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EFFECT OF NUTRITION EDUCATION ON HAEMOGLOBIN LEVEL IN BLOOD OF ADOLESCENT GIRLS

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ABSTRACT

During puberty wrong food habits accelerate in adolescent girls and affect their nutritional status, which have impact on their haemoglobin level in blood. Therefore there was the need to impart nutrition education to adolescent girls. Nutrition education has been recognised as a nutritional knowledge improver and good food habit builder. The purpose of the study was to improve their nutritional status through nutrition education and observe the change in their haemoglobin level in blood. The results show that more than 85.17 per cent respondents had positive change in their haemoglobin level in blood after exposure to nutrition education. The't' value ofhaemoglobin level in bloodwas highly significant. The findings support the importance of nutrition education to adolescent girls to improve the haemoglobin level in blood towards the normal range.

Keywords: Nutrition education, change in heamoglobin level, adolescence, adolescent girls, eating habits

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INTRODUCTION

Health of an individual is a state in which every cell and organ in the body perform well at their optimum capacity. Health potential indicates adequate health knowledge, good nutritional status, immunological resistance and normal haemoglobin level in adolescent girls.

Prevalence of anemia is more than 60 per cent among all vulnerable groups and may be much higher among adolescent girls. In tribal areas, this problem is much higher because of malnutrition, infections and lack of sufficient knowledge regarding this problem (Amarnath, M. and N. Lakshmanrao, 2013).

Adolescent growth spurt starts at about 10-12 years in girls. Adolescent girls are at greater physiological stress because of menstruation. Their nutritional needs are particular importance as

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they have to prepare for motherhood. All these rapid anabolic changes require more nutrients per unit body weight. Well-formulated balance diets for adolescent help optimum growth and boost their immunity. Adolescence is the vulnerable stage for developing wrong food habits as well as bad habits like smoking, chewing tobacco or drinking alcohol (Dietary Guidelines for Indians- A Manual, 2011). Adolescent age group is a crucial period in life and implies multiple physiological, biological and psychological changes that affect nutritional needs and habits. Meal skipping, eating out and eating irregularly are common in adolescent girls. High fibre diets, fruits and vegetables provide bulk or more satiety and have been linked to heamoglobin level in blood during adolescence.

Adolescent girls choose unhealthy foods on their own. They consume junk foods, desserts, chocolates, candies, biscuits, cakes, cookies and soft drinks since childhood, which they like and tend to consume. Wrong eating habits and choices of foods, skipping meals, eating while watching television and peer pressure have impact on adolescent girls' nutritional status, which affect their haemoglobin level in blood.

Health education for nutrition and healthy balanced diet should be integrated in the curriculum of adolescent girls (Elrahman, A. et al., 2013). The nutrition education to the adolescent girls helps them to be decision makers about their food. Nutrition education can bring changes in their haemoglobin level in blood.

In light of above mentioned background and need of the study effect of nutrition education on haemoglobin level in blood of adolescent girls was adjudged.

MATERIALS AND METHODS

Sampling and research design of the study

The study was carried out on a group of 290 adolescent girls of age range 13-15 years from 10 schools of Amravati city,

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Maharashtra. A list of adolescent girls from the 10 schools was prepared and 290 adolescent girls sample was drawn with the help of lottery method. The study design was before after without control experimental research design.

Biochemical test (Hemoglobin level in blood)

Blood and urine are the two easily available body fluids which are used in biochemical assessment of the nutritional status (Shubhangini, J., 2002). Heamoglobin level in the blood of respondent was measured by haemoglobin testing system.

The haemoglobin level of respondents compared with normal hemoglobin level <12g/dl (UNICE/UNU/WHO/MI, 1998).

