

## The Need of Training for Consumption of Supplementary Folic Acid in Pregnant Women

<sup>1</sup>Z. Safdari, <sup>2</sup>F. Ghodsi, <sup>3</sup>M. Kamravamesh

<sup>1</sup>Instructor and the member of midwife scientific committee of Qazvin University.

<sup>2</sup>Graduated from Qazvin University.Nursing and midwifery faculty,  
Qazvin University Medical Science, Qazvin, IRAN.

<sup>3</sup>Instructor and the member of Nursing and midwifery Faculty of Kermanshah University  
of Medical science

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**Abstract:** Folic acid is very important for all women who may become pregnant. Adequate folate intake during the periconceptional period, the time just before and after a woman becomes pregnant, helps to protect against a number of congenital malformations including neural Tube defects. This research has been carried out in order to determine the training effect on the amount of awareness of the role of supplementary folic acid and its consumption. According to our findings, increasing women awareness regarding folic acid and its advantages during pregnancy, educating by midwives, physicians, and family health staff that are based on designed education programs are essential especially before the beginning of pregnancy.

**Key words:** Training, Consumption of supplementary folic acid, Pregnant women

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### INTRODUCTION

Folic acid (folinic acid, folacin, pteroylglutamic acid) is essential for the synthesis of adenine and thymine, two of the four nucleic acids that make up our genes, DNA and chromosome. It is not surprising that a folic acid deficiency has been implicated in a wide variety of disorders from Alzheimer's disease to atherosclerosis, heart attack, stroke, osteoporosis, cervical and colon cancer, depression, dementia, cleft lip and palate, hearing loss, and of course, neural tube defects (Larsen, R.H)

Folic acid is an essential vitamin recommended for women who are at the prime reproductive age of between 25 and 35 years of age, and in particular during the period before and throughout the pregnancy (Folic acid awareness, 2002). This vitamin plays a key role in division of fetal cells, Placenta and synthesis proteins and the production of erythrocytes (Gilbert, E.S., J.S. Harmon, 2002).

Folic acid helps to prevent the defects of the brain and spinal cord when taken at least one month before becoming pregnant and through at least the first three months of pregnancy (Folic acid awareness, 2002). Neural Tube defects are serious birth defects of the spine (spina bifida) and brain (anencephaly) affecting approximately 4000 pregnancies each year in the united Stated. Daily periconceptional consumption of 400 mg of folic acid, as recommended by the public Health Service (PHS) and Centers for Disease Control (CDC) (Cunningham, F.G., K.L. Leveno; Use of dietary supplements containing folic acid among of childbearing age...united state, 2005).

Women suffering from anemia due to a deficiency of folic acid may suffer from preeclampsia, preterm labor, an increase of postpartum hemorrhage (Paradox, P. 2004), increase incidence of spontaneous abortion, low birth weight and fetal death (Sifakis, S.A.. G. Pharmakides, 2000).

The use of vitamin before pregnancy relates with awareness from advantages of folic acid consumption (Morin, V.I., M. Mondor, 2001). In spite of the importance of folic acid, women are not aware of its advantages and therefore there is a low rate of taking this vitamin (Levine, N.H., K.L. Daniel, 2001).

The pregnancy risk assessment monitoring system in North Carolina showed that taking a multi-vitamin containing folic acid every day in the month before pregnancy has increased from 24.4% in 1997 to nearly 30% in 2002. However, the rate of taking folic acid is still well below the amount recommended by Healthy People. The national Healthy People 2010 target is to have 80 percent of non-pregnant women, ages 15 to 44 years, to consume at least 400 micrograms of folic acid every day from fortified foods or dietary supplements (Folic acid awareness, 2002).

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**Corresponding Author:** Z. Safdari, Instructor and the member of midwife scientific committee of University Qazvin.  
Email: zsafdari@qums.ac.ir.

Caring before and during pregnancy provides a good chance for improving awareness of women regarding the advantages of folic acid, and midwives should use an effective method in order to record their rate of success (Dunkley, 2000).

It has been proven that taking folic acid at the prime reproductive age has reduced from 40 % in 2004 to 33 % in 2005, whilst the awareness of women has increased from 78% in 2004 to 84% in 2005. These results indicate that the current educational scheme should be changed especially in the taking of folic acid (Use of dietary supplements containing folic acid among of childbearing age...united state, 2005).

