

# EFFECTIVENESS OF IRON SUPPLEMENTS ON HAEMOGLOBIN LEVEL A LITRETURE REVIEW.

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## Abstract:

### Background

Human passes through different stages in life, like infant, children, adolescent, adult, and older. Adolescent is a period of life where number of changes takes place. The adolescent age is between 12-18 years. Anaemia is a condition due to an supply of unhealthy red blood cells, the volume of packed RBCs or the quantity of haemoglobin. Anaemia is caused in one of three ways: high construction of unhealthy Red Blood Cells, Augmented RBCs destruction and blood loss. There are various kind of anaemia like aplastic anaemia, megaloblastic anaemia, haemolytic anaemia, iron deficiency anaemia, sickle cell anaemia.

**Goal:** To promote healthier dietary intake.

### Objectives:

- To systematically assess the data of Effectiveness of Ragi balls on haemoglobin level.
- To assess other nutritional interventions effects on haemoglobin level.

**Material and Methods:** PubMed, Research gate, PubMed, Research gate, The Journal of Nutrition Community and International Nutrition. International Development Research centre , Association of Food Scientists & Technologists (India), International Journal of Community Medicine and Public Health, database were used to search the literature. The major study characteristics were extracted i.e. Study design, study year etc.

**Results:** Among selected all 5 studies it is identified that iron supplements influence on haemoglobin level. An average improvement of the Haemoglobin level across the study was increased mean of 1.2g/dl whereas ragi showed improvement 12.54 g% haemoglobin level.

**Conclusion:** Ragi and other Iron supplements (poha ladoo) significantly influence on haemoglobin level.

**KEY WORDS:** *Ragi, finger millet, Haemoglobin, Anaemia*

## 1.INTRODUCTION

Anaemia occurs by lower erythrocyte construction which results to low haemoglobin fusion. The haem in haemoglobin is two third of total iron in the body. Iron is vanished by long-lasting blood loss & extreme Menstruation. If deposited iron is not exchanged, haemoglobin construction is abridged results in lack of anaemia. The anaemic younger women raise in grown-up females with negotiated progress. According to NRHM(2013) statuses sixty nine percentage younger women among fifteen to seventeen age group having anaemia and it is high in rural community in India. Among the countries, India is one of highest prevalence of iron deficiency. So, for prevention of anaemia iron supplements are given as a nutritional intervention for improving haemoglobin level.

## 2. METHOD

### LITRERATURE SEARCH AND METHOD

A literature search was performed in the following electronic database: PubMed, Research gate, The Journal of Nutrition Community and International Nutrition. Journal for ready to eat food, International Development Research centre , Association of Food Scientists & Technologists (India), International Journal of Community Medicine and Public Health, for all publications up to 2013 to 2019..

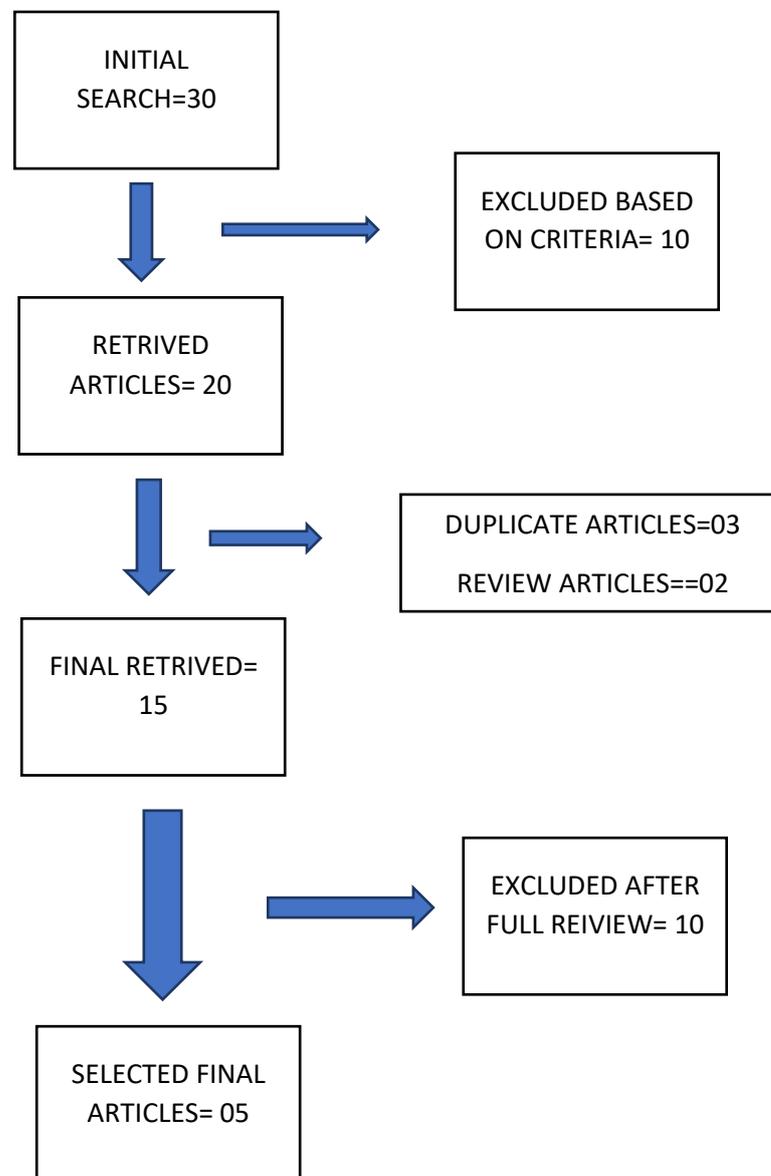
### INCLUSION CRITERIA

- Studies are included only if the data related to adolescent girls are included, Studies which are published after year 2000.All publication up to Oct. 2019or All studies included which nutritional interventions effects on haemoglobin level.

