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"EFFICACY OF BEET ROOT EXTRACT ALONG WITH JAGGERY ON IMPROVING HEMOGLOBIN LEVEL AMONG STUDENT NURSES OF SELECTED NURSING COLLEGES OF HUBBALLI, KARNATAKA."

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ABSTRACT

Title: "An experimental study to evaluate the efficacy of beet root extract along with jaggery on improving hemoglobin level among student nurses of selected nursing colleges of Hubballi." **Objectives**: To assess the hemoglobin level before administration of beet root extract along with jaggery among student nurses.To evaluate the effectiveness of beet root extract along with jaggery on improving hemoglobin level among student nurses. To find out an association between pre-test hemoglobin level of student nurses with their selected socio-demographic variables. **Methodology:** Pre-experimental; one group pre-test, post-test design Non-Probability; convenient sampling technique was used to select 20 student nurses. Data was collected by structured interview schedule which comprised of two sections. Those were: Section I: Socio demographic variables of the samples contain 7 items Section-II: Haemoglobin Estimation scale (Hb % test) and the data analysis were done using descriptive and inferential statistics. **Results:** Revealed that in pre-test, 3 (10%) had Mild anemia, 10 (50%) with moderate anemia and 07(35%) had severe anemia. In the post-test after administration of beet root extract along with jaggery the result shows that, 05(25%) had no anemia, 8(40%) had mild anemia 04(20%) had moderate anemia and 03(15%) had severe anemia. There was 22.8 % increase in hemoglobin level after administration of beet root extract along with jaggery. The calculated paired't' value (tcal = 22*) was greater than the tabulated value (ttab=2.093). Hence H1 was accepted. This indicated that the improve in hemoglobin level was statistically significant at 0.05 level of significance. Therefore, the beet root extract along with jaggery was effective to improve the hemoglobin level of subjects. **Conclusion**: Therefore, the study concluded that, the overall pre-test hemoglobin level was an average among student nurses. The post test hemoglobin level was significantly improved in the student nurses who were administered with beet root extract along with jaggery.

Key Words:
Anemia, Beetroot Extract along with jaggery, Student Nurses.

INTRODUCTION

Health has been recognized as a fundamental right to all human beings, which implies of right to good physical and mental health.[1]Female plays a vital role in contributing and preparing responsible citizen for the nation . The health of the female is an important component not only during reproductive years but also throughout her life. The health of the female focus on the physical, psychological and social needs. [2]

Inadequate nutrition during late childhood and adolescence can therefore have a significant impact on a woman's adult health and the health of her children. Under nutrition during childhood and adolescence is associated with higher risk for preterm delivery and still birth or miscarriage , women with low body mass index and/ or short statures are at increased risk for under nutrition, perinatal and neonatal mortality.[3]

Girls are more likely to be a victim due to various reasons. In a family with limited resources, the female child is more likely to be neglected. She is deprived of good food and education, and is utilized as an extra working hand to carry out the household chores, college activities and so on. Along with this the added problems may be burden of menstrual blood loss, precipitates the crises too often, which leads to decrease in Hb level.[4]

Anemia is a general term reflecting to the condition characterized by abnormally low levels of healthy red blood cells or hemoglobin. Around 50% are caused by iron deficiency anemia.[5]According to the WHO grading of anemia, hemoglobin level (Hb) between 10gm/dl to 12gm/dl is known as mild anemia, Hb level between 7gm/dl and 10gm/dl is known as moderate anemia and Hb level below 7gm/dl is known as severe anaemia.[6]

WHO stated that anemia is the most common nutritional deficiency disorder in the world, which contributes as a leading cause, complications of pregnancy and its outcome. It has estimated that the prevalence of anemia in developed countries is 14% and in the developing countries is 51%. In India the prevalence as 65-75%, about 1/3 of the global population is anemic. India has the highest prevalence of anemia and 41.8% of pregnant women worldwide are anemic. Some of the experts stated that Anemia is not a disease but actually is a condition that results in a group of symptoms such as weakness, fatigue, vertigo, dizziness, pallor, headache, ringing in the ears, headache, an inability to catch ones breath after physical exertion, and a racing or irregular heart beat. Some women are asymptomatic, but many become tired easily.[1]

