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EFFECTIVENESS OF BEET ROOT EXTRACT ON LEVEL OF HEMOGLOBIN AND INFORMATION,EDUCATION AND COMMUNICATION (IEC) ON KNOWLEDGE AND PRACTICE ON PREVENTION OF ANEMIA AMONG STUDENTS IN MAHALASHMI COLLEGE, THIRUVALLUR DISTRICT.

Nursing Research

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ABSTRACT

The aim of the study was to evaluate the effectiveness of beet root extract on level of hemoglobin and information, education and communication(IEC) on knowledge and practice on prevention of anemia among students in Mahalashmi college, Thiruvallur district.True experimental approach with pre-test-post-test control group design were used.20 Samples were selected by using purposive sampling technique. The data were collected by structured knowledge questionnaire, observational checklist for signs and symptoms of anemia, sahli's method to estimate the level of hemoglobin, rating scale on level of satisfaction regarding administration of beetroot extract.

The findings of the study shows that the overall pretest mean score of haemoglobin was 10.04 with SD of 0.58 and the overall posttest mean score of haemoglobin was 12.67 with SD of 0.99. It showed that after the administration of beetroot juice , there was a high significant improvement in the haemoglobin level of adolescent girls with a "t"value of 17.787 at p=0.001.

The present study findings concluded that , beet root extract was effective in treating anemia and improvement of hemoglobin level among anemic students.

KEYWORDS

Anemia, Hemoglobin, Beet root extract, Information, Education, Communication, Knowledge, students.

INTRODUCTION

Anemia is a major health problem throughout the world with an annual prevalence of 400 million. The prevalence rates are higher in developing countries like India, especially affecting toddler, adolescents and early adult.It is a one of the most prevalent health issue among adult within reproductive age group. WHO has estimated that prevalence of anemia among reproductive age group is 14% in developed and 51% in developing countries while it is 65-75% in India. (Mishra P 2012, Kalaivani K 2009).

Anemia is not a specific disease, but a sign of an underlying disorder. Anemia is a condition in which Hemoglobin concentration is lower than normal, reflects presence of fewer than normal RBCs with in circulation of oxygen delivered to body tissues. (NFHS-3, 2009, Park.k 2016). Iron deficiency anemia is one of the commonest forms of anemia whose prevalence is high among reproductive age women. The main reason is excessive loss of iron or demand of iron associated with menstruation and child birth. It is a critical health concern as it effect growth, energy levels and also leads to various health problems. According to a recent region and country survey. Anaemia is one of the most common nutritional problems in many parts of the world, especially in developing countries. A major health consequence of anaemia includes impaired cognitive and physical development. Low intake of iron-rich food is a risk factor for stunting. Due to poverty, inadequate diet, pregnancy, lactation, poor educational level and poor access to health services women become an easy prey for anemia. (Bhanushali et. al. 2011).

According to **International Center for Research on Women(ICRW, 2015)** states that 58% women are having <12gm% and 1.3% are having <7gm%. In Tamil nadu, 44.8% girls are there, in that 2.1% are having severe anemia, 6.3% are having moderate anemia and 35.5% are having mild anemia. In that premenarcheal anemia are 40.7%, post menarcheal anemia are 45.2%.

STATEMENT OF THE PROBLEM.

Effectiveness of Beet Root Extract on level of hemoglobin and information, education and communication(IEC) on knowledge and practice on prevention of anemia in Mahalashmi college, Thiruvallur. district.

OBJECTIVES:

1. To assess level of hemoglobin among students in experimental and control group.
2. To assess the knowledge and practice on prevention of anemia among students in experimental and control group.
3. To determine the effectiveness of beetroot extract on level of hemoglobin among experimental group.
4. To evaluate the effectiveness of information, education and communication(IEC) on knowledge and practice on prevention of anemia among students among both groups
5. To correlate the level of hemoglobin with beetroot extract in experimental group.
6. To correlate the level of knowledge and practice on prevention of anemia with information, education and communication (IEC) among experimental and control group.
7. To associate the pre and posttest knowledge and practice score on beet root extract on anemia with selected demographic variables among both groups.

