

# Impact of Multigrain Panjiri Supplementation in Malnourished Women: A Critical Study

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**Abstract** - Interest in nutrition has worldwide acknowledgment since it is significant for human turn of events. Powerlessness to contamination and in the long run decreased usefulness is associated with nutritional lacks. Human turn of events, controlling destitution and monetary improvement are reliant upon great nutrition. The current study was attempted to evaluate the viability of gathering based supplementation of soya multigrain panjiri. In this two randomized gathering plan, exploratory and control bunch comprises of 80 female women experiencing anemia. The subjects having a place with exploratory gathering were given supplementation of soya multigrain panjiri for quite some time. The hemoglobin assessment was finished by cyanmethemoglobin strategy. When of subjects was recorded before the initiation of study as well as following three months of study period. The outcome uncovers that hemoglobin levels of pale patient having a place with test bunch has expanded essentially when contrasted with their partner having a place with control bunch. It was concluded that dietary supplementation given to pallid women as soya multigrain panjiri is valuable in helping their hemoglobin levels.

**Keywords** - supplementation, multigrain

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## 1. INTRODUCTION

Interest in nutrition has worldwide acknowledgment since it is significant for human turn of events. Helplessness to contamination and in the long run diminished usefulness is associated with nutritional inadequacies. Human turn of events, controlling destitution and monetary improvement are subject to great nutrition.

At the point when body can't assimilate or get important measure of supplement from food, nutritional lack happens. Nutritional lack can prompt an assortment of health issues. One of the most predominant and far reaching nutritional lack is considered as lack of iron. It causes weariness, shortcoming and many ailments.

## MALNUTRITION

Around the world human local area is confronting the test of malnutrition. The state of malnutrition is influencing one out of three individuals in advanced climate. Malnutrition might be unfortunate kid development and advancement a lot of body weight or underweight or the people who are insufficient as far as significant nutrients and minerals. Malnutrition alongside diet is one of the significant gamble factor for weight of infections worldwide.

Weight list is for the most part considered as a file of wellness. It is a valuable strategy to assess health status of individual. A grown-up Person with BMI of 18.5 or lower is viewed as underweight. Weight list and other related data, for example, anemia then, at that point, are utilized to survey malnutrition.

Malnourishment can be clarified as absence of sustenance either by lacking food admission or some ailment. At the point when digestion of body is capable then malnutrition is sickness related. Principally all around the world malnutrition is because of neediness. At the end of the day malnutrition is the aftereffect of dietary issue, lopsided eating routine that needed more supplements. The term malnutrition by and large means nutritional lack which incorporates under nutrition also micronutrient inadequacies however it really alludes to nutritional abundance.

Malnutrition is frequently associated with mental variable, for example, wretchedness and tension to physiological issues like weariness. Malnutrition can likewise be dependable in insufficient muscle working. In women of regenerative age, low muscle versus fat or low BMI might influence their chemical capacity and imagining.

Malnutrition among women of regenerative age is a not kidding issue due to it influence them as well as. A malnourished women is in significant likelihood brings forth a youngster who is malnourished too. This makes the pattern of malnourishment be helped out through ages.

As per Global Nutrition Report, 2017, India is positioned one to the extent that number of frail women between the age gathering of 15 to 49 years.

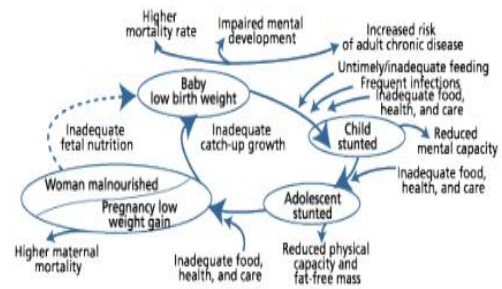
Moms are critical to kids and families yet frequently they disregard their own health. This disregard results in under nutrition. A few investigations have recorded the weakness of women towards malnutrition during regenerative age. [Tinker et al., 1995] Body Mass Index (BMI or the proportion of weight-for-tallness) of a sizeable extent of women for example 23% and men 20% in the age bunch 15-49 is viewed as falling underneath the norm.[ NFHS - 4. 2015-16] In Chhattisgarh 26.7% women and 24.1 men were under supported while 11.9% and 10.2% women and men were overweight. Taking everything into account 47% women and 22.2 percent men were pallid .

**(A) Nutrition and Women Health**

- Women are in greater probability to experience the ill effects of nutritional lacks when contrasted with men.
- Around half of pregnant women world over are weak separated from 120 million underweight women in generally lesser created nations on the planet.
- Increment event of disease and mortality can be ascribed to odd weight (under weight) which additionally influence effectiveness of women.
- Particularly in South Asia 60% women are weak as announced by Administrative Committee on Coordination (ACC)/Sub-Committee on Nutrition (SCN) and International Food Policy Research Institute (IFPRI), 2003.
- Normal event of hindering is likewise seen in underweight women. Hindering causes different complexities during conveyance and it might actually bring about death of mother and new conceived.

