



Food and Nutrition Consumption of Rural Households in Northern India

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ABSTRACT

Adequate and proper nutritious food is essential for essential for healthy lifestyle and good human health. Thus, promoting nutritious food among rural households is crucial for food and nutritional security. The study on 'Nutrition Education for Enhancing Nutritional Security and Gender Empowerment' was carried out for rural households in selected villages of Muzaffarnagar district in western Uttar Pradesh from 2014-15 to 2019-20. The data collected from 120 respondents revealed that more than 60 per cent school children (both boys and girls) and farm women were observed healthy with 61.67 per cent and 63.33 per cent, respectively with BMI score of 18.50 to 24.99 kg/m². The food consumption pattern of rural households revealed that cent per cent children had a food consumption pattern of three meals per day followed by male adult (80.00%), pregnant women (63.33%). The study also revealed that more than half of the school children (58.34%) and farm women (65.00%) were found in medium level of awareness about food nutrition. The prevalence of underweight and obesity among school children and farm women was observed low.

INTRODUCTION

A nutritious food is essential for good health. *Eating right* is one of the most important aspects of healthy living. A nutritious, balanced *diet* keeps our body healthy and helps fight off diseases. The UNDP's sustainable development goals have also suggested that attainment of food and nutritional security is essential for all human life and everyone has the right to eat safe and nutritious food with health well-being. Farming community in India has played a great role in food self-sufficiency and food security of the nation, however, they themselves lack the healthy and hygienic food consumption habits particularly the horticultural products (Sundaram et al., 2011). Among the 17 Sustainable Development Goals (SDGs), the second SDG of UN is to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. Revealed that in 2020, between 720 and 811 million people in the world were sufferings from hunger – as many as 161 million more than in 2019. In the same year, over

30 per cent – a stunning 2.4 billion people – 6 were moderately or severely food insecure, lacking regular access to adequate food. This represents an increase of almost 320 million people in just one year.

Between 2014 and the onset of the pandemic, the number of people going hungry and suffering from food insecurity had been gradually rising. Globally, 149.2 million or 22.0 per cent of children under age 5 were suffering from stunting (low height for age) in 2020, decreasing from 24.4 per cent in 2015. These numbers may, however, become higher due to continued constraints in accessing nutritious diets and essential nutrition services during the pandemic, with the full impact possibly taking years to manifest. Rout (2009) examined the variation in food consumption and nutritional status of women in the state of Orissa in rural and urban areas. He found that, 33 per cent of urban women and 48.6 per cent of rural women were in the low income group and urban women enjoy a better position in all the food items. So, nutritional status is positively related with education of respondent, education of

husband, household standard of living, and occupation of husband. At the global level, the WHO's Global strategy on diet, physical activity and health recommended that school policies and programmes support the adoption of healthy diets and physical activity (WHO, 2004). The National Institute for Nutrition's guideline for a nutritionally adequate diet call for adult women to eat 330 gm of cereals and 75 gm of pulses a day, along with 300 gm of dairy, 100 gm of fruit, and 300 gm of vegetables, which should include at least 100 gm of dark green leafy vegetables.

Considering the prevailing scenario of food and nutrition in India, a present study on 'Nutrition Education for Enhancing Nutritional Security and Gender Empowerment' was carried out in Muzaffarnagar district of Uttar Pradesh, India. The outcomes of such study may be helpful in understanding key issues related to food and nutrition of rural households.

METHODOLOGY

Awareness programme on food nutrition for the farm women and school children and nutrition education for gender empowerment were carried out in the selected villages (Kutba, Kutbi and Dhindawali). In addition, interventions on nutri-garden/kitchen garden were undertaken at the farmers' field for promoting food nutrition among the rural households especially farm women. At the end of the programme, 60 farmwomen and 60 school children were selected randomly from three villages. Thus, a total of 120 respondents constituted the sample of the study. The data were collected from the respondents with the help of pre-tested interview schedule and focused group discussion. The collected data were analyzed by using simple statistical tools, which led to the following major findings. The Body Mass Index (BMI) of school children and farm women was also measured using the classification given by World Health Organization. Height and weight were obtained to calculate the body mass index (BMI), as weight (kg) divided by height squared (m^2).