The world health organization (WHO) estimates that anemia affects over 2 billion people worldwide.6According to corporate social responsibility in women health care with Federation of Obstetric and Gynecological Societies of India (FOGSI) says that about 20% of maternal death occurs due to anemia..According to National Family Health Survey (NFHS2009) has reported that a large percentage of women and children in India are anemic.[3] Anemia can be managed by iron supplements by orally or by IV infusion, exercising regularly and iron rich foods such as beetroot.[7]

Beetroot is commonly cooked, but the juice of raw beetroot contains host of health benefits and is classed as a "super food" in today"s nutritional jargon .The pigment that gives beetroot juice its rich, red and purple color is called betaine. Some of the benefits of beetroot juice are lowering blood pressure by dilating the blood vessel and relaxing smooth muscles, increasing the oxygen level, improving the stamina by decreasing the oxygen during exercise, treating anemia by increasing the blood count and improving blood circulation and oxygen carrying capacity of erythrocytes (red blood cells), preventing birth defects by folate and folic acid, preventing hypertension and stroke, cleansing intestine, reducing kidney stone, improving rheumatoid arthritis, gout sand improving menstrual problems. Beetroot juice is particularly beneficial as an anemia remedy for children and teenagers, according to H.K.Bakhru author of „food that heal".[3]

The government of Karnataka directorate of public health and preventive medicine conducted a study on prevalence of anemia among adolescent girls in the urban and rural communities. The report stated that 34.4 % of school adolescents of Karnataka state (both Urban & Rural) are anemic.5 one of the supported literature revealed that administration of 100gms of beetroot for 20 days improved 2.63gms/dl of heamoglobin in adolescent girls.[3]

Though nutritional anemia can affect any group, but it is consider that female medical and nursing students form a vulnerable population due to their hectic schedules, erratic mealtimes and long working hours while staying on hospital for majority of times. The investigator observed that there is more prevalence of anemia mainly among the nursing students. Most important is to investigate the intake of low cost iron rich diet among the nursing students, by which anemia can be prevented. So the Investigator felt the need to improve the hemoglobin level among the nursing students, for that the researcher intended to provide beetroot extract along with jaggery.

PROBLEM STATEMENT

"Efficacy of beet root extract along with jaggery on improving hemoglobin level among student nurses of selected nursing colleges of Hubballi."

OBJECTIVES OF THE STUDY

1. To assess the hemoglobin level before administration of beet root extract along with jaggery among student nurses.
2. To evaluate the effectiveness of beet root extract along with jaggery on improving hemoglobin level among student nurses.
3. To find out an association between pre-test hemoglobin level of student nurses with their selected socio-demographic variables.

HYPOTHESES

H1: There will be statistical difference in pre-test and post-test hemoglobin level of student nurses receiving beet root extract along with jaggery at 0.05 level of significance

H2: There will be statistical association between pre-test hemoglobin level of student nurses with their selected socio-demographic variables at 0.05 level of significance.

MATERIALS AND METHODS

- **Research Approach**: An evaluative approach was adopted.
- **Research design:** Pre-experimental; one group pre-test, post-test design.
- **Variables**
  - **The variables for present study were:**

- **Independent variable:** Beetroot extract along with jaggery
- **Dependent variable:** Hemoglobin level
- **socio-demographic variables:** such as age, type of family, religion, income per month, ,dietary pattern and menstrual history, history of previous anemia

➢ **Research Setting:** The present study was conducted in KLES's Institute of Nursing Sciences, Vidyanagar, Hubballi.

➢ **Sample:** In the present study, the sample consists of Student Nurses studying in KLES' Institute of Nursing Sciences, Vidyanagar, Hubballi.

➢ **Sample size:** The sample size selected for the present study was 20 Student Nurses.

➢ **Sampling Technique:** Non probability: convenient sampling technique was used to select subjects according to the sample selection criteria.

