



Experimental Study To Assess Different Educational Methods To Overcome Anaemia Among Adolescent Girls In Chikkaballapura District, Karnataka, India

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Abstract

The present study was undertaken by Krishi Vigyan Kendra, Chikkaballapura district to assess the Efficacy of different educational methods in reducing iron deficiency anemia among 120 adolescent girls (13-16 years) studying at government high school of Hirekattigenahalli village, Chintamani taluk, Chikkaballapura district during 2015-16. The subjects were divided into four groups namely, Control group, Experimental group 1, Experimental group 2, and Experimental group 3. They were assessed for nutritional status (height, weight and haemoglobin level) and changes in the Knowledge, Attitude and Practice (KAP) before and after intervention of different educational methods. The results indicated that, the mean height of subjects increased to 2.03cm, 2.45cm and 2.79cm in experimental group 1, 2 and 3 respectively as compared to control group which is 1.91cm. Similarly the mean weight of subjects increased to 2.03kg, 2.24kg and 2.94 kg in experimental groups 1, 2 and 3 respectively as against 1.13kg in control group. Experimental groups showed the higher increase in haemoglobin level (1.06 to 1.10g/dl) than control group (0.32g/dl). the mean KAP scores of experimental groups 1, 2 and 3 where increase to 31.53, 31.73 and 32.67 percent as compared to control group (3.14%). Further, family counseling method showed better improvement in nutritional status of adolescent girls compared to other groups.

Key words: Adolescent girls, Nutritional status, Anaemia, Educational methods, Haemoglobin level

I. INTRODUCTION

Anaemia is a global public health problem affecting both developing and developed countries with major consequences for human development. Iron deficiency continues to be the leading single nutritional deficiency in the world, despite considerable efforts over the past three decades to decrease its prevalence. Iron deficiency is the principal cause of anaemia. Two billion people, over 30 percent of the world's population are anaemic (WHO, 2013). The prevalence of anaemia in India is 55.6 per cent. The prevalence of anaemia among adolescents in India is estimated to be 69.7 per cent (INACG,2004).

Nutrition education has been defined as educational measures for including desirable behavioral changes for the ultimate improvement in the nutritional status of all nutrition intervention programmes. Lack of knowledge of dietary requirements and the nutritive value of different foods is the main contributory cause for the widespread occurrence of malnutrition in developing countries. Adolescents are one of the most important groups of any society but nutritionally vulnerable for iron deficiency because of double demand of growth and activity. Nutrition education might be of the important strategies to combat iron deficiency anaemia in adolescent girls, stressing importance of haemopoietic nutrients and consumption of green leafy vegetables which are excellent source of iron

and micronutrients. So, there is a need to promote nutrition education on anaemia and its prevalence, causes and consequences. The importance of nutrition education as a means for improving the nutrition and health of community has been increasingly realized during recent years. With this background, the study was conducted with the objective of assessing the efficacy of different educational methods to combat anaemia among adolescent girls.

II. MATERIALS AND METHODS

The study was conducted as per the approved action plan 2015-16 of KrishiVigyan Kendra, Chikkaballapura district. As per the suggestion of Block Education Officer (BEO), a Government High School which is located at Hirekattigenahalli village, Chintamani taluk, Chikkaballapura district was selected for the study. A total of 120 adolescent girls between the age group of 13-16 years old, studying in VIIIth, IXth and Xth classes who were willing to participate in the study were selected.

The subjects were divided in to four groups comprising 30 subjects in each group as control group and experimental group 1, experimental group 2 and experimental group 3 (Table-1) with different treatments. Control group received regular school education with Mid Day Meal and Iron and Folic acid tablet distributed in the school. Experimental group 1 was given nutrition education with special emphasis on anaemia by means of self-reading teaching material along with Mid Day Meal and Iron and Folic acid tablets. For experimental group 2, awareness was created by conducting trainings on health, nutrition, hygiene with special regard to anaemia and method demonstrations on iron rich recipes in school classrooms once in a week along with Mid Day Meal and Iron and Folic acid tablets. For experimental group 3, family counseling (counseling to the mothers of the students) was done for a period of three months in addition to the Mid Day Meal and Iron and Folic acid tablets distributed to the students. These treatments were imposed for a period of three months to subjects.