Since most of the women referred to clinics and health centers are at reproductive ages or pregnant, this research has been carried out in order to determine the training effect on the amount of awareness of the role of supplementary folic acid and its consumption.

Here we consider the effect of training for consumption of supplementary folic acid in pregnant women. Beside the introduction this paper contains three other sections: the material and methods are represented in the next section. The data analysis has been considered in a separate section. We finish the paper with a conclusion in the last section.

### **MATERIEL AND METHODS**

In order to examine the hypothesis of our research we considered 126 pregnant women (during their first 14-weeks of pregnancy) who referred to health centers and clinics in Qazvin city, Iran from between 2006-2007. Health centers and clinics were chosen by cluster sampling and the women were selected randomly. We tried to cover our population and also consider several criteria; an absence of any mental disorder and fluent in Persian or at least with elementary literacy or have a member of family capable to read. The data gathering procedure was by interview and questionnaire including three divisions as follows;

- first division: individual characteristic of pregnant women,
- second division: awareness of women about folic acid,
- third division: supplementary taking of folic acid.

The method of validity of content was used for scientific validity of questionnaire. We also used test-retest approach to examine scientific reliability.

The first test was completed through an interview for each unit (each woman). The advantages of using folic acid trained to each person during a 15-minute session. Finally, a pamphlet of the trained awareness was given to each women. The second test was carried out two weeks after completion of the instruction.

The standard of measuring the awareness level was the number of correct answers to the questions. We assigned different scores to each question according to the type of the question (between 0-17). After adding up the scores, calculating average and variance, the awareness level classified into three levels: good (12 and more), average (6-12) and weak (6 and less). The usage of folic acid before training was specified through the yes-no answers while the rate of consumption after training was firstly specified through yes-no answers and then the way how to use it was classified according to the trained models for the number of days that this tablet was used by each unit after training correctly. The usage instruction was classified into four groups, good, average, weak and none used according to the days of using as follows;

- good usage: using folic acid tablet for two weeks,
- average usage: between one to two weeks,
- week usage: less than a week,
- nonuse: a person who did not use any tablets.

The data analysis was done according to the description statistics and also statistical tests (chi-Square, T-test and Fisher test). We used SPSS software for our data analysis.

### **RESULTS AND DISCUSSION**

Most of the pregnant women (51.6%) were less than 25 years old and only 6.3% of them were more than 35 years old. 34.9% were graduated and 0.8% of them were illiterate. 84.9% were housewives and 15.1% had jobs. 56.3% of them were in their first pregnancy and 14.3% were in their 3rd or more pregnancy. The highest education levels of their fathers were 24.8% guidance school and only 0.8% illiterate.

Most of the pregnant women (52.38%) had gained the required awareness from midwives. 57.1% of the pregnant women had average awareness before training while 57.1% had good awareness after training and only 2.4% had weak awareness (Table 1).

**Table 1:** Frequency of pregnant women according to awareness level about role of supplementary folic acid before and after training.

Level of awareness from role of folic acid	Before training		After training	
	Number	Percent	Number	Percent
Good	5	4	72	1.57
Average	72	1.57	51	5.40
Weak	49	9.38	3	4.2

The comparison of the mean awareness before and after training using T-test with  $P < 0.000$  confirmed that the difference is statistically significant (Table 2). This concludes that training can be considered as an important criterion in using folic acid. The fisher statistic test with  $P = 0.003$  also showed that there is a significant difference between the consumption of folic acid before and after training (Table 3).

**Table 2:** Comparison of the mean awareness: before and after training.

Level of awareness from role of folic acid	Mean	Result		
		df	t	P-value
Before training	6.99	125	-14.898	$P < 0.000$
After training	12.95			

**Table 3:** The results of F test and frequency of pregnant women in terms of consumption supplementary folic acid: before and after training.

Consumption supplementary folic acid	Before training		After training	
	Number	Percent	Number	Percent
Yes	106	1.84	121	96
No	20	15.9	5	4
Total	126	100	126	100
Result	$P = 0.003$			

Most of the pregnant women (77%) had good consumption (using for 2 weeks) after training, 17.5% had average consumption (using between 1-2 weeks), 1.6% weak consumption (using for less than a week) and 4% not using.

