International Journal of Community Medicine and Public Health
Choudhary N et al. Int J Community Med Public Health. 2021 Nov;8(11):5288-5292
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040
DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20214261

Original Research Article

Knowledge and consumption of folic acid among teachers in Jammu region: a cross-sectional study

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Received: 25 January 2021
Revised: 22 June 2021
Accepted: 24 September 2021

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ABSTRACT

Background: Folic acid reduces the risk of birth defects, including neural tube defects (NTDs). It reduces the risk of miscarriage and fetal death as well as folate-deficiency anemia. Folate status is particularly important before conception and during the first 12 weeks of pregnancy. Objective was to assess knowledge and consumption of folic acid among teachers in the reproductive age group.
Methods: 336 school teachers selected from government and private schools (primary/middle/secondary/higher secondary) by simple random sampling technique. Teacher's knowledge and consumption of folic acid and associated factors was studied using a pre- tested; self- administered questionnaire.
Results: 95% teachers had heard about folic acid, 57% knew about neural tube defects. 53% were aware of the role of folic acid in NTDs. 66% had knowledge about the best timing for its intake. 56% were aware about the sources rich in folic acid. 75% believed that foods are the best source of folic acid, 80% believed that taking foods rich in folic acid and tablets are sufficient to maintain body stores.49% were taking folic acid presently. 66% of the participants were taking folic acid under medical advice, 29% due to the recommendations by their family/friends while self-initiation was reported in only 5% of the individuals.
Conclusions: IEC activities needs to be conducted among different strata of population so that the intake of folic acid could be increased and associated factors effecting its intake and absorption could be taken care of.

Keywords: Folate, Folic acid, Neural tube defects

INTRODUCTION

Neural tube defects (NTDs) are common birth defects which contribute to disability and infant mortality.[1] These are a serious group of congenital birth defects of the brain and spine and include spina bifida and anencephaly. It is believed that NTDs have highest incidence rates among all congenital malformations causing 22% of all infant deaths and those effected with NTDs are exposed to an increased risk of morbidity and mortality, in turn resulting in approximately 88 000 deaths and 8.6 million disability-adjusted life years.[2-5] NTDs occur when the neural tube fails to close completely within 28 days of conception. It is well established that adequate folate status is important before conception and during the first 12 weeks of pregnancy so as to prevent the occurrence of NTDs. Its consumption even reduces the risk of miscarriage and fetal death along with lowering folate-deficiency anaemia.[6-8] Thus folic acid supplementation before pregnancy becomes quintessential.

Inspite of the various government schemes and campaigns being run to raise the awareness of FA consumption and the need for NTD prevention, studies have claimed that intake of folic acid by non-pregnant women; of reproductive age group, especially young women who take folic acid supplements daily, is still low.[9,10] 40 times higher likhelihood of FA consumption

among women who were aware about the folic acid requirement and role in human body as compared to those women who were unaware of its benefits.[11] In some countries like US, modelling studies have shown that women who consume folic acid enriched food products like cereal grains etc. have lower RBC folate concentration as compared to those who take FA supplements along with FA enriched food products.[12,13] Owing to motivation from the international agencies like WHO, UNICEF etc., in 1990's many countries started fortifying wheat flour with Iron and FA. It is even mandatory in some countries like Kingdom of Saudi Arabia, Oman, Kuwait and Bahrain, and voluntary in Qatar. Qatar even began adding 30 mg of iodine and 1.5-2 mg of folic acid to wheat flour in the year 2000. However, with these fortifications in practice, reports from investigations have stated most women are still required to take folic acid-containing dietary supplement daily to reach the daily recommendations of 400 micrograms. [14]

In the low to medium income countries (LMIC) like India, approach to improve the folate nutritional status of women has been providing folic acid supplements to pregnant women visiting public health centres.[15] However, this strategy is not effective in preventing NTDs since failure of closure of neural tube occurs within 28 days of conception, a time by which most women do not even realise that they are pregnant.

This study marks its importance in a way that it has been conducted on teaching women of reproductive age group, a profession that needs to be assessed for FA acid consumption knowledge and practices to have an overview about how vigilant they are about their own health and how their knowledge can be spread to students to improve their health status as well.

METHODS

Study design

It was a cross-sectional study.

Ethical considerations

Teachers were informed about the aims and objectives of the study and invited to participate. Verbal informed consent was obtained from all the participants.

Teacher's knowledge and consumption regarding folic acid and associated factors was studied using a pre-tested; self- administered questionnaire.

Study population

School teachers from selected government and private schools, in Jammu district, Jammu and Kashmir were included in the study.

