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THE EFFECTIVENESS OF NUTRITIVE BALL AND DRUMSTICK LEAVES EXTRACT IN IMPROVING THE HEMOGLOBIN LEVEL AMONG ADOLESCENT GIRLS WITH ANEMIA

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Abstract: This study has been undertaken to determine the effectiveness of Nutritive Ball and Drumstick leaves Extract in improving the Hemoglobin level among Adolescent Girls and to compare the effectiveness of Nutritive Ball and Drumstick leaves Extract in improving the Hemoglobin level among Adolescent Girls. Pre-experimental research Design (group I and group II experimental study) was used for the study. 60 Adolescent Girls with Anemia (divided into two groups with 30 samples each) who fulfill the inclusion criteria were selected for the study. Nutritive ball and drumstick leaves extract were administered to Group I and Group II respectively as the interventional method to improve Hemoglobin level. The finding revealed that there is significant differences between the pre-test and post-test level of hemoglobin, which indicate that there is a significant reduction in the severity of anemia after the administration of nutritive ball and drumstick leaves extract respectively to Group I and Group II adolescent girls.

Key: Nutritive ball, Drumstick Leaves Extract, Hemoglobin, Anemia, Adolescent Girls

I. INTRODUCTION

Anemia is a major health problem in India. One in every two Indian women is suffering from a form of anemia. The adolescent population is facing a series of serious nutritional challenges which are not only affecting their growth and development but also their livelihood as adults. Adolescents are becoming more independent and making many food decisions on their own. Many adolescents experience a growth spurt and an increase in appetite and need healthy foods to meet their growth needs.

Iron deficiency is lack of sufficient iron in the blood. Iron deficiency is the most common etiological factor in anemia. The decreased hemoglobin level is called as iron deficiency anemia Iron deficiency anemia will be prevented by adequate dietary intake or iron such as green leafy vegetables such as amaranth, spinach, coriander leaves, drumstick leaves, radish leaves, vegetables such as beet root, drumstick, cereals like ragi, barley, Cholam (Sorghum), rice (raw milled), legumes like Bengal gram dhal, Black gram dhal, soya bean, Nuts and oil seeds like dates, cherry, fruits such as chickoo, pomegranate and Jaggery.

3.1Population and Sample

The population of the study was the Adolescent Girls with Anemia. 60 Adolescent Girls with Anemia and living in selected villages in Dehradun and fulfills the inclusion criteria were selected, from which 30 clients each were assigned to the two experimental groups, Group I and Group II.

3.2 Data and Sources of Data

For this study, data has been collected from the two experimental groups (Group I & II) before and after the administration of intervention (Nutritive Ball & Drumstick Leaves Extract). The data includes Demographic Data of the respondents (age, religion, education, family income, diet, etc) and Hemoglobin level measured using Sahli's Hemoglobinometer.

Method of data collection

Girls aged 15 - 20 were assessed and the hemoglobin level measured using Sahli's Hemoglobinometer. 60 adolescent girls with mild to moderate anemia were selected as the study sample. The clients were divided into two groups using simple random sampling technique. A pretest was conducted for every sample on the first day before starting the intervention.

Nutritive ball and drumstick leaves extract were administered to Group I and Group II respectively as the interventional method to improve Hemoglobin level. Nutritive Ball is prepared using Soya beans, Wheat, Ragi, Jaggery, Ghee and dry fruits. 1 nutritive ball (50 gm) has been given to each participant twice a day for 30 days. 100gm of nutritive ball provide about 13.28 gm of Protein, 381.3 Kcal of Energy, and 10.25 mg of iron. Drumstick leaves extract is made from fresh drumstick leaves (100 gm) by boiling the leaves and grinds it to get a liquid which is a good source of iron.

3.4 Statistical tools

The data obtained were tabulated, analyzed and interpreted using descriptive and inferential statistics based on the objectives and hypotheses formulated for the study.

