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A STUDY ON EFFECT OF MILLET INTAKE ON IRON LEVELS OF PREGNANT AND LACTATING WOMEN IN THE TADEPALLI MANDAL GUNTUR DISTRICT

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ABSTRACT:

A Study was conducted on effect of intake of millet recipes on iron levels of pregnant and lactating women in the Pathuru and Chirravuru villages of Tadepalli Mandal Guntur district, with a sample of 50 pregnant and lactating women respectively. Iron deficiency is the most common and widespread nutritional disorder in the world, and is a public health problem. Because of the lack of awareness towards millets and millet recipes they are prone to get anemia. Blood test for estimation of Hb% was done to subjects before the supplementation of millet recipes. It was found that 68% in prathuru and 56% in Chirravuru has 7-10gm/ of Hb% which is a cause of anemia. So awareness programs were conducted and millet recipe demonstrations were done in the field, and book on millet recipes in the local language telugu were distributed to subjects in both village. Surprisingly after three month it was found that 86% in pathuru and 74% in Chirravuru, who takes diet with millet recipes like ragi java, ragi malt, jowar roti, etc at least one item daily, improved their Hb% in the blood to 10 – 12gm/dl than those who takes only rice as a staple food.

Key Words: Millet, Pregnant Women, Lactating Women, Hb% Awareness.

INTRODUCTION:

In recent years millets are recognized as important substitute for major meals crops to cope up with worldwide food shortage (Shanmugapriya and Sujatha, 2006). The name millet is applied to numerous small seeded grasses which originated in Asia and Africa. Millets are one of the oldest foods known to humans and possibly the first cereal grain to be used for

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domestic purposes. Millets are small-seeded grasses that are hardy and grow well in dry zones as rain-fed crops, under marginal conditions of soil fertility and moisture. Millets are also unique due to their short growing season. They can develop from planted seeds to mature, ready to harvest plants in as little as 65 days. When properly stored, whole millets are safe for two or more years.

Millets (ragi, bajra, jowar) like cereals (rice, wheat) belong to the grain family, but are small seeded and one of the oldest forms of human food, with cultivation of millets going back to almost 7000 years ago! Wheat and rice need fertile soil and adequate rainfall, so in some sense are pampered crops, while millets can grow in poor soil with very little rain. Hence they are a favored crop in many parts of Asia and Africa. In fact, our country is the world's largest producer of millets but unfortunately there has been an alarming decline (50-75%) in their consumption, from the 1970s to the present.

How millets disappeared from our diets

The following are the types of millets:

Banyard Millet

Banyard Millet has 6 times high fiber content when compared with wheat. It's gluten free millet with high calcium, phosphorous & fiber. It is high in carbohydrates & fat too. It helps to maintain the body temperature. It acts as a good anti oxidant too.

Finger Millet

Finger Millet contains high amount of calcium, protein with well balanced essential amino acids composition along with Vitamin A, Vitamin B and phosphorous. It also contains high amount of calcium, Its high fiber content also checks constipation, high blood cholesterol and intestinal cancer. It is called as wonder grain. It helps to reduce the heat of the body. It also helps to heal ulcers & anemia. It's a great replacement for rice & wheat especially for diabetic patients.

Foxtail Millet

Foxtail Millet is a gluten free grain is and the second most commonly grown species. It is one of the oldest cultivated millet. Foxtail millet is high in carbohydrates. It is rich in dietary fiber and minerals such as copper & iron. It helps us to keep our body strong & immune. It helps to control blood sugar & cholesterol levels.

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Kodo Millet

In Kodo Millet, the fibre content of the whole grain is very high. As with other food grains, the nutritive value of Kodo millet protein could be improved by supplementation with legume protein. It's basically digestion friendly millet. It is rich in phytochemicals, Phytate that helps in reduction of cancer risks. It helps to reduce the body weight which is most needed for obese people. It helps to overcome irregular period problems in women. It helps to reduce knee & joint pains. Also it is good for diabetic people .It reduces nervous disorders especially in eyes.

Little Millet

Little Millet is suitable for people of all age groups. It helps to prevent constipation & heals all the problems related to stomach. It improves the semen counts of men. It also helps for women with irregular period's problems. Its high fiber helps to reduce the fat depositions in the body.