Despite the fact that endeavors are continuing internationally to resolve the issue of malnutrition in women, it is likewise a fact that laziness and sorrow brought about by lack of iron are disregarded as expected or irrelevant. This raises the issue of malnutrition. It has been know since ages that offspring of malnourished mother face issues, for example, mental disability, debilitated actual

development and more inclined to contaminations. Figure 1 shows the existence cycle during unfortunate nutrition

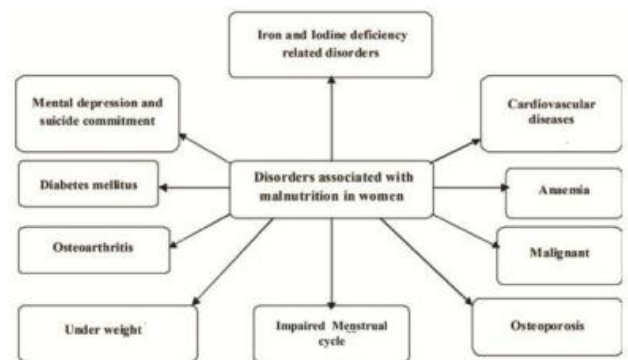


**Figure 1: Poor Nutrition - Life Cycle**

Source : ACC/SCN-appointed Commission on the Nutrition Challenges of the 21st Century

**(B) Disorders Associated with Malnutrition in Women**

Disorders associated with malnutrition in women are presented in figure 2.



**Figure 2: Disorders Associated with Malnutrition**

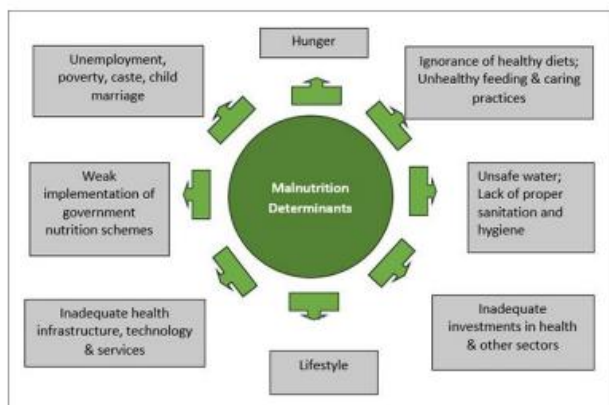
The major disorders associated with malnutrition in women are as under :

- Iron and iodine deficiency related disorders (Dharmalingam et al., 2018)
- Mental depression and suicide commitment (Bohra et al., 2015)
- Diabetes mellitus (Massé et al., 2010)
- Osteoarthritis (Pecina et al., 2016)
- Under weight (Dharmalingam et al., 2010)
- Impaired menstrual cycle (Halder et al., 2015)
- Anemia (Girija 2008)

- Malignancy (Gadomska et al. 2005)
- Osteoporosis (Pecina 2016)
- Cardiovascular disease (Krishnan 2012)

**(C) Factors Responsible for Malnutrition**

Figure 3 shows the factors responsible for malnutrition.



**Figure 3: Factors Responsible for Malnutrition**

Source :

<https://www.unicef.org/nutrition/training/2.5/4.html>

**ANEMIA**

One of the minerals for example iron is liable for smooth working of some of body part. As a piece of hemoglobin it transport oxygen from lungs to human cells. It is a fundamental essential of our body.

Places for Disease Control and Prevention characterized it as a condition happens because of diminished degree of iron in the body.

Iron is a significant supporter with regards to improvement of hemoglobin by erythroblasts. Whenever iron stockpile is insufficient or not ordinary, the hemoglobin creation obstructs and number of red platelets in our body diminishes. (Milman, 2018). The condition is known as anemia.

Normal reason for anemia is lack of iron. Iron is significant part of hemoglobin and it is crucial of its appropriate working.

Blood misfortune because of a few ailments might exhaust iron store and significant reason for low iron levels in body. Subsequently anemia because of low degrees of lack of iron is called iron anemia.

Young ladies are more inclined to foster lack of iron anemia. This might be because of the deficiency of blood during ordinary monthly cycle. Typical monthly cycle additionally cause lack of iron anemia. The

side effects are irrelevant in light of the fact that blood misfortune is in tiny sum.

Medicinally low hemoglobin worth of under 12.0 gram/100 ml in women is considered as anemia. Low hemoglobin is because of low red platelet counts with diminished hematocrit.

