



Nutritional intervention at the grassroots level: the nutri smart village approach

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ABSTRACT

Malnutrition has long been a major issue in India, affecting a significant portion of the whole population of the country. Despite of the economic growth and development strides, India is still facing the issues in ensuring proper nutrition for all. To combat this problem, Poshan abhiyan was first enacted throughout the country and to enhance its effects nutri smart village project was launched afterwards. Through the nutri smart village approach, a study was conducted by taking 300 respondents from 10 villages in Odisha and the necessary interventions were provided to improve their nutritional awareness, education and behavioral changes .By the interventions nutri sensitive agriculture was implemented through homestead agriculture and nutri garden. Throughout the intervention process, main focus was on nutri gardening, mushroom cultivation, poultry and fishery rearing and the impacts were studied properly. From this research, it can be concluded that mass media, social media and grass root extension functionaries play a pivotal role in creation of nutritional awareness among farm women and nutritional awareness is significantly correlated with age, educational level, and mass media exposure of farm women.

INTRODUCTION

Malnutrition and under nutrition is widely prevalent in the urban, rural and slums areas of the country, especially amongst vulnerable section of the population namely the infant , pre-school, school going children, expectant and nursing women. Lack of sanitation hygiene and knowledge about nutrition among the affected groups as well as widespread of resources are the major factors contributing to such nutrition deficiencies. A desirable change in the situation can be achieved by increasing food availability; to improve environmental sanitation and impart nutrition education to the women and increase their income. Nutritional knowledge has great importance in proper management of food, application of balance diet and specific requirements of different nutrients for people of different age groups. Nutritional education should be practical and adopted to suit the socio-economic conditions, food habits and local food resources.

To lay emphasis on nutritional status of adolescent girls, pregnant women, lactating mothers and children from 0-6 years age Poshan Abhiyaan was launched on 8th March, 2018. To strengthen the Poshan abhiyan, Nutri smart village programme was implemented in 10th November 2021 with a vision to promote nutritional awareness, education and behavioral changes in rural areas, to harness traditional knowledge through local recipe in a view to overcome malnutrition and to promote nutrition-sensitive agriculture through nutria gardening and homestead gardening. Keeping this in view, nutritional interventions were carried out in the rural households through nutria smart village approaches.

MATERIALS AND METHODS

The present study was conducted in Puri, Khorda, Cuttack, Jagatsingpur districts of Odisha state of India. Total 10 villages Kunjar, Mahura, Majjihara, Lokapal, Chitra, Sagada, Srivantapur, Tentalpur, Sankilo, Dubuduba from Seven Blocks were randomly selected purposively for study. A total 300 respondents were selected randomly from 10 selected villages. Quantitative and qualitative data were generated through personal interview schedule along with participatory observation, interaction and discussion with key informants, AWWs, school teachers, Asha workers, housewives. Data thus generated were analyzed by calculating simple frequencies, percentages, means etc. along with descriptive analysis.

RESULT AND DISCUSSION

It is imperative to know the situational context of farm women; hence socio-economic profile of farm women was studied. From the table 1, it is noted that 60 per cent farm women belong to 36 – 50 years age group, however 18 per cent respondent belonged to 18- 35 years age group.(Table no.1) The perusal of table also revealed that education level of 42.7 per cent farm women was in primary school level and only 19.3 per cent up to higher secondary. It is also noted that 71.3 per cent respondent had up to 1hectare land i.e., in marginal group and most of them belonged to nuclear family (68.7%). Majority of the farm families belong to small size category i.e., 49.75%.

Agriculture is the main occupation of the farm families, i.e., 77.7% of the respondents belong to this category. In context to family income, 50 percentage of the respondent earn between 50,000 to 1 lakh rupees annually.(Table no 2 and 3)

Table no.1- Socio economic Profile of farm women

Variables	Class intervals maximum	Fr.	%	Mean	SD	CV (%)	Mode	Min	Max
Age (in year)	Young (18 to 35 yr)	54	18	43.33	18	41.54	43	18	73
	Middle (36 to 50 yr)	181	60						
	Old (>51 yr)	65	22						
Educational qualification	Illiterate	28	9.3						
	Functional literate	10	3.3						
	Primary school	128	42.7						
	Middle school	49	16.3						
	High School	58	19.3						

	Intermediate education	7	2.3						
	Graduation and higher education	20	6.7						
Land Holding	Marginal(<1ha)	214	71.3						
	Small(1 to 2ha)	38	12.7						
	Semi medium(2 to 4 ha)	33	11						
	Medium(4 to 10 ha)	12	4						
	Large (>10 ha)	3	1						
Family type	Nuclear	206	68.7	1.26 ha			0.5ha	0.1ha	1ha
	Joint	87	29						
	Extended	7	2.3						
Family Size	Small	149	49.7						
	Medium	113	37.7						
	Large	38	12.7						

