

# A Experimental Study to assess the Effectiveness of Ladoo with Beetroot on Haemoglobin Level among the 13-17 year Girls in Selected Rural Areas of Indore (M.P)

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## ABSTRACT

Adolescence is a distinct age group (13–17 years) with unique challenges. In teenage girls, ladoo with beetroot aids in the increase of haemoglobin levels. Setting for pre-test and post-test control groups: selected rural area in Indore districts Participants: 40 13-17 year girls who met the criteria for participation. The study involved adolescent females ranging in age from 13 to 17 years old, with experimental groups of 20 and control groups of 20. Methods: The experimental group included 20 adolescent females, while the control group included 20 13-17 year girls picked at random. The quantity of anaemia was determined using a simple random sampling approach using Sahli's haemoglobin metre. According to the data, the majority of the 13-17 year girls in the Experimental group had 0(0 percent) level of anaemia in the pre-test, normal level, mild level, and severe level out of 40 samples. and every single one of them was anaemic to a moderate degree. In the control group, the majority of the adolescent females had a normal, mild, or severe level of anaemia, whereas in the experimental group, the majority of the 13-17 year girls had a normal, mild, or severe level of anaemia. and every single one of them was anaemic to a moderate degree. In the Experimental group, 15 of the adolescent girls' haemoglobin levels are normal, 5 are mildly anaemic, 0(0 percent) are not moderately anaemic, and 0(0 percent) are not severely anaemic at post-test. 0 (zero percent) of those in the control group are not. Conclusion: After receiving hemonutri balls, adolescent females' haemoglobin levels improved. Clinical applications include giving Ladoo with beetroot to 13-17 year girls who have low haemoglobin levels to prevent anaemia. Since of its high iron and vitamin C content, ladoo with beetroot is considered the most effective home remedy for anaemia because it regenerates and reacts red blood cells, supplying fresh oxygen to the body and continually increasing blood count.

**Keywords:** M.P. - Madhyapradesh, Hb- Hb

## 1 Introduction

Adolescence begins when secondary sex features appear and ends when physical development is complete and the individual is psychologically competent and capable of contributing to society. They make up about a fifth of India's population. In India, socio-demographic variables that may contribute to malnutrition in the 16 to 19 year old age range (late adolescence) are considered. Nutritional programmes have been undertaken in several countries, including India, to boost adolescent nutrition. Adolescent nutrition is important since a person's nutritional and dietary needs fluctuate as they get older. Adolescence is a time when a person's dietary needs increase. The body requires more calories and vital nutrients including protein, calcium, iron, and foliate throughout puberty.

The main causes of iron deficiency anaemia in teenage females include low iron intake, poor absorption, worm infestation, increasing body demand, and menstruation. Pallor of the eyes, irritability, fatigue, husky voice, loss of appetite, desire for solid substance (pica), ice (pagophagia),

or clay (geophagia), nails that are dry, brittle, concave, angular stomatitis, irritation of the tongue, sore mouth, difficulty swallowing, breathing difficulty due to decreased oxygen carrying capacity of the blood, and it also affects the immune system are signs and symptoms of iron deficiency an Iron deficiency anaemia is a prominent concern for teenage females due to an increase in blood volume and muscle mass.

Hence the investigator felt that the occurrence of alteration in the Hb level occurs among the adolescent group especially in girls Therefore the present study was to examine effectiveness of Ladoo with beetroot on Hb level among 13-17 year girls in a particular rural area.

## 2 Objectives

### Objectives of study

- To assess the pre-test level of Hb level among the 13-17 year girls in experimental group and control group.
- To assess the post- test level of Hb level among the 13-17 year girls in experimental group and control group
- To evaluate the effectiveness of Ladoo with

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beetroot on haemoglobin level among 13-17 year girls in experimental group and control group.

- To find out the association between the post-test level of haemoglobin among 13-17 year girls with their selected demographic variables in experimental and control group.

**Hypothesis**

- RH<sub>1</sub>: There is a significant effectiveness of Ladoo with beetroot on haemoglobin level among adolescent girls.
- RH<sub>2</sub>: There is a significant association between the post-test levels of haemoglobin with their selected demographic variables.

**Study Design**

Pre - experimental pre-test, post-test control group research design is used.

**Diagrammatic presentation of the research design**

Randomly Selected Samples	Pre-test	Intervention	Post-test
Experimental group	O1	X	O2
Control group	O3	-	O4

O<sub>1</sub>-Pre-test

O<sub>2</sub>-Post-test

X-Administration of Ladoo with beetroot

O<sub>3</sub>-Pre-test

O<sub>4</sub>- Post-test

**Sample and Setting**

Totally 40 Adolescent girls.

