

## **Kitchen Garden: A Way Forward for Enhancing the Health and Nutritional Status of Girl Children**

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### **Abstract**

*Health and nutrition are the most important contributory factor for human resource development in the country. The nutrition is a burning issue in India which leads to malnourished problem in girl children and paramount anemic patients can be seen in the rural area. There are several reasons like lack of knowledge, economic problem and lack of education with regards to balanced diet. The study was undertaken by the KVK, Hardoi in collaboration with the ICDS and allied departments. A total of six villages were selected from 6 blocks of Hardoi district. Only severe malnourished girl children were identified from these villages and thus 16 families could be identified. Vegetable seed kits were provided to these families along with the scientific layout of kitchen-garden. The physical parameter age, height and weight were also calculated for enhancing the health status of the girl child in rural area. The impact of the KVK activities was assessed in terms of before and after intervention followed by the per cent change in malnutrition by calculating BMI. The study showed that daily consumption of vegetables in daily diet enhanced the health status and help in minimizing the malnutrition problem to maximum extent. Kitchen garden which contents all types of vegetables can play a vital role especially in rural area where consumption of vegetable is not in practice, hence for habituating them for incorporating vegetables in their daily diet. Kitchen garden is excellent weapon. It could be a cheapest source for rural people specially girl children for overcome the malnutrition problem.*

**Key Words:** Kitchen Gardening, Malnutrition, BMI (Body Mass Index)

### **Introduction**

Community and nutrition garden can play an important role in enhancing national food security and dietary diversity to combat malnutrition (Suri 2020). Health and nutrition are the most important contributory factor for human resource development in the country. Nutrients which obtained through food have vital effects on physical growth and development, maintenance of normal body function, physical activity and health (Krishnaswamy, 2011). Human needs a wide range of nutrients to perform various functions in the body and to lead a healthy life. The nutrient includes protein, fat, carbohydrates, vitamins and minerals but still the vegetable cultivation was not in

habit of the farm families. Limbu (2019) observed that imparting nutritional education had a positive effect on knowledge level of the farm women. Utilizing methods like frontline demonstration, field day, method demonstration along with lectures for imparting trainings could have resulted in significant improvement of knowledge. Nath *et al.* (2020) also revealed that Government should take necessary steps to reduce the problems faced by farmwomen to boost the production and productivity in vegetable farming. It was also evident that because of unawareness of nutrients and consumption of vegetables in daily diet of rural people specially girl children, face the malnutrition problem. Hence, a study was conducted by KVK Hardoi for minimizing the malnutrition problem and to assess the physical parameters of girl

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child to overcome the nutrient deficiency problem and enhance the health status. A new concept of Nutri Garden was given in villages along with the detail technology of cultivation of vegetables at household level.

### Materials and Methods

A special targeted survey was conducted in collaboration with staff working under Integrated Child Development Scheme (ICDS) and allied departments. All eighteen blocks were visited and identified six block and one village was selected from each block. Total 6 villages were selected for the present study. The selected villages were Barkhera, Mujahidpur, Tatyora, Darkeshpur, Habibpur and Barbitapur respectively to collect the mal nutrition data (Table 1).

Three categories were made for identification of the health status of children *viz.*, red, yellow and green colour. Red colour indicated sever problem of malnutrition, yellow colour for moderate health status and green colour pointed out the good health of the children. Targeted total 16 girl children were identified and selected as per sever and moderate category for the further study who were less than 5 yr.

#### Physical Parameter

Physical parameters were calculated in terms of age (yr), weight (kg), height (cm). Body Mass Index (BMI) was calculated by using height and weight of the respondent. Vegetable seed kits containing leafy vegetables, climbers, roots and tubers, beans and fruits type vegetables *viz.* brinjal, chilly and tomato etc. were provided to the participants. A systematic layout of the nutria garden with a total areas of 100 m<sup>2</sup> with a bed size of 1.5m ´ 5m was laid out.

The impact in terms of minimizing the malnutrition problems was assessed before and after consumption of the vegetables in daily diet by calculating the BMI (Body Mass Index) by using following formula.

$$BMI = \frac{\text{Weight (kg)}}{\text{Height}^2 \text{ (cm)}}$$

Table 1: Details of selected group for the study as per the Malnutrition category

Block	Village	Malnourished Girl children	Percentage	Remark
Bawan	Mujahidpur	04	25.00	Yellow Category
Tariyawa	Habibpur	01	06.25	Red Category
Hariyawa	Barbitapur	03	18.75	Red Category
Madhavganj	Tatyora	03	18.75	Red Category
Biligram	Darbeshpur	03	18.75	Red Category
Mallawa	Barkhera	02	12.50	Red Category

### Results and Discussion

Total six villages were selected namely Mujahidpur, Habibpur, Barbitapur, Tatyora, Darbeshpur and Barkhera from six block of Hardoi district covering 16 sample size for the study. The selected girl children fell under two category of malnutrition (Table 1).

In the normal daily consumption practice of meal in rural families was pulses, Bengal gram flour, pickle and negligible amount of vegetable. It was evident that production of spinach, bottle gourd, coriander and sponge gourd was abundant while okra, chilly and bean were cultivated minimally (Table 2).

