

Original Research Article

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## Nutrition Security of Children through Food Diversification of Nutri-Smart Village of Jabalpur District, India

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### ABSTRACT

#### Keywords

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In Indian diet the consumption of pulses has been decline in last decade. The major reasons of the low consumption of pulses includes the fact of lower pulses production, lack of knowledge of nutritional benefits of different types of pulses, limited knowledge of their nutritious recipes, value added products and their long preparation time. The present paper evaluate the impact of integrating various pulses nutrition intervention on programmes such as mix pulses (gram, black gram, green gram, pea and lentil) based foods such as *chilla*, sprouted *salad* and *paratha* on food diversification by under taken the activities – training, demonstration and awareness programme were carried out in nutri- smart village Sihoda of Jabalpur District (M.P.) during 2016-17 and 2017-18. Data was collected before and after intervention through interviews using a pre and post questionnaire containing information indicating the adequacy, quality and diversity of food material. Convergence programme implemented by Krishi Vigyan Kendra, Jabalpur along with women and child department includes introduction of pulse based recipes in *Aganwadi* centers. The intervention brought significant improvement in food and nutritional security in terms of frequency and consumption of pulses as well as food diversity. Data shows a liking of pulse food by 76% of the children and an increase in pulse consumption of Lentil, black gram, and green gram also recorded a positive to end over the period.

### Introduction

The agricultural production systems influence, due to the type of crops locally grown and their free access, the food-intake pattern of the households (Valverde *et al.*, 1997, Taussig, 1978b; and George, 1977). Pulses and coarse grains, which are the source of staple food and protein requirements for poor, have not been given adequate attention (Adiguru and Ramasamy, 2003; Reddy 2009). Naturally, the cost of food is significant to

India's poorest population, and in recent years the country has suffered a persistent problem of food price inflation. Many basic foods exhibit a higher average rate of inflation than the overall Wholesale Price Index (WPI); Sonna *et al.*, (2014). The agricultural development agencies also need to consider health and Nutrition intervention programs for promoting nutritional objectives along with their programs. The nutritional intake and malnutrition are complex phenomena involving multi-sectoral interests and socio-

economic factors. Among food groups, and in the case of green leafy vegetables (GLVs), the children in the age group of 1-3 years across the production systems were slightly more deficit. This was partially due to the non-preference for these food items by children of these groups may be due to non-palatable preparation to suit their taste. Further, some mothers had strong belief that the greens if given to children induce diarrhea and, therefore they did feed it to the children. Household's resources and other constraints also affected the nutritional status of pre-school children. The present study was taken up to find the nutrient intake pattern of the rural households under specially pulses the cheapest source of protein. The interventions were selected with emphasis to improve food and nutritional security through food diversity of pulses such as *chilla*, sprouted *salad* and *paratha*. Crops such as pulses were intended to enhance consumption in daily diet of the children, whereas black gram, green gram, pea and lentil, for improving nutritional status.

The objectives of the study include to find the nutrient intake and consumption pattern and its determinants of rural households of Model Nutri smart village. To assess the possibilities of consumption of pulses among agriculture, health, and nutritional-intervention programs for nutritional security.

### **Materials and Methods**

Nutrition-Sensitive Women-led Agriculture programme have been implemented in Jabalpur district of MP. All selected district was leading the problems of malnutrition. First step take to study malnutrition security, in collaboration with the Ministry of WCD, Jabalpur KVK included one Model Nutri-Smart Village *Sihoda* of each block. The broad objectives of reducing the prevalence of malnutrition by availability of food or improving household food security, family

survey done with the help of Anganwadi workers. Intervention was taken with help of *Anganwadi* center, women and child department. The diversified nutritious recipes of pulse are adopted nutri smart village selected children.

### **Results and Discussion**

The present study data on nutrition in *Sihoda* village of Jabalpur, India revealed that, it was at the bottom of the nutrients intake by the poorest of the poor.

Figure 1 depicts present status of nutrient intake and consumption patter of this village. It reveals that there is high deficit of protein quantity i.e. -130.5 quintals. Data were taken from a unpublished source of State Department of Agriculture MP.

Table 1 shows basic requirement of RDA in infants and Children assessed by ICMR 2010. Protein requirement is ranging from 1.16 per kilogram to 40.4 g/day from infants to adolescence girls. Energy requirement ranges from 92/kg to 2,190 Kcal per day.

Nutrient requirement of *Sihoda* village is depicted in Table 2. An infant requires 0.26 – 0.30 gram protein per day. Children of age 1-3 yrs require 3.60 gram of protein per day, 4 - 6 yrs require 6.62 gram of protein per day and 7-9 yrs require 12.92 gram protein per day. Protein requirement for boys and girls of age 10-12 yrs are almost same.

Table 3 shows data on percentage of adoption of intervention with percentage change. As it is directly linked to the food and nutritional security as well as consumption of pulses, a highly positive percent-change has been recorded. The highest percentage change was observed for the recipe of *gram sprouted salad* (+76) followed by *Lentil Cheela, paratha* (+20).