Sample size

The sample size was calculated using Open Epi Info software. Based on 30% expected proportion of the awareness of folic acid, 95% CI, estimated sample (n) came out to be 336.

Sampling method

Office of the Chief Educational Officer (CEO), Jammu was approached and briefed about the purpose of the study. Thereafter, list of schools falling under Jammu municipal corporation (JMC) was procured.

Using simple random sampling technique, a total of 15 schools (primary/middle/secondary/higher secondary) were selected. A separate list was prepared of the selected schools and each principal falling in sequence in the list was approached till the desired sample size was reached. Thereafter, Head of the institution was explained about the purpose as well as the procedure of the study. They were also assured that confidentiality of the study participants i.e. teachers at every step will be maintained.

Teachers, at different educational levels, who were present on the day of their respective school visit, were made part of the study. All the teachers were approached individually and briefed about the study. After seeking informed verbal consent, questionnaires were distributed among them during the lunch break.

Inclusion criteria

School teachers, willingness to participate in the study, age 15-49 years.

Exclusion criteria

Age >50 years, pregnant teachers, not willing to participate, females with congenital/chromosomal deformities, those on leave.

The questionnaire consisted of socio-demographic information of the participant e.g.; age, gender, income, marital status etc. Data collection tool was self-administered questionnaire after extensive literature research. The questionnaire was developed according to our cultural setup. It included variables: knowledge and consumption of folic acid; assessed through various relevant questions in each section. Question format in both the sections was closed ended and no open-ended question was included.

RESULTS

Table 1 indicates that 22% individuals in our study were below 30 years of age, 38% belonged to 30-49 year age group while 40% were in the >50 year age group. 80% of the females were married and 64% were postgraduates degree holders while 36 % females were graduates. Half

of the females were secondary school teachers nearly half i.e. 49% were from higher secondary schools while only 1 % were primary school employees.

Table 1: Demographic data of the participants.

Demographic data	N	%
Age (years)		
<30	72	22
30-49	129	38
>50	135	40
Marital status		
Married	270	80
Unmarried	66	20
Educational level		
Graduate	120	36
Postgraduate	216	64
School type		
Primary	3	1
Secondary	168	50
Higher Secondary	165	49
Family Income		
<20000	0	0
20000-30000	18	5
>30000	318	95

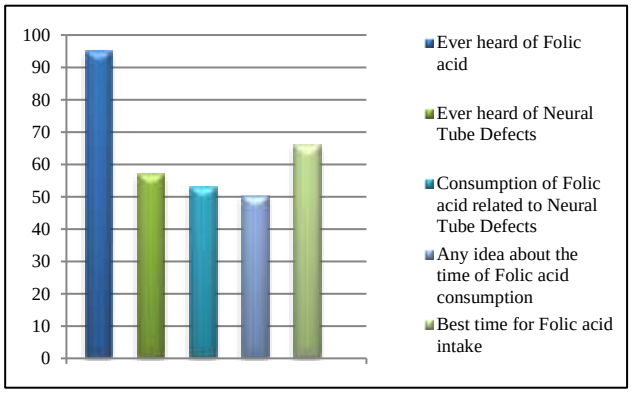

Figure 1: Distribution of participants based on their knowledge about folic acid consumption.

Figure 1 shows that 95% of the female teachers had heard about Folic acid while 57% had knowledge about neural tube defects. More than half of the teachers (53%) were aware of the fact that consumption of folic acid is related to NTDs. It also reveals that half of the participants were aware about the timing of folic acid consumption and a good percentage (66%) had knowledge about the best timing for its intake.

Figure 2 reveals that more than half i.e. 56% of the study participants were aware about the sources rich in folic acid. 75% believed that foods are the best source of folic acid and 80% were of the view that taking foods rich in folic acid and tablets are sufficient to maintain body stores.

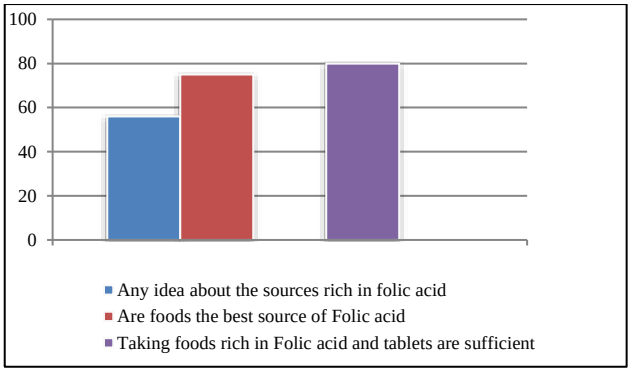

Figure 2: Distribution of study participation as per their knowledge of source of folic acid.

