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Study of Awareness and Practice of Folic Acid Intake among Iraqi Women

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ABSTRACT

Background: Folic acid supplementation before and during pregnancy reduces the risks of neural tube defects. WHO recommended that folic acid supplement of 400 μg should be taken daily by all women, from the moment they begin trying to conceive until 12 weeks of gestation.
Objectives: To study the knowledge, attitude and practice (KAP) of women at childbearing age regarding folic acid intake.
Materials and methods: A descriptive cross sectional study was conducted at the second Al-Adhamyia primary heath care center/ Baghdad from the 1st of January to end of February 2017. One hundred seventy married women at age 15−49 years were enrolled in the study. They were selected by non-probability convenient sampling technique. Data was analyzed using SPSS version 22.
Results: Mean age of the study sample was 30.3 ± 8 years. The illiterate and the highly educated were 7 (4.1%) and 70 (41.1%) respectively. Their awareness regarding the folic acid need was 79%. About 61.2% knew its importance in pregnancy, while only 47.1% knew its benefit in pre pregnancy. The practice of folic acid in previous pregnancy was 76.5%, mainly started during the first month. More than half (57.7%) used it daily. Results also show that there is a significant association between knowledge (heard of folic acid and awareness of its importance) of women and age, education and parity.
Conclusion: Knowledge regarding folic acid and its importance among women was fairly good. The practice was also satisfactory. However, more strategies are needed to increase the awareness about the preconception use of folic acid in our community.

Keywords: KAP, Folic acid, Child bearing age.

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INTRODUCTION

Folate is an essential B vitamin that is naturally occurring. It is needed by the body to repair, form and methylated DNA as well as to act as a helping factor in certain biological interactions. Synthetic forms of folate, folic acid is more bioavailable and stabler than the natural forms [1]. It is very important during infancy and pregnancy due to its role in aiding rapid cell division and growth [2].

Folic acid cannot be synthesized by the body, thus requires the intake of food. It is mainly present in green leafy vegetables. Liver, meat, kidney, dairy products, nuts and eggs are also good food sources of folic acid [3]. Folic acid is converted in the body into tetrahydrofolate and methyltetrahydrofolate, coenzymes needed for many metabolic reactions, including DNA synthesis and to maintain normal erythropoiesis and interconvert amino acids [4]. It is absorbed in the jejunum and stored in the liver and CSF, about 4−5 microgram is excreted daily in the urine. Neural tube defects (NTDs) are the most observed birth defects associated with folic acid deficiency. Commonly occurring neural tube defects include anencephaly and spina bifida. These defects develop due to the failure of closure of the neural tube during embryogenesis which usually occurs at 21−28 days postconceptionally [5]. Globally, each year 0.3−0.4 million infants are born with spina bifida and other defects [6]. The prevalence is nearly 1−5/1000 live births and the risk of recurrence is 2−3% [7]. Folate intake during the preconception period and just after pregnancy helps protect from those congenital de-

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fects [8, 9].

Folic acid also prevents congenital heart defects, growth retardation, low birth weight of infants, smaller head and chest circumference [10], preterm delivery and cleft lip [9]. Low intake of folic acid during pregnancy may be associated, as stated by Rebecca et al [11], with autism in infants, and another research has shown a possible link between folic acid deficiency and Down syndrome [12]. Megaloblastic anemia can result from folate deficiency. To prevent megaloblastic anemia in pregnancy, the recommended daily dose of folic acid should be 0.2−0.5 mg/day.

Folic acid supplementation is well tolerated, although gastrointestinal side effects may occur. Folic acid also plays an important role in the prevention of arteriosclerosis [13]. Several studies have shown that prei-conceptional use of folic acid has an effective role in the prevention of NTDs [8, 9, 14, 15].

WHO recommended that all women, trying to conceive till 12 weeks of gestation should use folic acid supplement 400 μg daily. Women with a past history of delivering a baby with a neural tube defect should be informed about the risk of recurrence, and be advised that the intake of folic acid before and during pregnancy have a protective effect and thus should take high dose supplementation (5 mg folic acid daily); and be advised to increase their dietary folate [9].

It was found that approximately 70% of NTDs can be prevented by peri-conception folic acid supplementation [16]. A study among 130, 142 Chinese women between 1993−1995 demonstrated a reduction in the risk for an NTD of up to 85% in women who took 0.4mg/day of folic acid prior to conception and during the first trimester [17]. Preventive strategies of NTDs include health education and awareness about the importance of folic acid intake among women of reproductive age, availability of folic acid supplements, and fortification of certain food with folic acid [18].