Nutrition education

This nutrition education programme was developed and standardized through following process-

1. Collecting and editing of nutrition education contents from available literature and material.
2. Nutritionists and nutrition educationists' responses on collected and edited nutrition education contents on a three point continuum namely 'relevant', 'somewhat relevant' and 'not relevant' with the scores of 3, 2 and 1 respectively.
3. Assessing relevancy of nutrition education contents- the relevancy score for the nutrition education contents was found out by addition of scores. Rating given to each item by experts was added. From this data relevancy percentage, relevancy weightage and relevancy score were calculated. Contents scored relevancy percentage >75, relevancy weightage >0.75 and mean relevancy score >2 were considered for final selection of contents and included in the nutrition education programme.
4. By following all above procedure the standardized nutrition education programme was formulated. The nutrition education programme was planned and objectives were set.
5. Nutrition education programme was conducted for 6 months (once a month).

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Data collection

In this study the data of haemoglobin level in blood of respondents were collected through above mentioned standard instruments, before and after imparting the nutrition education.

Statistical analysis of data

The statistical analysis of data was carried out by using SPSS software (version 20).

RESULTS AND DISCUSSION

Two tests of haemoglobin level in blood administered to the respondents before and after the standardized nutrition education programme.

Anaemia status of the adolescent girls was assessed using the WHO classification. Adolescent girls were considered anaemic if the Hb value was below 12.0 g/dL. Anaemia were further categorized into different grades such as mild (10-12 g/dL), moderate (7-9.9 g/dL) and severe (<7.0 g/dL)[5].

It may be observed from table 1 and figure 1 that the normal haemoglobin level in blood found to be in 27.93 per cent respondents after exposing them to the standardized nutrition education programme, whereas before imparting the nutrition education programme only 5.17 per cent respondents were in normal haemoglobin category.

Maximum percentage, (65.52%) of respondents found to be in mild anaemia category, followed by 24.83 per cent found to be in moderate anaemia category and 4.48 per cent found to be in severe anaemia category before exposing them to the nutrition education programme After exposing them to the standardized nutrition education programme 61.04 per cent respondents appeared under mild anaemia category, 9.31 per cent under moderate anaemia category and 1.72 under severe anaemia category.

It, can be, inferred that majority of the respondents have change in their haemoglobin level in blood.

The respondents realized the importance of intake of iron, protein, vitamin B_{12}, folic acid and

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vitamin C rich foods in diet. This realization encouraged them to improve the intake of nutrient rich foods as an effect of the standardized nutrition education programme.

Thus, the keen interest and involvement of respondents helped respondents to improve their haemoglobin level in blood.

Change in Haemoglobin level in blood

Imparting the standardized nutrition education programme brought change in haemoglobin level in blood of respondents. This change was worked out in terms of change in haemoglobin level through the difference between after and before education for each individual. The per cent change for each individual was calculated, then they were categorised into three categories as below.

It is evident from the table 2 and figure 2 majority of the respondents i.e. 85.17 per cent have medium level changes, 8.28 per cent and 6.55 per cent respondents have high and low level change respectively show relatively meagre change.

Testing the significance of difference between the means (Before- after) towards change in Haemoglobin level in blood

With a perception to observe the effect of standardized nutrition education programme in the terms of change in haemoglobin level in blood of respondents, the mean of haemoglobin level in blood before and after imparting the standardized nutrition education programme were worked out and furnished in table 3.

The mean of haemoglobin level in blood of the respondents after exposing them to the standardized nutrition education programme (11.27) found to be higher than the mean of haemoglobin level of respondents before imparting them to the standardized nutrition education programme (10.23), and difference found to be between after and before means of haemoglobin level in blood is 1.04.

The above discussed quantitative superiority of mean value of the haemoglobin level of

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respondents after exposing them to the standardized nutrition education programme over the mean value of the respondents before exposing them to the standardized nutrition education programme cannot be a conclusive measure of its superiority. Therefore further paired‘t’ test was subjected. For paired ‘t’ test, the first step i.e. testing the significance of difference between the means of same group of individuals i.e. paired/dependent sample taken a pre-test of haemoglobin level in blood (before imparting the standardized nutrition educationprogramme) and post-test haemoglobin level in the blood (after imparting the standardized nutrition education programme) to determine whether the influence of standardized nutrition education programme was statistically significant or not.

