

Original Research Article

Factors associated with iron and folic acid supplementation among pregnant women aged 15-45 years attending Naroosura health centre, Narok County, Kenya

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ABSTRACT

Background: Iron and folic acid are very important nutrients to mothers during pregnancy. Their deficiencies are risk factors for anaemia, preterm delivery and low birth weight. This study aimed to investigate the supplementation of iron and folic acid and the associated factors among pregnant women attending Naroosura health centre, Narok County, Kenya.

Methods: This study employed a descriptive cross-sectional study design. Data collection took a period of one month where a total of 123 mothers participated. A self-administered semi-structured questionnaire was used for data collection. Chi-square test was conducted to find associations at a significance level of 0.05.

Results: Of the study participants, nearly a third (31.7%) took iron and folic acid supplements daily, over a half (57.7%) indicated that taking iron and folic acid supplements was important to them, about a quarter (24.4%) reported that use of iron and folic acid supplements reduces birth defects and about a third (32%) consumed foods rich in iron and folic acid. Supplementation of iron and folic acid was significantly associated with residence ($\chi^2=4.311$, $df=1$, $p=0.038$), monthly household income ($\chi^2=10.870$, $df=4$, $p=0.028$), reduced birth defects ($\chi^2=6.131$, $df=1$, $p=0.013$) and consumption of iron and folic acid rich foods ($\chi^2=4.163$, $df=1$, $p=0.041$).

Conclusions: The intake as well as supplementation of iron and folic acid is still low. Therefore, both the intake and supplementation of iron and folic acid need to be scaled up.

Keywords: Supplement, Consumption, Deficiency, Iron, Folic acid

INTRODUCTION

Iron and folic acid are very important nutrients to mothers during pregnancy. Their deficiencies during pregnancy are risk factors for anaemia, preterm delivery and low birth weight. These deficiencies subsequently contribute to poor neonatal health and increased maternal mortality.¹ Health problems associated with low intake of iron and folic acid can be addressed by adherence to proper diets with emphasis on vitamin B rich foods as well as use of prenatal supplements that are provided in health facilities.

Daily oral iron and folic acid supplementation (IFAS) with 30 mg to 60 mg of elemental iron and 400 µg (0.4 mg) folic acid is recommended for pregnant mothers to prevent maternal anaemia, puerperal sepsis, low birth weight and preterm birth.² IFAS should be commenced as early as possible (ideally before conception) to prevent onset of adverse health outcomes.

The Kenyan government through the ministry of health (MOH) ensures that proper counselling is offered to all pregnant mothers by the health care providers before commencing IFAS. In Narok County, where Naroosura health centre is located, hospital records indicated low

(8%) adherence to routine IFAS.³ This was unexpected since the supplements were provided at no cost by the government in public health facilities putting the pregnant mothers at significantly high odds of the negative health impacts of iron and folic acid deficiencies. Therefore, the study sought to investigate the supplementation of iron and folic acid and the associated factors among pregnant women attending Naroosura health centre, Narok County.

METHODS

This study employed a descriptive cross-sectional study design. It was conducted among the pregnant mothers attending antenatal (ANC) clinic at Naroosura health centre, Narok County. All pregnant mothers who underwent counselling and were given IFAS prior to the study were recruited while those who had visited for the first time were excluded from the study.

Data collection took a period of one month where a total of 123 pregnant mothers participated. A self-administered semi-structured questionnaire was used for data collection. The completed questionnaires were coded and entered into statistical packages for social sciences (SPSS) version 23.0 software for analysis.

Approval to conduct the study was obtained from the university of Eastern Africa Baraton ethics committee. Permission was sought from the facility in-charge prior to data collection. Also, informed consent was sought from study participants. The respondents were informed about the nature and purpose of the study and were guaranteed that all data gathered from them were coded to protect their identity.