The teaching materials used for educating the students in experimental group 1 are, snake and ladder game chart entitled “Understand Anaemia and Live Healthily”, a folder entitled “Anaemia among Adolescent Girls” and flip chart entitled “Management of Anaemia” containing information on health, nutrition and causes, symptoms, daily iron requirement for different age groups, locally available iron rich foods, preventive measures for anaemia. To the experimental group 2, using the locally available materials and crops, preparation of iron rich foods viz., *Dry fruit laddu, Poustik roti, Garden crush seeds payasa, Sweet rice flakes, Niger seed chutney powder etc.* were demonstrated. For experimental group 3, the mothers were given awareness on the management of anemia and also preparation of iron rich recipes.

To know the impact of different educational methods, the subjects were assessed for nutritional status by way of anthropometry (height and weight) and biochemical method (haemoglobin) and change in the behaviour by conducting Knowledge, Attitude and Practice (KAP) test at pre and post treatments. Haemoglobin estimation was carried out by Sahli’s method and diagnosis of anaemia and its severity were made by using WHO guidelines. The subjects at pre and post intervention period and were classified into four different categories (Anonymous, 1986) namely, normal (≥ 12 g/dl), mild anaemic (10-11.9g/dl), moderately (8-9.99g/dl) and severely anaemic (≤ 8 g/dl). After imparting nutrition education, for evaluating the level of nutrition knowledge one score was awarded for right answer and zero for wrong answer of each question. Gain in nutrition knowledge and quantum of improvement was calculated as follows.

Gain in nutrition knowledge = Score obtained in post test – score obtained in pre test

The data obtained on nutritional status was statistically analyzed. Mean were calculated for each studied variable. Comparison of the nutritional status before and after imparting nutrition education was done by applying paired t test.

III. RESULTS AND DISCUSSION

At the baseline, the mean height, weight, haemoglobin level and nutrition knowledge levels were not significantly different between experimental and control groups ($P>0.05$) indicating the homogeneity of the groups with regard to nutritional status, haemoglobin level and awareness on nutrition knowledge. Post intervention data analysis as obtained by t-test indicated that significant improvement in mean height, weight, haemoglobin level and knowledge level of experimental groups compared to control group. The mean height of subjects increased to 2.03cm, 2.45cm and 2.79 cm in experimental group 1, experimental group 2 and experimental group 3 respectively as against 1.91 cm in control group which was significant at one percent probability level. Similarly, the mean weight of subjects increased to 2.03 kg, 2.24kg and 2.94 kg in experimental group 1, experimental group 2 and experimental group 3 respectively as against 1.13kg in control group which was significant at 1 per cent level of probability after a gap of three months.

Table 3 clearly indicates that at baseline level, none of the subjects in experimental groups as well as in control group had normal hemoglobin level. Majority of the subjects in all the groups belonged to moderate and mild anaemic category. Assessment of Haemoglobin level before and after treatment (table-4) indicated that experimental groups showed a higher increase in hemoglobin level (1.06 – 1.10/g/dl) compared to control group (0.32g/dl). The percent increase in haemoglobin level was 11.38 – 12.03 and 3.49 for experimental and control group respectively. This increment was found to be significant at 1 per cent level. Goal and Talikoti (2003) also reported a significant improvement in haemoglobin levels (3-5g) after imparting nutrition and health education to 150 adolescent girls of urban slums of Jaipur. Similarly a study conducted by Jyothi *et al.* (2011) on impact of nutrition education intervention on haemoglobin status of 60 adolescent girls of rural Dharwad district showed a significant increase (7.71%) in haemoglobin level. The statistical analysis of the data further revealed effectiveness of the nutrition education among the subjects which was measured in terms of gaining scores (Table-5). The mean KAP scores of experimental groups were increased to 31.53, 31.73 and 32.67 per cent in experimental group 1, experimental group 2 and experimental group 3 respectively as against 3.14 per cent in control group. Increase in nutrition knowledge scores after imparting nutrition education was found significant ($P\leq 0.01$). The findings are concurrence with the study of Kouret *al.* (2007), who reported significant improvement in knowledge, attitude and practice of adolescent girls in Solan District of Himachal Pradesh towards gain in nutrition knowledge after nutrition education. The findings of the present study are also at par with the findings of Sharma and Chawla (2005) who observed highly significant gain in nutrition knowledge of 13-14 years old school girls after imparting nutrition education.