METHODOLOGY:

The Research approach used for the study was true experimental approach with pre-test-post-test control group design.The study was conducted in Mahalashmi college, Thiruvallur district By using purposive sampling technique, samples were selected for the study based on the inclusion and exclusion criteria. The study was conducted by using structured questionnaire which consists of two parts.

PART -A: It consist of five sections.

SECTION-1

Includes 15 socio demographic variables such as age, sex, religion, type of family, monthly income, number of children in the family, type of food, meals per day, Frequency of fruits intake, Intake of Green leaf vegetables, do they have anemia before, if yes, are they are taking any treatment.

SECTION-2

Includes of 13 clinical variables such as height, weight, BMI, blood pressure, age at menarche, body temperature, heart rate, menstrual cycle, nature of menstrual flow, number of days of menstrual flow , habit of consuming tea and coffee.

SECTION-3

It Includes the biophysiological approach to estimate the level of hemoglobin among students by using Sahli's hemoglobinometer method.

Hemoglobin level classified as per WHO criteria

- 12gm%-Normal(excluded in the study)
- 10-11.9%-Mild anemia
- 7-9.9%-Moderate anemia
- <7gm%-Severe anemia(excluded in the study)

SECTION-4

It contains 20 observational check list which consists of signs and symptoms of anemia with a single answer. Scoring "1" were given when the clinical symptoms were present, and scoring "0" were given when the clinical symptoms was never present. Total score of the items was "20". Maximum score was "20"and minimum score was "0".

SCORING KEY
Experienced-Yes
Never experienced-No

Interpretation score

Score	Percentage	Categories
1-7	50 and below	Mild
8-14	50-75	Moderate
15-20	Above 75	Severe

SECTION- V
This rating scale consist of 12 items which is designed to assess the level of satisfaction of students with anaemia regarding administration of beetroot extract and this assessed by the researcher after intervention.

PART-B: It contains 25 Structured questionnaire with the following items on knowledge and practice on prevention of anemia. It was measured in the terms of knowledge score. Each correct response was given a score of 'one' and a wrong answer score of 'zero'.The maximum score was 25, to interpret levels of knowledge the scores were distributed as follows:
50% and below. - Inadequate knowledge
51-75%. - Moderately adequate knowledge
Above 75%. - adequate knowledge

DATA COLLECTION PROCEDURE:
The period of data collection was about one month. The samples those had less than 12 gm/dl of hemoglobin were selected as study participants. On the first day demographic variables were collected and the level of anemia for 20 samples were selected by checking the hemoglobin level using Sahli's hemoglobinometer and signs and symptoms were assessed by using checklist.Experimental group consist 10 students and control group consist 10 students.Beetroot extract and Information, Education and communication (IEC) regarding knowledge and practice on prevention of anemia was administered to experimental group.Beetroot extract was provided, whereas Information, Education and communication regarding knowledge and practice prevention of anemia was administered to control group. Samples were visited every day in their class and made to consume Beetroot extract to the experimental group.The intervention was done continuously for 21days.On the very next day(i.e, 22ndday) hemoglobin level was checked. anemia signs and symptoms were assessed by using checklist level of satisfaction on beetroot extract administration by rating scale.A posttest was done for both experimental and control group.

RESULTS:

- The results shows that, in clinical variables majority of them had height 145-160cm(60%,50%), weight45 kg(60%,60%), body mass index between 18.5 - 24.9 (60%, 50%),body temperature 98.6-99^{0} F (90%, 80%), pulse at the rate of 72-80 pulse/min (80%, 80%), systolic blood pressure of below120 mmHg (70%,60%), diastolic blood pressure of below 80mmHg (80% 70%), age at menarche at 11yrs (50%,40%),regularity of cycle (40%, 30%), number of days for cycle more than 5 days(60%,50%),nature of menstrual flow is moderat70%,40%), consuming tea(80%,70%) and consuming coffee(20%,30%) in both control and experimental group respectively.
- **Assessment of pretest and posttest level of hemoglobin in experimental and control group**

