

Impact of Knowledge, Attitude and Practice on Anemia status among women in coastal Kochi, Kerala

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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 anemia in a coastal area of Ernakulam district. The subjects were reproductive aged adult women selected from the different coastal wards 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.

Keywords: Anemia Prevalence, Reproductive Age Adult Women, Knowledge, Attitude, Practice, Nutrition, KAP study

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). 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). 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).

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).

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).

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 and Gupta, 2008).

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.

Material and methods

This study was conducted in the coastal area of Ernakulam district. The subjects were selected from the different wards in Kadamakudi Panchayath. Four wards namely Kothad, Cheriamthuruth, Moolampilly and Pizhala were selected. The areas selected were thickly populated islands inhabited by people who were mostly 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) 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	
Death during or after delivery	49(26.5)
Complications in delivery	34(18.4)
Others	20(10.8)
Don't know	106 (57.3)
4.Knows about ways to prevent anemia	
Consume iron rich foods	129(69.7)
Consume vitamin C rich foods during or after food intake	52(28.1)
Consume iron tablets	85(45.9)
Prevention of anemia caused due other diseases	27(14.6)
Others	5(2.7)
Don't know	34(18.4)
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	
Vitamin C rich foods	98(53.0)
Others	10(5.4)
Don't know	77(41.6)
7. Knows about foods inhibiting iron absorption	
Tea	63(34.1)
Coffee	52(28.1)
Others	13(7.0)
Don't know	98(53.0)

* 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) found majority of subjects had knowledge about anemia and most of the subjects thought that infections like malaria and poor iron rich diet cause anemia. 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	74(19.5)
Not aware	36(40.0)
Don't know	75(40.5)
2. Attitude regarding seriousness of anemia	
Anemia is a serious health problem	84(45.4)
Anemia is not a serious health problem	17(9.2)
Don't know	84(45.4)
3. Attitude on importance of including iron rich foods in diet	
Important	139(75.1)
Not important	5(2.7)
Don't know	41(22.2)
4. Attitude regarding preparation of iron rich foods	
Very difficult	7(3.8)
Not difficult	127(68.6)
Don't know	51(27.6)
5. Self-confidence in preparing iron rich foods	
Confident	112(60.5)
Not confident	9(4.9)
Don't know	64(34.6)
6. Feels that iron rich foods are tasty	
Yes	116(62.7)
No	21(11.4)
Don't know	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	4(2.2)
Non vegetarian foods	10(5.4)
Fish	106(57.3)
Leafy vegetables	91(49.2)
All Others	34(18.4)
2.a) Consumption of Vitamin C rich fruits	
Yes	143(77.2)
No	21(11.4)
Don't know	21(11.4)
b) Frequency of eating fruits	
Before meal	13(7.0)
After meal	53(28.6)
Other time	119(64.4)
3. Consumption of tea/coffee regularly	
Yes	153(82.7)
No	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

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) 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). The gradation in anemia was mild in 14.8% cases, moderate in 72% cases and severe in 13% cases.

NNMB (2006) revealed that about 75% of NPNL women had anemia, with 34% females having moderate to severe anemia. NFHS-3(IIPS,2007) 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) 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) 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 score of 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 found between Practice Scores of subjects and Haemoglobin levels.

To address the issue of anemia, 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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