➢ **Criteria for sample selection:**

The criteria for selection of samples in this study involves:-

Inclusive criteria: Student nurses who were;

- ❖ with low haemoglobin level i.e. less than 12gm%
- ❖ Present at the time of data collection
- ❖ Willing to participate in the study

Exclusion criteria: Student nurses who were:

- ❖ Sick at the time of data collection.
- ❖ Have allergic reaction to beetroot extract and jaggery.

➢ **Tool:** structured interview schedule which comprised of two sections. They were:

- Section I: Socio demographic variables of the samples contains 7 items
- Section-II: Haemoglobin Estimation scale (Hb % test)

➢ **Procedure for data collection:** After obtaining written consent from the student nurses, The data was collected by administration of structured knowledge interview questionnaire and Haemoglobin Estimation scale.Administration of intervention (beetroot extract and jiggery).The post test was carried out 20 days later using the same tool.Data collected was then tabulated and analyzed

RESULTS

SECTION I: DISTRIBUTION OF SAMPLE CHARACTERISTICS ACCORDING TO SOCIO-DEMOGRAPHIC VARIABLES

Table No 1: Frequency and percentage distribution of subjects according to socio-demographic variables. n=20

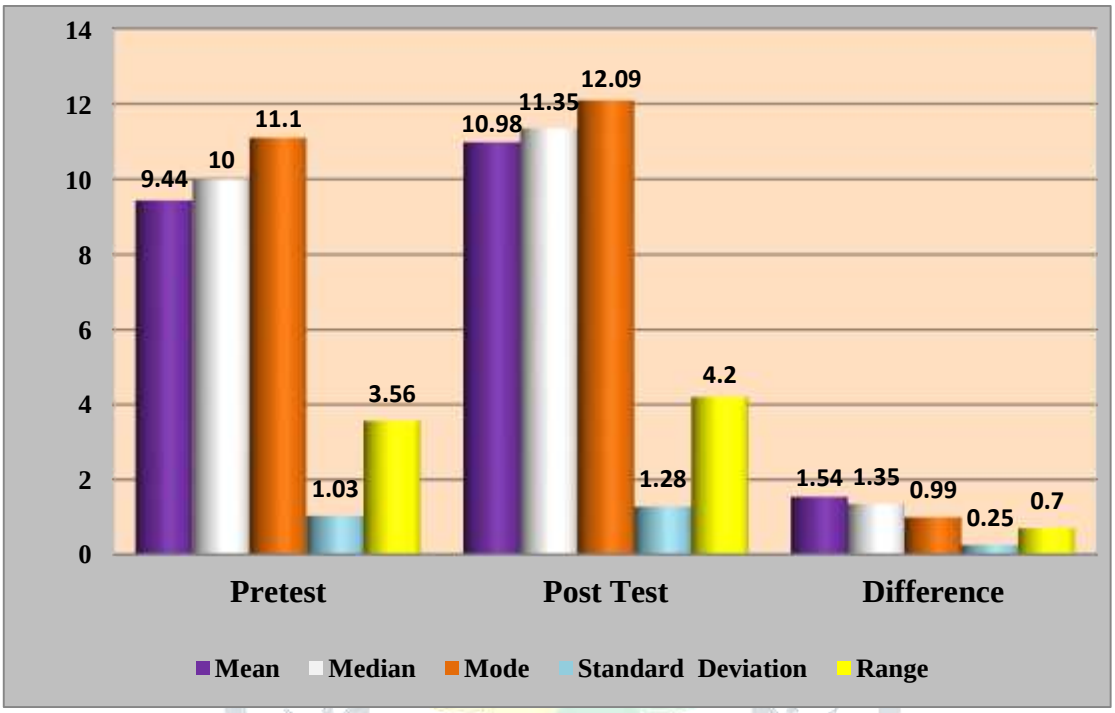
Sl. No	Demographic Variable	Frequency	Percentage
1	**Age in years**		
	a. 17-19years.	04	20
	b. 19-21 years.	08	40
	c. 21-23 years	04	20
	d. 23-25years of age.	04	20
2	**Type of family**		
	a. Nuclear family.	14	70
	b. Joint family.	06	30
	c. Extended family.	00	00
3	**Religion**		
	a. Hindu.	15	75
	b. Christian.	03	15
	c. Muslim.	02	10
	d. Others.	00	00
4	**Income per month(in Rs)**		
	a. <10,000,	06	30
	b. 10,000-20,000	07	35
	c. >20,000	07	35
5	**Dietary pattern**		
	a. Vegetarian	11	55
	b. Mixed	09	45
6	**Menstrual cycle**		
	a. Regular,	18	90
	b. Irregular menstruation.	02	10
7	**History of previous anemia**		
	a. Yes (specify treatment)	09	45