Descriptive statistics

- Frequency and percentage were used to present the demographic variables of clients as well as their hemoglobin level in study group I and II.
- Chi-square was used to find out the association between the severity of anemia among group I & Group II adolescent girls and the selected demographic variables.

Inferential statistics

- The 't' test was used to compare the pre-test and post-test mean scores and effectiveness of Nutritive Ball and Drumstick Leaves Extract in improving the hemoglobin level.

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statistics of Study Variables

Table 4.1: Descriptive Statics (Frequency and Percentage wise distribution of demographic variables of Adolescent Girls with anemia in study group I & II)

Sl. No.	Demographic Variable	Category	Group I (n=30)		Group II (n=30)	
			Frequency	Percentage	Frequency	Percentage
1	**Age**	15 – 16	12	40	10	33.3
		17 – 18	11	36.7	14	46.7
		19 - 20	7	23.3	6	20
2	**Education**	No Formal Education	2	6.7	2	6.7
		Primary School	3	10	2	6.7
		Education	18	60	20	66.7
		High School/Higher secondary	7	23.3	6	20
		Degree/Diploma				
3	**Religion**	Hindu	23	76.7	25	83.3
		Muslim	5	16.7	3	10
		Christian	2	6.7	2	6.7
4	**Family Income (Monthly) in rupees**	Less than 5000	3	10	4	13.3
		5001 – 10000	9	30	10	33.3
		10001 – 15000	12	40	11	36.7
		More than 15000	6	20	5	16.7
5	**Type of Family**	Single	18	60	16	53.3
		Joint	12	40	14	46.7
6	**Type of Diet**	Vegetarian	9	30	7	23.3
		Non-vegetarian	21	70	23	76.7
7	**Previous Treatment for Anemia**	Yes	2	6.7	3	10
		No	28	93.3	27	90
8	**Duration of Menstruation**	1 – 3 Days	3	10	4	13.3
		4 – 7 Days	21	70	18	60
		More than 7 Days	6	20	8	26.7
9	**Duration of menstrual cycle**	28 Days or Less	9	30	6	20
		29 – 35 Days	17	56.7	18	60
		More than 35 Days	4	13.3	6	20
10	**Menstrual Flow**	Heavy	6	20	7	23.3
		Moderate	21	70	19	63.3
		Scant	3	10	4	13.3

Table 4.2: Distribution of samples according to severity of anemia before and after intervention (Pre-test & Post Test)

Severity of Anemia	Category Range	Pretest				Post Test			
		GROUP I (30)		GROUP II (30)		GROUP I (30)		GROUP II (30)	
		n	%	n	%	n	%	n	%
Mild	Less than 7	21	70	22	73.3	22	73.3	22	73.3
Moderate	7.0 – 9.9	9	30	8	26.7	2	6.7	3	10
Severe	10.0 – 11.9	0	0	0	0	0	0	0	0
Non-anemic	12 and Above	0	0	0	0	6	20	5	16.7

Table 4.2 displayed the frequency and percentage wise distribution of Group I and Group II samples according to severity of anemia before and after intervention.

In group I before administering Nutritive Ball, most of the Samples 21 (70%) are having Mild Anemia and 9 (30%) are having moderate anemia, after administering Nutritive Ball most of the samples 22(73.3%) are having mild anemia 2(6.7%) are having moderate anemia and 6(20%) are non anemic and no samples had severe anemia.

In group II before administering Drumstick Leaves Extract most of the samples 23 (76.7%) are having Mild Anemia and 7(23.3%) are having moderate anemia, after administering Drumstick Leaves Extract most of the samples 22(73.3%) are having mild anemia 3(10%) are having moderate anemia and 5(16.7%) are non anemic. and no samples had severe anemia.