1. Experimental group : 20 adolescent girls
2. Control group : 20 adolescent girls

**Inclusion Criteria and Exclusion Criteria**

**Inclusion Criteria**

**Adolescent girls:**

1. who are in the age group of 13-17 years
2. who are with the haemoglobin level with moderate level (i.e) 8-10.9mg/dl
3. who are available at the time of data collection
4. Who can understand, read hindi or English.
5. Who are willing to participate in the study?

**Exclusion Criteria**

1. Who are in the age group of below 13 years and above 17 years..
2. Who are with the history of menorrhagia.
3. Who are in normal, mild and severe anaemia.
4. Who are under the treatment of anaemia.

**3 Tool and Data Collection**

Tool used in the study is structured knowledge questionnaire. It consisted of two parts:

**Section A:** Demographic variables such as Age, Religion, Educational status of the father, and mother, Food pattern, Family income per month, Duration of menstruation and menstrual cycle.

**Section B:** Assessment of haemoglobin level by Sallie’s haemoglobin meter

**Salli’S Haemoglobin meter**

Hb level on first day	Hb level after 30 days

**Table 2 Scoring for Anaemia**

No	Level of Anaemia	Score / mg/dl
1	No	> than 12
2	Mild	11-11.9
3	Moderate	8-10.9m
4	Severe	< than 8

**4 Data collection procedure**

**Pre-test:** 13-17 year girls aged between 13-17 years were divided into 2 groups as experimental group and control group. Informed consent was obtained from the 13-17 year girls who fulfilled the criteria. On the 1<sup>st</sup> day the haemoglobin level was checked for based on Probability Simple Random Sampling Technique by (Lottery method).he researcher found the sample for experimental and control group with moderate level of anaemia (8-10.9mg/dl). By 2<sup>nd</sup> day the Demographic data were collected from the 13-17 year girls of both the experimental and control group and beetroot ladoo ball should be provided to experimental group only.

**5 Implementation**

From 2<sup>nd</sup> day-31<sup>st</sup> day, 100 gram of Ladoo with beetroot ball With Vit-C was given daily for about 30 days for experimental group in morning and evening time. All 20 13-17 year girls were consumed Ladoo with beetroot in the presence of investigator. **Post-test:** After 30 days, post Haemoglobin level was checked for both the groups and values were recorded.

**6 Result and Interpretation**

Age in Experimental group, 3(15.00%) of them belonged to the age group of 13-14 years, 09(45%) of them belonged to the age group of 15-16 years, and 8(40.00%) were in the age group of 17-18 years. In Control group 4(20%) of them belonged to the age group of 13-14 years, 8(40%) were in the age group of 15-16 years and 8(40%) were in the age group of 17-18 years, Distribution of religion shows that in experimental group 14(70%) of the

adolescents girls were Hindu, 2(10%) of the 13-17 year girls were Christian, 4(20%), of the 13-17 year girls were not Muslim, 0(0%), of them are nothing. In Control group 13(65%) of the 13-17 year girls were Hindu, 01(05%) of the 13-17 year girls were Christian and 6(30%) of the 13-17 year girls were not Muslim, 0(0%) of them are nothing.

Distribution of their Educational status of father in Experimental group, 03(15%) of them were in Non formal education, 11(55%) of them were in Primary education, 4(20%) of them were in Secondary education, 0(0%) of them are Graduate and above. In Control group 03(15%), of them were in Non formal education, 8(40%) of them were in Primary education, 7(35%), of them were in Secondary education, 2(10%) of them were Graduate and above. Distribution of their Educational status of mother in Experimental group, 9(45%) of them were in Non formal education, 7(35%), of them were in Primary education, 4(20%), of them were in Secondary education, 0(0%) of them are Graduate and above. In Control group 6 (30%), of them were in Non formal education, 10(50%), of them were in Primary education, 4(20%), of them were in Secondary education, 0(0%) of them were Graduate and above. Distribution of their Food Pattern in Experimental group, 9(45%) of them were vegetarian, 11(55%), of them were Non vegetarian. In Control group 8(40%), of them were vegetarian, 12(60%) of them were Non vegetarian. Distribution of their Family income per month in Experimental group, 06(30%) of them had income of Rs 1001-5000, 9(45%) of them does not have the income of Rs 5001-10000, and 5(25%) of them had income of Above Rs10001. In Control group 5(25%) of them had income of Rs 1001-5000, 08(40%) of them had income of Rs 5001-10000, 7(35%) of them had the income of Above Rs 10000. Distribution of Menstrual cycle in Experimental group, 08(40%) of them had Regular menstrual cycle, 12(60%) of them had irregular menstrual cycle. In Control group 09(45%) of them had Regular menstrual cycle and 11(55%) of them had irregular menstrual cycle.

