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A PREVALENCE STUDY ON ANAEMIA AMONG ADOLESCENT SCHOOL GIRLS AND THE IMPACT OF NUTRITION EDUCATION PROGRAMME

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Abstract

Anaemia is a significant public health challenge in India. It has devastating effects on health, physical and mental productivity affecting quality of life among adolescents. The overall aim of the study was to determine the prevalence of anaemia among adolescent school girls as well to assess the effectiveness of nutrition education programme. A cross sectional survey was conducted in a higher secondary school in Chennai, Tamilnadu. Hundred adolescent girls aged 13 - 16 years were selected for the study. Informed consent was taken and the individuals were screened for hemoglobin level. Anthropometric measurements including body weight and height were recorded. Dietary intakes of the girls were assessed by 3 day 24 hour recall method. All statistical data were analyzed using the program SPSS. Results predicted that among the 78 % of anaemic adolescent girls 22 % had mild anaemia, 30 % had moderate anaemia and 48 % had severe anaemia. Dietary intake of the girls was found to be inadequate before nutrition education. Knowledge and awareness about anaemia improved significantly after nutrition education. Results were significant at 5 % level.

Introduction

Adolescence is defined by WHO as period of life spanning the ages between 10-19 years which is a period where both physical as well as psychological changes occur. During childhood, nutritional needs of boys slightly differ from that of girls. But the difference in the nutritional needs widens after the onset of puberty. Iron requirements peak during adolescence due to rapid growth and increase in blood volume. [1]

Iron requirements are increased during adolescence reaching a maximum at peak growth and remaining almost as high in girls after menarche to replace menstrual losses. Adolescent iron requirements are even higher in developing countries because of infectious diseases and parasitic infections cause iron loss. Anemic girls are at risk of compromised physical and mental functions and they may also be at increased obstetric risk, once pregnant. [2]

So this present study was carried out to assess the magnitude of problem of anaemia in adolescent girls and to find out the impact of nutrition education.

Methodology

A cross sectional study was executed in Chennai-India .One hundred adolescent girl students between the age group of 13- 16 were selected by simple random sampling method and included for the study after obtaining their informed consent. A pre-tested interview schedule was used to collect the information about the participants. It included details like personal details like age, religion, Standard, Academic performance. Family details like type of family, Parent's education, occupation, income. Anthropometric measurements such as height and weight were measured. Dietary consumption pattern was elicited using 3 day 24 hour recall.

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Knowledge and Awareness regarding anemia such as its definition, causes and symptoms were recorded by using a check list. Educational material used in the programme was audio visual aids in the form of animated videos, posters and charts. Lecture method was also used to incorporate information regarding various nutrients Hemoglobin concentration was estimated by the cyan method using hemoglobin analyzer. It is measured in terms of g/dl. Capillary blood was drawn by finger prick method.
The data thus collected were processed and analyzed by SPSS 17.

Results and Discussion

A total of 100 adolescent girls were included in the study. Among them, 27 % were in the age group of 13 – 14 while, 73 % were in the age group of 15 – 16. The nuclear family set up has emerged as the main pattern of current years thus vanishing the joint setup. A maximum of 65 per cent of study samples sample were living in nuclear family whereas 35 per cent subjects belonged to joint family setup. A greater part of 59 per cent belonged to those families who had more than 5 members revealing that that size of family has also some correlations with the percent of anaemia. Anaemia in adolescent girls of mothers with primary or less education is significantly higher than girls of highly educated mothers. However there was no significant association found with father's education and occupation.

Socio economic status has a bearing on the percentage of anaemic in poor communities. About 42 per cent of the adolescent girls belonged to low or lower middle class group whereas 45.5 per cent respondents belonged to average middle class group. When girls were assessed for nutritional status by assessing BMI, it was revealed that a majority of 62 % girls were underweight while 27 % girls had normal BMI.

Table 1 Prevalence of anaemia among the study sample

Sl.No.	Condition	Percent
1.	Severe (< 7 mg/dl)	48
2.	Moderate (7 – 10 mg/dl)	30
3.	Mild (10 – 12 mg/dl)	22

The results of hemoglobin estimation predicted that 48 per cent of the girls had hemoglobin level less than 7mg/dl indicating that the girls were severally anaemic, hemoglobin levels was between 7-10 mg/dl for 30 per cent of the study sample which indicates moderate distribution of anaemia and 22 per cent of the girls had hemoglobin level between 10-12 mg/dl which proves the girls were mildly anaemic.
In the present study, it can be interpreted that out of 100 girls, 78 were suffering from anaemia and 11 were found non anaemic. This indicated that anaemia is a public health problem of high magnitude.

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Menarche and History of Past Illness

Study revealed that majority 64 per cent of the study sample attained puberty at the age of 12; however rest of the respondents had attained menarche either before 12 or after 12 years. Dysmenorrhea can feature different kinds of pain, including sharp, throbbing, dull, nauseating, burning, or shooting pain. Dysmenorrhea may precede menstruation by several days or may accompany it, and it usually subsides as menstruation tapers off. Dysmenorrhea may coexist with excessively heavy blood loss, known as menorrhagia.
Thirty five per cent of the respondents suffered from dysmenorrhea. 48 per cent of the girls suffered from abdominal pain, 8 per cent from back ache, 1 per cent from vomiting and nausea. The duration of menstrual blood flow for majority of girls was more than 5 days. 63 per cent of the subjects had cycle duration of more than 28 days where as 37 per cent had below 28 days. Prolonged bleeding may be the symptom of anaemia. About 44 per cent had irregular periods, due to the decreased level of hemoglobin stored in the body. Irregular period is due to insufficient intake of iron, vitamin A and vitamin c rich foods.