The ‘t’ test value presented in the table 3with respect to haemoglobin level in blood “15.493” found to be highly significant at 0.01 level of probability. It, could, therefore be, stated that the standardized nutrition education programme did improve the haemoglobin level in blood of respondents, who had undergone the standardized nutrition education programme.

Correlation between age, education and socio-economic status with their change in haemoglobin level in blood

Improvement in haemoglobin level in blood to obtain normal haemoglobin level, through the standardized nutrition education programme in adolescent girls, might have been a function of several factors. For identifying these factors, influencing the improvement in haemoglobin level in blood the coefficient of correlation between the age, education and socio-economic status of adolescent girls and change in their haemoglobin level in blood was worked out and presented in table 4.

It, could, therefore be observed from table 3that the age, education and socio-economic status are not correlated with change in haemoglobin level.

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CONCLUSION

The normal haemoglobin level in blood found to be in 27.9 per cent respondents after exposing them to the standardized nutrition educationprogramme, whereas before imparting the standardized nutrition educationprogramme only 5.17 per cent respondents were in normal haemoglobin category. Maximum percentage (65.52%) of respondents found to be in mild anaemia category, followed by 24.83 per cent found to be moderate anaemia category and 4.48 per cent found to be in severe anaemia category before exposing them to the standardized nutrition education programme. After exposing them to the standardized nutrition education programme 61.04 per cent respondents appeared under mild anaemia category, 9.31 per cent under moderate anaemia category and 1.72 under severe anaemia category, which found to be meagre. It can be inferred that majority of the respondents have change in their haemoglobin level in blood. Significant difference was observed before and after education in heamoglobin level in blood.

Acknowledgement

Thanks to Prof. Dr. Manisha P. Kale for guidance and 10 schools of Amravati city, Maharashtra to carry out the research.

Table 1: Distribution of respondents according to their Haemoglobin level in blood

Categories	Haemo globin level in blood (g/dL)	Respondents (n=290)			
		Before		After	
		Frequency	Percentage	Frequency	Percentage
Severe Anaemia	<7	13	4.48	5	1.72
Moderate Anaemia	7-9.9	72	24.83	27	9.31
Mild Anaemia	10-12	190	65.52	177	61.04
Normal Haemoglobin	>12	15	5.17	81	27.93
Total		**290**	**100**	**290**	**100**

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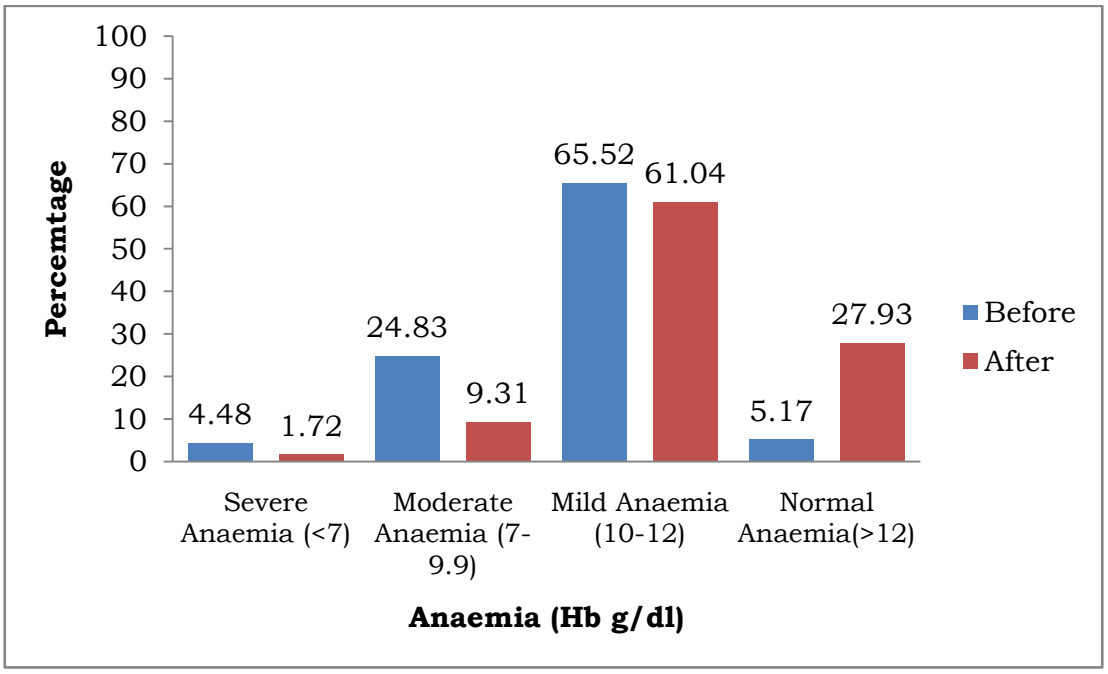

