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A STUDY ON IMPROVEMENTS OF IRON LEVEL IN PREGNANT AND LACTATING WOMEN BY THE INTAKE OF MILLETS AT TADEPALLI MANDAL GUNTUR DISTRICT

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Abstract.

A study was carried out using a sample of fifty pregnant and lactating mothers, respectively, in the Pathuru and Chirravuru villages of Tadepalli Mandal Guntur district, to determine the impact of consuming millet dishes on iron levels in these populations. The most common dietary condition in the world, iron deficiency is a public health issue. They are susceptible to anemia since they do not know about millet and millet recipes. Prior to the addition of millet recipes, a blood test was performed on the individuals to estimate their haemoglobin percentage. It was discovered that 7–10 gm/ of Hb%, which causes anemia, is present in 68% of Pathuru and 56% of Chirravuru. Thus, awareness campaigns were held, field demonstrations of millet meals were carried out, and people in both villages received a book on millet recipes written in the native Telugu language. Remarkably, after three months, it was discovered that 86% of people in Pathuru and 74% of people in Chirravuru who followed a diet consisting of at least one millet recipe per day, such as Ragi java, Ragi malt, Jowar roti, Pearl idly, Bajra roti, etc., saw an improvement in their blood hemoglobin percentage to 10–12 gm/dl compared to people who only ate rice as a staple food. According to the study, pregnant and nursing women who frequently incorporate millet recipes into their diets have a higher probability of improving their blood's hemoglobin percentage.

Keywords: Millets, Pregnant Women, Lactating Women, Hb% Awareness**.**

1. Introduction

As a response to the global food crisis, millets have gained recognition as a significant replacement for main meal crops in recent years (Shanmugapriya and Sujatha, 2006). Many

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small-seeded grasses with African and Asian origins go by the name millet. Millets are among the earliest foods that humans have ever consumed, and they may have been the first cereal grain to be used for cooking. As rain-fed crops, millets are tough, small-seeded grasses that thrive in arid climates with varying levels of soil moisture and fertility. Another distinctive feature of millets is their brief growing season. In as little as 65 days, they can grow from planted seeds to mature, harvest-ready plants. Whole millets are safe for two years or more if stored correctly. Similar to cereals like rice and wheat, millets (ragi, bajra, and jawar) are small-seeded and among the earliest food sources for humans, having been cultivated for about 7000 years! Millets may thrive in poor soil with very little rain, but wheat and rice are considered pampered crops since they require rich soil and regular rainfall. As a result, they are a preferred crop throughout most of Asia and Africa. Although our nation is the world's leading producer of millet, from the 1970s to the present, consumption of the grain has alarmingly decreased (by 50–75%).

How millets disappeared from our diets

While the Green Revolution helped India become self-sufficient in food production, the easy availability of wheat and rice led to millets moving away from our dining tables to being used as feed for livestock and for alcohol production. While health enthusiasts in India are embracing quinoa (a grain-like crop with edible seeds from South America), millets are sought after in the USA, selling at ten times that of Indian retail prices!

The following are the types of millets:

Banyard Millet

Compared to wheat, the fiber level of banyard millet is six times higher. This gluten-free millet has a high fiber, calcium, and phosphorus content. It also has a lot of fat and carbs. It aids in regulating body temperature. It also functions well as an antioxidant.

Finger Millet

In addition to having a high calcium content, finger millet also has a composition of important amino acids that is well-balanced, vitamin A, vitamin B, and phosphorous. Moreover, it has a high fiber content that prevents constipation, high blood cholesterol, and intestinal cancer. It also has a high calcium content. It facilitates the body's cooling process. It aids in the recovery of anemia and ulcers. It's a fantastic substitute for wheat and rice, particularly for those with diabetes..

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Foxtail Millet

One gluten-free kind that is grown second most frequently is foxtail millet. It is among the earliest millets to be planted. Carbohydrate content is high in foxtail millet. It has high levels of dietary fiber and minerals including iron and copper. It supports the health and immunity of our bodies. It helps to control blood sugar & cholesterol levels.

Kodo Millet

Kodo Millet has a very high whole grain fiber content. Legume protein supplementation may enhance the nutritional value of Kodo millet protein, as it does for other dietary grains. The millet is easy on the stomach. It has high levels of phosphate and phytochemicals, both of which lower the risk of cancer. It aids in weight loss, which is very important for obese individuals. It aids ladies in overcoming irregular menstruation issues. It aids in easing joint and knee discomfort. It is beneficial for diabetics as well. Nervous problems are lessened, particularly in the eyes.