Proso Millet

Proso Millet is one of the most nutritious and delicious temperate millet, also known as broom corn, common millet. The grain contains a comparatively high percentage of indigestible fiber because the seeds are enclosed in the hulls and are difficult to remove by conventional milling processes. The health-promoting phenolic compounds contained in the grains are readily bioaccessible and high Calcium contents favor bone strengthening and dental health Protein content in proso millet grains is comparable with that of wheat, but the share of essential amino acids (leucine, isoleucine and methionine) is substantially higher in proso millet.

Red Sorghum

Sorghum is rich in potassium and phosphorus and also has a good amount of calcium with small amounts of iron and sodium.Sorghum grain has high levels of iron and zinc and is hence being targeted as a means to reduce micronutrient malnutrition globally.

Adding sorghum regularly in the meals of pregnant woman helps them attain requirements for minerals and vitamins in their diet. Jowar helps control heart problems, body weight and arthritis.

Pearl Millet

Pearl Millet is known to possess photochemical that lowers cholesterol. It also contains folate, magnesium, copper, zinc, and vitamins E and B- complex. It has a high energy

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content compared to other flours. It is also rich in calcium and unsaturated fats which are good for the body.It is miracle millet which has iron that is 8 times of rice. It is very rich in Calcium, Protein, and Iron & Magnesium. It helps to reduce the bad cholesterol level in our body. It's a great body coolant. It's consumed as porridge during summer. It helps to improve the digestion power & heals stomach ulcers too. It helps to improve bowel movements & prevents constipation. It makes our body strong. It helps to increase the secretion of milk for lactating mothers.

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 millets 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 long 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 as flour. We lose some nutrients during milling of cereals and millets as the outer layers, where the nutrients are concentrated, are removed.

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

MATERIAL AND METHODS

Sample : 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, 50 Lactating women who are taking and not taking millet.

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Settings: Anganwadi centers of Tadepalli Mandal, Guntur district. Andhrapradesh.

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

Study design: Anganwadi based cross sectional study.

METHODOLOGY:

All pregnant and lactating women belonging to low income group and attending the antenatal clinics and Anganwadi centers who are having millet intake in their diet at least one millet recipes daily and are not having any intake of the same were screened for Hb level testing. Height, and weight were measured as per standard guidelines laid down by World Health Organization (WHO) Nutritive value of the diet consumed by the pregnant women was calculated by a Day's sample study and it was compared with the standard recommended allowances given by ICMR. Hematological and other investigations were carried out for the target group. As they do not know how to cook millet recipes. So a book was written and published with a caption **"Chirudhanyalu and Chiruvantakalu**" in local language (telugu) and distributed, so that they can cook easily.

RESULTS AND DISCUSSION

An Anganwadi based cross sectional study was carried out at the antenatal clinic among pregnant women and lactating mothers from two villages and their age was considered for the study.

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

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2	Chirravuru	< 20yrs	35	70
		> 20yrs	15	30

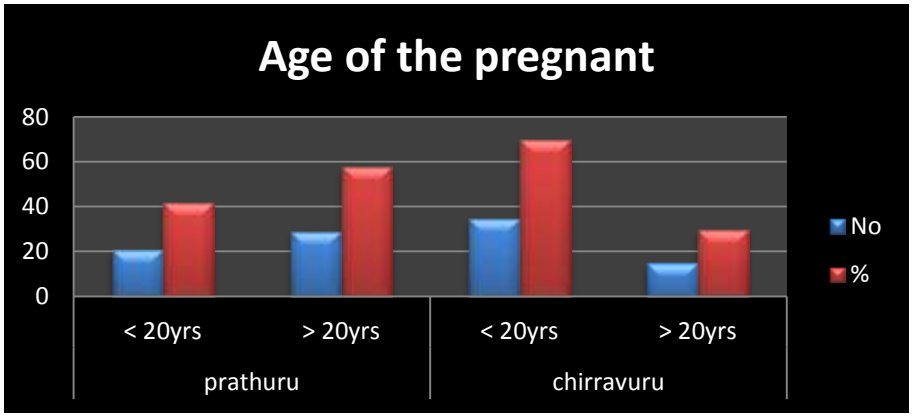

Table – 1 Shows the age of the pregnancy in two villages, (prathuru and Chirravuru). It was revealed that 42% and 35% are below 20years in two villages respectively and 58% and 30% are above 20years in pathuru and Chirravuru respectively. Because age is also one criterion to with stand the physical changes in the women. In a study conducted in Denmark From 1978-92, a total of 634 272 women had 1 221 546 pregnancies, of which 126 673 ended in fetal loss, 285 022 in an induced abortion, and 809 762in a live birth. The overall risk of fetal loss was 13.5%. The risk of fetal loss according to maternal age at conception followed a J-shaped curve, with a steep increase after 35 years of age. More than one fifth of all pregnancies in 35 year old women resulted in fetal loss, and at 42 years of age more than half of the intended pregnancies (54.5%) resulted in fetal loss. So, ideal age for marriage and to have children is 20-30 years.

