Progressive Research – An International Journal
Vol. 5 (Special Issue) : 468-471 (2010), ISSN : 0973-6417

Society for Scientific Development in Agriculture and Technology, Meerut (U.P.) INDIA

EFFECT OF SUPPLEMENTARY FEEDS ON HEMOGLOBIN LEVEL AMONG RURAL WOMEN OF SAHARSA DISTRICT (BIHAR)

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ABSTRACT

Hemoglobin is an iron bearing protein molecule contained within red blood cells. It performs major function which is essential to life that is 'tissue oxygen buffer' that means hemoglobin in the blood is mainly responsible for stabilizing the oxygen pressure in the tissue. Low hemoglobin is highly prevalent in women residing in poor and illiterate families, resulting in substantial increases in fatigue, tiredness, weakness and dizziness etc which also increases overall disease burden. Low hemoglobin blood levels or anemia is the most common blood disorder in the human being. It is more common in women due to blood loss from menstruation and increased demand during the childbearing years, various medical conditions, and poor diet. Low hemoglobin levels in women can affect health and also has great effects on menstrual cycle, which need to be understood. Hemoglobin is main component of body for maintaining health. The normal range of hemoglobin for healthy women is 12 to 16 gm /deciliter. The hemoglobin range below the normal (12gm/deciliter) is sign for suffering from a lot of complications. In the present study, a group of women were included ranged between the age of 18 years to 45 years. A group of 30 women performing agricultural and allied work have been selected randomly for the study. Initially, pre-testing of hemoglobin was done and it was found that 83% beneficiaries were below the normal range of hemoglobin. After implementation of the supplementary feed for 6 month (Sprouted Gram + Green Gram with Jaggery @ 50gm each /day into two divided dose), hemoglobin level was recorded thrice at the interval of 2 months. Results pertaining to the hemoglobin level showed significant improvement as a result of intervention. This supplementary feed is locally and easily available as well as more economic also for poor and rural women.

Key words : *Hemoglobin, supplementary feed, anemia.*

While rural disadvantage for childhood malnutrition in developing countries is established, little attention has been paid to the rural-urban disparity among women.Poverty is the main underlying cause of malnutrition and its determinants. However the degree and distribution of protein-energy malnutrition and micronutrient deficiencies among a population depend on many factors, including: the political and economic situation; the level of education and sanitation; the season and climate conditions; food production, cultural and religious food customs; breastfeeding habits; prevalence of infectious diseases; the existence and effectiveness of nutrition programs; and the availability and quality of health services.

Hemoglobin is an iron bearing protein molecule containing within red blood cells. It performs major function which is essential to life that is 'tissue oxygen buffer' that means hemoglobin in the blood is mainly responsible for stabilizing the oxygen pressure in the tissues. It picks up oxygen from the lungs and delivers it to the body's tissue to maintain the good condition of cells.Low hemoglobin is highly prevalent in women residing in poor and illiterate families, resulting in substantial increases in fatigue, tiredness, weakness and dizziness etc which also increases overall disease burden. Low hemoglobin blood levels or anemia is the most common blood disorder in the human being. It is more common in women due to blood loss from menstruation and increased demand during the childbearing years, various medical conditions, and poor diet. Low hemoglobin levels in women can affect health and also has great effects on menstrual cycle, which need to be understood. Hemoglobin is main component of body for maintaining health. The normal range of hemoglobin for healthy women is 12 to 16 gm /deciliter. The hemoglobin range below the normal (12gm/deciliter) is sign for suffering from a lot of complications.People do not take proper diet; illiteracy may also be the cause. Socially somewhere women are more prone so it because of Indian tradition (about eating habits).

Table-1 : Nutritive values of supplementary feed.

Nutritive Values	Jaggery/10 gram	Sprouted gram/100 gm	Sprouted green gram/104 gram
Calories	13.3	37	31.2
Carbohydrate	9.8 gm	24 gm	6.2 gm
Iron	0.30 mg	0.39 gm	0.9 mg
Protein	0.01 gm	8 gm	3.2 gm
Phosphorous	4 mg	28 mg	54.2 mg
Potassium	13 mg	71 mg	155 mg
Sodium	3 mg	6 mg	6.2 mg
Calcium	8 mg	15 mg	13.5 mg
Magnesium	16 mg	11 mg	21.8 mg
Fiber	nil	3 gm	1.9 gm
Sugar	9.7 gm		4.3 gm

Low hemoglobin or anemia is a common condition. Among older adults, with prevalence increasing with age (Buzzle Com, 2010). Anemia is associated with increased mortality (Zakai *et al.,* 2005, Penninx *et al.,* 2006, Culleton *et al.,* 2006, Dong *et al.,* 2008) disability, and poorer physical performance (Penninx *et al.,* 2004) regardless of the underlying cause of the low hemoglobin.The aim of the study was to find the effect of supplementary feeds on hemoglobin level among rural women of Saharsa District of Bihar.