Little Millet

Little Millet is appropriate for individuals of all ages. It cures various gastrointestinal issues and aids in the prevention of constipation. It raises men's semen counts. It also benefits ladies who experience irregular menstruation. Its high fiber content aids in the body's reduction of fat accumulation.

Proso Millet

Proso millet, sometimes referred to as common millet or broom corn, is one of the most tasty and nutritious varieties of temperate millet. Because the seeds are encased in their hulls and are challenging to extract using traditional milling techniques, the grain has a relatively high percentage of indigestible fiber. The grains' easily bioavailable health-promoting phenolic chemicals and high calcium content support strong bones and good oral health. While the protein composition of proso millet grains is similar to that of wheat, proso millet has a significantly higher proportion of the three essential amino acids (leucine, isoleucine, and methionine).

Red Sorghum

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Potassium, phosphorus, and calcium are abundant in sorghum, but sodium and iron content is relatively low. Due to its high iron and zinc content, sorghum grain is being considered as a potential global solution to eliminate micronutrient deficiency.

Pregnant women can meet their dietary needs for vitamins and minerals by including sorghum on a regular basis in their meals. Jowar helps manage arthritis, body weight, and cardiac issues..

Pearl Millet

It is well known that pearl millet contains phytochemicals that reduce cholesterol. Folate, magnesium, copper, zinc, and vitamins E and B complex are also present. In comparison to other flours, it contains a high energy level. It also contains a lot of healthy unsaturated fats and calcium. Miracle millet has eight times the iron content of rice. It has high levels of magnesium, iron, calcium, and protein. It contributes to lowering our body's harmful cholesterol levels. It works well as a body coolant. It is eaten as porridge in the summer. It also helps to cure stomach ulcers and enhances digestion. It keeps constipation at bay and facilitates better bowel motions. It strengthens our bodies. It facilitates increased milk secretion.

Millets are predominantly starchy; they can form the main component of any meal, and occupy the slot at the base of the food pyramid. The carbohydrates in rice, wheat, and millet are' complex,' but the extent to which they are refined affects the speed at which they are utilized by the body. As a thumb rule, if it takes longer for the body to use carbohydrates, it means the food source is less refined and offers more fiber, satiety, and delivery of nutrients. Hence whole millets are healthier than white rice. It is important to note that you derive more benefits from millets if you use the grain as is or coarsely milled than flour. We lose some nutrients during the milling of cereals and millets as the outer layers, where the nutrients are concentrated, are removed.

So recipes can be done with the help of millets because they contain protein, fiber, iron zinc, calcium, etc, In a study conducted by Arora and Srivastava (2002) reveals that barnyard and finger millet-based khichadi and laddu prepared along with legumes and fenugreek seeds were highly acceptable. Carbohydrate content in finger millet-based khichadi and laddu provided 56.47 and 81.71 percent of total energy, whereas the Barnyard millet-

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based khichadi and laddu provided 51.59 and 79.40 percent of total energy, respectively. Finger millet-based pasta products with good cooking quality, storage stability, acceptability, and higher nutritive values developed by Devaraju et al. (2003). Composite finger millet flour (50%), refined wheat flour (40%), defatted soy/whey protein concentrate (10%), and hot water (75°C) were used for pasta making and it contained 14-18 g, 365-372 kcal, 102-148 mg and 3-5 mg of protein, energy, calcium and iron respectively.

Table of nutritive value of millets

Name of the millet	Protein (g)	Fibre (g)	Iron (mg)	Zink (mg)	Calcium (mg)
Pearl millet	11.6	1.2	8.0	3.1	42
Sorghum	11.3	6.3	4.4	1.6	28
Foxtail millet	11.2	8.0	2.8	2.4	31
Finger millet	7.3	3.6	3.9	2.3	344
Little millet	7.7	7.6	9.3	3.7	17
Rice(raw milled)	6.8	0.2	0.7	1.3	10
Brown rice	7.5	3.5	1.47	2.2	23
Wheat	12.1	1.9	4.9	2.2	48

2. Design/Methods/Modelling

Study on population: Pregnant and Lactating women from low income group attending the antenatal clinic in two villages i.e. Pathuru and Chirravuru were selected.

