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Original Article
Impact of Knowledge, Attitude and Practiceon Anemia status among womenin coastal Kochi, Kerala

Shilpa Jose*, Sreni C Antony and Betty Rani Isaac

Department of Home Science,St.Teresa's College, Ernakulam,Kochi-682035

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ABSTRACT

ABSTRACT:Anemia is considered to be a direct cause of 3-7% of maternal deaths and an indirect cause of 20-40% of maternal deaths. The present study explored knowledge, attitudes, and practices of reproductive age women regarding anemiain a coastal area of Ernakulum district. The subjects were reproductive aged adult women selected from the different coastal wards in KadamakudiPanchayath, in coastal Kochi,Kerala. The standardised KAP questions on Iron Deficiency anemia was adopted from FAO Guidelines (Macias and Glasauer, 2014).Haemoglobin was assessed by Cyanmethemoglobin method. Majority (72.6 %) of the subjects in the total population were anemic. Knowledge level of subjects was not significantly correlated with their Haemoglobin levels.However, there was a highly significant (1% level) positive correlation between Attitude scores of subjects and Haemoglobin levels. Significant (5% level) positive correlation was found between Practice Scores of subjects and Haemoglobin levels also

1. Introduction

Anemia is one of the global public health problems, both for developing and developed countries, affecting women of different age groups. However, it is more prominent in pregnant women, young girls and in women of reproductive age (Ejeta et al.,2014)[1].Nutritional anemia is the most common type of anemia worldwide, which is very often the after effect of iron, folate and vitamin B12 deficiencies(Kaur,2014) [2]. Although the etiology of Anemia is multifaceted, it generally results when iron demands are not met by iron absorption for any number of reasons. Individuals with Anemia may have inadequate intake of iron due to poor quantity and/or quality of diet, impaired absorption or transport of iron, or chronic blood loss due to secondary diseases (Bamji,2009)[3].

Iron deficiency anemia (IDA) is a significant public health problem in India also.National and regional surveys indicate that the prevalence of anemia could be as high as 74 percent in children below three years of age, 85 percent in expectant mothers and 90 percent among adolescent girls in some population groups (ICMR, 2004)[4].Anemia is the second most common cause of maternal death in India accounting for 20% of total maternal deaths. The prevalence of anemia ranges from 33% to 89% among pregnant women and is more than 60% among adolescent girls with wide variations in different regions of the country(Toteja et al.,2006)[5].

Reproductive age is a period where significant growth changes occur necessitating optimum nutrition requirement.Women have additional needs of iron requirements from puberty to menopause. These arise from the physiological requirements of menstruation, pregnancy and lactation. For this reason, iron deficiency is common in women of reproductive age even in developed countries throughout their reproductive years(Sen and Kanani, 2005)[6].

Although the etiology of IDA is multifaceted, it generally results when iron demands are not met by iron absorption for any number of reasons. Individuals with IDA may have inadequate intake of iron due to poor quantity and/or quality of diet, impaired absorption or transport of iron, or chronic blood loss due to secondary diseases (Subramoney andGupta , 2008)[7].

Nutrition-related KAP studies assess and explore the people's KAP relating to nutrition, diet, foods and closely related hygiene and health issues. KAP studies have been used for two main purposes: (1) to collect key information during a situation analysis, which can then feed into the design of nutrition interventions and (2) to evaluate nutrition education interventions.

The specific objectives of the present study were to assess KAP of subjects using a validated questionnaire and analyse the impact of KAP on Anemia levels of subjects.

* Corresponding Author : **Shilpa Jose**
   e-mail:shilpa_jose@yahoo.com

MATERIAL AND METHODS

This study was conducted in the coastal area of Ernakulam district. The subjects were selected from the different wards in KadamakudiPanchayath. Four wards namely Kothad, Cheriamthuruth, Moolampilly and Pizhala were selected. The areas selected were thickly populated islands inhabited by people who were daily wage workers.

The subjects were selected on the basis of gender and age. Adult women of reproductive age (18 to 49 years)were selected by Stratified random sampling .Total number of 185 subjects who were willing to participate in the study were identified.

The standardised KAP questions on Iron Deficiency anemia was adopted from FAO Guidelines (Macias and Glasauer, 2014)[8] and was administered to all 185 subjects. Hemoglobin assessment by Cyanmethemoglobin method was carried out on 62subjects who consented for the same.