Iron is liable for around 35% of preventable low birth weight: Because less iron is moved from weak moms to their hatchlings, infants are in danger of lack of iron and anemia right off the bat in outset. Babies brought into the world to moms with anemia are at more serious gamble of low birth weight, untimely birth, and disabled mental turn of events.

Non-industrial nations notice more occurrence of lack of iron anemia with females and youngsters are bound to experience the ill effects of IDA. The physiological factors demonstrate more serious gamble in women, all things considered. Siddiqui and Siddiqui (2008) detailed higher rates near half among pregnant women to be experiencing lack of iron anemia separated from 44% non pregnant women. They likewise revealed that pre-school and younger students are additionally seriously impacted by lack of iron anemia.

It's obviously true that pervasiveness of nutritional lack in the structure lack of iron and anemia is high world over. Human

Hemoglobin is delivered by the utilization of iron. Protein is answerable for transportation of oxygen from lungs to various pieces of body which is achieved by circulatory system.

**MULTIGRAIN PANJIR**

Overall terms portion containing a few kinds of grains is called multigrain. This recognizes entire grain breads from multigrain. Multigrain can incorporate oats, wheat, millet, flex and so on and there is no aggregate rundown of grain which is utilized to get ready multigrain. It might be said item with at least two grains might be delegated multigrain. The course of arrangement isn't pertinent, all things considered. Panjiri is a conventional occasional staple from Punjab area utilized as nutritional enhancement.

It is ready by entire wheat flour singed in sugar and ghee with loads of dry products of the soil. Today panjiri is ready and appropriated as Prasad. It is additionally served to new moms.

Dry organic product, dhaniya, methi and semolina panjiri are a few varieties of essential panjiri. The veritable panjiri is loaded with ghee and feels like wet sand.

The elements of multigrain panjiri arranged for the current study was soyabean, wheat flour, dark sesame seed, finger millet (ragi), jaggery and ghee.

The nutritional viewpoint and health benefits of every one of the fixing are portrayed momentarily.

**(A) Soyabean**

The soybean United States is called soya bean in Europe (Glycine max). It is a types of vegetables of East Asia. It is delegated oilseed by UN Food and Agriculture Organization. In south East Asia, it has been utilized an alternative for creature protein.

Soybean is a wonder bean and it contains around 43.2 percent great quality protein with least soaked fat alongside 21% starch (Gopalan et al., 2019). Soybean is additionally a decent wellspring of minerals and nutrients.

As indicated by American Soybean Association (2004) it has around 18% of oil when contrasted with different oilseeds which contain around 40-half of oil. Among plant protein amino corrosive profile of soy protein is truly outstanding. Soybean is better than other plant protein because of its lavishness in amino acids with methionine being the special case.

According to study by Mirrahimi et al., 2018 soy protein can bring down the degrees of serum cholesterol. It additionally has natural dynamic proteins for example chemicals, compounds, attempt sin inhibitors, trim agglutinins, and cysteine and so forth

The anticancer impact of is flavones contained in soybean is very notable. Dissolvable fiber in soy food sources is utilized to control glucose. Soybean is against maturing specialist when utilized routinely, works on mental and actual capacities and hemoglobin levels particularly in kids.

Because of these characteristics soybean has been utilized as a food supplement.

**(I) Nutritive value of raw soybean per 100g.**

Table 1 shows the nutritive value of raw soya bean per 100g.

**Table 1: Nutritive Value of Raw Soybean per 100g**

Energy	1,866 kJ (446 kcal)
Carbohydrates	30.16 g
Fat	19.94 g
Protein	36.49 g
Calcium (Ca)	277.0 mg
Iron (Fe)	15.70 mg
Phosphorous (P)	704.0 mg

Source : USDA National Nutrient Database for Standard Reference, Nutrition value.org, 2018.

**(II) Health benefits of Soybean**

1. A complete protein for human body: Soybean is a decent substitute for creature protein with cholesterol bringing down specialists. It brings down the gamble of heart illnesses.
2. Soy protein decreases muscle versus fat.
3. Essential amino acids in soybean is useful for health.
4. The cell reinforcement action of amino acids in soybean go about as preventive specialist against sickness.
5. Soybean is a rich wellspring of isoflavones which is against disease treatment.
6. Soybean has remarkable prophylactic profile consequently advantageous for the board of stoutness.
7. Tocopherols present in soybean is a decent prophylactic to the extent that avoidance of malignant growth, cardiovascular sickness and asthma. It is likewise advantageous in diabetes and respiratory illnesses.
8. Germinated soya is rich wellspring of cell reinforcement like L-ascorbic acid.
9. Linoliec and limolenic acids are necessities for ordinary development and upgrading the invulnerability. These twin unsaturated fats are available in soybean.