The results of the present study revealed that all the three methods used for reducing the prevalence of anaemia and improving nutritional status of subjects were found effective in improving the nutritional status and reducing the prevalence rate of anaemia. However, among three educative methods used for educating the adolescent girls, Family counseling method showed better results followed by training cum demonstration method and creating awareness with the help of teaching aids.

IV. CONCLUSION

Provision of nutrition education had a significant impact on nutritional status and nutrition knowledge among subjects. So it can be concluded that nutrition education plays a vital role in improving the nutritional knowledge, which in turn will improve the nutritional status of the respondents. Along with the existing government programme that is, provision of iron and folic acid tablet for adolescent girls to reduce the anaemia, it is better to include the nutrition education programme along with school education in order to improve the nutritional status and reduce the prevalence of anaemia. Further, the concerned developmental departments should take steps to conduct counseling to the parents of the children as parents are more conscious of their children and

the ones who manage their children's and family's health and nutritional status which may reduce the level of anemia to some extent.

V. BIBLIOGRAPHY

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Table 1 : Distribution of subjects in different groups

Groups	Treatment	Number of subjects
Control group	School learning with Midday meal + Iron and Folic acid Tablets (given in School)	30
Experimental group – 1	Treatment given in control group +Teaching with the help of extension materials	30
Experimental group – 2	Treatment given in control group +Training and Method demonstration on enriched foods using regional foods	30
Experimental group – 3	Treatment given in control group + Family counseling	30

Table 2: Mean anthropometric measurements of subjects before and after intervention

Groups	Sample size	Height(cm.)					Mean Weight(kg.)				
		Initial	Final	Increase in Height	% increase	t values	Initial	Final	Increase in Height	% increase	t values
Control	30	148.75	150.66	1.91	1.28	1.46 ^{NS}	37.13	38.26	1.13	3.04	1.36 ^{NS}
Experimental group – 1	30	149.00	151.03	2.03	1.36	2.61 ^{**}	38.05	40.08	2.03	5.33	7.59 ^{**}
Experimental group – 2	30	147.41	149.86	2.45	1.66	3.36 ^{**}	36.66	38.90	2.24	6.10	0.0023 ^{**}
Experimental group – 3	30	147.16	149.96	2.79	1.89	9.10 ^{**}	36.66	39.60	2.94	8.10	6.50 ^{**}

NS - Non significant

** - Significant at 1 per cent level of probability

Table 3: Haemoglobin status of subjects

Haemoglobin classification	Control (N=30)		Experimental group 1(N=30)		Experimental group 2(N=30)		Experimental group 3(N=30)	
	Before	After	Before	After	Before	After	Before	After
Normal (>12g/dl)	0	0	0	3	0	2	0	3
Mild anaemia (10-11.9g/dl)	18	26	0	8	2	20	4	12
Moderate anaemia (8-9.9g/dl)	12	04	30	19	28	08	26	15
Severe anaemia (<8g/dl)	0	0	0	0	0	0	0	0

Table 4: Mean Haemoglobin level of subjects before and after intervention

Groups	Mean haemoglobin (g/dl)				
	Initial	Final	Increase in Hb level(g/dl)	% Increase	t values
Control	9.15	9.47	0.32	3.49	1.27 ^{NS}
Experimental group – 1	9.15	10.19	1.04	11.36	1.72 ^{**}
Experimental group – 2	9.15	10.21	1.06	11.58	2.84 ^{**}
Experimental group - 3	9.14	10.24	1.10	12.03	9.87 ^{**}

NS - Non significant

** - Significant at 1 per cent level of probability

Table 5: Improvement in KAP Scores of adolescent girls before and after intervention

Groups	KAP scores (%)			
	Initial	Final	% increase	t values
Control	49.06	52.2	3.14	1.39 ^{NS}
Experimental group – 1	49.40	80.93	31.53	9.39 ^{**}
Experimental group – 2	49.36	81.06	31.70	5.77 ^{**}
Experimental group – 3	49.33	82.00	32.67	6.14 ^{**}

NS-Non significant

** - Significant at 1 per cent level of probability