RESULTS

Demographic information and socio-economic characteristics of the respondents

Table 1 presents background information on demographic and socio-economic characteristics of the respondents which include place of residence, level of education, age, marital status, source of income, monthly income, religion and number of pregnancies.

From the study findings, slightly over two-thirds 85 (69.1%) of the respondents lived in the village, over a third 49 (39.8%) had attained primary level of education, the most age bracket was 26-30 years 50 (40.7%), about two-thirds 81 (65.9%) were married, about three-quarter 94 (76.4%) were Christians and a small proportion of 26 (21.1.8%) had formal employment. On monthly income, the respondents indicated that nearly a half 59 (48.0%) earned an income of less than KES 5000 and slightly more than a half 64 (52%) earned an income of above KES 5000. With regard to pregnancy experiences, 27 (22.0%) indicated 0-2 pregnancies, almost half 60 (48.8%) indicated 3-5 pregnancies and close to a third 36 (29.3%) indicated 6 and above pregnancies.

IFAS among pregnant women

Figure 1 shows the intake of iron and folic acid supplements among the study participants.

The study findings indicates that nearly a third 39 (31.7%) of the pregnant women took iron and folic acid supplements daily while more than two-third 84 (68.3%) didn't take iron and folic acid supplement daily.

It was necessary to check mothers' view on importance of IFAS as indicated in Figure 2.

Over a half 71 (57.7%) of the respondents reported that taking iron and folic acid supplements was important to them while less than a half 52 (42.3%) reported the contrary.

Figure 3 shows the understanding of the mothers on whether the use of IFAS can reduce the risk of birth defects.

According to study findings, only 30 (24.4%) of study participants indicated that iron and folic acid supplementation reduces the risks of birth defects.

Dietary intake of iron and folic acid among pregnant women

The study participants were asked if they consumed foods rich in iron and folic acid (Figure 4).

From the study findings nearly a third 39 (32%) of the study participants consumed iron and folic acid rich foods.

Findings from qualitative data indicated beef to be the most common source of iron and folic acid as reported by respondents. Some of the reasons given by the respondents included its affordability and availability which could be attributed to the fact that the study participants were pastoralists. In fact, they reported that consumption of vegetables will make someone feel hungry earlier. For instance, one respondent said, "*keeta mpuka esumash oleng*" translated as "*when one eats vegetable he/she feels hungry earlier*". Another respondent said, "*mikinyangu nkirii anaake*" meaning "*beef is cheap especially one can obtain meat without buying*". Other reasons cited were: "*beef gives extra energy that sustains one for a whole day*" and "*belief that a woman who doesn't eat beef while pregnant gives birth to unhealthy baby*".

Other rich sources for iron and folic acid cited by study participants were milk, eggs, vegetables and whole grain cereals. Some of the reasons given for considering such sources included livestock moving to other places for grazing during dry seasons and thus taking long before returning. For example, a respondent said, "*kidur oshi nkishu tengataa oo olameyu*" translated as "*during*".

drought the livestock will go away from home in search of pasture". As a result, they were forced to use legumes particularly beans. Also, they reported that soaking beans led to increase in quantity which in turn sustains the whole family for more than one day. For instance, a respondent said, "*ore tenimuuk emboosho tenkare, engewarie pooki metubula, nebaikii olmarei tonkoloongi nataasha,*" which meant "when you soak one kilogram of beans overnight, they will multiply by morning and you will end up with more than one kilogram that will sustain the whole family the following day until the next day".

Association between socio-demographic characteristics and IFAS

A Chi-square test was conducted to find association between socio-demographic characteristics and IFAS as shown in Table 2.

From the Chi-square analysis, the place where the study participant resided was significantly ($\chi^2=4.311$, $df=1$,

$p=0.038$) associated with supplementation of iron and folic acid. In addition, monthly household income had a significant ($\chi^2=10.870$, $df=4$, $p=0.028$) association with the supplementation of iron and folic acid. Other socio-demographic factors such as level of education, age bracket, marital status, source of income, religion and number of pregnancies were not significantly ($p>0.05$) associated with supplementation of iron and folic acid.