RESULTS AND DISCUSSION

Opinion of the respondents about healthy and balance diet

According to Swaminathan (2020) new analysis from the Food and Agricultural Organization (FAO) showed that hundred millions of people in India above the international poverty line of \$ 1.90 purchasing power parity (PPP) per person per day cannot afford a healthy or nutritious diet. The data related to opinion of the respondents about balance diet (Table 1) revealed that about 70 per cent farm women opined that balance diet gives energy to

Table 1. Opinion of the respondents about healthy and balance diet

Opinion about balance diet	Farm women (n=60) %	School children (n=60) %
Balance diet gives energy to do work	70.00	66.67
Balance diet helps to grow and build body	63.33	60.00
Balance diet protects against diseases	58.33	46.66
Balanced diet helps good health	53.33	43.33
Balance diet provides all nutrients	65.00	56.67
Balance diet enhances immunity	41.67	35.00

work followed by balance intake of food provides all essential body nutrient (65%), it helps to grow and build body (63.33%), balance diet protects against diseases (58.33%) and balanced diet helps good health (53.33%) and enhances immunity (41.67%). However, school children of 9th and 10 standard of village school were observed almost similar percentage of opinion as shared by farm women.

Status of Body Mass Index (BMI) of rural Households

The Body Mass Index (BMI) of school children and farm women was measured using the classification given by World Health Organization. Height and weight were obtained to calculate the body mass index (BMI), as weight (kg) divided by height squared (m^2). The results of the BMI were classified according to WHO classification: underweight (BMI<18.50 kg/m²), healthy/normal weight (18.50 to 24.99 kg/m²), overweight (25.00 – 29.99 kg/m²) and obese (30.00 kg/m²). The data depicted in Table 2 revealed that more than 60 per cent school children (both boys and girls) and farm women were observed healthy with 61.67 per cent and 63.33 per cent, respectively with BMI score of 18.50 to 24.99 kg/m². It is also noticed that 30.00 per cent school children and 6.67 per cent farm women were observed underweight with BMI score below 18.50 kg/m². In addition, 18.33 per cent farm women and 8.33 per cent school children were found overweight with BMI score of 25.00-29.99 kg/m² and 11.66 per cent farm women were found obese with BMI score of more than 30.00 kg/m². This finding is consistent with the one obtained in the study of Ferrao et al., (2018), where it was found the prevalence of underweight and obesity was small. The present findings are also in line with Jethi et al., (2018) and Jodha & Dahiya (2019).

Table 2. Status of Body Mass Index (BMI) of School Children and Farm Women

BMI Category	BMI Score (kg/m ²)	School children (n=60) %	Farm women (n=60) %
Underweight	< 18.50	30.00	6.67
Healthy	18.50–24.99	61.67	63.33
Overweight	25.00–29.99	8.33	18.33
Obese	> 30.00	0	11.66

Level of Awareness of respondents about food nutrition

Adequate and proper nutrition is an important aspect of a healthy lifestyle. Hence, it is essential to promote awareness among the rural households of the nutrients contained in foods in relation to their roles in health maintenance and growth. The data related to level of awareness about food nutrition (Figure 1) revealed that more than half of the school children (58.34%) were found in medium level of awareness about food nutrition followed by low (28.33%) and high (13.33%) level of awareness about food nutrition. In addition, 63.33 per cent of the farm women had medium level of awareness about food nutrition followed by low (26.66%) and high (10.00%) level of awareness about food nutrition. The findings are in line with Ngozi et al., (2017). This finding could be a support for government policy initiatives directed at promoting healthy consumption behaviours.

