MITIGATING ANAEMIA AMONG ADOLESCENT GIRLS THROUGH NUTRITION COUNSELLING

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Abstract

Adolescence is the period of transition when an individual changes physically and psychologically from a child into an adult and occupies a crucial position in the life of human beings. Anaemia is the major public health problem among adolescent girls of age 10-19 years. The objective of the study was to Assess the prevalence of iron deficiency anaemia among adolescent girls and Impart nutrition education to adolescent girls on anaemia through power point presentation, videos and demonstration. One hundred and ten adolescent girls were selected for the study. Socio demographic and nutritional status of the subjects was assessed well designed questionnaire. The haemoglobin level was analysed by cyanmethoglobin method. The nutrition education was given to the students. The study observed that only 41 percent of girls had normal BMI. Fourteen percent, 27 percent and 34 percent of the adolescent girls had mild (11-11.9 g/dl), moderate (8-10.9) and severe anaemia (<8 g/dl) respectively.

INTRODUCTION

WHO defines adolescent as an individual in the year 10-19 years age group [1].About 30% of Indian population belongs to the adolescent age group of 10-19 years. And 50% of adolescent girls aged between 15-19 years are underweight[2]. According to WHO guidelines for control of IDA, nutritional anaemia is a major public health problem in India and is primarily due to iron deficiency. Poverty is the main reason for iron deficiency anaemia apart from other factors. There are many reasons of iron deficiency and IDA in adolescent girls. These may be deficient intake or absorption of iron, increased demand during adolescence, heavy blood loss during menstruation, parasitic infestation etc. Although IDA occurs at all age and involves both the sexes, adolescent girls are more prone to it. In India the prevalence of anaemia among adolescent

girls were 56% and this amounts to an average 64 million girls at any point in time. Anaemia cause adverse effect as the disease progress. It is not only affecting the growth of adolescent girl but also affect their concentration, memory and school performance and maintenance in school attendance[3]. It also causes delay in onset of menarche; involve immune system leading to infections.

Iron deficiency is the third greatest global health risk factor next to obesity. Anaemia resulting from iron deficiency involves approximately two billion people or 34% of the world population.

Anaemia was observed among adolescent girls was 56 % and this to be average of 64 million girls in India. Studies conducted in various regions of India exposed that the prevalence of anaemia was 52.5% in Madhya Pradesh, 37 % in Gujarat, 41.1% in Karnataka, 85.4% in Maharashtra, 21.5% in Shimla, 56.3% in Uttar Pradesh, 77.33% in Andhra Pradesh, 58.4% in Tamil Nadu and in Kerala as 19.13%amongcollege students and 96.5% in tribal areas[4].

Nutrition education is important measure to improve dietary habits and food choices, since poor dietary habits and ignorance are the main reason for poor nutritional status of adolescents. It is based on the food source of iron and vitamin c rich foods.

The best sources of iron are green leafy vegetables, meats, poultry, fish, legumes, and fortified cereals. Vitamin C rich fresh fruits like guava, and citrus fruit enhance the absorption of non-haem iron

The objective of the study was to :

- Assess the prevalence of iron deficiency anaemia among adolescent girls.

- Impart nutrition education to adolescent girls on anaemia through power point presentation, videos and demonstration.

METHODOLOGY

Selection of area and subjects

The study was conducted in Higher Secondary School of Coimbatore. Adolescent girls of (13-18) years age were selected for the study. The adolescent girls were selected by purposive sampling techniques because the prevalence of anaemia was more among adolescent age group. Number of adolescent girls selected was 110. This age group had irregular menstrual cycle due to stress, improper food, and lack of awareness. The menstrual cycle with heavy blood loss was the main reason for anaemia.The nutritional status of the adolescent girls were assessed by ABCD method.

The information from the students were collected using the questionnaire that was formulated for the study. Anthropometric measurement which included measurement of height, weight and BMI of the gils were recorded. Biochemical assessment was used to identify whether the subjects were anaemic or non-anaemic. This assessment was done by cyanmethoglobin method. The clinical examination of anaemia was carried out for the presence of pale conjunctiva in eyes, paleness or yellowness in skin, thinness and easy pluckability in hair, brittle and discolouration in nails. Dietary assessment was done to assess the food and nutrient intake by twenty four hour dietary recall method and compared with recommended daily allowance of ICMR..The nutrients like energy, protein, fat, calcium and iron was calculated.

Conduct of nutrition education

Nutrition education is a combination of arts and science which not only contributes to nutritional information about good health, good sanitary practices, introduction of better food hygiene, more efficient use of food resources etc. The nutrition education was given to the students based on the concept of anaemia like definition, causes, symptoms, treatment using foods like iron rich foods, vitamin c rich foods, diet charts and foods to be included and excluded. Iron rich recipes like sesame chikki, curry leaves Idly powder, ABC (Apple, beetroot and carrot) juice, and fig and dates juice, carrot and dates juice were demonstrated to the students. The nutrition education was given to the students by power point presentation based on the concept of anaemia like definition, causes, symptoms, preventive measures like increased intake of iron and vitamin c rich foods and avoiding junk and unhealthy foods.