We also found that there was not any significant relationship between mother's age, number of pregnancies and job with her awareness before training. But the education of mother and father and his job had a meaningful significant relationship with the awareness before training. Also there was not a meaningful significant relationship between mother's number of pregnancies, age, education and job, partner's education and his job with the awareness after training.

The studying of the relationship between individual characteristics and the effects of training on the amount of folic acid consumption revealed that the education level of the male partner affected the amount of folic acid consumption before training, but there was not any meaningful relationships between mother's number of pregnancies, father's job and mother's age and the amount of using folic acid before training. The same relationship was also observed about the method of using that includes the amount of folic acid consumption after training with the individual characteristics.

**Conclusion:**

The results of this study showed that the awareness level of pregnant women regarding the role of folic acid before training was average and a few of them had a good level confirming the results obtained in previous research (Safdarian, L., M. Adineh, 2004; Kamravamesh, M., 2004).

Researchers believe that low awareness on the effects of folic acid before training among pregnant women could be as a result of low awareness among health center staff, low facilities, space and training periods as well as limited time health center staff have in order to create a suitable relationship with patients coming in for health services. Our findings showed that the awareness increased similar to the results obtained by other studies (Johnson, P.A., D.D. Stadler, 2002; Lynch, S.M., 2002; Watson, M.J., *et al*, 1999; Byrne, J., *et al*, 2005). A high percentage of women become more aware about folic acid after training and there is a direct relationship between higher awareness and training (Wu, D.Y., *et al*, 2007). Kamravamesh has also shown that the average score has been increased after training and the test result revealed a significant difference before and after training (Kamravamesh, M., 2004).

In this study our findings suggest that the consumption of folic acid before training was poor. Gjergia *et al.* also found that 75.35% of the pregnancies in Croatia were programmed however only 14.41% of women adequately received folic acid (Gjergia, R., F. Stipoljev, 2005). Potzsch *et al.* also reported that only 7% of women received folic acid in 4 weeks before pregnancy as well as in the first three weeks after it (Potzsch, S., *et al.*, 2006). Kamravamanesh showed that 56.9% of women used folic acid in Kermanshah, while 43.1% of them did not receive it at all (Kamravamanesh, M., 2004). Researchers believe that the suitable and correct consumption of folic acid among women depends on factors such as the awareness of its advantages and effects on their health as well as their children's health, and a positive view and attitude toward the importance of this vitamin is required. Previous studies indicate that there is a significant difference in the use of folic acid supplementation before and after training and that training has increased the consumption of folic acid (Kamravamanesh, M., 2004).

Here we did not find a meaningful statistically significant relationship between individual characteristics and the awareness. Moreover, we did not observe a significant relationship between using folic acid supplementation after training and most of the considered variables. This confirms the effect and the importance of training on consumption of folic acid supplementation and its awareness.

According to this research most of the pregnant women were awarded folic acid supplementation by midwives and doctors before training. It has been previously shown that the health attendants could be a good awareness resource of folic acid supplementation to women of reproductive age. Most women state that they prefer to hear about the importance and the advantages of using folic acid from health attendants and if this group such as doctors and midwives speak about the beneficial effects and advantages of this vitamin supplement, they would use it more often (Levine, N.H., K.L. Daniel, 2001).

The result of a study in North Carolina shows that most mothers (70.8%) get their awareness from the health attendants and a few of them get it from the other awareness resources (Folic acid awareness, 2002). According to the highly prevalence of neural tube defects in infants, anemia among the women who are in childbearing age, early parturition and prevalence of low weight infants as well as the effect of using folic acid on time in decreasing such cases, the findings of this research can be used by the hygienic-curing programmers of the country in order to prevent the results of folic acid supplementation shortage in society through applying educational programs at different levels.

These results can be of value to hygienic officers in planning and programming suitable consultations to increase awareness regarding folic acid before and during pregnancy. It has been revealed that consultation before pregnancy should be planned in a way that emphasizes the importance of using folic acid regularly before pregnancy and in the first 3 months (Levine, N.H., K.L. Daniel, 2001). Midwives who also deal with different age groups and play an enormous role in activities in schools, universities, hospitals, health centers and villages can in addition use the results of this research in their activities, as training has shown to be effective in increasing the amount of awareness.

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