Sample size: 50 pregnant women, 50 lactating who are eating and not eating millet recipes from Pathuru 50 pregnant woman and 50 Lactating mothers from Chirravuru were selected.

Settings: Anganwadi centers of Tadepalli Mandal, Andhra Pradesh.

Study period: The study was carried out for a period of six months.

Study design: Anganwadi based cross sectional study.

METHODOLOGY:

Testing for hemoglobin levels was done on all expectant and nursing low-income women who attended prenatal clinics and Anganwadi centers, regardless of whether they consumed one or more millet dishes each day. Seventy percent of expectant moms and eighty percent of

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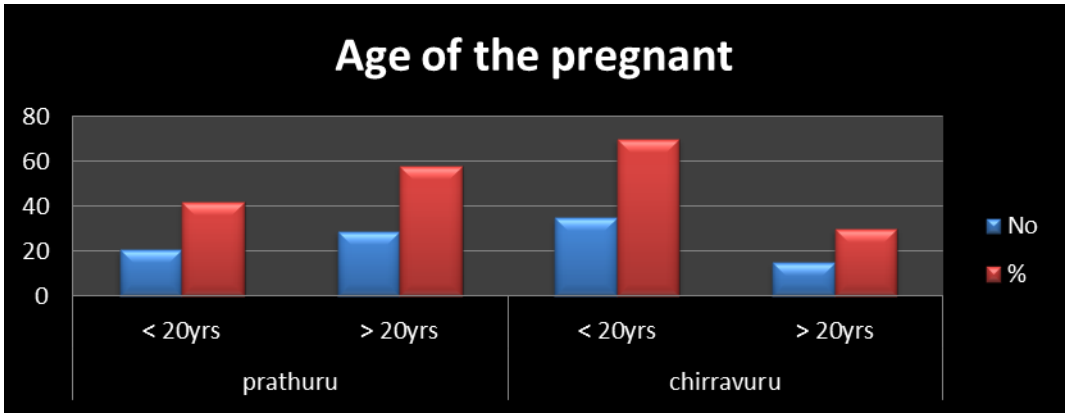
nursing mothers could be screened for anemia. The World Health Organization's (WHO) standard procedures were used while measuring height and weight. A Day's sample study was used to calculate the nutritional value of the pregnant women's diet, and the results were compared to the ICMR's standard suggested allowances. For the target group, They were given a millet recipe book with the caption "Chirudhanyalu and Chiruvantakalu" in their native Telugu because they were unable to cook. This helped them to become more proficient cooks.

3. Results and Discussion

Anganwadi-based cross-sectional research was conducted at the prenatal clinic with 50 expectant moms and 50 nursing mothers from a low-income group who consume and do not consume millet recipes on a daily basis from the two villages, respectively.

Table -1 shows the age of the Pregnant Women

S.No	Name of the Village	Age of Pregnant Women	No	%
1	Pathuru	< 20yrs	21	42
		> 20yrs	29	58
2	Chirravuru	< 20yrs	35	70
		> 20yrs	15	30



The age of pregnancy in two villages (Prathuru and Chirravuru) is displayed in Table 1. It was found that in Prathuru and Chirravuru, the percentage of people under 20 is 42% and

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35%, respectively, while in Prathuru, the percentage is 30% and above. Another requirement to tolerate the physical changes in women is age. In a Danish research study 634 272 women had a total of 1 221 546 pregnancies between 1978 and 1992; 126 673 of these resulted in fetal loss, 285 022 in an induced abortion, and 809 762 in a live delivery. There was a 13.5% chance of fetal loss overall. The probability of fetal loss increased sharply beyond the age of 35, with a J-shaped curve proportional to the mother's age at conception. Fetal loss occurred in almost one-fifth of all pregnancies among women aged 35, and in over half (54.5%) of planned pregnancies among women aged 42. Thus, 20 to 30 years old is the best age range for marriage and childbearing.