Results and discussion

Adolescent girls were selected in the middle adolescent age period of 15-17 years. out of the selected 110 adolescent girls, 22 percent (n=24) of adolescent girls were 14 years old and 64 percent (n=70) of adolescent girls were 15 year old , nine percent (n=10) of adolescent girls were 16 years old and only five percent (n=6) of adolescent girls were in the

late adolescent age of 17 years. Income level of parents is classified based on Prasad scale (PoorinamaTiwari,2019). Out of 110 adolescent girls, most of the subjects i.e. 25percent werecoming under the monthly income categories of upper lower class (Rs.1051- 2101), this was followed by 23 percent of subjects belonging to a lower class(<Rs.1050). 21 percent of adolescent girls belonged to a lower middle class (Rs.2102-3503) and 19 percent of adolescent girls belonged to an upper middle class(Rs.3504-7007). Only twelve percent of adolescent girls belonged to an upper class (>Rs.7007).

BMI of the selected adolescent girls

Body mass index (BMI) is calculated using height and weight and classified and compared with WHO standards. The distribution of selected adolescent girls according to their Body Mass Index is given in table I and figure I

Table I

BMI of the selected adolescent girls

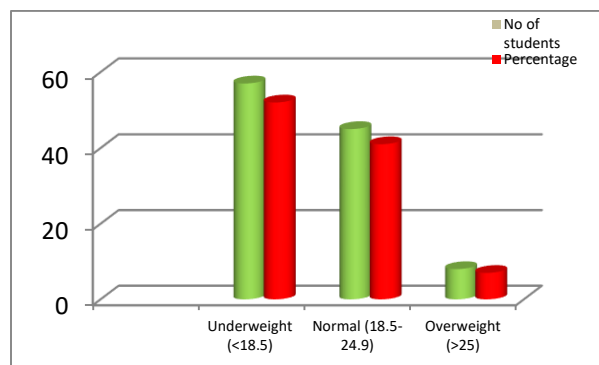| BMI classification	No of students (n=110)	Percentage
Underweight (<18.5)	57	**52**
Normal (18.5-24.9)	45	**41**
Overweight (>25)	**8**	7

Figure – I

BMI of the selected adolescent girls

Classification of anaemia	Hb level (g/dl)	No of students (n=110)	Per cent
Severe	<8	37	34
Moderate	8-10.9	30	27
Mild	11-11.9	15	14
Normal	≥12	28	25

From table *I* and figure I it is evident that 52 percent of the adolescent girls were underweight and their BMI was less than 18.5. Only 41 percent of girls had normal BMI and a minimum of seven percent girls were overweight (i.e.) 25. It is understood from the

data that majority of the girls were underweight which can be a reason for anaemia.

Biochemical assessment of adolescent girls.

Biochemical assessment is most objective measures of nutritional status. It is widely

Parts of the body	Symptoms	Presence of symptoms		Absence of symptoms	
		No	%	No	%
Hair	Thinness	82	75	28	25
	Brittle / easily pluckable	63	57	47	43
Skin	Pale	44	40	66	60
	Dryness	72	65	38	35
Eye	Pale conjunctiva	81	74	29	26
	Yellowing	30	27	80	73
Nails	Brittle	54	49	56	50
	Discolouration	70	64	40	36

used to assess the nutritional deficiency of various diseases. The prevalence of anaemia was estimated by analysis of whole blood to find the haemoglobin level present in the blood. The blood was drawn by finger prick method from the selected adolescent girls. Haemoglobin status of the selected adolescent girls is given in the table II

Table II

Distribution Of Adolescent Girls According to Haemoglobin Level.

From the table II it is evident that only 25 percent of the adolescent girls had normal level of haemoglobin. Fourteen percent, 27 percent and 34 percent of the adolescent girls had mild (11-11.9 g/dl), moderate (8-10.9) and severe anaemia (<8 g/dl) respectively. Majority of the girls (i.e.) 75 percent of the adolescent girls were anaemic ranging from mild to severe anaemic level. The anaemic

level was high due to insufficient intake of iron and vitamin c rich foods. Table III presents data about the presence of clinical symptoms for anaemia among adolescent girls

The data in the table II reveals that majority of the adolescent girls are having one or other clinical symptoms of anaemia present. Seventy five percent of girls hair was thin and sparse and it was easily pluckable for 57 percent of girls. The symptom observed in skin was dryness among 65 percent of girls. Seventy four percent of girls had pale conjunctiva eyes and discolouration of nails among 64 percent of girls.

The dietary practices of adolescent girls was analyzed using the questionnaire. The habit of skipping one meal is higher among adolescent girls and 57percent of adolescent girls skipped a meal. The meal which was most commonly skipped was breakfast and 29 percent of adolescent girls skipped breakfast. The lunch was not taken by 14percent and 5percent skipped dinner. Out of 63 adolescent
girls, 29 percent felt tired if they miss any meal. Majority of adolescent girls (i.e.)