Table no. 2 - Family Occupation

	Frequency	Percentage (%)
Agriculture	233	77.7
Labor	27	9
Service(Govt./Private)	13	4.3
Small business	9	3
House wife	17	5.7
Any other	1	0.3

Table no. 3 - Family Annual Income

	Frequency	Percentage (%)
< 50000	41	13.7
50000 – 1 lakh	150	50
1 to 2 lakh	88	29.3
>2 lakh	21	7

Table no. 4 - Distribution of respondents according to their Extension Contact

	Total Score	Rank
Anganwadi worker	92.8	I
ANM	37	III
Agri scientist	41.3	II
Kvk Personnel	25.8	V
Agri Line Dept.	23.8	VI
NGO personnel	33.4	IV
Any Other	25	VII

Table no. 5 - Exposure to mass media

	Total Score	Rank
Radio	12.1	VI
Television	51.5	II
Mobile	53.3	I
Internet/ Social Media	21.1	III
Kisan Call Center	6	VII
News paper	19.5	IV
Visit to agri	16.10	V
Others	2	VIII

In present context regarding the extension contact, it is revealed that Anganwadi worker secured 92.8 score (rank I) followed by Agri scientist who secured 41.3 of total score (rank II). As per the views of the respondents ANM and NGO personnel have secured 37 and 33.4 respectively. (Table no 4)

In context to mass media, mobile Radio, Television, Mobile, Internet/ Social Media, Kisan Call Center, News paper play pivotal role in dissemination of nutritional related information among the common people. However, it becomes imperative to know the roles of these Media in nutrition awareness creation among the farm women. It is noted that now a day's mobile contributed mostly on creation of nutritional awareness among the farm women and it was ranked I followed by television (rank-II), Internet/ Social Media (rank III) and news paper (rank-IV) .(Table no 5)

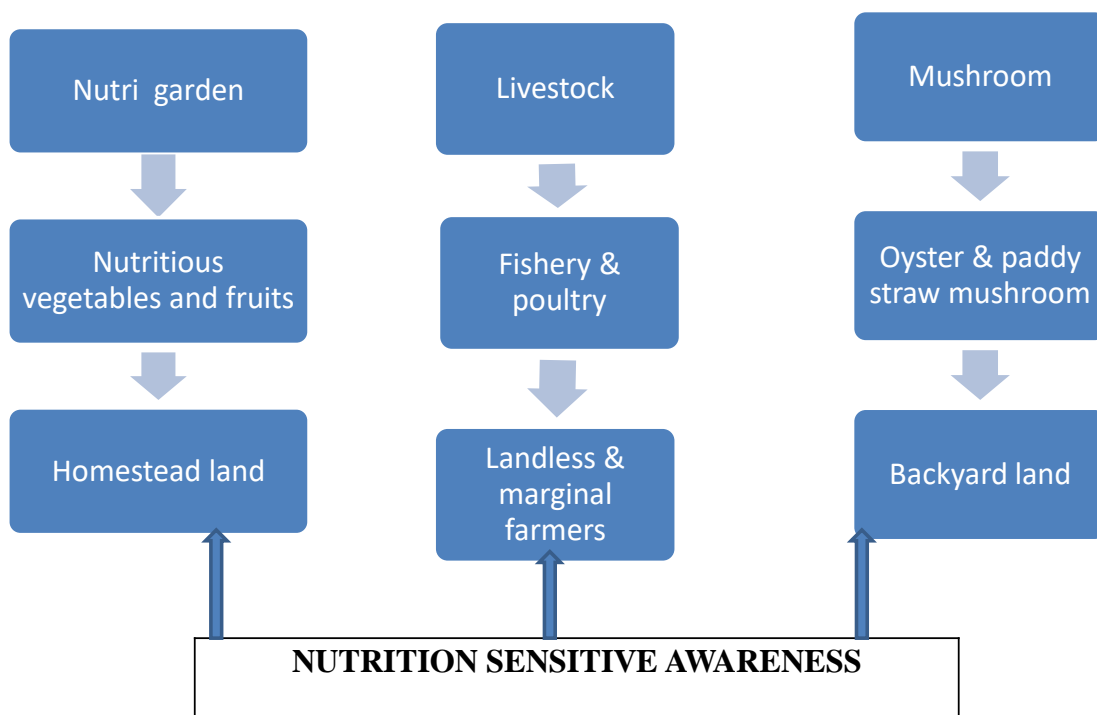
Table no. 6 - Daily consumption of selected foods by the respondents