b.	No	11	55

SECTION-II: ANALYSIS AND INTERPRETATION OF HEMOGLOBIN SCORES OF SUBJECTS WHO HAVE PARTICIPATED IN THE STUDY.

Table No 2: Mean, Mode, Standard Deviation and Range and differences of hemoglobin level of subjects regarding improving hemoglobin level **n=20**

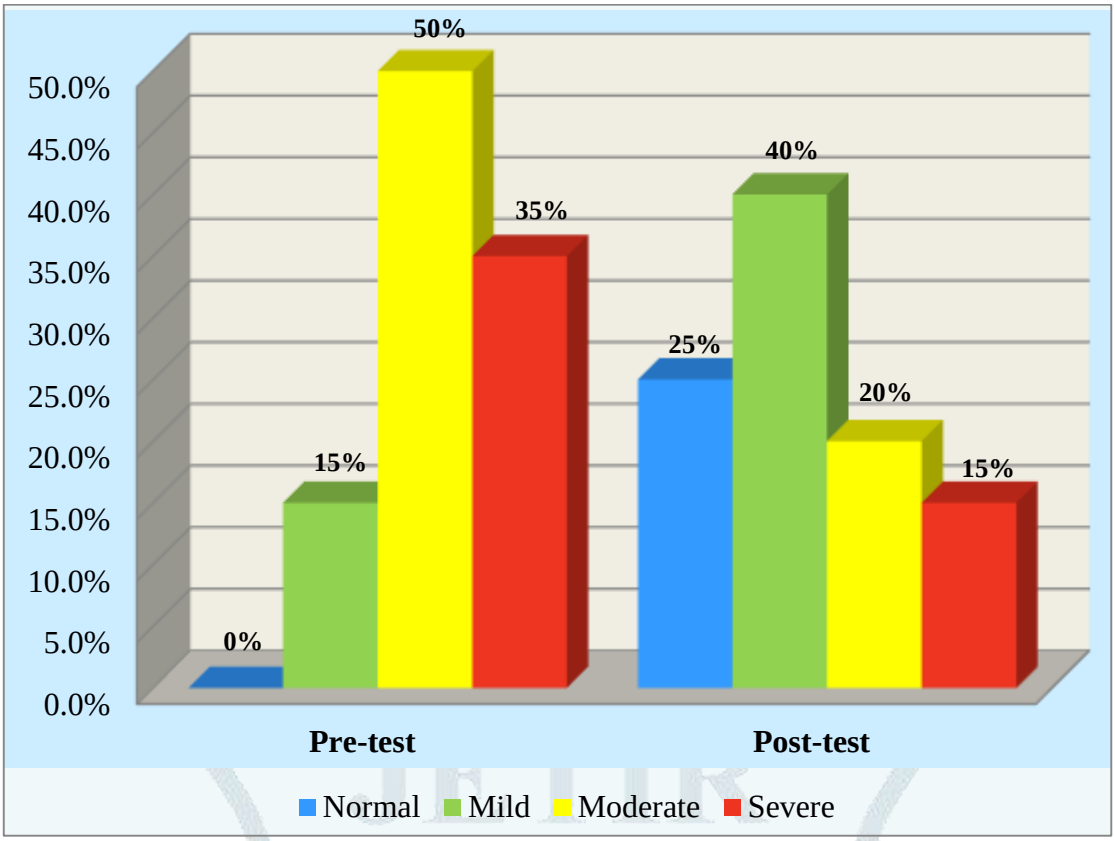
Aspects of Analysis	Mean	Median	Mode	Standard deviation	Range
Pre-test	9.44	10	11.1	1.03	3.56
Post-test	10.98	11.35	12.09	1.28	4.2
Difference	1.54	1.35	0.99	0.25	0.7