Table 2: Shows Difference in Hb levels before and after Millets Consumption

Name of the Village	HB %gm/dl Before	No	%	HB %gm/dl After	No	%
Pathuru	7 to 10	34	68	7 to 10	7	14
	10 to 12	16	32	10 to 12	43	86
Chirravuru	7 to 10	28	56	7 to 10	13	26
	10 to 12	22	44	10 to 12	37	74

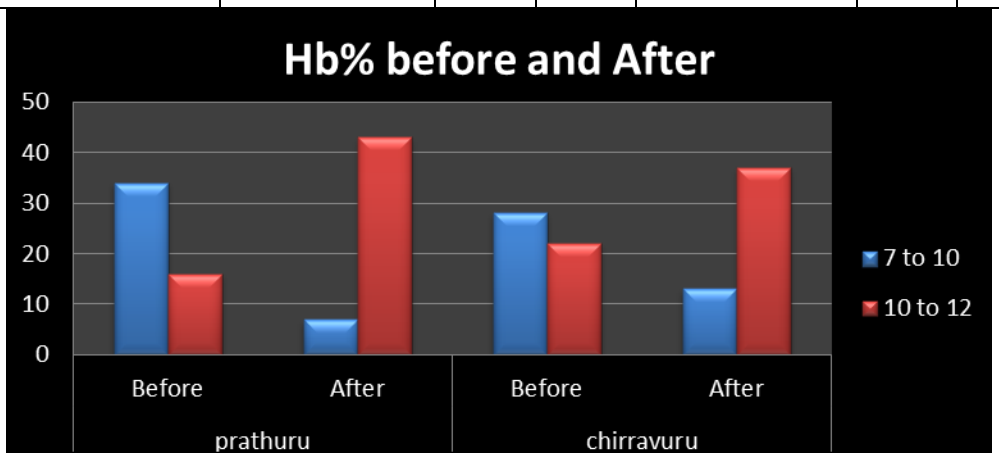

Table 2 illustrates the considerable improvement in the Hb% levels of nursing and pregnant women following the village awareness campaigns and millet recipe demonstrations. Women were encouraged to learn about and prepare at least one millet dish in their homes after being impressed. Millets contain iron, calcium, protein, fiber, and energy, which is the main reason why their hemoglobin percentage in the blood has improved. Prior to the test, 68% and 56%

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of the pregnant women in both villages had 7–10 g/dl, respectively. After the test, the percentages improved to 86% and 74%, respectively, with 10–12 g/dl in both villages.

Their hemoglobin percentage is low because they suffer from iron deficiency anemia. The most common dietary disorder in the world and a public health issue is iron deficiency. There are 25 million DALYs (Disability Adjusted Life Years) lost as a result of iron deficiency anemia. Over two billion individuals are thought to be anemic, and iron deficiency is thought to be the cause of 0.8 million deaths annually, or 1.5 percent of all mortality (WHO 1996 and 001).

In a population whose diet consists primarily of low-quality cereals, reduced bioavailability of absorbed iron has been identified as the primary cause of iron insufficiency (Gillespie, 1998; Rao, Vijaysarathy, and Prabhavathi 1983; Taylor et al., 1995).

4. Conclusions

We can therefore assume that even-risk children are born to anaemic pregnant women. Such as those with physical abnormalities or low birth weight. Psychomotor tests reveal that children with iron deficiency anemia do worse than their non-anemic peers (Pollitt and Metallinos-Katsaras, 1990). According to studies by Agarwal, Upadyay, and Tripathi (1987), Lozoff (1990), Lozoff et al. (1991), Yip (1994), and Dubey, Sachdev, and Choudhary (1994), infants and children who develop anemia due to iron deficiency are at a high risk of long-term, even permanent, impairment in mental and motor development and coordination, impaired language development, scholastic achievement, psychological and behavioural effects, and decreased physical activity. Studies indicate that children with anemia or even slight iron deficiency do poorly academically in the areas of vocabulary, reading, and knowledge as well as in terms of attention, memory, and attentiveness. Youngsters who are iron deficient exhibit poorer performance on standardized academic examinations as well as delayed motor development. Children who are anaemic have lower aerobic capacity and a higher contribution from anaerobic metabolism to the stress of exercise, which leads to early exhaustion. Iron deficiency impairs endurance, work capacity, and work output.

Therefore, it is advised that expectant and nursing mothers incorporate millet recipes such as ragi java, ragi idly, ragi dosa, ragi sank, Jowar idly, Jowar roti, bajra

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roti, bajra upma, like upma, etc. into their diets and raise their iron levels in order to maintain good health and produce healthy offspring for society.

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