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Research Article

IMPACT OF IFA SUPPLEMENTATION, HEALTH AND NUTRITION EDUCATION IN IMPROVING THE NUTRITIONAL AND HEALTH STATUS OF SAHARIA WOMEN

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ABSTRACT
Anemia makes human system more weak and hence the morbidity. Since the tribal women have lesser access to modern health facilities they ignore the ill health and try to manage for livelihood. Poverty is a curse which forces them to work more than their counterparts. Despite Government's major concern on tribal population, the condition of women in rural areas has not seen much improvement. Women are precious resource as she is not only the mother of our future children but also the caretaker of families. The present study is an endeavor to study the impact of IFA supplementation, health and nutrition education in improving the nutritional and health status of Saharia women of Baran district. Married Saharia women (n=100) in the age group of 18-35 years willing to participate in the study were selected from the Kishanganj block of Baran district. A pre- structured and pre tested questionnaire was used to collect the data. Hemoglobin was assessed by trained health worker using WHO recommended Hemochek color strip method. Nutrition and health counseling was conducted using IEC material. The IFA Supplementation was administered to subjects (n=100) for 100 days, after deworming (Albendazole-400mg). The pre and post intervention health and nutritional status was assessed using standardized techniques. More than half of the subjects (53.8%) had hemoglobin below 10g/dl, which reduced to 10.8% after intervention. The impact of intervention was positive as thirty nine percent subject's hemoglobin came in 12 g/dl or more after intervention. Nutrition and health education along with IFA supplementation brings a positive impact in improving health and nutritional status as well as in combating anemia.

Keywords: *IFA Supplementation, Tribe, Women*

INTRODUCTION
In India, 427 groups have been recognized as scheduled tribes. As per the 2011 census, the Scheduled Tribe (ST) population of India is 84,326,240 constituting 8.2 percent of the total population of India (CENSUS, 2011). They are referred to as backward, due to their lack of capacity to utilize the opportunities of development offered to them. The Scheduled Tribes of the Rajasthan State constitute 13.5 percent of the total population (9,238,534) of the State. Saharia is one of the most primitive tribes, which resides in the Shahabad and Kishanganj Panchayat Samiti's of Baran district of Rajasthan. Total population of Saharia is 79,312 with sex ratio of 951 females / 1000 male. Saharia live in infrastructural weak and remote areas, not well connected through road/bridge network even now. Lack of exposure to modern life and historic exploitation by landlords who paid them lesser wages, has left Saharia extremely primitive and backward (Malikharjuna, 2006).
In India the status of women be it nutritional, health or social is not good in the rural areas, the situation is worse in the tribal groups. The health status of tribal women is found to be lower than that of the Indian women (Basu, 2005). The causes of high maternal mortality rate are found to be poor nutritional status, low hemoglobin (anemia), unhygienic and primitive practice for parturition (Balgir, 2004b).
Lack of proper health education, poverty, faulty feeding habits and irrational beliefs aggravate all these problems in underprivileged people in India (Balgir, 2000 a). The nutritional deficiency has two major consequences for women first they become anemic and second they never achieve their full growth, which leads to an unending cycle of undergrowth as, malnourished women cannot give birth to a healthy baby. Anemia is disturbingly common in adult women, more than half of women in India (55%) are

anemic. Even though men are much less likely than women to be anemic, anemia in men is at 24% (NFHS-III, 2005).

Anemia lowers resistance to infections, leads to fatigue, thus reducing their working capacity under conditions of stress. Anemia makes human immune system weak and leads to morbidity, that is, one's susceptibility to fall ill. Since the tribal women have lesser access to modern health facilities they ignore ill health and manage extreme conditions for livelihood. Poverty is a curse which forces them to work more than their counterparts.

Women are precious resource as she is not only the mother of our future children but also the caretaker of families. Therefore her health is of prime importance in the present scenario. The present study is an intervention of IFA supplementation and health education on anemia and morbidity pattern of Saharia women of Baran district.

MATERIALS AND METHODS

The present study is a longitudinal study conducted in a Baran tribal belt. Subject comprised of 100 married Saharia women of age group 18-35 years. A pre- structured and pre tested questionnaire was used to collect data.

Sampling technique: The Saharia tribe resides in two blocks of Baran namely Kishanganj and Shahabad. Out of the two Kishanganj was selected as Shahabad block is 85 km away from Baran and the approach was difficult as geographic terrain is mostly forest. Villages with maximum Saharia population were selected purposively.

