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Impact of Iron Rich Food Supplementation on Poor Anemic Rural Pregnant Women and Adolescent Girls

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A B S T R A C T

The study was carried out under OFT (on farm trial) at Krishi Vigyan Kendra, Birauli, Samastipur to see the impact of iron rich food supplementation, made out of locally available foods materials, on hemoglobin level of poor rural pregnant women and adolescent girls who are our future giver. Two type of iron rice food supplements one made up of rice flake and jaggery and other of roasted Bengal gram and jaggery were used. The study revealed that pregnant women and adolescent girls were taking insufficient amount of iron which is an alarming message for them. It is clear that they are the future giver and low hemoglobin level of these vulnerable groups will affect health of our coming future. Insufficient iron intake is very harmful for them. They should be encouraged to consume sufficient amount of iron. There should be nutrition intervention and health related programmes for them.

Introduction

Prevalence of anemia in India is among the highest in the world. Anemia is the most common blood disorder effecting about a third of the global population. Iron deficiency anemia affects nearly one billion people. It is a major public health nutritional problem and has adverse health and economic implications. WHO has estimated that prevalence of anemia in developing countries among pregnant women is 51 percent and among adolescent girls 45.2 percent and it is 65-67 percent in India. Prevalence of anemia in all the group is higher in India as compared to other developing countries (Dutta, 2004).

A great asset in our present nutritional situation is the remarkable ability of the poor Indian mothers to undergo the period of great stress and strain of pregnancy where the women has to meet the needs of the foetus and adjust herself to the change occupying in her system and later to breast feed her infant for prolonged period. Anemia is one of the most remarkable reason for maternal death. The most important is the fact that half of the global maternal death due to anemia occur in South Asian countries. India contributes to about 80 percent of the maternal death due to anemia in South Asia (Ross and Thomos 1996).

The consequences of iron deficiency anemia during pregnancy includes increased risk of low birth weight or premature delivery and neonatal mortality, inadequate iron stores for the new born, lowered physical activity, fatigue and increased risk of maternal mortality (Bentley and Grifiths 2003). Anemia also affects immune status, physical capacity and work performance of adolescents and increase morbidity. Adolescent girls are also most vulnerable as there is increased demand of iron due to rapid growth spurt and menstrual blood loss. Since adolescent girls are the future mothers and if their dietary intakes are poor in iron and if married before 18 years of age and become pregnant, they tends to become anemic, adversely affecting the outcome of pregnancy (Nimmathota Arlappa *et al.,* 2014). In terms of dietary iron, the daily allowance for pregnant women in 38 mg per day whereas for adolescent girl is is from 41-50 mg/day (for age group 13-19 years). Iron deficiency is one of the major causes of anemia. Anemia is pregnant women and in adolescent girls is associated with adverse consequences both for women and girls and for coming future Most of the poor rural women and girls are uneducated and unaware of all these facts. Therefore this study has been planned to see the impact and make them aware of the facts of iron rich food supplementation made out of locally available food materials on hemoglobin level of poor pregnant women and adolescent girls who are our future giver.

Materials and Methods

Two villages (Morsand Malpur and Birauli Khurd) of Samastipur district have been selected. The criteria of selecting villages was large population of poor schedule caste families. Thirty (30) pregnant women expecting for about 3-4 months and thirty (30) adolescent girls of age 13-19 years were selected. The study was conducted under OFT (On farm trial) at KVK, Birauli, Samastipur. The main criteria for selecting the subjects (Pregnant women and adolescene girls) were haemoglobin level which was less than the normal standard values. The selected subjects (both groups) were divided into three groups, ten in each group. One group each of pregnant women and adolescent girls was control group who was not getting any iron rich food supplementation. One group of each women and girls was given iron rich food i.e. rice flake laddu and one group of women and girls was given roasted Bengal gram laddu. An effort was made to supplement iron rich diet to the women and girls over and above to their daily meal taken at home.

Procurement of row materials

Row materials like rice flake, bengal gram and jaggery were procured from local market and products were prepared.

Composition of iron rich food supplements

Rice flake laddu

	Amount (g)	**Iron (mg)**
Rice flake	150	30
Jaggery	100	2.64

Roasted Bengal gram laddu

	Amount (g)	**Iron (mg)**
Roasted Bengal laddu	150	14.25
Jaggery	100	2.64

Both the groups i.e. pregnant women and adolescent girls were given iron rich food supplementation for about 100 days and equal amount of iron i.e. about 30 mg/day.

The care has been taken that individual (Subject) should get about 30 mg of iron per day. For the purpose rice flake laddu of 235g giving iron as 30.68 mg and Bengal gram laddu of 450g giving iron about 30.402 mg were provided per day for about 100 days. The iron content of the products has been determined by computing the row food materials (Gopalan *et al.,* 1995). the hemoglobin level of all the women and girls (subject) were measured before and after supplementation of iron rice food supplements.

Statistical analysis

The mean increase in hemoglobin level with standard deviation was calculated to see the impact.