Other factors associated with IFAS

Mothers' view on importance of IFAS, mothers' opinion on whether IFAS reduces birth defects and consumption of iron and folic acid rich foods were tested against IFAS using Chi-square test (Table 3).

From the Chi-square analysis, there was a significant ($\chi^2=6.131$, $df=1$, $p=0.013$) association between IFAS and reduction of birth defects. A significant association was also found between consumption of iron and folic acid rich foods with IFAS ($\chi^2=4.163$, $df=1$, $p=0.041$).

Table 1: Background information of the respondents (n=123).

Characteristics		Frequency	Percentage
Residence	Within town	38	30.9
	Village	85	69.1
Level of education	None	26	21.1
	Primary	49	39.8
	Secondary	33	26.8
	Post-secondary	15	12.2
Age (in years)	15-20	14	8.1
	21-25	28	22.8
	26-30	50	40.7
	31-35	20	16.3
	36-40	6	4.1
Marital status	Single	10	8.1
	Married	81	65.9
	Widowed	27	22.0
	Separated	5	4.1
Source of income	Self-employment	40	32.5
	Formal employment	26	21.1
	House wives	57	46.3
Monthly household income (in KES)	<5000	59	48.0
	5000 and above	64	52.0
Religion	Christian	94	76.4
	Non-christian	29	23.6
Number of pregnancies	<2	27	22.0
	3-5	60	48.8
	>6	36	29.3

*KES-Kenya shilling.

Table 2: Socio-demographic characteristics and IFAS.

Variables		Yes	No	Statistical test
		N (%)	N (%)	
Residence	Within town	17 (13.8)	21 (17.1)	* $\chi^2=4.311$, $df=1$, $p=0.038$
	Village	22 (17.9)	63 (51.20)	

Continued.

Variables		Yes	No	Statistical test
Level of education	None	5 (4.1)	21 (17.1)	$\chi^2=6.557$, df=3 p=0.087
	Primary	14 (11.4)	35 (28.5)	
	Secondary	16 (13.0)	17(13.8)	
	Post-secondary	4 (3.3)	11 (8.9)	
Age (in years)	15-20	3 (2.4)	11 (8.90)	$\chi^2=2.06$, df=0 p=0.864
	21-25	9 (7.3)	19 (15.4)	
	26-30	16 (13.0)	34 (27.6)	
	31-35	7 (5.70)	13 (10.6)	
	36-40	1 (0.80)	4 (3.30)	
Marital status	Single	4 (3.3)	6 (4.90)	$\chi^2=3.503$, df=3 p=0.301
	Married	22 (17.9)	59 (48.0)	
	Widow	10 (8.1)	17 (13.80)	
	Separate	3 (2.40)	2 (1.60)	
Source of income	Self-employment	15 (12.20)	25 (20.30)	$\chi^2=4.05$, df=2 p=0.132
	Formal employment	11 (8.9)	15 (12.2)	
	House wives	13 (10.6)	44 (35.80)	
Monthly household income (in KES)	<5000	12 (9.80)	47 (38.2)	* $\chi^2=6.768$, df=1 p=0.009
	5000 and above	27 (22.0)	37 (30.1)	
Religion	Christian	31 (25.20)	63 (51.20)	$\chi^2=0.298$, df=1 p=0.585
	Non-Christian	8 (6.5)	21 (17.1)	
Number of pregnancies	<2	10 (8.10)	17 (13.80)	$\chi^2=0.714$, df=2 p=0.700
	3-5	17 (13.80)	43 (35.0)	
	6 and above	12 (9.80)	24 (19.50)	

*Significance at 0.05.

Table 3: Factors associated with IFAS.