Emphasis was given on vitamins because at rural area the diseases and symptoms were very common related to deficiency of vitamins. The vegetables were good source of almost vitamins like, carotene, thiamin riboflavin and niacin. The ascorbic acid (Vit. C) was completely absent in farmer's routine daily diet whereas ascorbic acid is essential vitamin for protein digestion and helps in formation of hemoglobin. Spinach and Coriander were rich source of Carotene chilly, spinach and bitter gourd were the richest source of ascorbic acid (Longvah *et al.*, 2017).

The results revealed that there was a slight positive growth in height and weight after consumption of vegetable in daily diet (Table 3). BMI totally depends on height and weight, as these two parameters increase BMI also increases. Before consumption of vegetables BMI was 12.23±1.86 whereas after one year it was 13.07±0.89.

### Conclusion

The study showed that daily consumption of vegetables in daily diet enhanced the health status and help in minimizing the malnutrition problem to maximum extend. Nutria Garden which contents all types of vegetables can play a vital role especially in rural area were of vegetable is not in practice, hence for habituating them for incorporating vegetables in their daily diet, Nutri Garden is excellent weapon. It could

Table 2: Nutrient contents in vegetables/100g

Vegetable	Nutrients / 100 g. $\beta$ carotene				
	Vit A (mg) Carotene	Vit C (mg) Ascorbic acid	Vit B1 (mg) Thiamine	Vit B2 (mg) Riboflavin	Vit B3 (mg) Niacin
Spinach	2605 $\pm$ 521	30.28 $\pm$ 4.71	0.16 $\pm$ 0.016	0.10 $\pm$ 0.009	0.33 $\pm$ 0.03
Coriander	3808 $\pm$ 891	23.87 $\pm$ 11.67	0.09 $\pm$ 0.005	0.05 $\pm$ 0.004	0.73 $\pm$ 0.03
Onion	1.10 $\pm$ 0.06	$\pm$ 10.96 $\pm$ 2.00	0.07 $\pm$ 0.012	0.02 $\pm$ 0.004	0.21 $\pm$ 0.01
Okra	69.10 $\pm$ 10.41	55.51 $\pm$ 1.60	0.04 $\pm$ 0.005	0.07 $\pm$ 0.009	0.61 $\pm$ 0.01
Bottle Gourd.	44.05 $\pm$ 11.68	04.33 $\pm$ 1.55	0.03 $\pm$ 0.003	0.01 $\pm$ 0.001	0.14 $\pm$ 0.01
Chilly	125 $\pm$ 122	94.07 $\pm$ 11.67	0.09 $\pm$ 0.033	0.1 $\pm$ 0.038	0.89 $\pm$ 0.15
Tomato	905 $\pm$ 58.4	00.03 $\pm$ 0.004	0.03 $\pm$ 0.004	0.52 $\pm$ 0.01	27.47 $\pm$ 1.77
Brinjal	146 $\pm$ 24.0	02.09 $\pm$ 0.85	0.06 $\pm$ 0.016	0.11 $\pm$ 0.011	0.53 $\pm$ 0.08
Sponge Gourd	130 $\pm$ 00	3.80 $\pm$ 00	0.03 $\pm$ 00	0.01 $\pm$ 00	0.04 $\pm$ 00
Bitter Gourd	126 $\pm$ 7.10	50.87 $\pm$ 3.03	0.06 $\pm$ 0.008	0.04 $\pm$ 0.005	0.29 $\pm$ 0.03
Cluster Bean	241 $\pm$ 6.0	17.96 $\pm$ 5.83	0.05 $\pm$ 0.006	0.03 $\pm$ 0.005	0.71 $\pm$ 0.05
Walore	35.52 $\pm$ 6.0	5.99 $\pm$ 00	0.07 $\pm$ 00	0.07 $\pm$ 00	0.32 $\pm$ 00
FP (Farmers Practice)					
Red Gram Pulse	127 $\pm$ 26.3	00	0.45 $\pm$ 0.046	0.11 $\pm$ 0.006	2.09 $\pm$ 0.14
Bengal Gram flour	165 $\pm$ 22.8	00	0.35 $\pm$ 0.029	0.15 $\pm$ 0.003	1.87 $\pm$ 0.06

Table 3: Physical Parameters of Selected respondents with respect to age, height and weight

Parameter	Before			After		
	Mean $\pm$ SD	Minimum	Maximum	Mean $\pm$ SD	Minimum	Maximum
Age (yr)	4.37 $\pm$ 0.44	3.8	5.0	05.37 $\pm$ 0.44	4.8	6.0
Height (cm)	98.21 $\pm$ 6.82	88	107	103.07 $\pm$ 6.68	91	112
Weight (kg)	11.44 $\pm$ 1.55	9.5	14.2	13.88 $\pm$ 1.52	10.8	15.5
BMI	12.23 $\pm$ 1.86	10.85	17.16	13.07 $\pm$ 0.89	11.55	14.80

be a cheapest source for rural people specially girl children for overcome the malnutrition problem.

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