Graph 1: The column graph represents Mean, Mode, Standard Deviation and Range and differences of hemoglobin level of subjects regarding improving hemoglobin level.

Table No 3: Frequency and percentage distribution of hemoglobin level of subjects. **n=20**

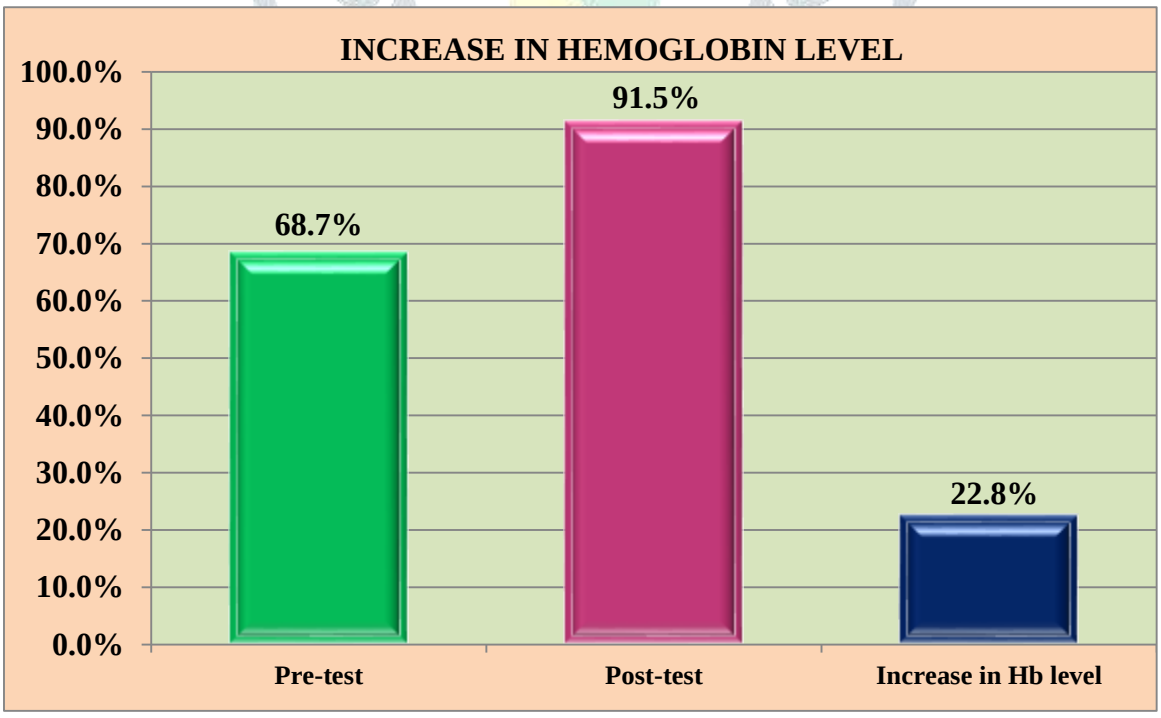
Level of hemoglobin (Degree of Anemia)	Pre-test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No anemia	00	00	05	25
Mild anemia	03	15	08	40
Moderate anemia	10	50	04	20
Severe anemia	07	35	03	15



Graph 2: The clustered cylindrical graph represents the distribution of the subjects according to their hemoglobin level

Table No 4: Pre-test, Post-test percentage of knowledge scores of subjects regarding Nutritional Practices. n=20

Items	Mean % hemoglobin levelof subjects		
	Pre-test	Post-test	Increase in hemoglobin level
Haemoglobin estimation scale	68.70	91.5	22.8



Graph 3: The column graph represents Pre-test, Post-test percentage of hemoglobin level.