Variables		Yes N (%)	No N (%)	Statistical test
Took IFAS daily	Yes	24 (19.5)	15 (12.2)	$\chi^2=0.341$, df=1, p=0.560
	No	47 (38.2)	37 (30.1)	
Whether IFAS reduce birth defects	Yes	15 (12.2)	24 (19.5)	* $\chi^2=6.131$, df=1, p=0.013
	No	15 (12.2)	69 (56.1)	
Consumption of iron and folic acid rich foods	Yes	16 (13.0)	23 (18.7)	* $\chi^2=4.163$, df=1, p=0.041
	No	51 (41.5)	33 (26.8)	

*Significance at 0.05.

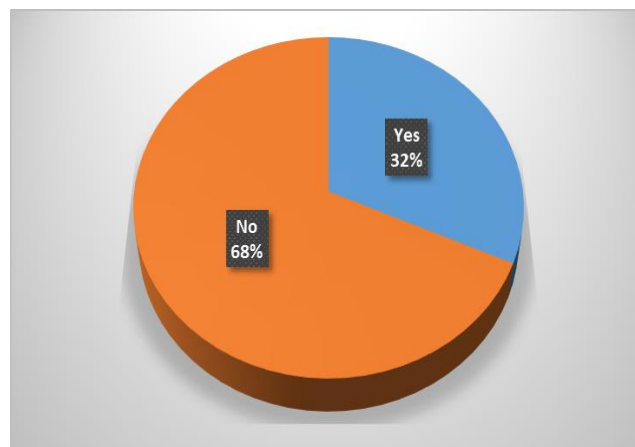


Figure 1: Daily supplementation of iron and folic acid.

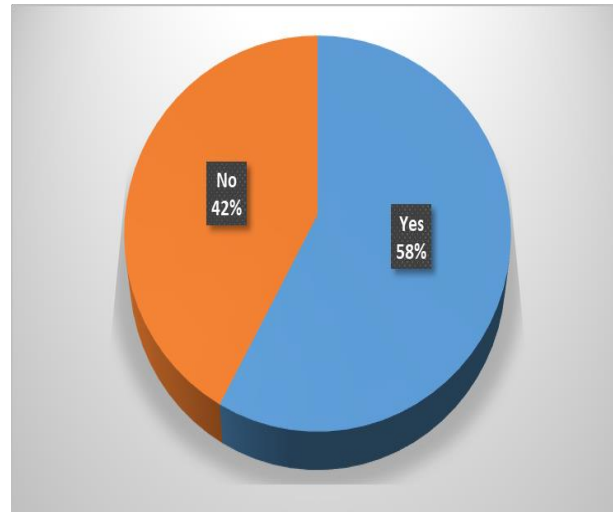


Figure 2: Mothers' view on whether IFAS was important to them.

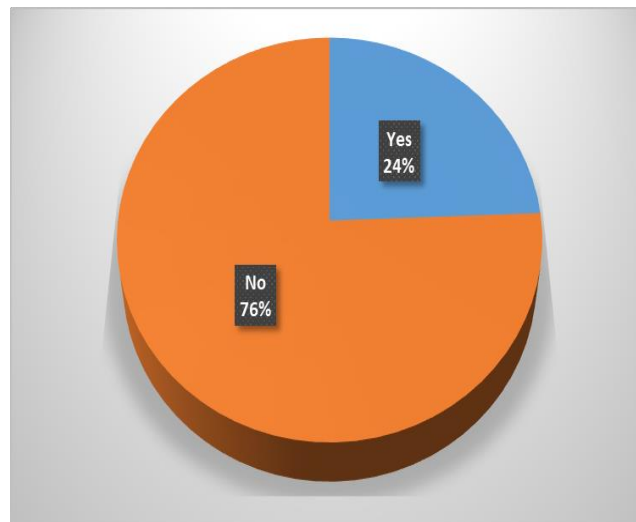


Figure 3: Mothers' opinion on whether IFAS reduces birth defects.

