Original article

Knowledge and attitude of the community towards rich sources of vitamin A and iron in relation to malnutrition, (Debark and Adi Arkay) North Gondar, Ethiopia

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Abstract: The effects of rich sources of vitamin A and iron are paramount, but their utilization and application are unknown. This study therefore, is intended to assess knowledge and attitude of the community to curb down the existing traditional misconceptions and to promote integrated prevention of malnutrition. A cross sectional study was conducted between September and October 1998 in two districts of North Gondar to assess the level of knowledge on the occurrence of common deficiencies mainly linked with limited utilization and application of rich sources of vitamin A and iron. Data were collected from 400 subjects (280 females and 120 males). It is revealed that the overall level of knowledge of respondents with respect to the deficiencies of iron and the rich sources of vitamin A as cause for nutritional anaemia, night blandness, and complication of measles accounted for 44.1, 47.1% and 36.3%, respectively. Similarly, the level of attitude with regard to both deficiencies as causes for nutritional anaemia, night blindness and complication of measles accounted for 48.5%, 31.9% and 22.2%, respectively. Results differed significantly by age, educational status, household income, and occupation ($P<0.05$). In addition, the rates of negative responses were found to be very high for all variables. It is suggested that continuous education on health and nutrition directed to the rich sources of Vitamin A and iron, such as dark green leafy vegetables, be instituted to change the existing social behaviour of the community to step-up the prevention of malnutrition in Ethiopia. Further study in carefully mapped communities is also recommended. [*Ethiop. J. Health Dev.* 2000;14(1):23-29]

Introduction

The problem of malnutrition in developing countries encompasses a spectrum of deficiencies, of which the most devastating is deficiency of one or more of the three micronutrients namely, iron, vitamin A, and iodine (1). The deficiency of micronutrients contributes to a great dread of morbidity, growth retardation, reduced levels of physical development in children, and lowered productivity in adults (1). Like in other developing countries, in most places of Ethiopia, modern technology, such as food fortification, is hardly introduced among the majority of the people.

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Knowledge, attitude, and practice in preventing specific micronutrient deficiencies may reflect the current international understanding as to how to address concomitantly three main vitamin or mineral nutritional deficiencies of public health significance: iodine deficiency, iron deficiency anaemia, and vitamin A deficiency (2,3). Though their adverse effects, such as blindness, mortality, disability, are widely discussed, they are not adequately disseminated into the majority of the disadvanteged groups. Community-based studies show that the dietary changes towards dark-green leafy vegetables were strongly advocated in the developed nations in favour of vulnerable groups (4). Moreover, the society in developing countries has experienced a considerable increase in improving nutritional conditions for women

and their families with greater understanding and behavioural changes. On the contrary, developing countries are lacking precise knowledge on the nutritive value of rich sources of minerals and vitamins (4, 5).

Crops such as corn, rice and wheat; root crops such as ensete and cassava, being the primary sources of food for the vast majority of the Ethiopian poor, lack sufficient amounts of essential vitamins and minerals that play important roles in preventing diseases. Studies also show that iron and vitamin A deficiencies are among the most important nutritional problems in developing countries (6, 7).

By and large, in Ethiopia, like in other developing countries, a substantial number of people have diets that are low in vitamin A and minerals such as iron, iodine, and zinc. Although, this type of study is relatively less applicable for iodine deficiency, it is more feasible for iron and especially valuable for Vitamin A disorders. However, level of knowledge, attitudes and practices to introduce dark-green leafy vegetables have not been well established in the country, and there is no clear guideline to expand them.

Social sensitization for the promotion of the consumption of rich sources of Vitamin A and iron in relation to malnutrition, and especially for the prevention of nutritional anaemia, night blindness, and complications of measles are lacking in most places in the country.

Availing adequate information on the present level of knowledge, attitudes, and practices of the communities in relation to these micronutrient deficiencies might help in influencing cultural and socio-economic factors and in changing the food consumption pattern (8-10).

The objectives of this study, therefore, is to determine the level of knowledge and attitudes of the community in the prevention of malnutrition.

Methods

A cross sectional study was conducted during September - October 1998 to determine the level of knowledge and attitude of the community in two districts of Debark and Adi Arkay, North Gondar. The study sites were selected based on information obtained from the Zonal Project Support Unit (PSU) and the demographic surveillance data in the area since 1991 that could provide relevant information on socio-demographic variables.

Of the 420 community members only 20 individuals were cancelled from the study due to repeated absence. Attitude variables in relation to vitamin A and iron contents of green, leafy vegetable; and knowledge variabless in relation to rich sources of vitamin A and iron were collected from the study subjects by trained enumerators who were recruited from the study sites, and all had completed 12 grade education. An informed consent was obtained from all study subjects before interviewing.