SECTION III: TESTING HYPOTHESES

H_1: There will be statistical difference in pre-test and post-test hemoglobin level of student nurses receiving beet root extract along with jaggery at 0.05 level of significance.

Table No 5: mean difference (d), standard error of difference and paired't' values of hemoglobin level of subjects. n=20

Mean difference ($\bar{d}$)	Standard Error of difference ($S\bar{d}E$)	Paired 't' values	
		Calculated	Tabulated
1.54	0.07	22	2.093

Table No 5 reveals that the calculated paired't' value (t_{cal} = 22) was greater than the tabulated value (t_{tab} = 2.093). **Hence H_1 was accepted.** This indicated that the improve in hemoglobin level was statistically significant at 0.05 level of significance. Therefore, the beet root extract along with jaggery was effective to improve the hemoglobin level of subjects.

H_2: There will be statistical association between pre-test hemoglobin levels of student nurses with their selected socio-demographic variables at 0.05 level of significance.

Table No 6: Association between pre-test hemoglobin levels with their selected socio demographic variables. n=20

Sl. No	Demographic Variable	Normal	Mild	Moderate	Severe	Chi-Square		
						Cal	Tab	df
1	**Age in years**							
a.	17-19years.	-	01	03	-	5.18	16.91	9
b.	19-21 years.	-	01	03	04			
c.	21-23 years	-	01	01	02			
d.	23-25years of age.	-	-	03	-			
2	**Type of family**							
a.	Nuclear family.	-	02	07	05	0.22	12.59	6
b.	Joint family.	-	01	03	02			
c.	Extended family.	-	-	-	-			
3	**Religion**							
a.	Hindu.	-	03	07	05	1.32	16.91	9
b.	Christian.	-	-	02	01			
c.	Muslim.	-	-	01	01			
d.	Others.	-	-	-	-			
4	**Income per month(in Rs)**							
a.	<10,000,	-	01	03	02	0.42	12.59	6
b.	10,000-20,000 income group,	-	01	04	02			
c.	>20,000 income group.	-	01	03	03			
5	**Dietary pattern**							
a.	Vegetarian	-	03	05	03	3.1	7.81	3
b.	Mixed	-	-	05	04			
6	**Menstrual cycle**							
a.	Regular,	-	02	10	09	3.1	7.81	3
b.	Irregular menstruation.	-	01	-	01			
7	**History of previous anemia**							
a.	Yes (specify treatment)	-	01	04	04	2.8	7.81	3
b.	No	-	02	06	03			

The computed chi square test revealed that, There was no statistical association between pre-test hemoglobin levels of student nurses with their selected demographic variables at 0.05 level of significance. Hence, **H_2 was rejected.**

DISCUSSION

Findings related to effectiveness of beet root extract along with jaggery on improving haemoglobin level. There was a significant improve in haemoglobin level of student nurses who have administered beet root extract along with jiggery. The paired 't' test value (t_{cal} = 22) at $p<0.05$ level of significance which proved the stated hypothesis i.e. There will be statistical difference in pre-test and post-test haemoglobin level of student nurses receiving beet root extract along with jaggery at 0.05 level of significance. Hence H_1 was accepted. These findings were supported through a study conducted by Dr. N. Gayathri Priya , Mrs. M. Malarvizhi who observed that there was a significant improve in haemoglobin level after administration of beet root extract along with jiggery The calculated paired 't' value (t_{cal}=19.62) was greater than the tabulated value at $p<0.05$ level of significance and therefore beet root extract along with jaggery was effective to improve the hemoglobin level of subjects.[8]

CONCLUSION

Consuming beetroot juice is very effective and feasible drink to all. It is low cost and locally available vegetable which can affordable by all set of people. The study findings provides the statistical evidence which indicates that beetroot juice Along with jaggery is one of the best alternative therapy which may be used to improve hemoglobin level among student nurses

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