International Journal of Applied Home Science **RESEARCH PAPER**
Volume 5 (4), April (2018) : 826-831 ISSN : 2394-1413
Received : 26.02.2018; Revised : 06.03.2018; Accepted : 16.03.2018

Study the status of anaemia in hostel girls of Ahmedabad city

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ABSTRACT

Anemia is global health problem .About 24.8% of the world's population suffers from anemia and young adult females are one of the most vulnerable age group. Hence the objective of the study was to study the nutritional status of hostel girls as well as to study the correlation of the dietary intake and anemia in hostel girls. This study was conducted in two hostels of Navrangpura area of Ahmedabad coir young females residing in hostels .A total of 82 girls (19-26 years of age) were included in the study. A profarma was prepared and subjects were asked to fill the questionnaire which included their basic information, menstrual history, dietary history, anthropometric measurements as well as their food frequency. Serum haemoglobin estimation was also done at pathology laboratory and anemia was defined as per the cut off points given by the laboratory (12-16mg/dl). The prevalence of anemia was found to be 82.92% and the study showed a positive correlation between iron and vitamin c rich food intake and Hb level. The present study revealed anemia to be a major health problem among the young adult females living in hostels and nutrition is one of the leading causative factor for anemia.

Key Words : Anemia, Vulnerable age group, Dietary intake, Anthropometric measurements, Haemoglobin

INTRODUCTION

WHO defines anaemia as a condition in which the Haemoglobin (Hb) content of blood is lower than normal as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiencies (WHO Geneva, 1989). Most of the anaemias are due to inadequate supply of nutrients like iron, folic acid and vitamin B12, proteins, amino acids, vitamins A, C, and other vitamins of B-complex group *i.e.*, niacin and pantothenic acid are also involved in the maintenance of haemoglobin level (Lee and Herbert, 1998).

Recent World Health Organization (WHO) statistics indicate a worldwide anemia prevalence of about 30% with higher rates in developing countries. Anemia is also prevalent in non-pregnant women (35%) and among adult males (18%). It is an important public health problem affecting people from all walks of life. Anemia is very widespread, more among females than in males. Overall 52% of women in age group of 15 to 49 were found to be anemic in India (De Benoist *et al.*, 2008).

Prevalence of anaemia in all the groups is higher in India as compared to other developing countries (DeMayer and Tegman, 1995; Kalaivani, 2009). In India, anaemia affects an estimated

Cite this Article: Singh, Renu, Chaudhary, Parul and Jain, N.K. (2018). Study the status of anaemia in hostel girls of Ahmedabad city. *Internat. J. Appl. Home Sci.*, **5** (4) : 826-831.

50% of the population. The problem becomes more severe as more women are affected with it as compared to men (Malhotra *et al.*, 2004). It is estimated that about 20%-40% of maternal deaths in India are due to anaemia and One in every two Indian women (56%) suffers from some form of anaemia (National consultation on control of nutritional anemia in India, 1998).

India has the world's highest prevalence of iron deficiency anemia among women, with 60-70% of adolescent girls and young adults being anemic. Adolescence is considered as a nutritionally critical period of life. Nutritional status prior pregnancy is of vital importance. Inadequate iron stores before conception is a major cause of iron deficiency.

According to a survey conducted by NFHS, the prevalence of anemia in girls and young adults aged between 15-24 years is 56% with higher rates in rural than in urban India (NFHS-4).

A report showed that data on anemia levels were available for about 8,000 adolescent girls aged 10-19 years who constituted 60% of the total sample. In Gujarat, overall, 99 % of adolescent girls have anemia. 19 % of them were mildly anemic, 41 % were moderately anemic and 39 % were experiencing severe anemia. No significant age difference was found in the prevalence of anemia among adolescents in Gujarat. While the prevalence of mild and moderate anemia was higher in urban areas, but that of severe anemia was found to be high in rural areas. More than half (55 %) of women in Gujarat have anemia, including 30 % with mild anemia, 17 % with moderate anemia and 3% with severe anemia. 61 % of women who are pregnant or women who are breast feeding are anemic (National Family Health Survey-4 (2015-2016).

According to National consultation on control of nutritional anemia in India (Seshadri, 1999; National consultation on control of nutritional anemia in India, 1998), anemia is defined as the hemoglobin of less than 12 g/dl in females. Moderate anemia as hemoglobin level of 7-9.9 g/dl and severe anemia was defined as hemoglobin level of less than 7g/dl among females. Data from National Nutrition Monitoring Bureau (NNMB) (National Nutrition Monitoring Bureau, 2002).

METHODOLOGY

Study design :

A cross sectional study was conducted.

Study population :

The study population consisted of a sample of girls who were residing in hostels during the study period.

Development of research tool and collection of data :

A structured interview questionnaire was developed keeping in view the information to be collected. The subjects were personally visited and were briefed about the purpose of the study and the confidentiality of the information was ensured. The questionnaire consisted of general information (age, income, and dietary habit), anthropometric measurements (height, weight, BMI,), biochemical estimation (blood Hb test), clinical signs and symptoms (hair, nails, skin) and dietary information (food frequency questionnaire, 24-hour recall).