The field research team included the principal investigator, three collaborators, 20 enumerators (10 males and 10 females) and 20 street guides. The enumerators were given training for five days in both theoretical and practical areas focusing on the interview techniques and questionnaire manuals. They were provided with field manuals to be used during the training and interviewing. All research team members also participated in the pilot study.

The enumerators were organized in pairs (one male and one female). To avoid confusion in locating the selected households, to assist the team and for better communications with the study community a guide was hired in each village. The principal investigator closely observed and co-ordinated the overall activities of the project and three visits were made before giving up on absentees who were not available.

Data from the written questionnaire were coded and entered into a computer and analysed by frequency, percentage, and x^2 using EPI-INFO version 6.0 and SAS microsoft ware packages (11). The degree of association with determinant factors was assessed and statistical significance was defined when p-value was less than 0.05.

Results

Table 1 shows the distribution of socio-demographic characteristics, such as sex, age, marital status, occupation, educational status, and level of household income. Out of 400 respondents, males and females were 29.4% and 70.6%, respectively, which accounted for 95.2% of the planned samples. Furthermore 35% were in the age-group of 25-34 years, 36.7% were married, 86.1% were Christians, 23.9% were illiterate, and 55.6% had a monthly household income of 101-500 birr (Table 1). All the study subjects were in economically active age-groups.

Table 1: **Social and demographic characteristics of the study subjects, Addis Ababa, October 1999.**

Variables	Numbers	Percent
Sex		
Male	120	29.4
Female	280	70.6
Age		
15-24	92	23.0
25-24	140	35.0
35-44	84	21.0
>44	84	21.0
Religion		
Christian	344	86.1
Muslim	56	9.9
Occupation		
Civil Servant	36	8.7
Housewife	108	26.9
Student	52	13.2
Unemployed	88	21.9
Private workers	80	19.5
Pensioned	36	9.8
Marital status		
Married	148	36.7
Single	188	47.1
Divorced	64	16.2
Educational status		
illiterate	96	23.9
Elementary	88	22.5
Junior secondary	52	13.7
Secondary	144	35.7
College Diploma and above	20	4.7
Household income		
<101	128	31.7
101-500	224	55.6
>501	48	12.7

As depicted in Table 2, the responses for iron deficiency as the cause of nutritional anaemia were 83.8% and 60% for respondents with monthly incomes of <101 birr and for educational level of diploma and above, respectively. The results of the two variables were adequate and differed significantly ($P<0.05$). The level of knowledge/response was adequate in males (63.3%) in married individuals (79%) and in civil servants (69.4%) than other variables considered the deficiency of rich sources of vitamin A as cause of night blindness. However, the level of knowledge with regard to the deficiency of iron and of the rich sources of vitamin A as complicating measles was adequate only in households with monthly incomes between 101-500 birr (Table 2). The difference was statistically significant ($P<0.05$). However, the overall (aggregated) results show that the level of knowledge towards these three variables as causes of nutritional anaemia, night blindness, and complications of measles is very low. Though the level of knowledge was low in relation to most socio-demographic characteristics, only variables such as education, age, household income, and occupation showed statistically significant differences (Table 2).

The levels of attitude were found to be very low in relation to socio-demographic characteristics. However, variables such as age, marital status, education, income, and occupation showed statistically significant differences when the deficiencies of iron and rich sources of vitamin A were evaluated as causes of nutritional anaemia. While, only age and income showed statistically significant differences as causes of night blindness and complications of measles (Table 3).

Table 2: Community's knowledge of deficiency of rich sources of Vitamin A and iron as vauses of diseases, by selected demographic characteristics, Addis Ababa, 1992