To our knowledge, no study has been conducted on the awareness and practice of folic acid intake among women of reproductive age in Baghdad. Thus, the aim of this study was to assess the awareness and practice of Iraqi women regarding folic acid intake before and during pregnancy.

MATERIALS AND METHODS

Study design

A crosssectional study of awareness and practice related to folic acid intake of women of reproductive age. This study was carried out in Baghdad at the Second Al Adhamyia Primary Health Center/ Baghdad. For the period 1st of January to 28th of February 2017. The study was conducted on married women at childbearing age (15−49 year) who visit antenatal care. The study was approved by College of Medicine, University of Anbar.

The sample size was one hundred and seventy women, selected by non-probability convenient sampling technique. Inclusion criteria included married women at age (15−49 year).

Data collection

After taking informed verbal consent, the specially designed questionnaire was administered through interviewing women with closed ended questions related to knowledge, and practice in folic acid use. The questionnaire was divided into three parts: part one was demographic data included: age, gender, education, parity and on knowledge; part two attitudes; part three for practice of folic acid intake.

Statistical analysis

The statistical analysis was conducted in the form of percentages, mean, standard deviation. Chi-square analysis was used for rate comparison. Statistical significance at level $p<0.05$ was used when required. The statistical analysis was carried out by using SPSS version 22.

RESULTS

The study sample is one hundred and seventy women at child bearing age (15−49 y) who were interviewed. They were from the second Al-Adhamyia primary health care center.

Socio-demographic characteristics

Table 1 shows the age distribution of the study sample. The age range of women was 15−49 years, which is childbearing age with a mean 30.3 ± 8 years. The highest proportion were 20−29 years old (44.7%), while the lowest frequency (7.1%) at the age less than 20 years. The Table also shows education that ranges from the lowest frequency (4.1%) among illiterate and the highest frequency (41.2) which represent the university group.

Occupation wise, the study sample was composed of house wives that representatives (76.5%) and the employed women (23.5%). Regarding parity, the highest frequency (29.4%) was pure one, while the lowest frequency was primigravida that representatives (10.5%). About 77.1% of women were having abortion at least once, while stillbirth, and other deaths (neonatal, postnatal and child deaths) have the same frequency (11.4%).

Knowledge and attitude of folic acid

From one hundred and seventy women interviewed, (79%) responded that they have heard of folic acid and (61.2%) knew about its importance in pregnancy, while those who partially knew about its importance in pregnancy have the lowest frequency (10.6%) as shown in Table 2.

Table 2 also shows the knowledge of food containing folic acid, most of women (86.2%) did not know types of food containing folic acid. Only 5.9% knew those foods and 25.9% partially knew them. Less than half (47.1%) knew the benefit of folic acid in pre pregnancy, while more than half (52.9%) did not know the benefit. The women who received advice from health care provider of pre-pregnancy use of folic acid have constituted nearly one third of the study sample (35.3%), and those who did not receive advice were (64.7%). Table 2 also shows that most women took folic acid during the first month of pregnancy (43.5%). Almost (21.2%) did not know the proper timing of folic acid supplementation during pregnancy.

Doctors were considered the major source of knowledge of folic acid intake (68.2%), while the lowest source included nurse and midwifes and previous experience (1.2%). The same Table shows that 47.1% of women knew that folic acid deficiency lead to abnormalities in new born, 17.6% did not know while 35.3% had no idea. Women who were willing to know more about folic acid have the highest frequency (60%), while those not willing represented (40%) as shown in Table 2.

Practice of women who took folic acid in previous pregnancy

Table 3 shows that only 23.5% of women took folic acid in previous pregnancy, while the highest frequency (76.5%)

Table 1. Socio-demographic Characteristics of the study sample.

Variables	No.	%
AGE (years)		
Mean ± SD (30.3 ± 8)		
< 20	12	7.1
20−24	36	21.2
25−29	40	23.5
30−34	26	15.3
35−39	22	12.9
40+	34	20.0
Total	170	100
Education		
Illiterate	7	4.1
Read & write	17	10
Primary	38	22.4
Intermediate	16	9.4
Secondary	22	12.9
University	70	41.2
Total	170	100
Occupation		
Housewife	130	76.5
Employed	40	23.5
Total	170	100
Parity		
Primigravida	18	10.5
1	50	29.4
2	30	17.7
3	32	18.8
4	20	11.8
5+	20	11.8
Total	170	100
Abortion	54	77.1
still birth	8	11.4
Other deaths	8	11.4
Total	70	100

Table 2. Distribution of knowledge , attitude relation information among the study sample.