Blood test:

Permission was taken to conduct blood test at a health center of Gujarat University. Haemoglobin test was done by Haemoglobinometer (Fully Cell-Counter Automatic) and its cutoff points was 12-16mg/dl. Blood samples for the estimation of blood serum hemoglobin were obtained

and direct estimation was done by the instrument. Blood was collected from each subject for estimation of serum haemoglobin.

Data processing and analysis :

Logistics of the given data were analyzed and all the data are represented in the form of mean ±SD (standard deviation). Z Value was calculated for dietary intake, height and weight. The differences were considered as significant at a p value of <0.05. The correlation was also calculated to see the association of Iron and Vitamin C intake with hemoglobin content.

RESULTS AND DISCUSSION

Socio demographic information:

The study revealed 8.53% were of age group 15-19 years while 43.98% were of 20-22 years and 40.24% girls were of age group 23-25 years.

2.43% girls belong to low income group (<8000), 2.43% belong to medium income group (8000-16000) and 95.12% girls belong to high income group (>16000). Out of all the subjects 68.29% were vegetarian, 2.43% were non-vegetarian, 9.7% ate both veg. as well as non-veg. and 19.51% were ovo-vegetarian.

Table 1 : Demographic profile of hostel girls (n=82)

Age	No.	%
15-19	7	8.53
20-22	36	43.98
23-25	33	40.24
Family income		
< 8000	2	2.43
>16000	78	95.12
Duration of stay		
< 1 year	16	19.51
1-3 years	48	58.53
>5 years	18	21.95
Dietary habit		
Vegetarian	56	68.29
Non-vegetarian	2	2.43
Both	8	9.7

Anthropometric measurements:

The information gathered from the individual respondents on their height, weight, BMI, waist-hip ratio and serum hemoglobin have been classified and presented in table to depict a clear picture of the population under study.

The mean height of hostel girls was 153.06± 5.94 and the mean weight of the hostel girls was 51.44 ±7.75. The height and weight of respondents were compared with the reference value given by ICMR and it was found that the observed values were significantly lower than the reference value at 0.05 per cent level of significance.Study revealed that the mean BMI of underweight girls

Table 2 : Anthropometric status of hostel girls (n=82)

Measurements	Mean ± SD	Reference value	Z value
Height	153.06 ± 5.94	161	*12.10
Weight	51.44± 7.75	55	*4.15
BMI -		NO	%
Underweight(<18)	13.74±1.96	8	9.75
Normal(18-22.9)	20.94±1.26	38	46.34
Overweight(23-25)	23.74±0.61	17	20.73
Obese(>25)	25.86±0.83	19	23.17

were 13.74 ±1.96, mean BMI of normal girls were 20.94±1.26, the mean BMI of overweight girls were 23.74 ±0.61, the mean BMI of obese girls were 25.86 ±0.83.Percentage distribution shows 9.75% girls were underweight, 46.34% were normal, 20.73% were overweight and 13.17% were obese.

Serum hemoglobin:

Out of the total subjects, 82.92% girls had Hb level <12mg/dl and were seen to have anemia while only 17.07% girls had normal Hb level (12-16mg/dl).

Table 3 : Serum haemoglobin level of hostel girls (n=82)

Hb -	Range	NO	%
Anemic (<12)	11.17± 0.721	68	82.92
Normal(12-16)	12.59±0.630	14	17.07

Presence of clinical signs and symptoms:

Respondent's eyes, nails, tongue and skin were observed and visible clinical signs were noted. The following table depicts a clear picture of the population under study. Only 15.85% of the girls had pale skin while rest of the clinical signs were absent.

Symptoms:

There are a lot of symptoms for anemia. A list of the most common symptoms was made and the respondents were asked if they have any of the symptoms present. The following table shows the symptoms were present in the hostel girls.

Table 4 : Presence of symptoms (n=82)

Symptoms	No	Present (%)	No	Absent (%)
Fatigue	35	42.68%	47	57.31%
Shortness of breath	16	19.51%	66	80.48%
Dizziness	6	7.31%	76	92.68%
Headache	28	34.14%	54	65.85%
Coldness in hands and feet	2	2.43%	80	97.56%
Chest pain	10	12.19%	72	87.80%

Table 4 revealed the symptoms present in the hostel girls. From the total number of respondents (n=82), 42.68% of the girls experienced fatigue, 19.51% had shortness of breath, 7.31% felt dizziness, 34.14% had headache, 2.43% experienced coldness in hands and feet while 12.19% had chest

pain.

Nutritional profile:

Information about their dietary intake was gathered by two methods – 24 hour diet recall method and Food frequency questionnaire.

Nutrition is a basic human need and a prerequisite to a healthy life. A proper diet is essential from the very early stages of life for proper growth, development and to remain active. Food consumption, which largely depends on production and distribution, determines the health and nutritional status of the population.