Variables	Knowledge on Nutritional anaemia			Knowledge on Night Blindness			Knowledge on Complications of Measles		
	Adequate N	Low N	P. value	Adequate N	Low N	P. value	Adequate N	Low N	P. value
Sex									
Male	47(39.2)	73(60.8)		76(63.3)	44(36.7)		35(29.2)	85(70.8)	
Female	98(35)	182(65.0)	NS	168(60)	112(40)	NS	87(31.0(	193(68.9)	NS
Age in Years									
15-24	37(40.2)	55(59.8)		38(41.3)	54(58.7)		28(30.4)	64(69.6)	
25-34	41(29.3)	99(70.7)		101(72.1)	39(27.9)		31(22.1)	109(77.9)	
35-44	20(23.8)	64(76.2)		19(22.6)	65(77.4)		39(46.4)	45(53.6)	
>44	>44	33(34.5)	0.05	37(44.0)	47(56.0)	0.0	38(45.2)	46(54.8)	0.00
Religion									
Christians	211(38.7)	133(61.3)		155(45.1)	189(54.9)		94(27.3)	250(72.7)	
Muslim	21(37.5)	35(62.5)		20(35.7)	36(64.3)	NS	18(32.1)	38(67.9)	NS
Marital status									
Married	62(41.9)	86(58.1)	NS	117(79.0)	31(21.0)		20(13.5)	128(86.5)	
Single	86(45.7)	102(54.3)		34(18.1)	154(81.9)		24(12.8)	164(87.2)	
Divorced	28(43.8)	36(56.3)		15(23.4)	49(76.6)	NS	12(18.8)	52(81.2)	NS
Education status									
Illiterate	30(31.3)	66(68.7)		17(17.7)	78(81.3)		14(14.6)	82(85.4)	
Elementary	23(26.1)	65(73.9)		34(38.6)	54(61.4)		14(15.9)	64(72.7)	
Junior Secondary	20(38.5)	32(61.5)		10(19.2)	42(80.8)		7(13.5)	45(86.5)	
Secondary	70(48.6)	74(51.4)		47(32.6)	97(67.4)		9(6.3)	135(86.5)	
Diploma & above	12(60.0)	8(40.0)	0.00	6(30.0)	14(70.0)	0.0	5(25.0)	15(75.0)	0.00
HH income									
<101	98(83.8)	19(16.2)		13(11.1)	104(88.9)		99(84.6)	18(15.4)	
101-500	158(70.2)	67(29.8)		44(19.6)	180(80.4)		198(88.0)	27(12.0)	
>500	20(34.7)	38(65.3)	0.0	9(18.6)	39(81.3)	0.0	41(60.7)	17(29.3)	0.0
Occupation									
Civil Servant	28(22.6)	96(77.4)		86(69.4)	38(30.6)		105(84.7)	19(15.3)	
Housewife	45(26.0)	128(74.0)		118(68.2)	55(31.8)		147(85.0)	26(15.0)	
Student	35(41.2)	50(58.8)		22(25.9)	63(74.1)		25(29.4)	60(70.6)	
Others	8(44.4)	10(55.6)	0.00	7(38.9)	11(61.1)	0.03	7(58.9)	11(61.1)	0.0

N.B = Numbers in parenthesis are percentages; NS = not significant

As shown in Table 3, in aggregate, the majority of the study subjects responded negatively to the question pertaining to the levels of knowledge with respect to the deficiency of rich sources of iron as a cause of nutritional anaemia (51.5%). Similarly, the majority of individuals responded negatively when the lack of rich sources of vitamin A was taken as a cause of night blindness (68.1%) and complications of measles (77.8%).

Discussion

Vitamin A deficiency, which can cause permanent blindness, is associated with high rates of child mortality, incapacitating the immune system to fight off complications of diarrhoea and measles. Anaemia, also associated with lack of iron deficiency, affects pregnant and lactating women in developing countries, including Ethiopia. The study generated some useful data regarding the adverse effects of knowledge and attitude with respect to the lack of rich sources of iron and vitamin A in the study villages.

Studies elsewhere suggested that parental knowledge, attitude, and skilled management of malnutrition not only can buffer these effects and social stress on family, but also considered as support to medical advancements (11,12). Psycho-social reactions associated with improving communities perceptions are also found to be appropriate means to introduce rich sources of vitamin A and iron (13).

Results of this study showed that people in the study sites are not totally ignorant about the effects of the lack of rich sources of vitamin A and iron. Although, the levels of both knowledge and attitude were found to be slightly better on males than females in this study the difference observed is not statistically significant ($P<0.05$). However, the results in aggregate indicate that the levels of knowledge

Table 3: Community's attitude towards rich sources of Vitamin A and Iron acting against diseases by selected demographic characteristics, Debark and Adi Arkay, 1998.