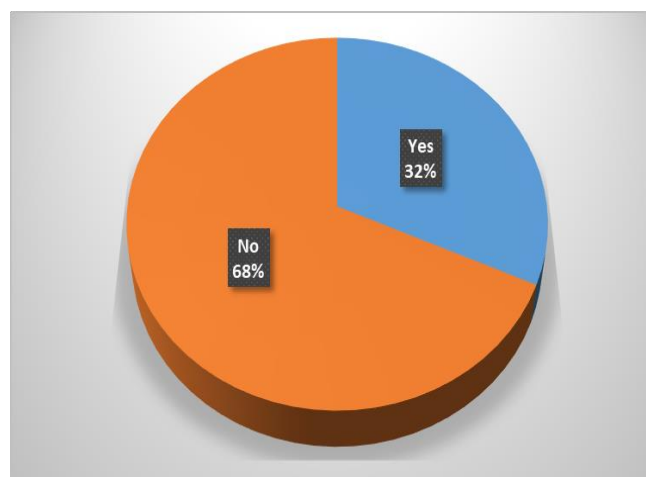


Figure 4: Consumption of iron and folic acid rich foods.

DISCUSSION

From the study findings, level of education, age, marital status, religion and number of pregnancies were not associated with IFAS. With regard to level of education, the finding contrast to that of national micronutrients survey results which indicated that education makes one understand more about nutrients.⁴ From the study, it was found that most mothers were young and not employed hence housewives thus being placed at low positions with regard to decision making. For instance, they can't afford to purchase foods that will improve their nutritional status particularly micro-nutrient-rich foods. This was in contrast with recent studies which are showing that more pastoral women were becoming the breadwinners due to frequent droughts and their active participation in non-traditional activities.⁵

Over a half of the study participants took iron and folic acid supplements. This could be attributed to the level of income. On monthly household income, the respondents earned an income of at least KES 5000. In addition, income was found to be associated with iron and folic acid supplementation. This could suggest that those women who sustained themselves were able to seek health care including accessing iron and folic acid supplements during pregnancy. On the other hand, a low proportion (a third) of the study participants consumed iron and folic acid rich foods. This could pose a challenge of iron deficiencies among such population in Kenya, being a middle-income country. Other studies have found iron deficiency to be widely prevalent in low and middle-income countries.⁶ A study in rural India was undertaken to determine the socio-demographic correlated of anaemia in adolescent girls. The results found a significant association between anaemia and type of family (nuclear or extended), father's occupation, mother's education and family size.⁷

From the study findings, less than a third saw it important to take iron and folic acid supplements. This implied few women understood the importance of taking iron and folic acid supplements. Similarly, less than a third of the study participants understood that lack of iron and folic acid could increase the risk of birth defects. This compared well with other studies which found more adverse health outcomes other than birth defects. For example, anaemia in pregnancy was said to contribute to neonatal deaths, premature birth and low birth weight as well as maternal mortality and morbidity.^{8,9}

From the study, it was found that beef was majorly consumed. Other iron and folic acid rich sources cited were milk, eggs, vegetables and whole grain cereals. The best sources of folic acid in terms of amount and availability are liver, fortified foods, legumes and green leafy vegetables. Other less rich sources include eggs, dried beans and oranges.¹⁰

CONCLUSION

A smaller proportion of the study participants understood the importance of taking iron and folic acid supplements and their associated risk factors. The place of residence, monthly household income, understanding low IFAS as a risk factor for birth defects and consumption of iron and folic acid rich foods were found to be associated with IFAS. The food sources of iron and folic acid were beef, milk, eggs, vegetables and whole grain cereals.

Recommendations

From the study, the intake as well as supplementation of iron and folic acid is still low. Therefore, both the intake and supplementation of IFAS need to be scaled up hence need for specific interventions such regular education through women group forums, church meetings, youth meetings, local media and health forums. In addition, a similar study can be undertaken in different areas to validate these findings.

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