Figure 3 indicates the pattern of folic acid consumption wherein 49% of the participants were taking folic acid presently out of which 45% consume it daily whereas, 56% of the females had taken folic acid in the past.

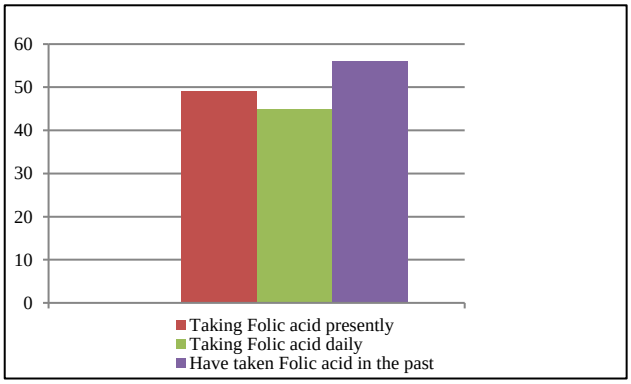

Figure 3: Distribution of participants based on folic acid consumption.

Figure 4 reveals the reasons for folic acid consumption among the participants. It shows that, majority (66%) of the participants were taking folic acid under medical advice, 29% due to the recommendations by their family/friends while self-initiation was reported in only 5% of the individuals.

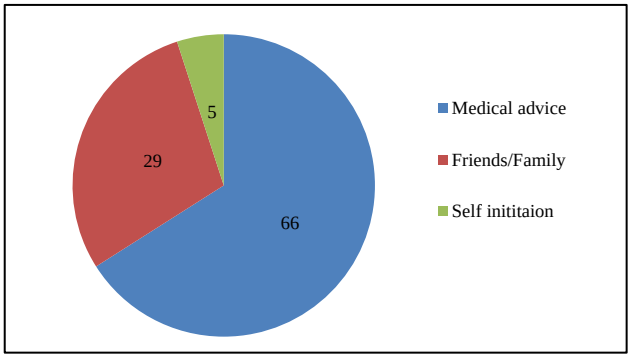

Figure 4: Distribution of participants based on the reasons for folic acid consumption.

DISCUSSION

This study was conducted to assess the knowledge and intake of folic acid among teachers in the reproductive age group as teachers is an educated cohort, who also have an impact and command over the students which can shape them into a more self-aware group, in addition of their own health and well-being.

Current study shows that 95% of the female teachers had heard about folic acid while 57% had knowledge about neural tube defects. More than half of the teachers (53%) were aware of the fact that consumption of folic acid is related to NTDs. It also reveals that half of the participants were aware about the timing of folic acid consumption and a good percentage (66%) had knowledge about the best timing for its intake. This fair amount of knowledge could be attributed to the participant's education level as more than half of the teachers possessed a postgraduate degree and the rest were graduates too.

It was also seen that more than half i.e. 56% of the study participants were aware about the sources rich in folic acid. 75% believed that foods are the best source of folic acid and 80% were of the view that taking foods rich in folic acid and tablets are sufficient to maintain body stores**,** 49% of the participants were taking folic acid presently out of which 45% consume it daily whereas, 56% of the females had taken folic acid in the past. This could be due to the fact that majority of the women were married (80%) and women are prescribed folic acid in their pregnancies to prevent the occurrence of neural tube defects.[15,16] This coincides with results from some studies that have reported a direct association between educational level of women in the reproductive age group and their knowledge and intake of folic acid.[17-19] It shows that, majority (66%) of the participants were taking folic acid under medical advice, 29% due to the recommendations by their family/friends while self-initiation was reported in only 5% of the individuals.

Strength of the study was its uniqueness as the study group is teachers, the educated and impactful section of the society.

This study is not free from limitations which include- recall bias, participants may have under or over reported the consumption of folic acid or the reason for its intake; small sample size- all the teachers have been selected from the urban area, it would be interesting to assess the knowledge and intake among the rural area teachers as well. Also, teachers may not be a representative of women in the reproductive age group; therefore, the results should be generalised with caution.

CONCLUSION

Folic acid reduces the risk of birth defects, including NTDs. It also decreases the risk of miscarriage and fetal death as well as folate-deficiency anaemia. Folate status is particularly important before conception and during the first 12 weeks of pregnancy. Awareness should be generated through appropriate nutritional counselling during Out-patient and antenatal visits and through media as well, intensive counselling and motivation of women to consume folic acid and ensuring adequate supply to them would help in reducing the burden of disease.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Choudhary N, Manhas P, Narangyal A, Manhas RS. Knowledge and consumption of folic acid among teachers in Jammu region: a cross-sectional study. Int J Community Med Public Health 2021;8:5288-92.