Variables	Iron Acts Against Nutritional Anaemia			Vitamin "A" Acts Against Night Blindness			Vitamin "A" Acts Against Measles complication		
	Agree N	Disagree N	P. value	Agree N	Disagree N	P. value	Agree N	Disagree N	P. value
Sex									
Male	46(38.3)	74(61.7)		44(36.7)	76(63.3)		36(30.0)	84(70.0)	
Female	112(40.0)	168(60.0)	NS	98(35.0)	182(65.9)	NS	64(30.0)	216(70.0)	NS
Age in Years									
15-24	33(35.9)	59(64.1)		37(40.2)	53(57.6)		37(40.3)	66(71.7)	
25-34	58(41.4)	82(58.8)		39(27.9)	101(72.1)		31(22.1)	109(77.9)	
35-44	32(38.7)	52(61.9)		19(22.6)	65(77.4)		39(46.4)	45(53.6)	0.00
>44	29(34.5)	55(65.5)	0.0	36(42.6)	48(57.4)	0.001	23(27.4)	61(62.6)	0.00
Religion									
Christians	149(43.4)	195(56.6)	NS	114(33.1)	230(66.9)		94(27.6)	250(72.4)	
Muslim	19(34.0)	37(66.0)		17(30.3)	39(69.7)	NS	12(21.4)	44(78.6)	NS
Marital status									
Married	51(39.8)	97(60.2)		48(25.5(	140(74.5)		35(18.6)	153(81.4)	
Single	80(42.6)	108(57.4)		34(18.1)	154(81.9)		24(12.8)	164(87.2)	
Divorced	25(39.1)	39(60.9)	0.00	16(25.0)	48(75.0)	NS	12(18.8)	52(81.2)	NS
Education status									
Illiterate	42(43.8)	54(56.3)		44(45.8)	52(54.2)		27(24.0)	69(71.9)	
Elementary	34(43,6)	44(56.4)		30(38.5)	48(61.5)		21(26.9)	57(73.1)	
Junior Secondary	22(42.3)	30(57.7)		18(34.6)	34(55.4)		14(26.9)	38(73.1)	
Secondary	62(40.3)	92(59.7)		54(35.1)	100(64.9)		33(22.4)	114(77.6)	
Diploma & above	15(25.0)	15(75.0)	0.01	12(60.0)	8(40.0)	NS	9(4.0)	11(55.0)	NS
HH income									
<101	21(17.9)	96(82.1)		16(13.7)	101(86.3)		9(7.7)	108(92.3)	
101-500	161(71.4)	64(28.6)		43(19.2)	181(80.8)		27(12.0)	198(88.0)	
>500	20(20.8)	38(65.5)	0.00	19(32.8)	39(68.2)	0.012	19(39.6)	29(60.4)	0.00
Occupation									
Civil Servant	48(38.7)	76(61.3)		52(41.9)	72(58.1)		38(30.6)	86(69.4)	
Housewife	75(43.4)	98(56.6)		60(34.7)	113(65.3)		58(33.5)	115(66.5)	
Student	35(41.2)	50(58.8)		36(42.4)	49(57.6)		31(36.5)	54(63.5)	
Others	8(44.4)	10(55.6)	0.0	7(38.9)	11(61.1)	NS	6(33.3)	12(66.7)	NS

N.B = Numbers in parenthesis are percentages

and attitude of the study subjects in relation to the lack of rich sources of iron as a cause of nutritional anaemia; and the lack of rich sources of vitamin A as a cause of night blindness and complication of measles resulted due to incorrect perceptions by the majority. Moreover, it is a general truth that the consumption of dark-green vegetables is mostly limited to fasting periods and rainy seasons in Ethiopia. It is thus speculated that there is limited involvement of concerned bodies in sensitizing the community on the usefullness of dark-green leafy vegetables which are cheaper than animal products.

The levels of knowledge and attitude with regard to the application of rich sources of vitamins and minerals especially vitamin A and iron will be quite influential in farming systems in preventing iron and vitamin A deficiencies in rural and urban Ethiopia. If poor people have adequate awareness, they can obtain most of their nutrients from plants which are cheaper and more available than animal products. However, dePeese, et al, (1995) found out that increased consumption of dark-green leafy vegetables did not improve vitamin A status, which indicates that this could invite the re-consideration of our recommendation (14). We argue that their investigation could be very important to consider. But their finding has its own limitation for a number of reasons. First they demonstrated an additional daily portion of dark-green leafy vegetables of vitamin A and iron status to women who were already with low haemoglobin levels and breast-feeding their children. Secondly these study subjects were receiving fried vegetables that might have lost vitamins and minerals due to overcooking. In contrast to their findings, Takyi EE (1999) indicated that the percentage of children with adequate retinol status increased from 28.2%-

48.2% after the consumption of dark-green leafy vegetables with fat which significantly ($P<0.05$) enhanced serum retinol. (16).

Micronutrient malnutrition can be ameliorated by access to green leafy plant items rich in minerals and vitamins (15-17). Before arriving conclusions about misconceptions in the study area, this finding needs to be supported by further research with emphasis towards developing intervention strategies in relation to behavioral changes regarding the rich sources of vitamins and minerals.

In conclusion, it advocates positively that females have better knowledge of food sources rich in green leafy vegetables than males and can be good sources for behavioural changes than males (18). Contrary to other findings, our results indicated that males have more positive attitudes than females towards nutrition fighting anaemia, night blindness, and complication of measles. This is probably due to a better access and exposure to communication and information than females. However, the observed negative attitude among females could have more adverse effect than males since they are the ones who are more responsible for family care with better access to food sources. It is recommended that, in addition to supplementation of minerals and vitamins, changes in behavioral factors with successful efforts should be made to increase the levels of knowledge and attitude in production and consumption of rich sources of iron and vitamin A. Similar studies on carefully mapped communities are recommended.

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