Fig 1: Distribution of respondents according to their haemoglobin level

Table 2: Distribution of respondents according to per cent change in haemoglobin level in blood

Per cent change in haemoglobin level in blood	Respondents (n=290)	
	Frequency	Percentage
Low	19	6.55
Medium	247	85.17
High	24	8.28

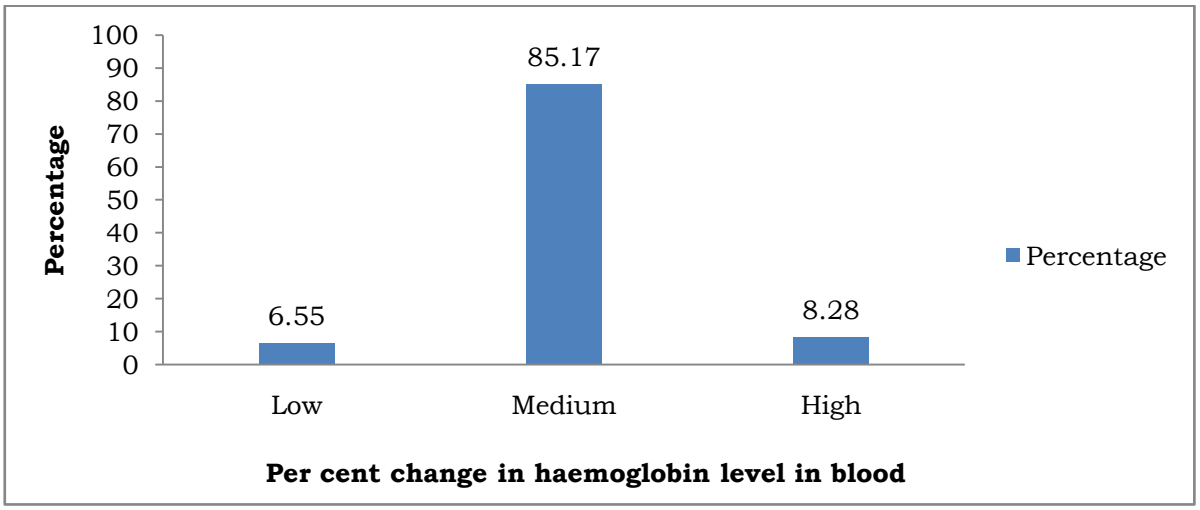

Fig 2: Distribution of respondents according to per cent change in haemoglobin level

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Table 3: Means of Haemoglobin level in blood before and after nutrition education programme

Haemoglobin level in blood (g/dl)	Mean Score		Difference	't' value
	Before	After		
	10.23	11.27	1.04	15.493**

** Significant at 0.01 level of probability

Table 4: Correlation matrix of age, education and socio-economic status with their change in Haemoglobin level in blood

Variables	Age	Education	Socio-economic status	Change in Haemoglobin level in blood
Age	1	1.000 **	0.064	-0.067
Education	1.000**	1	0.064	-0.067
Socio-economic status	0.064	0.064	1	-0.045
Change in Haemoglobin level in blood	-0.067	-0.067	-0.045	1

* Significant at 0.05 level of probability
** Significant at 0.01 level of probability

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