Results and Discussion

The mean hemoglobin level of experimental group and control group subjects before and after iron food supplementation are show in Table 1. The mean hemoglobin level before and after supplementation of experimental group were 9.3g and 10.2g for rice flake laddu group, 9.9g and 10.5g for Bengal gram laddu group respectively while the control group had 11.5g and 11.3g for pregnant women whereas mean hemoglobin level were 9.5g and 10.7g for rice flake laddu group and 9.7g and 10.8g for bengal gram group among experimental group and the level for control group were 10g and 9.9g among adolescent girls.

The point to be noted is that there is an increase in haemoglobin level after supplementation of iron rich supplements among experimental groups of both pregnant women and adolescent girls where as there is a little bit negative increase in hemoglobin level among control group.

Table.1 Mean hemoglobin level (mg/100 ml of blood) of pregnant women

	Pregnant women			Adolescent girls		
	Experimental Group		Control group	Experimental Group		Control group
	Rice flake laddu group	Bengal gram laddu group		Rice flake laddu group	Bengal gram laddu group	
Before supplementation	9.32±0.79	9.94±1.10	11.57±0.14	9.58±1.05	9.78±0.70	10.06±1.04
After supplementation	10.22±0.78	10.54±0.96	11.32±0.59	10.72±0.84	10.82±0.89	9.96±1.15

Table.2 Mean increase in haemoglobin level of pregnant women

Experimental Groups		Control groups (c)	Comparison between	't' value
Rice flake laddu group (a)	Bengal gram laddu group (b)			
090±0.01	0.60±0.14	0.25±0.45	A vs C	3.95**
			A vs B	0.74 (NS)
			B vs C	4.80**

Table.3 Mean increase in hemoglobin level of adolescent girls

Experimental Groups		Control groups (c)	Comparison between	't' value
Rice flake laddu group (a)	Bengal gram laddu group (b)			
1.14±0.21	1.04±0.19	0.10±0.11	A vs C	1.57 (NS)
			A vs B	0.20 (NS)
			B vs C	2.35 **

The increase in hemoglobin level in experimental group with rice flake laddu group is more compared to the bengal gram laddu group in both groups i.e. pregnant women and adolsescent girls. This increases showed that it is very much important that these group should be given sufficient iron as they are the future mother (Sri Jaya and Jhansi, 2003). This study revealed that these vulnerable groups consumed very less amount of iron. The mean increase in haemoglobin level among pregnant women is shown in Table 2.

The mean increase for experimental group is 0.90±0.01 for rice flake laddu group and 0.60±0.14 for Bengal gram laddu group. The mean negative increase in control group is 0.25±0.45. When mean increase of haemoglobin level of different group were compared it was found that the mean increase among experimental group were statistically significant when compared with control group whereas mean increase in hemoglobin level was not significant among experimental groups.

The mean increase in haemoglobin level of adolescent girls is shown on Table 3. The mean increase for experimental group is 1.14±0.21 for rice flake laddu group and 1.04±0.19 for Bengal gram laddu group. The mean negative increase in control group is 0.10±0.11. When mean increase of hemoglobin level of different group were compared it was found that the mean increase among rice flake laddu group and control group was not significant but mean difference of Bengal gram laddu group and control group was statistically significant at 5% level. The mean difference among experimental groups was not significant.

The negative mean increase in control group of both pregnant women and adolescent girls showed that they were taking insufficient amount of iron which is an alarming message for them. It is very harmful for the health of both group of future mother and ultimately our coming future. The pregnant women and adolescent girls should be encouraged to consume more of iron and iron rich foods. This study showed that nutrition intervention programmes, nutrition and health training should be arranged for them. They should be trained to take iron rich food from their own locally available foods.

References

Bentley M.E., Grifiths, P.L. 2003. The burden of anemia among women in India. *Eur. J. Clin. Nutr*. Jan, 5791) 52-60 pub. med. PM(1): 12548297 (Pubmed).

Dutta D.C. 2004 Anemia is pregnancy. textbook of obstetrics including perinatology and contraception. 6th edition. Published by new central book agency (P) Ltd. Calcutta, India 262-267.

Gopalan, C Ramasastri, B.U. and Balasubramaniam, S.C. 1995 Nutritive

value of Indian foods. NIN, ICMR, Hyderabad.

Lokare PO, Karanjekar VD, Gatlani, PL, Kurkarni AP.2012. A study of prevalence of anemia and socio demographic factors associated with anemia among pregnant women in Aurangabad city, *India Nigerian Med.* 6:30-34.

Nimmathota Arlappa, Indrapal Meshram, Nagalla Balakrishna, Rachkula Hari Kumar, kodavant Mallikaarjuna Rao and Avula laxmalan 2014. prevalence of anemia among different physiological groups in the rural areas of Maharashtra, Indian journal of community health 26:3.

Ross J.S, Thomas E.L 1996. Iron deficiency anemia and maternal mortality. PROILE 53, working notes series no. 3. Academic for Education Development. Washington, D.C.

Sri Jaya. M. and Jhansi, Rani, P. 2003. Energy balance in selected anemic adolescent girls. The *Indian. J. Nutr. Diet. 40*, 84.

UNICEF, UNO, WHO 2001. Iron deficiency anemia assessment, presentation and control: A guide for programme managers. Geneva, World Health Organization.

Would Health Organization WHO 1992. The prevalence of anemia in women: A tabulation of available information. Geneva, Switzerland.

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