Data was collected on general information which included information about subject's name, age, education, occupation, type of family, total family members and family income. Assessment of anthropometric measurement and biochemical estimation was done prior to intervention and post intervention. Anthropometric measurements are valuable indicators of nutritional status. They reflect the pattern of growth and development (Park and Park, 2002).

A decrease in hemoglobin (Hb) concentration in blood below normal values is a sign of anemia. Hemoglobin was assessed by trained health worker using WHO recommended Hemochek colour strip method. Nutrition and health counseling intervention was conducted using IEC material developed on anemia and its prevention, balanced diet, cooking practices and locally available nutritious foods. This was imparted three times in period of 100 days The IFA Supplementation was administered to subjects (n=100) for 100 days, after de-worming (Tablet Albendazole 400mg). The hemoglobin assessment was done three times firstly at pre –intervention secondly at an interval of 45 days than on completion of 100 days. ASHA and ANM motivated the subjects for regular IFA supplementation. Ethical clearance was taken before conducting the study.

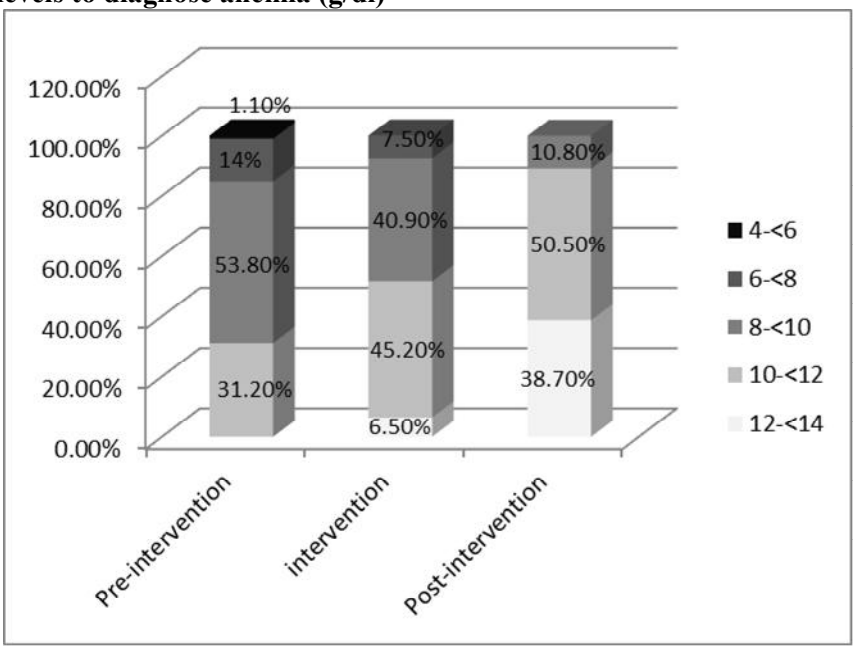
RESULTS AND DISCUSSION

Results

Out of 100 subjects 7 were drop outs, and 93 subjects participated in the study. About 69% lived in nuclear family set up, and by 31 % were from joint family. Fifty one percent of the families constituted of 5-8 members. Illiteracy is a big impediment in tribal development, 72% females were found to be illiterate in present study. As per NFHS -3 Indian tribal female literacy rate is 49.4 % against national female literacy rate of 65.46%.

Despite of Government's many claims for employment generating programs; the tribal's are engaged mostly as laborers. In the present study most of the subject's worked as laborers (74%) followed by housewives (20%), while 5% of women subjects were in services which are similar to their male counterparts. All the efforts for livelihood incurred an excessive workload on women. It was not unusual to find that 14% subjects husband's do nothing for earning.

Hemoglobin levels to diagnose anemia (g/dl)