Table -III

Presence of clinical Symptoms of Anaemia among adolescent girls

55percent were drinking less than 2 liters of water per day.Mean nutrient intake of adolescent girls is presented in Table – IV

Table – IV

Mean nutrient intake of adolescent girls

Nutrient Intake	ICMR	Mean Intake of Selected Adolescent girls	percent Excess or deficit
Energy (kcal)	2330	1705	-26.7
Carbohydrate(g)	345	300	-12.88
Protein(g)	51.9	57.8	+11.42
Fat(g)	40	31.4	-21.4
Calcium(mg)	800	495	-38.12
Iron(mg)	27	16	-41.48
β-carotene(µg)	4800	2873.42	-40.13
Thiamine (mg)	1.2	1.1	-8.3
Riboflavin (mg)	1.4	1.24	-11.42
Niacin(mg)	14	15.29	+9.21
Folic acid (µg)	150	167.61	+11.77
Vitamin C (mg)	40	45	+12.5

The poor intake of food is reflected in the nutrient intake also. A deficit of all nutrients was observed. The protein and folic acid was high due to the intake of egg which was provided in the noon meal lunch. Energy was deficit by 26.7percent due to the factor of skipping meal. Fat, calcium, and iron are deficit due to inadequate intake of pulses, milk and iron rich foods. 21.4, 38 and 42 percent of fat, calcium and iron was deficit respectively... Due to deficit intake of iron, the girls were anaemic. Protein intake was high (i.e.) by 22 percent due to daily intake of egg in mid day meal. Niacin and folic acid are excess when compared to recommended dietary allowance. It was observed that there was an excess of 12.5 percent intake of vitamin C among adolescent girls. Vitamin c plays an important role in iron absorption.

Majority of selected subject i.e. 63 percent of girls are having the habit of skipping a meal. Therefore, the energy is not met with recommended daily allowance of an individual. The reason for underweight and anaemia was inadequate intake of food which did not met recommended dietary allowances (RDA).

Consumption of iron rich foods by the anaemic adolescent girls were analysed. Consumption of iron rich cereals like rice flakes, bajra, ragi and wheat was consumed everyday by minimum number of girls,

majority of the adolescent girls consumed it only once in a month or they included it in their diet rarely. One or other form of pulses was consumed by 75 percent and 25 percent of the adolescent girls everyday and twice in a week.

Consumption of green leafy vegetables, mint, sundakkai and soyabeans was consumed twice in a week or weekly once or once in a month but not on a regular basis. Iron and calcium rich sesame seeds was consumed by 6, 7 ,9 and 24 percent girls daily , twice in a week, weekly once and once in a month respectively. This was consumed as sesame chikki which is available everywhere and girls liked to eat and same was with the intake of ground nuts as chikki. Dates as iron rich food was consumed by 15, 20, 16 and 32 percent of girls daily, twice in a week, weekly once and once in a month respectively.

Consumption of vitamin c rich foods by the anaemic adolescent girls were analysed. Consumption of vitamin c rich foods like orange, guava, lemon, sweet lemon and grapes was consumed everyday by minimum number of girls, majority of the adolescent girls consumed it only once in a month or they included it in their diet rarely. Orange as vitamin c rich foods was consumed 7, 12, 24 and 44 percent of girls daily , twice in a week, weekly once and once in a month respectively. Lemon as vitamin c rich food was consumed by 10, 24 ,34 and 20 percent of girls daily, twice in a week, weekly once and once in a month.

IV. CONCLUSION

The prevalence of anaemia increased due to many physiological factors, improper food intake and lack of knowledge among adolescent girls. The iron rich and folic acid tablets were consumed which government gave to adolescent girls. Awareness and education can create an idea for the students to improve the anaemic status. Nutrition Education is very important in the present scenario to decrease the prevalence of nutritional deficiency diseases among the younger generation.

References

1.Sneha Kamat and Rupali Sengupta, (2019),Nutrition Intervention for Improvement of Knowledge on Anaemia Prevention among Adolescent Girls in Mumbai (16-19 years), *International Journal Of Food Science And Nutrition*, 4(2), Pp 136-139.

2.Deepika Anand, R. K. Anuradha, (2016), Malnutrition Status of Adolescent Girls in India: A Need for the Hour, *International Journal of Science and Research*, 5(3), Pp 642-646.

3.Sarika More, V. B. Shivkumar, Nitin Gangane, and Sumeet Shende, (2013), Effect of Iron Deficiency on Cognitive Function in School Going Adolescent Females in Rural Area of Central India, Hindawi publishing corporation, Pp 1-5.

4.P.M. Siva, A. Sobha, V.D. Manjula, (2016),prevalence of anaemia and its associated risk factors among adolescent girls of central kerala, *journal of clinical and diagnostic research* , 10(11), Pp 19-23.