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

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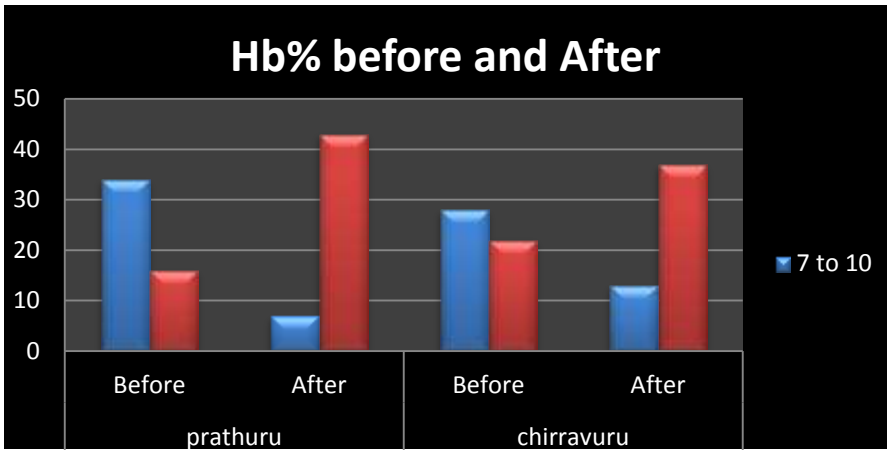

Table – 2 Shows the drastic improvement in the Hb% levels of the pregnant and lactating women after awareness programs and millet recipe demonstrations in the villages. Women were impressed and accepted to learn and to cook in their houses daily at least one millet item. That is the main reason to improving their Hb% in the blood.

As they have iron deficiency anemia they have low Hb% in the blood. Iron deficiency is the most common and widespread nutritional disorder in the world, and is a public health problem. Iron deficiency anemia results in 25 million DALYS (Disability Adjusted Life Years) lost. Anemia is defined as a low blood hemoglobin concentration. It is estimated that over two billion people are anemic, around 0.8 million deaths (1.5 percent of the total) can be attributed to iron deficiency each year.

Poor bioavailability of consumed iron in relation to the need (Gillespie, 1998) has been reported as the major cause of iron deficiency in a population whose diet is predominantly cereal-based and of poor quality (Rao, Vijaysarathy and Prabhavathi 1983and Taylor et al., 1995)

Conclusion:

It can be concluded that anemic pregnant women give birth to even risk children. Like low birth weight or some with physical deformities. Children with iron deficiency anemia perform less well on psychomotor tests than non-anemic counterparts (Pollitt and Metallinos-Katsaras, 1990). Infants and children who become anemic with iron deficiency is at high risk of long-term, even permanent, impairment in mental & motor development and co-ordination, impaired language development, scholastic achievement, psychological and behavioral effects and decreased physical activity (Agarwal, Upadyay and Tripathi 1987,

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Lozoff 1990, Lozoff et al., 1991,Yip 1994 and Dubey, Sachdev and Choudhary 1994). There are studies to suggest that children with anemia or even mild iron deficiency show poor attentiveness, memory and academic performance in the areas of vocabulary, reading and knowledge. Children with iron deficiency perform less well on standardized scholastic tests and have impaired motor development. Aerobic capacity in anemic children is reduced and anaerobic metabolism makes a greater contribution to the stress of exercise, resulting in early fatigue. Work capacity, work output and endurance are impaired in iron deficiency.

So pregnant and lactating women can be counseled to include the millet recipes like ragi java, ragi idly, ragi dosa, ragi sankati, Jowar idly, Jowar roti, bajra roti, bajra upma, arike upma, etc millet recipes in the book and improve their iron levels to give birth to the healthy citizen to the society, and keep their health in good condition.

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