Variables (n = 170)	No.	%
1- Knowledge of folic acid		
Heard of folic acid	135	79
Did not hear of folic acid	36	21
2- Importance of folic acid in pregnancy		
Know its importance	104	61.2
Did not know	48	28.2
Partially Know	18	10.6
3- Food containing folic acid		
Know	10	5.9
Did not know	116	86.2
Partially know	44	25.9
4- Know the benefit of folic acid in pre pregnancy		
Know	80	47.1
Dont Know	90	52.9
5- Received advice from health care provider of pre pregnancy use of folic acid		
Received	60	35.3
Not received	110	64.7
6- proper time of folic acid supplementation in pregnancy		
Pre conception	28	16.5
During 1st month	74	43.5
During 2nd month	10	5.9
After 3rd month	22	12.9
Dont know	36	21.2
7- Source of knowledge		
Doctor	116	68.2
Nurse & midwife	2	1.2
Family & relative	10	5.9
Previous experience	4	2.4
TV	2	1.2
Other	36	21.2
8- Deficiency of folic acid lead to abnormalities in new born		
Yes	80	47.1
No	30	17.6
Dont know	60	35.3
9- Willing to know more about folic acid benefits		
Yes	102	60
No	68	40

did not take. Among those who took folic acid in previous pregnancy, 42.4% took it during first month while lowest frequency of use was at pre pregnancy period (12.9%). The intake of folic acid in previous pregnancy was daily in 57.7% of women while the interrupted use was among 18.8% of them. The daily use of folic acid was practiced in first pregnancy among 67% and declined in successive pregnancies to about 2.4% during sixth pregnancy (Table 3).

The association between knowledge and socio-demographic characteristics

Table 4 shows significant association between womens knowledge (heard of folic acid and know its importance) and socio demographic characteristics which they were age, education, occupation, and parity that represent by ($p<0.05$).

DISCUSSION

The current study has focused on KAP of women at child bearing age (15−49) year about folic acid intake.

Socio-demographic characteristics

The findings of this study revealed a highest proportion at age 20−29 years for women (44.7%), this result lower than that reported by other studies [19, 20]. Women at age 40 and more represent 20% here which is higher than reported by Al-Hossani et al study in Abu Dhabi which was 1.1% only [19].

Graduated women with university education constituted a higher proportion which also agrees with a study in Abu Dhabi[19] but higher than that among urban Iranian pregnant women with university education 3.9% [20]. In spite of higher education, more than 75% of women were housewives

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Table 3. Distribution of women who took folic acid in previous pregnancy.

Variables (n = 170)	No.	%
Folic acid use in previous pregnancy		
Took folic acid	130	76.5
Did not take folic acid	40	23.5
Time of supplementation		
Before pregnancy	22	12.9
During 1st month	72	42.4
After 1st month	36	21.2
No use	40	23.5
Way of supplementation		
Daily	98	57.7
Interrupted	32	18.8
No use	40	23.5
Did you use daily folic acid in previous pregnancies n=170		
1st pregnancy	114	43.5
2nd pregnancy	80	30.5
3rd pregnancy	38	15.4
4th pregnancy	20	7.6
5th pregnancy	6	2.3
6th pregnancy +	4	1.5
	262	

probably due to less chance for employment in our country even after graduation.

Knowledge and attitude of folic acid

The awareness of folic acid in this study among women was 79%. This finding agree with Abu Dhabi study (79.1%) with almost same percentage[19], but higher than an Indian study in which only 36.6% of women were aware of folic acid. However, it is lower than Iranian study which reported that 96.1% of pregnant women have heard of folic acid [20]. Al-Akhfash et al [21] reported 88% of women had heard about folic acid among Saudi population. Bener et al in Qatar showed that folic acid awareness in women was 54% [22]. In Norway and Poland, studies reported that 50.4% and 67.5% of women in their reproductive age respectively had heard about folic acid [23, 24] while Nawapun and Phupong showed that folic acid was known by only 24.4% of Thai women [25].

The study findings showed that among those who knew folic acid importance during pregnancy, 61.2% reported correct knowledge which is higher than (46.6%) reported by Al-Hossani et al study in Abu Dhabi [19] and 12.2% among pregnant women in Southern India [26]. Women who know foods containing folic acid in this study were only 10 out of 170 (5.9%) which reflect poor nutrition education in our community. This result is much lower than reported by other studies as in Abu Dhabi [19] in which 28.3% knew the proper food containing folic acid, and in Poland, 42.2% of women identified foods containing folate [24].