**2. OBJECTIVE**

- To study on Women Health, Nutrition and multigrain panjiri
- To know the impact of soya flour supplementation on Hemoglobin level of blood.

**3. RESEARCH METHODOLOGY**

A pre-test post - test control bunch configuration was embraced for the study. The study was directed on 80 pallid women in Raipur City. At first the hemoglobin assessment was finished by Cynamet hemoglobin technique with the end goal of assortment of tests in the following stage of the research, an iron rich nutritious soya multi grain panjiri was ready with the end goal of supplementation to the test bunch. 75 g (one little

katorie) of panjiri estimated on electronic gauging machine and pressed for each example each day. The supplementation was given for the time of 90 days and furthermore for control bunch 75 g Rava panjiri arranged and allowed to 90 days. After the supplementation time frame, again the hemoglobin assessment of exploratory and control bunch was done to discover the impact of soya multigrain panjiri and rava panjiri supplementation on them and observed that test bunch hemoglobin level has change low to typical, ordinary to high and control bunch was not showing such kind of importance.

**Methods followed for undertaking the study**

**Assessment of hemoglobin:** Hemoglobin levels of the examples was assessed by Cyanmet Hemoglobin strategy.

**Supplementation:** For the motivation behind giving iron rich valuable food to the exploratory subject to see its impact on hemoglobin level and cardiovascular effectiveness, a minimal expense Soya Bean + Multigrain panjiri was ready. It was a changed wheat flour panjiri which was profoundly nutritious. The soya flour utilized in the readiness was liberated from against nutritional factors, which are available in crude Soya Bean + Multigrain on the grounds that during business handling. It is standard practice to apply controlled hotness to the Soya Bean+Multigrain which inactivates the counter nutritional factors. Every day 75gm gave to each subject in test bunch adapted to consume it on that specific day.

**Post-assessment of hemoglobin:** After 90 days of giving supplementation, again hemoglobin levels of the examples was assessed for establishing the impact of soya multigrain panjiri.

**4. DATA ANALYSIS**

In table# 2, pre-post mean hemoglobin scores of subjects having a place with test and control bunch are portrayed. The correlation of pre-post mean hemoglobin of chosen subjects was finished by combined example 't' test.

**Table 2: Pre Post Mean Hemoglobin level among chosen women's having a place with Experimental and Control Group**

Groups	Haemoglobin		't'
	Pre Test Mean±S.D.	Post Test Mean±S.D.	
Experimental Group (N=40)	10.70 ± 1.07	13.10 ± 0.92	37.88**
Control Group (N=40)	11.17 ± 0.78	11.48 ± 0.90	8.21**

Significant at.01 level; t (df=79) =1.96 at.05 level; t(df=79) =2.63 at.01 level.

A scrutiny of table # 1 show a critical expansion in posttest mean hemoglobin scores (M=13.10) among chose subjects having a place with trial bunch when contrasted with their pre-test mean Hb (M=11.17). The determined t=37.88 is genuinely huge at.01 level.

Correspondingly discoveries were acquired for control bunch. A critical expansion in post-test measures on hemoglobin (M=11.48) happened among subjects having a place with control bunch when contrasted with their pre-test mean hemoglobin values (M=11.17). The determined t=8.21 is genuinely huge at.01 level.

To look at changes in pre-post test scores on hemoglobin levels among trial and control bunch, gain scores was determined and contrasted between these two gatherings and the assistance of free example 't' test. The equivalent is portrayed in table 3

**Table 3: Comparison of Gain Scores on Hemoglobin Level among Experimental and Control Group**

Groups	N	Gain Score (Weight)		Mean Difference	't'
		Mean	S.D.		
Experimental Group	40	2.40	0.40	2.09	28.43**
Control Group	40	0.31	0.23		

Significant at.01 level; t (df =78) =1.96 at.05 level, 2.63 at.01 level

The factual estimation as far as t=28.43 displayed in table #2 demonstrate a huge contrast in mean increase scores between two gatherings. It shows that mean increase in hemoglobin levels is essentially higher in subjects having a place with trial bunch (M=2.40) when contrasted with the aspiratory tuberculosis patients having a place with control bunch (M=0.31).

**5. RESULTS**

The supplementation of soya multigrain panjiri was viewed as successful in expanding the hemoglobin levels low to typical, ordinary to gentle and gentle to high of chosen subjects and control bunch was not showing such kind of importance.

**6. CONCLUSION**

The study concluded that bunch based supplementation assists with further developing the hemoglobin level and furthermore health of women. These projects whenever proceeded relentlessly for longer term will have critical changes in health status. Such gathering - based supplementation assists with making mindfulness among the women in regards to the significance of nutrition which will work on the nutritional status of the whole society

and all together will assist with accomplishing our thousand years improvement objectives.

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