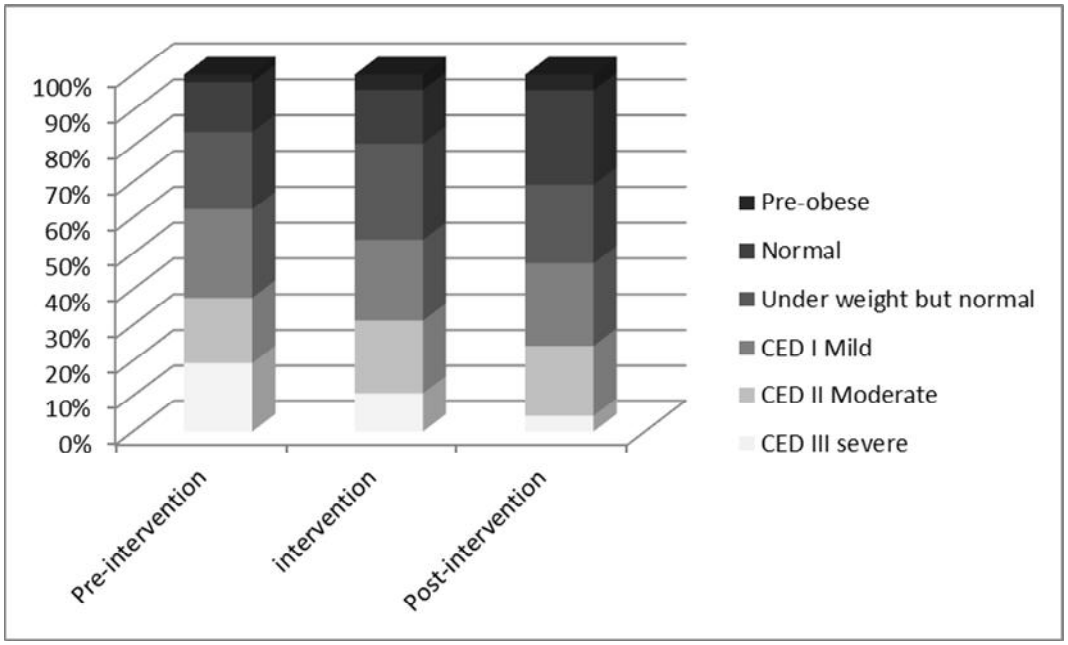
The investigations showed that prior to intervention 14 % subjects had severe anemia (Hb less than 8 g/dl), with majority of the subject's (53.8%) hemoglobin fall in category less than 10g/dl. The intervention influenced these subjects the most, after intervention only 10.8% were in this category. Intervention had positive outcomes and brought 38.7% of subject's hemoglobin in 12 g/dl or more. There was statistically significant relationship between socioeconomic variable and Hemoglobin values. The table value for Chi square at 5% level of significance is 10.7 In a similar study by Maiti *et al.,* (2005) about 3% of the tribal women in Jharkhand are severely anemic. Thirty percent and thirty nine percent of tribal women are either moderately anemic or mild anemic. Findings of the current study 85% were suffering from moderate anemia. The improvement of women from severe anemia to milder forms of anemia was statistically significant. After intervention moderate anemia in saharia women reduced to 61%. The relationship established between education and haemoglobin values showed no significant relationship statistically.

Table 2: Age wise anthropometry measurement of subjects

Mean Anthropometric Values							
Age	**Height (cm)**	**Weight (kg) (Mean)**			**BMI (Mean)**		
		Pre-intervention	**Intervention**	**Post-intervention**	**Pre-intervention**	**Intervention**	**Post-intervention**
18-20	1.53 ± 0.16	43.59 ± 4.39	44.13 ± 5.36	44.47 ± 6.22	19.03 ± 3.43	19.27 ± 3.75	19.32 ± 3.48
21-23	1.54 ± 0.12	41.48 ± 4.28	42.09 ± 4.40	43.50 ± 5.01	17.71 ± 2.41	18.01 ± 2.71	18.58 ± 2.64
24-26	1.53 ± 0.08	42.34 ± 4.61	42.88 ± 5.03	44.67 ± 5.16	18.29 ± 2.48	18.50 ± 2.48	19.26 ± 2.44
27-29	1.54 ± 0.05	42.23 ± 4.16	43.20 ± 4.21	44.09 ± 4.37	17.96 ± 1.98	18.39 ± 2.16	18.77 ± 2.29
30-32	1.48 ± 0.11	40.37 ± 4.80	41.00 ± 4.40	43.06 ± 5.59	18.60 ± 2.04	18.94 ± 2.35	19.85 ± 2.49
33-35	1.53 ± 0.07	42.00 ± 5.62	43.70 ± 5.40	44.80 ± 5.65	17.83 ± 1.80	18.56 ± 1.79	19.04 ± 1.93

It is evident in the present study that the lowest values in BMI (17.71) were found in 21 to 23 years old saharia women while maximum improvement in BMI value was brought about in 30 to 35 years old saharia women.