Table II Nutritional intake of the study sample as per 3 day dietary recall

Nutrients	Mean ± SD		RDA	P Value	
	Before	After			
CHO	114.54 ± 37.56	270.01 ± 63.93	335	0.0012	S
Energy	968.31 ± 385.71	1648.23 ± 314.26	2060Kcal/day	0.023	S
Protein	42.46 ± 7.4	44.90 ± 7.7	65gms/day	0.809	NS
Fat	11.95±4.6	12.98±3.4	22gms/day	0.974	NS
Iron	5.10±1.93	8.72±4.52	28mg/day	0.037	S
S= Significant($p<0.05$) ; NS= Non Significant($p>0.05$)					

Table II depicts the intake of various nutrients by the study sample. It was disquieting that the carbohydrate, energy drastically improved after nutritional education. Protein, fat and iron intake of the girls were very less when compared with that of RDA. But it was found that the intake gradually improved after counselling.

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TABLE III: Avoidance of specific foods during menstrual cycle

Sl.No.	Avoidance of specific foods	% of the respondents
1	Pickles	6
2	Lassi	1
3	yoghurt	2
4	Sweets	11

Table III depicts the avoidance of foods during the menstrual cycle. Majority 11 per cent of the girls avoid sweets and 6 per cent of the study sample avoids pickles. There is a belief that consuming sweets causes excessive bleeding, blood clots and cramps and majority of the girls say that pickles, curd and Lassi causes indigestion, induces stomach pain and cramps.

Table IV illustrates the foods that are frequently consumed during menstrual cycle

Sl.No.	Foods frequently taken	% of the respondents
1	Halwa	0
2	Milk with turmeric	5
3	Hot milk	6
4	Dates	63

Table V Consumption pattern of iron rich foods

When the consumption pattern of iron rich foods were investigated among the study sample, it was astonishing that rice flakes which contain 20mg of iron per 100g was consumed at least monthly once by 52 per cent of the girls.Bajra which contain 8mg of iron per 100g was consumed as such by 25 per cent of the girls once a month. Cowpea contains 8.6mg of iron per 100g was consumed by 64 per cent of the girls once a week. Soya bean which contains 10.4 mg of iron per 100g was consumed by 13 percent of the girls once a week. Roasted Bengal gram contains 9.5mg of iron per 100g. It was consumed by 52 per cent of the girls daily, 19 per cent of the girls twice a week. Dried dates contain 7.3 mg of iron per 100 g was consumed in the form of payasam, milk shake, laddu and as such by 34 per cent of the girls on daily basis, 30 per cent of the girls consume it once a week, only 3 per cent of the girls consume it twice a week, 16 per cent of the girls once a month and 17 per cent of the girls never consume it.Nuts play a major role in supplying iron to the body. Nuts especially walnut contains omega 3 fatty acid which is present only in animal source. Nuts are consumed in the form of sweets, garnish desserts, kheer and sweets. Among 100 samples nearly 41 per cent of the girls consume it twice a week, 52 per cent of them

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consume it once a month and only 4 per cent never consume it. Liver contains 6.3 mg of iron per 100g was consumed by nearly 20 per cent of the girls once a week and 56 per cent of the girls did not consume it.

Impact of nutrition education on study samples

Table vi: Mean value of Knowledge and Awareness score card

Sl.No	Particulars	Mean±S.D.	t-Test	p Value
1.	Before	11.26 ± 2.2	-23.345	0.0043
2.	After	17.90 ± 1.75		
*p < 0.05 show the significant results				

Table VI depicts the mean value of knowledge and awareness score card. The results were significant at 5 % level. Knowledge and awareness about Anaemia was investigated using a check list. Questions like meaning of anaemia, normal hemoglobin values, knowledge about iron rich foods, symptoms of anaemia were tested. 70 % of the subjects were unaware about normal hemoglobin values while 50 % were ignorant about iron rich foods. All the participants were aware about the nutritional deficiency Anaemia.

After nutrition education Participants were able to tell out iron rich foods more promptly. Also they had a clear idea about hemoglobin, and hemoglobin values.

During statistical analysis, initial mean was 11.26 which drastically improved to 17.9 with the standard deviation of 1.75. The p value was 0.0043 which shows that the study is significant at <5% level. Therefore there is a significant improvement in the respondent's scores cards which proves that nutrition education was significant.

Conclusion

From the present study it was discovered that anaemia is a major health problem among adolescent girls. It can also be concluded that overall nutritional status of adolescent girls was not up to the mark. Anaemia could be also the result of reduced iron intake and heavy periods, thus government should promote awareness programs in schools which will lead to healthy eating patterns and selection of appropriate foods. Nutrition education is one of the appropriate, effective and sustainable approach to combat iron deficiency anaemia.

References

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