Figure 4.1: Bar Diagram showing Distribution of Group I & Group II samples according to the difference in mean hemoglobin level before and after administration of Nutritive Ball & Drumstick Leaves Extract respectively

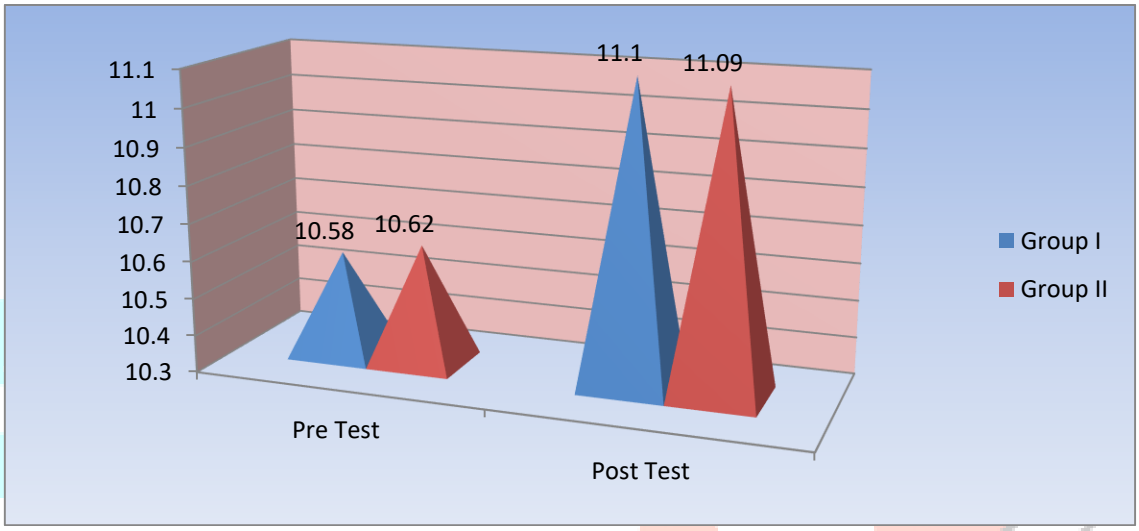

Figure 4.1 displayed the mean Hemoglobin Level of Group I & Group II samples in pre-test & post-test

In group I, the mean Hemoglobin Level in pre-test is 10.58 and in post-test it is 11.1 with the mean difference between pre test and post test is 0.52. In group II the mean Hemoglobin Level in pre-test is 10.62 and in post-test it is 11.09 with mean difference between pre test and post test is 0.5

Table 4.3: **Mean, standard deviation and‘ t’ value of severity of anemia of study group I & II (pre-test and post-test)**

Groups	Test	Samples level of Anemia		Paired ‘t’ Test	P value
		Mean	SD		
Group I (30)	Pre test	10.58	0.792	2.565*	P=0.0064
	Post test	11.1	0.788		
					P=0.011
Group II (30)	Pre test	10.62	0.763	2.344*	
	Post test	11.09	0.79		

* Significant at P <0.05

Table 4.2.1 Shows that, for group I the t-test value (t= 2.565) and p value (P = 0.0064) indicates that there is a significant difference (improvement) between the pre and post intervention values (level of anemia) among Adolescent Girls.

For group II the t-test value (t = 2.344) and p value (P = 0.011) indicates that there is a significant difference (improvement) between the pre and post intervention values (level of anemia) among Adolescent Girls.

Table 4.4 **comparison of effectiveness of Nutritive Ball and Drumstick Leaves Extract in improving Hemoglobin Level among Adolescent Girls using 't' test in study groups I and II (post-test)**

Post test	Groups	Mean	SD	F value	p value
Post test	Group 1 Group 2	11.1 11.09	0.788 0.79	0.065#	P = 0.474

Not Significant at P<0.05

Table 4.2.2shows that the t value (0.065) and p value (P = 0.474) indicates that there is no significant difference in the mean improvement in hemoglobin level among the two experimental groups of adolescent girls in post test.

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