### EXCLUSION CRITERIA

- Studies excluded other than out of Asian countries, Studies related to pregnant women are excluded, Studies that were not related to anaemia are excluded, Studies related to Malnutrition children are excluded, Studies related to older people are excluded or Studies which shows effects on other than haemoglobin level are excluded. Unpublished articles are excluded.

### SEARCH OUTCOME



### 3.RESULTS

#### Identification of Studies

The following flow chart showing the systematic selection process of the studies. Through the initial search 30 studies were identified, then 10 studies were excluded according to the inclusion criteria. After the 20 studies were retrieved, in that 03 studies were duplicate and 02 studies were review based articles. Finally retrieved 15 studies and 10 studies excluded after final review accordingly, 05 studies saw the addition standards and were added in the review of literature.

#### Features of added studies

Study title /Author	Study conducted year	Location & setting	Study design	Sample size	Other Attributes	Iron Supplements	Major Findings
Suja karkada /Beneficial effect of ragi on haematological parameter <sup>(1)</sup>	2018	Manipal University, India	Quasi experimental study	30	Adolescent girls	Ragi porridage	There was mean hb level rise statistically important in experimental group on 90 <sup>th</sup> day t (29) = 7.514, p < 0001 the haemoglobin increase in the experimental group on 1 <sup>st</sup> day mean of 11.3g% and on last 90th day 12.54g%
Malathi Durgaraj, Gurumurthy /Dehulled small millets; improving nutrition of children <sup>(2)</sup>	2019	Madurai, India.	Quasi experimental study	60	Primary school children Age group – 4-6 years	Multi millet health mixture	The hb level increase by increased by 9.25g/dl in intervention group or in control group increased 8.89g/dl. In experimental group Mean difference 0.54 or t value 6.85 In experimental group Mean difference 0.26 or t value 10.625 <sup>(2)</sup>
Yogita K Sanap /Effect of supplementation of poha ladoon hb level <sup>(3)</sup>	2014	Nagpur, Maharashtra, India	Quasi Experimental study	45	Adolescent girls 13-16 years	Poha ladoo	The study with respect to haemoglobin level showed a increase in haemoglobin level by 2.3 g/dL after supplementation of 100 gm Poha Ladoo. (Normal diet + Poha Ladoo) indicated 41 % change in haemoglobin level of girls taken as subject. Mean haemoglobin level (g/dl) Pre 5.6 Post 7.9 <sup>(3)</sup>
Rajvi Mehta /Effectiveness of iron supplement bars to lessen anaemia <sup>(4)</sup>	2016	Maharashtra, India	Cluster Randomised control trial	22	women (age 18–35 y)	Iron supplement bar	Effect of intervention was accomplished on nineteenth day where odds ratio anaemia for the experimental arm linked with the controller arm was expected to be ,in control arm 1% (OR: 0.007; 95% CI: 0.001,00.04; P , 0.001),

							Mean SD haemoglobin concentration $10.5 \pm 1.3$ g/dL and $10.5 \pm 1.2$ g/dl in experimental personnels.
Julia L. Finkelstein School children hav randomized tril of biofortified pearlmillet	2014	Maharashtra	Randomised control trial	212	School-going children (twelve to sixteen years)	Pearl millet	The children who are iron deficient significant increase in serum ferretin from zero to middle ( $P < 0.01$ ) and zero to end line $P < 0.03$ . Median change on Serum Ferritin is 5.7 mg/L on the intervention personnels or in control group 1.2mg/L $P < 0.05$ Total Body Iron arised by 0.8 mg/kg on the intervention personnels or in conrol group there in no alteration in same period . Haemoglobin Class interval – { -1,0,2.0} p value = 0.41 RR(95% CI) – 1.78(0.75,4.21) <sup>(5)</sup>

#### 4.DISCUSSION

This literature review summarizes the data that ragi was effective in increasing haemoglobin level. By this literature reviewing, study by Suja karkada (2018) major findings were haemoglobin increased on group which having involvement on first day 11.3g% to 12.54g% on last day of nineteen days of study. another study by Malathi Durgaraj (2019) reveals that the value of mean of haemoglobin of sample increased by 9.25g/dl in group of study was increase 8.89g/dl. In other study Yogita K Sanap (2014) reveals that the study with respect to haemoglobin level showed an increase in haemoglobin level by 2.3 g/dL after supplementation of 100 gm Poha Ladoo. In another study Rajvi Mehta (2016) reveals that Mean SD haemoglobin concentration  $10.5 \pm 1.3$  g/dL or  $10.5 \pm 1.2$ g/dl. Julia L. Finkelstein (2016) suggests that The median change in Serum Ferritin 5.7mg/L results in study group whereas  $p > 0.05$ .

#### 5.CONCLUSION

In conclusion, it is identified that iron supplements was an uncomplicated, painless, attainable, and proven intervention to increase haemoglobin level. Its Affordability will support to the anaemic girls when there is Allopathic remedies is not used as first substitute. This systematic review exhibited that consuming iron supplements significantly influence on haemoglobin level.

#### 6.IMPLICATION TO NURSING PRACTICE

Nursing care includes preventive, promotive, curative and rehabilitative services. There are many new initiative in nutritive dietary supplements, which would help in improving haemoglobin level among adolescent girls and pregnant mothers such as Ragi , Multimillet mix, Iron supplement bar, Poha ladoo, Pearl millet.

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