In Southern India women correctly knew the food items rich with folic acid constituted 30.5% [26]. Nosrat et al reported that 37.6% subjects also identified natural foods that contain folic acid [20]. Nawapun and Phupong among Thai women reported that 32.4% women could identify types of natural foods with folic acid [25]. The benefits of folic acid in pre pregnancy was known by 47.1% of women which is higher than 27.6% reported by an Iranian study who thought that the use of folic acid supplement before and during pregnancy may prevent NTDs [20]. However those who did receive advice from health care provider about pre pregnancy use of folic acid in this study represent 35.3% which disagree with Kurian et al study that reported only 16.0% received advice [26].

The majority of women consider the proper time of folic acid supplementation in pregnancy in first month (43.5%). This is in accordance with Al-Hossani et al study in Abu Dhabi [19] this is most probably due to the routine prescription of folic acid by doctors at the first month of pregnancy.

Doctor is the major source of knowledge about the role of folic acid in pregnancy as mentioned by 68.2% of women participating in this study. This is similar to other studies in which a majority of women recalled hearing about folic acid from their doctors [22, 27]. Other sources had little impact in imparting knowledge among women such as nurses, midwives, family members and media. Nearly half of women studied believe that folic acid deficiency will lead to abnormalities in

Table 4. Association between knowledge and socio-demographic characteristics of the study sample.

Variables	Description of data	Women know folic acid and its important	Women don't know folic acid and its important	Women Partially know folic acid and its important	P-value
Age(years)					0.001
	< 20	6	6	0	
	20−24	20	6	10	
	25−29	30	2	8	
	30−34	16	10	0	
	35−39	12	2	8	
	40 +	18	6	10	
	T	102	32	36	
Education					0.000
	Illiterate	3	4	0	
	Read and write	7	8	2	
	Primary	16	12	10	
	Intermediate	10	4	4	
	Secondary	16	0	6	
	College	50	4	14	
	T	102	32	36	
Occupation					0.026
	Housewife	72	30	28	
	Employed	30	2	8	
	T	102	32	36	
Parity					0.000
	Primigravida	14	0	4	
	1	28	10	12	
	2	22	2	6	
	3	18	4	10	
	4	14	4	2	
	5+	6	12	2	
	T	102	32	36	

newborn and neural tube defects and that is in consistence with other studies [22, 24].

Practice of women who took folic acid in previous pregnancy

Concerning the practice of women regarding the use of folic acid in previous pregnancy, the study revealed relatively good practice as 76.5% of them took folic acid; more than half of them (57.7%) took it on daily basis. Most of women who used folic acid in their last pregnancy started using it during the first month. While only 12.9% had taken the supplementation before pregnancy. This is most probably due to the prescription of folic acid by doctors at the time when women start pregnancy. This result agrees with Al-Hossani study in which nearly 70% took folic acid and only 7.8% used it before pregnancy [19]. In South India, only 3.8% of women took folic acid before pregnancy [26]. When women were asked about their previous experience and practice during their previous pregnancies, it was noticed that the higher proportion 67% used it in their first pregnancy then it declined to reach 2.4% in their 6th pregnancy which indicate less awareness of women about the importance of using folic acid in successive pregnancies or less antenatal care delivered.

The association between knowledge and socio-demographic characteristics

The study shows that there is significant association between knowledge (heard of folic acid and awareness of its importance) of women and age, education and parity. Women with higher education were more likely to be more aware of folic acid and its importance. This result is in agreement with many studies. Al-Hossani study revealed that education was the most significant factor affecting women's knowledge with regard to the importance of folic acid in pregnancy [18]. A study in Southern India showed that women with low education had a poor knowledge compared to others [26]. In North China, the lower educated women reported less knowledge [28]. In Thailand, education was found the strongest factor contributing to knowledge about folic acid [25] and in Texas, a study reported that poor knowledge was associated with low educational status of women in reproductive age [29]. Other studies confirmed the same association [2, 30–32]. Regarding association of knowledge and importance with age, results of this study was unlike other studies which did not find any association [26, 33]. Riazi in Iran stated that there is a significant relationship between the knowledge, age, and parity. Rehan in Pakistan also revealed that there was significant correlation of women's age, number of children with knowledge of folic acid supplementation [32].

CONCLUSION

1. The study revealed that the awareness of women regarding use of folic acid is fairly good (79%).
2. Practice was also fairly satisfactory as 76.5% of them had used folic acid supplement during their previous pregnancy.
3. There is a significant association between womens knowledge (heard folic acid and know its important) with age, education and parity.

RECOMMENDATION

1. Further studies are needed including follow up studies for non users of folic acid supplements during periconcetion period.
2. Government involvement in fortification of food like flour, bread with folic acid is the need of the day.
3. There is a need for a public health education initiative and more strategies to increase the awareness of periconception use of folic acid in our community.

CONFLICT OF INTEREST

The author declare that there is no conflict of interest.

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