BMI compared with WHO standards



Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004

Prior to intervention only 16.13% women were in normal category and around 74% women were suffering from under malnutrition. During intervention the percentage of women increased to 19% and at post intervention to more than 30%. In a Study conducted in Jharkhand on tribal women revealed that the mean BMI for tribal women was 19.1. 5 kg/m2 (normal condition), about 41% of tribal women in Jharkhand had a BMI of less than 18.5 kg/m2 which indicates a high prevalence of chronic nutritional deficiency (Maiti *et al.,* 2005).

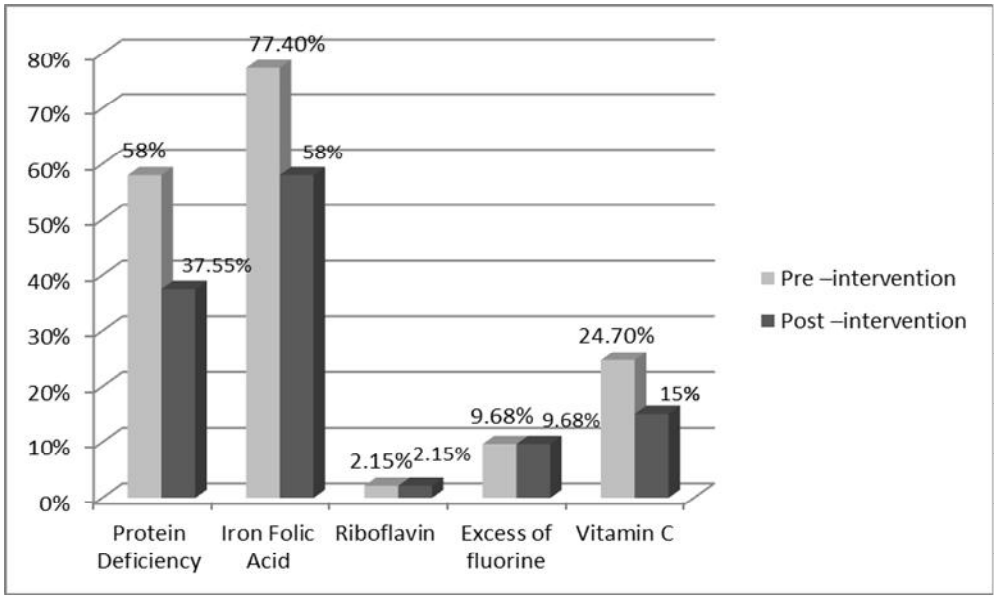


Table 3: Prevalence of Nutritional Deficiency Signs among saharia women

Nutritional Deficiency	Pre –intervention	Post –intervention
Protein Deficiency	54(58%)	34(37.55%)
Iron Folic Acid	72(77.4%)	54(58%)
Riboflavin	2(2.15%)	2(2.15%)
Excess of fluorine	9(9.689%)	9(9.68%)
Vitamin *C*	23(24.7%)	14(15%)

In pre-intervention about 58% of the saharia female had protein deficiency which decreased (37.55%) after intervention. Seventy seven percent were suffering from iron-folic acid deficiency which improvised in 58% women after IFA supplementation.

The clinical sign of B-complex vitamin deficiencies such as angular stomatitis was found to be low (2.2%). Deficiency of vitamin C shown by bleeding gums was 24.7% after intervention it was present among 15% subjects only.

Table 4: No. of subjects suffering from common ailments

			Fever	Cough	Cold	Diarrhea	Stomache	Headache	Dizziness
Pre – intervention		**n=93**	41(44.08)	39(41.93)	46(49.46)	3(3.23)	22(23.66)	50(53.76)	36(38.71)
Post intervention		**n=93**	3(3.22)	7(7.53)	7(7.53)	0	5(5.40)	25(26.88)	8(8.60)
Frequency of Disease	**Pre – intervention**	**Once**	31(33.33)	34(36.56)	38(40.86)	1(1.15)	16(17.20)	28(30.11)	25(26.88)
		Twice	7(7.53)	4(4.30)	7(7.53)	1(1.15)	2(2.15)	14(15.05)	6(6.45)
		Thrice	1(1.15)	0	0	0	1(1.15)	4(4.30)	1(1.15)
		Four times	2(2.15)	1(1.15)	1(1.15)	1(1.15)	2(2.15)	4(4.30)	4(4.30)
	Post intervention	**Once**	3(3.23)	6(6.45)	10(10.75)	0	5(5.40)	22(23.66)	6(6.45)
		Twice	0	1(1.15)	0	0	0	2 (2.15)	0
		Thrice	0	0	0	0	0	1(1.15)	2(2.15)
		Four times	0	0	0	0	0	0	0