RESULTS AND DISCUSSION

Table 1: Knowledge level of the subjects regarding Anemia

Knowledge level *	n=185(%)
1.a) "Heard about anemia"	
Yes	**165(89.2)**
No	10(5.4)
Don't know	10(5.4)
b) Knows about symptoms of anemia	
Fatigue	**99(53.5)**
Spoon shaped nails	45(24.3)
Pale face	84(45.4)
Frequent infections	35(18.9)
Others	20(10.8)
Don't know	29(15.7)
2. Knows causes of anemia	
Lack of iron in food	**126(68.1)**
Due to any other disease	14(7.6)
Due to over bleeding	56(30.3)
Others	17(9.2)
Don't know	36(19.5)
3.Knows about consequences which occur during pregnancy due to anemia	49(26.5)
Death during or after delivery	34(18.4)
Complications in delivery	20(10.8)
Others	**106 (57.3)**
Don't know	

4.Knows about ways to prevent anemia	**129(69.7)**
Consume iron rich foods	52(28.1)
Consume vitamin C rich foods during or after food intake	85(45.9)
	27(14.6)
Consume iron tablets	5(2.7)
Prevention of anemia caused due other diseases	34(18.4)
Others	
Don't know	
5.Knows about iron rich foods	
Organ meats	28(15.1)
Non vegetables	33(17.8)
Fish	36(19.5)
Leafy vegetables	**135(73.0)**
Others	16(8.6)
Don't know	12(6.5)
6. Knows about foods helps in iron absorption	**98(53.0)**
Vitamin C rich foods	10(5.4)
Others	77(41.6)
Don't know	
7. Knows about foods inhibiting iron absorption	63(34.1)
Tea	52(28.1)
Coffee	13(7.0)
Others	**98(53.0)**
Don't know	

* FAO Guidelines -Macias and Glasauer, 2014

Among the 185 subjects, majority (89.2%) had heard about anemia. Most of the subjects (53.5%) recognized fatigue as a cause of anemia and majority of them (68.1%) recognized lack of iron in food as the cause for anemia. More than half of the subjects (57.3%) did not know about the complications of anemia during pregnancy. About 69.7 percent pointed out that consuming iron rich foods could prevent anemia. Also 73 percent thought that leafy vegetables were iron rich. A little more than fifty percent of subjects knew that vitamin C rich foods helps in iron absorption but most of them (53%) did not know about the food items that inhibited iron absorption.

A study on the Knowledge level of reproductive age women by Fredanna et al., (2012)[9]found majority of subjects had knowledge about anemia and most of the subjects thought that infections like malaria and poor iron rich diet causesanemia. Few among the subjects thought that feeling sick or ill, feeling weak and being pale were the symptoms of anemia.

Table 2: Attitude level of the subjects regarding Anemia

Attitude level*	n=185(%)

1. Self-awareness regarding anemia
    Aware
    Not aware
    Don't know
	74(19.5)
	36(40.0)
	75(40.5)

2. Attitude regarding seriousness of anemia
    Anemia is a serious health problem
    Anemia is not a serious health problem
    Don't know
	84(45.4)
	17(9.2)
	84(45.4)

3. Attitude on importance of including iron rich foods in diet
    Important
    Not important
    Don't know
	139(75.1)
	5(2.7)
	41(22.2)

4. Attitude regarding preparation of iron rich foods
    Very difficult
    Not difficult
    Don't know
	7(3.8)
	127(68.6)
	51(27.6)

5. Self-confidence in preparing iron rich foods
    Confident
    Not confident
    Don't know
	112(60.5)
	9(4.9)
	64(34.6)

6. Feels that iron rich foods are tasty
    Yes
    No
    Don't know
	116(62.7)
	21(11.4)
	48(25.9)

* FAO Guidelines - Macias and Glasauer, 2014

Many of the subjects (40.5%) did not know whether they were anemic or not. Most of the total subjects (45.4%) knew that the anemia is a serious condition. Majority of them (75.1%) considered iron rich foods as important for the prevention of anemia. Many of them (68.6%) had no difficulty in preparing iron rich foods and were confident in preparing the iron rich foods (60.5%). Majority of the subjects (62.7%) liked the taste of the iron rich foods.

Table 3: Practice level of the subjects regarding Anemia

Practice level*	n= 185(%)

1. Consumption of food on previous day
    Organ meats
    Non vegetarian foods
    Fish
    Leafy vegetables
    All Others
	4(2.2)
	10(5.4)
	106(57.3)
	91(49.2)
	34(18.4)

2.a)Consumption of Vitamin C rich fruits
    Yes
    No
    Don't know
	143(77.2)
	21(11.4)
	21(11.4)

b) Frequency of eating fruits
    Before meal
    After meal
    Other time
	13(7.0)
	53(28.6)
	119(64.4)

3. Consumption of tea/coffee regularly
    Yes
    No
	153(82.7)
	32(17.3)

* FAO Guidelines - Macias and Glasauer, 2014

Little more than half of the subjects consumed fish on the previous day of the survey. Majority of them (77.2%) consumed vitamin C rich fruits. Most of them (68.6%) consumed fruits some other time rather than before or after meal. 82.7 percent consumed tea/coffee regularly.