Table –I: Frequency & percentage distribution of pre & post test level of hemoglobin in the study group & control group (N=20)

Group	Test	Mild 10 – 11.9 gm		Moderate 9 – 9.9 gm		Normal 12 gm and above	
		No	%	No	%	No	%
Experimental	Pretest	6	60	4	40		
	Post test	7	20	2	20	1	10
Control	Pretest	8	80	2	20		
	Post test	8	80	2	20		

In the study experiment group pretest hemoglobin level revealed 6(60%) have mild anemia, 4(40%) have moderate anemia, and in the posttest haemoglobin level revealed 7(70%) have mild hemoglobin level,2(20%)have moderate anemia and 1(10%) have normal hemoglobin level. And in the control group pretest haemoglobin level revealed 8(80%) have mild anemia, 2(20%) have moderate anemia, and in the posttest haemoglobin level revealed 8(80%) have mild anemia, 2(20%) have moderate anemia.(Table-I)

Table-II:Overall Mean, Standard deviation and mean difference of pre & post test level of haemoglobin in the study group and control group (N=20)

Group	Mean	Standard Deviation	SEM	Mean Difference	SED	't'	'p'
Experimental	12.67	0.99	0.5218	2.6	1.028	12.633	0.0210
Control	10.14	0.48	0.8854				

The findings unfolded that the overall posttest mean score of haemoglobin in the study group was 12.67 with SD of 0.99 and the overall posttest mean score of haemoglobin in the control group was 10.14 with SD of 0.48. It showed that after the administration of beetroot juice, there was a high significant improvement in the haemoglobin level of adolescent girls with a „t" value of 12.633 at p=0.001.

- **Assessment of pretest and posttest level of anemic symptoms in study and control group**

Table III:Frequency & Percentage Distribution of Anemic symptoms Before& After Administration of Beetroot extract in Control & Experimental Group.
N=20

Anemic symptoms	Control group n=10		Experimental group n=10	
	n	p	N	P
Before administration				
Mild	1	10	-	-
Moderate	7	70	6	60
Severe	2	20	4	40
After administration				
Mild	5	50	6	60
Moderate	4	40	4	40
Severe	1	10	-	-

The data presented in table 3 depicts that most of the students with anemia had moderate level of anemic symptoms (70%, 60%) in both control and experimental group before administration of beetroot extract. Where as majority of them experienced mild level of symptoms (50%) and significant of them experienced moderate level of symptoms (40%) in experimental group after administration of beetroot extract.

- **Assessment of Level of Satisfaction on Administration of Beetroot extract in Experimental group**

Table-IV:Frequency and Percentage Distribution of Level of Satisfaction on Administration of Beetroot extract in Experimental group
(N=10)
Experimental group

Level of satisfaction	n	P
Highly Dissatisfied	-	-
Dissatisfied	-	-
Satisfied	2	20
Highly Satisfied	8	80

The data presented in table 4depicts that majority of anemic students were highly satisfied with administration of beetroot extract (80%) and (20%) of them were satisfied with administration of beetroot extract

- **Assessment of Level of Knowledge Regarding Anemia**

Table-IV:percentage of Mean and Standard deviation of Knowledge Regarding Anemia in the Control and Experimental group
(N=20)

Group	Knowledge about anemia			Knowledge about menopausal management		
	Mean	SD	't'	Mean	SD	't'
Control	5.23	1.66	.16	5.33	1.61	.48
Experimental	5.06	1.69		5.16	1.71	

P<0.05*

The table 9 revealed that the mean, standard deviation of level of

knowledge regarding anemia and menopausal management were same (M=5.23, SD=1.66) in control and experimental group anemic girls. The difference was not statistically significant at $p<0.05$ level of confidence.

- There is a significant association between age in years, sex, age at menarche, nature of menstrual flow, habit of consuming tea and post Hemoglobin level.

CONCLUSION:

The present study findings concluded that administration of beet root extract was effective in treating symptoms of anaemia and improving Hemoglobin level among students with anemia. The study also recommends that administration of beet root extract is ore effective and can be utilised in community health setting to curb the serious health problem of iron deficiency anemia among students

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