There is 7.41% increase in consumption of Lentil was recorded after intervention (Figure 2).  
gram and 6.38% increase in consumption of

**Table.1** Basis for requirements of RDA in Children

Group	Category	Body Weight (Kg)	Energy (Kcal/Day)	Proteins (g/day)
<b>Infants</b>	0 – 6 mths	5.4	92/kg	1.16/kg
	6 – 12 mths	8.4	80/kg	1.69/kg
<b>Children</b>	1 - 3 yrs	12.9	1060	16.7
	4 - 6 yrs	18.0	1350	20.1
	7 - 9 yrs	25.1	1690	29.5
<b>Boys</b>	10 - 12 yrs	34.3	2190	39.9
<b>Girls</b>	10 - 12 yrs	35.0	2010	40.4

Source: ICMR RDA (2010)

**Table.2** Nutrient requirement of the protein

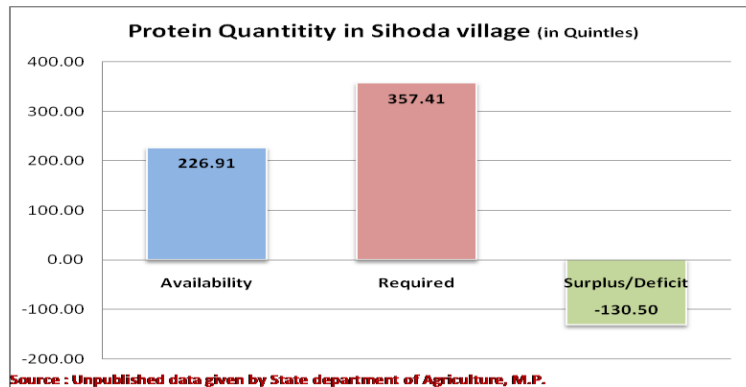
Population of Village			Nutrient Requirement (in g)
Group	Age (in Year)	Total No.	Protein (g/day)
<b>Infants</b>	0-5 month	13	0.30
	6 - 11 month	5	0.26
<b>Children</b>	1 to 3	59	3.60
	4 to 6	86	6.62
	7 to 9	120	12.92
<b>Boys</b>	10 to 12	52	7.57
<b>Girls</b>	10 to 12	52	7.67
<b>Total</b>		<b>390</b>	<b>38.94</b>

Source: RDA 2010, NIN. Hyderabad

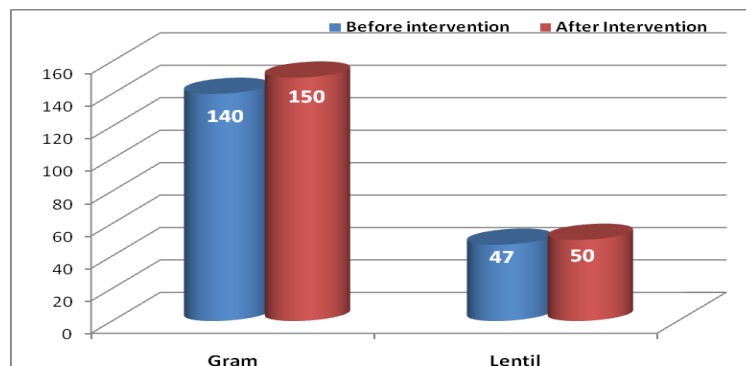
**Table.3** Adoption of diversified nutritious recipes of pulse

Pulses	Recipes	Adoption %		
		Pre-Intervention	Post-Intervention	Change
<b>Gram</b>	<i>Sprouted salad</i>	11	86	(+76)
<b>Green gram</b>	<i>Cheela, sprouted salad</i>	22	68	(+46)
<b>Pea</b>	<i>Cheela,, paratha</i>	18	47	(+29)
<b>Lentil</b>	<i>Cheela,paratha</i>	05	25	(+20)
<b>Black gram</b>	<i>Cheela</i>	16	23	(+7)

**Fig.1** Present status of nutrient intake and consumption pattern



**Fig.2** Increase pulse consumption through intervention



Food insecurity exists when all people do not have physical and economic access to sufficient food to meet their daily dietary needs (FAO, 1996). These types of interventions proposed in present study shows that nutritional security through food diversity of pulses can be achieved. Predictably, food security is defined as the balance of food supply and effective demand for food, otherwise, termed food self-sufficiency with in a territorial entity, usually the growing areas. No doubt availability of food is a necessary condition to ensure food security for all, because those who cannot afford to buy food are left hungry and undernourished. However suggested interventions can increase nutrient supplement through available crop pattern in villages. The agricultural development agencies need to consider health and nutrition intervention programs for

promoting nutritional security along with their programs.

In conclusion the main component of nutrition intervention programs is diversification and increasing of the pulse whereas, agriculture-based nutritional interventions are sustainable. Interventions of pulses based homestead recipes like Gram, Green gram, Pea, Lentil was increasing the adoption by children with nutrition education and demonstration were proved as successful in improving food and nutritional security in terms of frequency and quantity of consumption as well as diet diversity in all the nutria smart village. Interventions can be replicated in all growing children on how local communities can achieve higher self food and nutritional security through capacity building and adoption of diversified foods

interventions followed in *Aanganwadi* centers.

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