Table 4: Prevalence of anemia among subjects

Hb level*(g/dl)	Frequency	Percent
Not Anemic (12 and above)	17	27.4
Mild Anemic (10-11.9)	32	**51.6**
Moderate Anemic (7.0-9.9)	13	**21.0**
Severe Anemic (<7.0)	0	0.0
Total	62	100.0

*WHO, 2011[16]

Majority (72.6 %) of the subjects in the total population were anemic. Among them, most of them (51.6%) were mildly anemic and many (21%) were moderately anemic.

According to a study conducted in a rural area of Karnataka, by Raguram et al., (2012)[10] overall prevalence of anemia was 34.83%.In the present study, a much higher prevalence is noted. A very high (98.87 %) prevalence of iron deficiency anemia was found in the study by Mehnaz et al., (2006)[11]. The gradation in anemia was mild in 14.8% cases, moderate in 72% cases and severe in 13% cases.

NNMB (2006)[12] revealed that about 75% of NPNL women had anemia, with 34% females having moderate to severe anemia. NFHS-3(IIPS,2007)[13] revealed that about more than half of Indian women (56 percent) were anemic. 39 percent of women had mild anemia, 15 percent had moderate anemia, and 2 percent had severe anemia. Thus the present study results are in conformity to these survey results.

Risk Factor Analysis

Knowledge, Attitude and Practice Questions were scored appropriately and compared with Haemoglobin levels . Correlation coefficient was computed to elucidating any possible relation between the variables.

Table 5: Correlation analysis between Knowledge score and Haemoglobin level

Variables	Mean	SD	Correlation Coefficient	p - value
Knowledge Score* (Max.score 21)	8.806	5.334	0.089	0.491[ns]
Haemoglobin(g/dl)	10.87	1.298		

*FAO Guidelines - Macias and Glasauer, 2014   ns- not significant

Knowledge level of subjects was not significantly correlated with their Haemoglobin levels. This indicates that whether the subjects knew about anemia, its symptoms, causes, consequences or dietary prevention methods, it did not improve their Haemoglobin levels at all.

According to the study conducted by the Souganidis et al., (2012)[14] in Indonesia, maternal knowledge of anemia was associated with child anemia in urban and rural areas. There was no significant association between maternal knowledge of anemia and maternal anemia. The present study also confirms the same.

Table 6: Correlation analysis between Attitude score and Haemoglobin level

Variables	Mean	SD	Correlation Coefficient	p - value
Attitude Score* (Max.score 6)	4.161	2.105	0.326	0.010**
Haemoglobin(g/dl)	10.87	1.298		

FAO Guidelines - Macias and Glasauer, 2014   ** Significant at 1% level

There was a highly significant (1% level) positive correlation between Attitude scores of subjects and Haemoglobin levels. This indicates that self-awareness regarding anemia, attitude regarding seriousness of anemia, attitude on importance of including iron rich foods in diet, attitude regarding preparation of iron rich foods and self-confidence in preparing iron rich foods resulted in better Haemoglobin levels.

Studies conducted by Yusoff et al., (2012) [15] on Nutrition education, attitude and haemoglobin status of Malaysian adolescents suggests that the nutrition education resulted in better attitudes and higher hemoglobin levels among adolescents. The present study also is in line with the above findings.

Table 7: Correlation analysis between Practice score and Haemoglobin level

Variables	Mean	SD	Correlation Coefficient	p - value
Practice Score* (Max.score 7)	3.903	1.501	0.270	0.034**
Haemoglobin(g/dl)	10.87	1.298		

FAO Guidelines - Macias and Glasauer, 2014   ** Significant at 5% level

A significant positive correlation was found between Practice Scores of Subjects and Haemoglobin levels. Practices like consumption of food on previous day, consumption of vitamin C rich fruits, frequency of eating fruits and consumption of tea/coffee regularly etc. resulted in better Haemoglobin levels of subjects.

CONCLUSION:

Majority (72.6 %) of the subjects in the total population were anemic. Among them, most of them (51.6%) were mildly anemic and many (21%) were moderately anemic.The mean Knowledge level of the subjects were 8.8 compared to a maximum score of 21.The mean Attitude scoreof the subjects was 4.16 (maximum score 6) whereas mean practice scores was 3.9 (maximum score 7).Knowledge level of subjects was not significantly correlated with their Haemoglobin levels.There was a highly significant positive correlation between Attitude scores of subjects and Haemoglobin levels. Significant (5%) positive correlation was foundbetween Practice Scores of subjects and Haemoglobin levels.

To address the issue ofanemia, the health service sector needs to incorporate health promotion strategies and social marketing principles that will positively impact the attitude and practice levels of population.

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