Iron is needed for hemoglobin synthesis, mental function and to provide immunity against diseases. Deficiency of iron leads to anemia.

Vitamin C is required for immunologic function, iron metabolism, it acts as an antioxidant and also helps in the absorption of iron in the body. Its deficiency might lead to anemia.

Table 5 : shows the nutrient intake of hostel girls

Nutrients	RDA	Mean ± SD	Z value	RDA%
Energy	1900 Kcal	870.04 ± 237.95	*34.04	45.79%
Carbohydrate	265 g	126.77± 36.73	*34.07	47.83%
Protein	55 g	27.46±8.84	*28.21	49.92%
Fat	25 g	27.52± 7.93	*-2.87	110.08%
Iron	21 mg	7.268± 3.29	*37.82	34.60%
Vitamin C	40 mg	24.22 ± 16.87	*8.4	60.55%

While comparing the nutrient intake with RDA it was seen that subjects consumed all the nutrients in lesser amounts. Table 5 shows that total energy intake of hostel girls was 45.79%, carbohydrate was 47.83%, protein was 49.92%, fat was 110.08%, iron was 34.60% and Vitamin C was 60.55%. Further z value calculated between intake of nutrients and RDI showed highly significant different between all the nutrient at p=<0.05 level.

Food frequency:

A food frequency questionnaire was developed that consisted of iron and vitamin rich foods. The subjects were asked to fill the questionnaire.

From the above table we observe that leafy vegetables like cabbage were not eaten daily. 39.28% girls had 2-3 times a week, 50% had once in a week, 7.14% had rarely and 3.57% never

Table 6 : Food frequency of iron-rich foods

	Daily	2-3 times a week	Once a week	Sometimes	Never
Cereals	96.4%	3.57%	-	-	-
Pulses	-	10.71%	67.85%	21.42%	-
Leafy vegetables	-	-	3.57%	21.42%	75%
Other vegetables	-	-	21.42%	64.28%	14.28%
Fruits	-	3.57%	3.57%	89.28%	3.57%
Nuts	-	3.57%	7.14%	75%	14.28%
Beef	-	-	-	7.14%	92.85%
Meat	-	-	3.57%	14.28%	82.14%
Roots and tubers	32.14%	39.28%	28.57%	-	-

Table 7 : Food frequency of Vitamin C rich foods

	Daily	2-3 times a week	Once a week	Sometimes	Never
Leafy vegetables	-	39.28%	50%	7.14%	3.57%
Other vegetables	-	-	39.28%	53.57%	7.14%
Fruits	3.57%	3.57%	42.85%	46.42%	3.57%

consumed leafy vegetables.

39.28% girls consumed other vegetables such as drumstick and capsicum, 53.57% had rarely while 7.14% never had.

Fruits such as amla, orange, lime, were consumed daily by 3.57% girls, 3.57% had 2-3 times a week, 42.85% had once a week, 46.42% had rarely while 3.57% never consumed Vitamin C rich fruits.

Vitamin C intake is moderately positively correlated (0.242) with the haemoglobin content in individual within the selected population.

Iron is less moderately positively correlated (0.029) with the haemoglobin content in individual within the selected population.

Conclusion :

In conclusion, the present study revealed anaemia to be a major health problem among the girls residing the hotel due poor dietary intake. Thus, it can be concluded that the diet plays an important role in anemia status. Due to the poor intake of nutrients from the food provided in the hostels, the girls might suffer from energy deficiency as well as other diseases. As the correlation of iron and vitamin to Hb levels is positive but less, further studies should be undertaken on this topic.

REFERENCES

De Benoist, B. *et al.* (2008). eds, worldwide prevalence of anaemia 1993-2005, WHO Global Database on Anaemia Geneva, World Health Organization 2008

DeMayer, E.M. and Tegman, A. (1995). World Health statistics Quarterly, **38** : 302-316

Kalaivani, K (2009). *IJMR*, **130** : 627-633

Lee, G.R. and Herbert, V. (1998). In: Lukens J, Paraskevas P, Greer JP, Rodgers GM, editors. Wintrobe's clinical hematology. Baltimore, Maryland USA: William & Wilkins, pp. 228-266

Malhotra, P., Kumari, S., Kumar, R. and Varma, S. (2004). JAPI, **52** : 18-20

Ministry of Health and Family Welfare, National Family Health Survey-4(2015-2016)State Fact Sheet Gujarat.

National Family Health Survey India (NFHS-4). Nutrition and the prevalence of anaemia chapter 7

National consultation on control of nutritional anemia in India (1998). Department of Family Welfare (Maternal Health Division), Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi.

National Nutrition Monitoring Bureau. NNMB Micronutrient Survey. National Institute of Nutrition, Hyderabad, 2002.

Seshadri, S (1999). Department of Foods and Nutrition. WHO Collaborating Centre for Nutrition Research. The Maharaja Sayajirao University of Baroda, Vadodara, India.

WHO. Geneva (1989).

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