	Cereals/ Millets	Pulses	Green leafy vegetables	Other vegetables	Milk	Curd	Fish	Egg	Fruits
<i>f</i>	276	236	186	109	177	16	7	26	31
<i>%</i>	92	78.7	62	36.3	59	5.3	2.3	8.7	10.3

It is ascertained that 92%, 78.7% of respondents had consumed cereals and pulses daily. Though 62% respondents consumed green leafy vegetables regularly, other vegetables only 36.3% which will result in the micronutrients deficiency. (Table no 6).Bamji et al. (2021) demonstrated that education-behavioral change in the quality of communication and the impact of nutrition gardens and backyard poultry with high egg-yielding breeds had a positive impact on household consumption of vegetables and eggs in mothers with children less than 3 years of age.

For creating nutritional awareness among the farm women the ICAR –CIWA took the initiatives to introduce various technologies for enhancing the nutritional status and income generation. Initially nutritional garden, mushroom cultivation, backyard poultry, fishery introduced in their backyard. The interventions were planned such that the nutritional needs of the target families are met round the year. The interventions carried out as per the need, resources availability and willingness of the farm families. For strengthening the knowledge, skill of the farm women, regular training, interaction, home visits conducted in the grass root level.

ICAR–CIWA Interventions



NUTRIGARDENS -

Nutrigardens/kitchen gardens were established in the village by providing vegetable seeds like Amaranthus (*Khada, Leutia*), Okra (*Arka Anamika*), Pumpkin (*Arka suryamukhi*) to the women in the month of March 2022. Perennial plants like Papaya, Mango (*Amrapalli, Dashehari*), Lemon, Guava (*Allahabad safed, Safed jam, Hissar safed, Pant pravat*) were also given to the families to ensure the supply of micro nutrients to their family. They were provided a crop calendar for growing the vegetables. Women friendly farm tools and equipments like hand cultivator, secateurs, khurpi, shovel, hand hoe, garden hoe, rose can etc were also provided to the families. The farm families are utilizing the harvest of nutri gardens mainly for own consumption purpose and the surplus vegetables like banana, ridge gourd, bitter gourd, pumpkin, cucumber, green leafy vegetables are sold by them in the local market. In an average monthly they are getting Rs. 10,000 to 15,000/-.

BACKYARD POULTRY FARMING

In order to ensure supply of meat and eggs to rural families, one day old chicks of RIR and Vanraja Chicks were procured from CPDO, Bhubaneswar and distributed to the beneficiaries on 30th March 2022. Each beneficiary received 20 chicks each. They were also provided with the critical inputs like poultry feed, vaccines for Lasota and IBD, feeders and waterers. The farmers were also made aware of the management practices that should be followed for backyard poultry production. In context to the economics of rural poultry (20 birds) in intensive system of farming total expenditure was calculated to be Rs. 4800/- and total profit was approximately calculated to be Rs. 8520/-.

.HOMESTEAD AQUACULTURE

The village is blessed with ample water resources in the form of large number of homestead ponds. Fish is rich in easily digestible protein, essential amino acids and fatty acids. It is also a rich source of minerals and vitamins. On an average the pond size was 0.1 ha. Hence the beneficiaries were facilitated with 1000 nos of fingerlings each to stock their ponds. One Front Line Demonstration on Composite fish farming was also organized on 23rd February. They were also provided with critical inputs like feed, lime and mineral mixture. They were also advised to stock their ponds with small indigenous fishes which are rich sources of Iron and Vitamin A from the wild so that the availability of fish to the rural family will increase. The small indigenous fishes are auto breeders and hence will be self replenished in ponds periodically. In context to fishery production, in 1 acre area in 1 season the total profit is approximately Rs 1,20,000/- .The total fixed cost for this fishery unit is approximately 2000/- where total variable cost is 9,500/-. It is also possible to harvest these fishes in an interval of 2 weeks to one month.