MATERIALS AND METHODS

Sample Collection : A cross sectional study was performed. To evaluate hemoglobin status, under guidance of Doctor and medical technician, blood samples were collected from women's and hemoglobin percentage were observed in the year 2010.In the present study, a group of women of Saharsa district of Biharwere included ranged between the ages of 18 years to 45 years. A group of 30 women from rural area performing agricultural and allied work have been selected randomly for the study. Initially, pre-testing of hemoglobin was done and it was found that 83% beneficiaries were below the normal range of hemoglobin.

Recommended Dose : After implementation of the supplementary feed for 6 month (Sprouted Gram + Green Gram with Jaggery @ 50gm each /day into two divided dose), hemoglobin level was recorded thrice at the interval of 2 months.

Statistical Analysis :

(i) To calculate frequency and its percentage of samples in different hemoglobin level.

(ii) To calculate samples statistics of hemoglobin levels in different observations.

(iii) **Paired 't' test :** Paired t test was used to comparepaired differences of Mean, Standard. Deviation, Standard. Errormean. The Null hypothesis was also used to evaluate the statistical analysis of the test. Paired t testis applicable only when two samples are not independent and the observations are taken pairs. In this case, for each observation in one sample there is a corresponding observation in the other sample pertaining to the same character. It means that the paired observations are on the same units or matching units. Treating the differences as observations the standard deviation (s) is calculated as

$$s \quad \frac{d^2 \quad (\ d)^2 / n}{(n - 1)}$$

The standard error of the mean difference ($\bar{d}$) is computed as

Where, n is the number of pairs, $\bar{d}$ is paired mean difference

Under paired observations the null hypothesis will be $H_{0:\ \mu 1 - \mu 2} = \overline{D} = 0$, and the alternative hypothesis will be $H_1 : D \quad 0$ (or $\overline{D} > 0$ or $\overline{D} < 0$). The appropriate test statistic will be

$$t \quad \frac{\bar{d}}{\frac{s}{\sqrt{n}}}$$

This t follows t-distribution with n-1 degree of freedom. This test procedure is known as paired t-test.

RESULTS AND DISCUSSION

Initially, pre-testing of hemoglobin was done and it was found that 83% beneficiaries were below the normal range of hemoglobin and 17% beneficiaries were under the normal range of hemoglobin. In 2nd, 3rd and 4rth

Table-2 : Hemoglobin Level among Rural Women of Saharsa District (Bihar).

Sl No.	Hemoglobin range	Pre Test Observation	Post Test Observation		
		I (x_1) N = 30	II (x_2) N = 30	III (x_3) N = 30	IV (x_4) N = 30
1.	9-10	7 (23.33)	6 (20.00)	4 (13.33)	1 (3.33)
2.	10-11	8 (26.67)	5 (16.67)	4 (13.33)	2 (6.67)
3.	11-12	10 (33.33)	12 (40.000	9 (30.00)	8 (26.67)
4.	12-13	5 (16.67)	7 (23.33)	11 (36.67)	12 (40.000
5.	13-14	0 (0)	0 (0)	2 (6.67)	5 (16.67)
6.	14-15	0 (0)	0 (0)	0 (0)	2 (6.67)
7.	15-16	0 (0)	0 (0)	0 (0)	0 (0)

Table-3 : Samples Statistics of Hemoglobin levels in different observations.

Sl. No.	Observations	Mean	Std. Deviation	Std. Error Mean
1	I (x_1)	10.6600	1.0067	.183
2	II (x_2)	10.9933	1.0137	.185
3	III (x_3)	11.4900	1.0662	.194
4	IV (x_4)	12.3067	1.1098	.202

Table-4 : Paired t Test analysis of Hemoglobin levels between pre test and post test at different observations.

Sl. No.	Paired observation	Paired Differences			d.f.	t cal	t tab	Sig.
		Mean	Std. Deviation	Std. Error Mean				
1.	$x_1 - x_2$	.333	.2631	0.048	29	6.94	2.045	Sig.
2.	$x_1 - x_3$	.8300	.7169	.130	29	6.34	2.045	Sig.
3.	$x_1 - x_4$	1.6467	1.1988	.218	29	7.52	2.045	Sig.

Table-5 : Paired t Test analysis of Hemoglobin level between two consecutive observations.

Sl. No.	Paired observation	Paired Differences			d.f.	t cal	t tab	Sig.
		Mean	Std. Deviation	Std. Error Mean				
1.	$x_1 - x_2$	0.333	0.2631	0.048	29	6.94	2.045	Sig.
2.	$x_2 - x_3$	0.4967	0.6646	0.121	29	4.09	2.045	Sig.
3.	$x_3 - x_4$	0.8167	1.0764	0.196	29	4.15	2.045	Sig.

observation after the implimentation of supplimentary feed one can see the increasing percentage of heamoglobin under normal range that is 23%,37% and40% respectively.