Distribution of Duration of menstruation in Experimental group, 05(25%) of them were having menstruation pattern as 3days/month, 08(40%) of them had 5 days/month as menstruation pattern and 7(35%) of them had 5 days above/month as menstruation pattern. In Control group 4(20%) of them had 3days/month as menstruation pattern, 09(45%) of them had 5days/month as menstruation pattern, and 7 (35%) of them had above 5 days/month as menstruation pattern.

**Objective 1: To assess the pre-test level and post-test level of Haemoglobin among the 13-17 year girls in experimental group and control group.**

a) Frequency and percentage distribution of pre-test level of the 13-17 year girls in experimental and control group

**Experimental group:**

**Pre-test**

- 100% of them are having moderate anaemia

**Post-test**

- 75% of them are not having a anaemia
- 25% of them are having mild anaemia

**Control group:**

**Pre-Test**

- 100% of them are having moderate anaemia

**Post-test**

- 45% of them are in mild anaemia
- 55% of them are in moderate anaemia

**Hypothesis1:** There is a significant difference in the level of Haemoglobin among 13-17 year girls between experimental and control group. **So hypothesis H<sub>1</sub> is accepted.**

**Objective 2: To evaluate the effectiveness of Ladoo with beetroot on Haemoglobin level among 13-17 year girls in experimental group**

a) Paired „t“ value of pre-test and post-test level of haemoglobin of the 13-17 year girls in experimental group and control group

Paired “t” test value calculated to analyze the difference in pre-test and post-test of haemoglobin.

- The paired “t” test value was 59.08 in experimental group for level of haemoglobin.

The paired “t” test value was 8.06 in control group for level of haemoglobin.

b) Unpaired t” value of post test scores of haemoglobin of the 13-17 year girls in experimental group and control group

Unpaired „t“ test value calculated to analyze the difference in post-test of haemoglobin.

- The unpaired, „t“ test value was 9.45 in post- test levels of haemoglobin in experimental and control group.

When compared to table value ( $P < 0.05$ ) it was high. Hence it can be concluded that there is a significant difference between post-test levels of haemoglobin. It seems that Ladoo with beetroot was effective for experimental group.

c) **Comparison of mean, standard deviation and percentage of pre and post-test level of haemoglobin**

➤ **Pre-test Mean, Standard Deviation for Level of Haemoglobin in Experimental Group and Control Group.**

- In experimental group the level of haemoglobin mean was 10, Standard deviation was 0.5343.
- In control group the level of haemoglobin mean was 10, Standard deviation was 0.9343.

➤ **Post-test Mean, Standard Deviation for Level of Haemoglobin in Experimental Group and Control Group.**

- In experimental group the level of haemoglobin mean was 12, Standard deviation was 0.6533
- In control group the level of haemoglobin mean was 10, Standard deviation was 1.0871

**d) Mean difference of pre-test and post-test levels of haemoglobin among experimental and control group**

- In Experimental group the level of haemoglobin, the difference in mean was 0.0528.
- In Control group the level of haemoglobin, the difference in mean was 0.4338.

**Hypothesis2:** There is a significant difference between the effectiveness of Hemonutri ball on haemoglobin level among 13-17 year girls in experimental group than control group. **So the hypothesis  $H_2$  is accepted.**

**Objective 3: To find out the association between the post-test level of Haemoglobin among 13-17 year girls with their selected demographic variables in experimental and control group.**

**a) Association between the post-test level of Haemoglobin among 13-17 year girls with their selected demographic variables in experimental group**

Chi-square values that there was a significant association between post-test level of haemoglobin of Experimental group when associated with demographic variables of Age, Food pattern, Family income per month, Menstrual cycle and Duration of menstruation ( $P < 0.05$ ). Thus it can be interpreted that the difference in mean scores related to Age, Food pattern, Family income per month, menstrual cycle and Duration of menstruation were true difference.

However there was no significant association was found between post-test level of Haemoglobin with the demographic variables such as Religion, Educational status of father and Educational status of mother ( $P > 0.05$ ). Hence it can interpret the difference in mean scores related to demographic variables were only by chance and not true difference.

## 7 Conclusion and Summary

The above study can be done on large scale taking the women of the reproductive age so that the health status of the people can be improved to a great extent.

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