Morbidity Profile

Morbidity is related to one's susceptibility to fall ill. The widespread poverty, illiteracy, malnutrition, absence of safe drinking water and sanitary living conditions, poor maternal and child health services and ineffective coverage of national health and nutritional services have been traced out in several studies as possible contributing factors to dismal health conditions prevailing among the tribal population in India. NFHS-I, II, III data shows trends of deteriorating health indicators and socioeconomic status of the tribal population in comparison to national statistics (Source: nhsrcindia.org). The common ailments like cold, cough, fever, malaria, headache, diarrhea, dizziness etc. were assessed. The data on duration, frequency, and occurrence was collected for the past three months.

In the present study above table shows that the saharia women were facing many health related problems such as headache (55%), cold (49.5%), fever (44%), cough (42%), dizziness (38.7%) and stomachache (24%). About 44% saharia women were suffering from fever in pre intervention while the subject's fever decreased to 3.2% after intervention. Majority of the subject's had been ill due to fever only once in a period of three months where as many of the subject suffered for duration of less than five days. The patients having headache (55%) almost reduced to half (26.8%) after intervention.

A vast improvement was seen in cold (49.5% to 7.5%), cough (42% to7.5%), stomachache (24% to 5.4%) and dizziness (38.7 to 8.6%).

Discussion

Anemia continues to be major health problem worldwide, particularly among females of reproductive age in developing countries. Several studies conducted in India of micronutrient deficiency confirm the high prevalence of anemia among adolescent girls and women (Kanani and Poojara, 2000; Chakma *et al.,*

2000; Rajaratnam *et al.,* 2000). The report of NFHS-3 shows anemia to be considerably higher in rural women (52%) than the urban women (46%). It has been reported that scheduled tribe women have highest level of anemia (65%) followed by scheduled caste women (56%) (NFHS-3, 2005-06). A study conducted in Wayanad district of kerala on prevalence of anemia among tribal women of reproductive age-group revealed that the mean Hb% of the study group was 9.04 gm% (SD 1.6) Prevalence of anemia was found to be 96.5%. More than half of the study participants (55.9%) were found to be moderately anemic (Shrinivasa *et al.,* 2014).

The improvement in hemoglobin level as well as the positive changes in morbidity pattern predicts that there is a strong impact of health education and IFA supplementation.

The study conducted in Baran district on common forms of illnesses reported that there was fever (12.6%), upper respiratory tract infections (6.7%), diarrhea (1.7%) and measles (0.4%). Only about 5% of the adults reported sickness during the preceding fortnight (Mallikharjuna *et al.,* 2006). The morbidity status of the tribal women revealed the prevalence of pyrexia, respiratory complaints, gastro-intestinal diseases and rheumatic diseases. In the adult women gynecological complaints and deficiency diseases are commonly observed. (Shivaprasad *et al.,* 2011) Skin infections such as scabies were seen among tribals due to poor personal hygiene (Chhotray, 2003). Another study conducted by Khetarpal (2007) on Health and Well-Being of Rural Women found that majority of the women were suffering from anaemia and complained of backache, head ache and pain in the body. This may be due to considerable workload for women who spend 10-11 hours at working in fields, continue doing their work at home also and consume less food. Traditional practices and superstitions: Local beliefs, customs, and practices have obstructed health care delivery to the tribals. However, acceptance toward modern medicine is found to be increasing among tribals in the recent years (Soudarssanane *et al.,* 2009). Quite a few of the infectious and parasitic diseases can be barred with timely intervention, health awareness, and information, education and communication (IEC) skilled activities. Unless locality specific, tribe specific need based health care delivery system is evolved which is suitable, acceptable, accessible, and affordable (Shivaprasad *et al.,* 2011).

Conclusion

The condition of anemia is not only limited to a single tribal women but it transfers its consequences to its generations ahead. The burden is felt by increasing IMR and MMR. The present study established statistically significant relationship between socioeconomic variable and hemoglobin values while there was no statistical significant relationship between education and haemoglobin values. The current study approach lays a foundation to overcome anemia as well as increasing morbidity among saharia women. Nutrition and health education and IFA supplementation brings a positive impact on morbidity pattern as well as in combating anemia.

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