From the above result it is evident that, average and Std. Error Mean level of hemoglobin in each observation is increasing. Since, it shows positive effect of supplementary feed. The slightly deviation is observed among each observations. Since, it shows that treatments affects slightly.

Result depicted in Table-4 revealed that,the table value of t at level of significance (ά = 0.05) and 29 degree of freedom (d.f.) is2.045. Since t cal >2.045, Null hypothesis (H_o) is rejected. It shows that there is highly significant difference between different paired observationsof samples of hemoglobin level.

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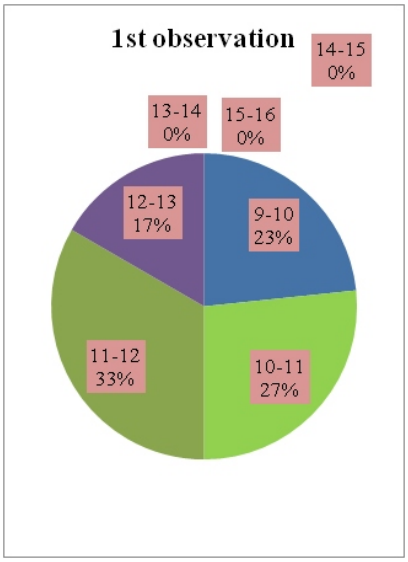
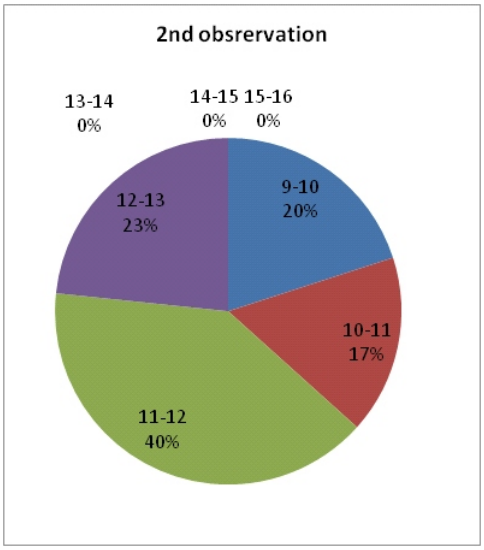
CONCLUSION AND SUGGESTIONS

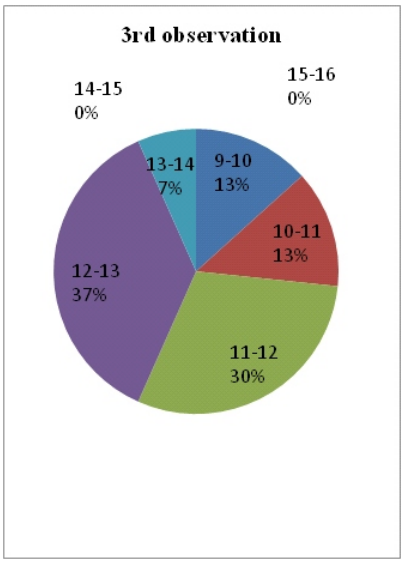
Results pertaining to the hemoglobin level showed significant improvement as a result of intervention.

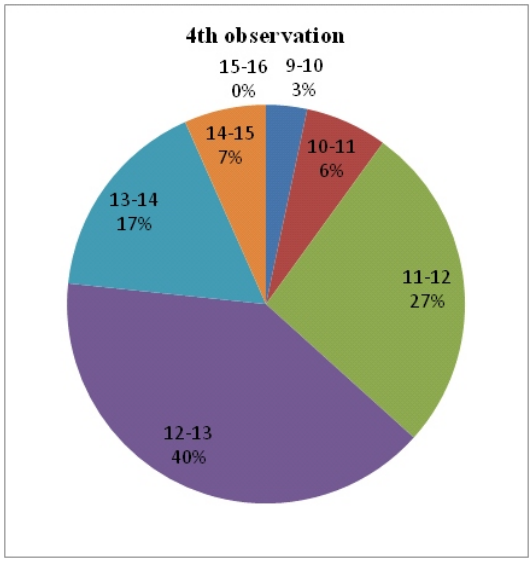
This supplementary feed is locally and easily

Pie diagram of Hemoglobin Level among Rural Women of Saharsa District (Bihar)









available as well as more economic also for poor and rural women.

Lackof knowledge about the nutritive values of locally available foods.

Hemoglobin problems observed in each age group of women.

An awareness programs should be organized for economically backward areas.

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