MUSHROOM FARMING

Mushrooms are an excellent source of protein and Vitamins especially Vitamin D. The climate of Odisha is best suited for the production of paddy straw mushrooms and the base material for mushroom beds. i.e., paddy straw is abundantly available in villages of Odisha. To tap these resources and to ensure the availability high quality protein and micro nutrients, the farming of mushroom is being popularized in the nutrismart villages. The women were given mushroom spawn and the polythene for making the mushroom beds. They could yield around 1.5 kg/bed /cycle of mushroom production. On an average each family could raise 10 beds of paddy mushroom in one

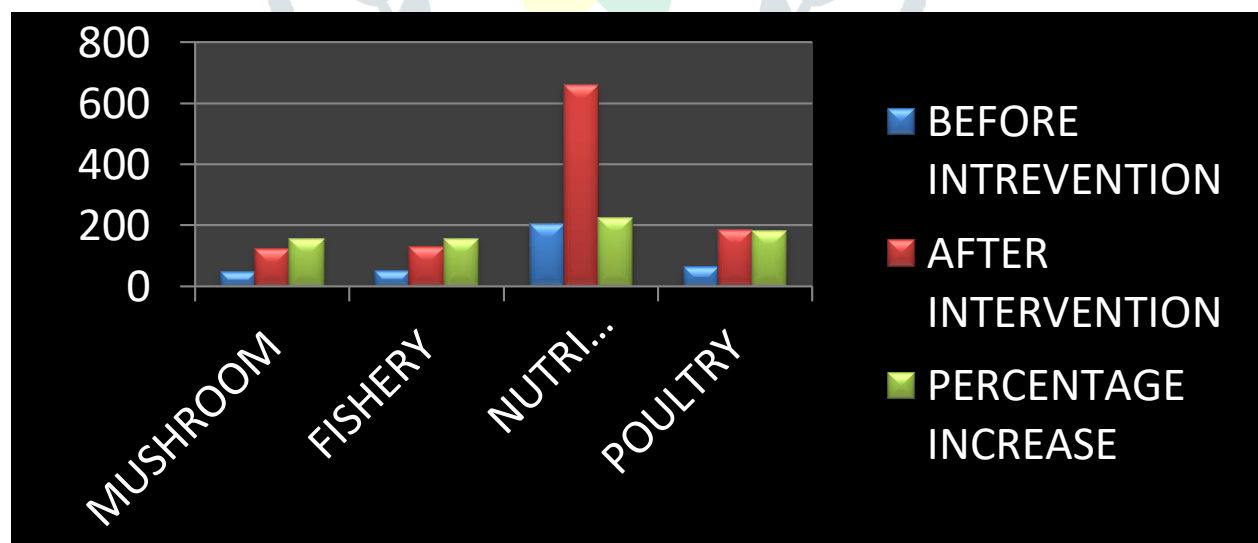
cycle. In general, Paddy straw mushroom is grown in the bed from April to October, where Oyster mushroom is grown in November to March. The farm family can raise 100 beds in their back yard and can earn a profit of Rs. 25,000/- from Paddy straw mushroom and Rs. 7500/- from Oyster mushroom.

INTERVENTION EFFECTS

At the initial stage a survey was conducted with a structural questionnaire to study the need, constraint, resource availability, malnourished status, dietary pattern etc of the respondents. The main interventions were focused towards establishment of nutria garden, backyard poultry, fishery and mushroom cultivation. It is observed that the percentage increase in nutria garden is highest i.e., 224.6% followed by poultry i.e., 183%. It is also observed that not only the adoption of different technology enhanced but also their income rose. Their daily consumption of vegetables, mushrooms, and fish and poultry products has increased in their dietary pattern. Margolies et al. (2022) found that nutrition-sensitive agriculture interventions have continuous, beneficial effects on dietary patterns in children under the age of 5 in low- and middle-income countries, with no major differences in effect sizes, found across age groups of 6-23.9 and 6-60 months.

Table No .7 – Status of intervention -

PARTICULARS	BEFORE INTERVENTION	AFTER INTERVENTION	PERCENTAGE INCREASE
MUSHROOM	48	123	156.25
FISHERY	50	128	156
NUTRI GARDEN	203	659	224.6
POULTRY	65	184	183



CONCLUSION

Due to socio-cultural traditions, the rural women have subordinate role in the society. They have inaccessibility to modern technology, credit, training and other facilities available to male workers and farmers. Their role has passive due to ignorance of modern inputs and methods of cultivation. Their regain energy is spent in procuring fuel, fodder, food and has little time to improve their skills.

The improved technology package has been developed in the country for agriculture and agro-processing but these have selectively been adopted mainly by male farmers. The reasons may vary from technological to marketing and social barriers. So attempt has been taken by ICAR- CIWA to enrich their technological upliftment through action research under nutria smart village programme approach by nutritional interventions at the grass root levels. It has been observed that there is an increase in percentage of establishment of mushroom unit, backyard poultry rearing, establishment of nutria garden etc. which not only enhance their income but also enrich their dietary pattern. It is also revealed that farm women nutritional awareness is significantly correlated with age, education level and mass media exposure of farm women.

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