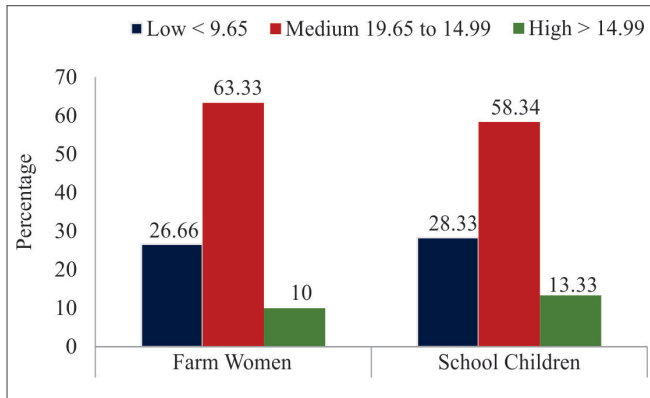


Figure 1. Level of Awareness about food nutrition

Awareness about sources of food nutritive value

The data related to awareness of school children about sources of food nutrition (Table 3) revealed that a majority of the school children (56.67%) were aware about the source of vitamin C rich of *aonla*, which boost immunity followed by source of fats (55.00%), carbohydrates provides energy for the body (53.33%), source of protein associated with body building, growth and development (48.33%), milk, curd and nuts are rich sources of bio-available calcium (43.33%), pulses are rich in proteins (40.00%) and fruits & vegetables are rich source of micronutrients (36.67), respectively. Also awareness of farm women about source of food nutrition observed that a majority of the farm women (50.00%) were aware about source of carbohydrates in food, followed by source of fats (48.33%), *aonla* rich source of vitamin C (56.67%), milk, curd and nuts are rich sources of bio-available calcium (43.33%), pulses (*dals*) are rich in protein (40.00%) & fruits & vegetables are rich source of micronutrients (33.33%), pulses are rich source of proteins (36.67%) and fibre rich foods are good for health (38.33%), respectively. Similar findings quoted by Ngozi et al., (2017).

Food consumption pattern of rural households

The data related to food consumption pattern of rural households (Table 4) revealed that cent per cent children had a food consumption pattern of three meals per day followed by male adult (80.00%), pregnant women (63.33%) female adult (43.33%) and 18.33 per cent of old respondents (male and female), respectively. It is also found that more than two third of the old

Table 4. Food consumption pattern of rural households

Category	Food consumption pattern (n=60)	
	Two meals a day*	Three meals a day*
Children	00	100.00
Female adult	57.00	43.33
Pregnant women	36.66	63.33
Male adult	20.00	80.00
Old (male & female)	81.66	18.33

*Multiple responses

people (81.66%) had a food consumption pattern of two meals a day followed by female adult (57.00%), pregnant women (36.66%), and male adult (20.00%), respectively. It is clear from the data that the dietary intake of women had low as majority of them been food consumption of two meals a day. The findings are in line with Jodha et al., (2019) & Gupta et al., (2020).

Health benefits from nutri-garden

Concept of nutri-garden was introduced in selected villages among rural household to grow healthy vegetables in their backyards. Considering the health benefits from fresh vegetables, nutri-garden kits were provided to the rural households as a well-planned nutri-garden ensures regular supply of fresh vegetables rich in nutrients.

For promoting nutri-garden for nutritional security, winter vegetables kitchen garden seed kits (Spinach, *Bathua*, Coriander, fenugreek, *kasuri methi*, carrot, radish, vegetables mustard etc.) were provided to the farm families of the selected villages. After the winter season, the perceptions of the respondents both school children (15 yrs old) and farm women were taken on kitchen gardening. The data depicted in Figure 2 revealed that majority of the respondents (75.83%) perceived availability of fresh vegetables during winter season due to cultivation vegetables crops followed by pesticides free organic vegetables (70.83%), enhanced vegetable consumption per day (68.33%), quality vegetables production (60.83%), fresh green vegetables beneficial to health (54.16%), easy availability of vegetables during the season (52.50%), saving on purchasing of vegetables (51.66%), kitchen gardening is the best hobby (42.50%), and enhancing knowledge to the children about vegetables (37.50%), respectively. The findings are in line with Jethi et al., (2020). This finding is consistent with the one obtained in the study of Chaudhary et al., (2019). According to Kumari et al., (2020) availability of macro and micro nutrients through consumption of vegetables in daily routine diet was found satisfactory.

Table 3. Awareness about sources of food nutritive value of respondents

Sources of nutrition value of food	School children (%)	Farm women (%)
Carbohydrate provides energy for the body	53.33	50.00
Protein is associated with body building, growth and development.	48.33	33.33
Fat and oils are energy sources to the body	55.00	48.33
Fibre rich foods are good for health.	38.33	28.33
<i>Aonla</i> rich in Vit-C helps to boost immunity	56.67	46.66
Calcium helps to maintain strong bones and teeth	000	5.00
Pulses (<i>dals</i>) are rich in proteins	40.00	31.67
Milk, curd and other dairy products are rich sources of bio-available calcium	43.33	35.00
Fruits & vegetables are rich source of micronutrients	36.67	33.33

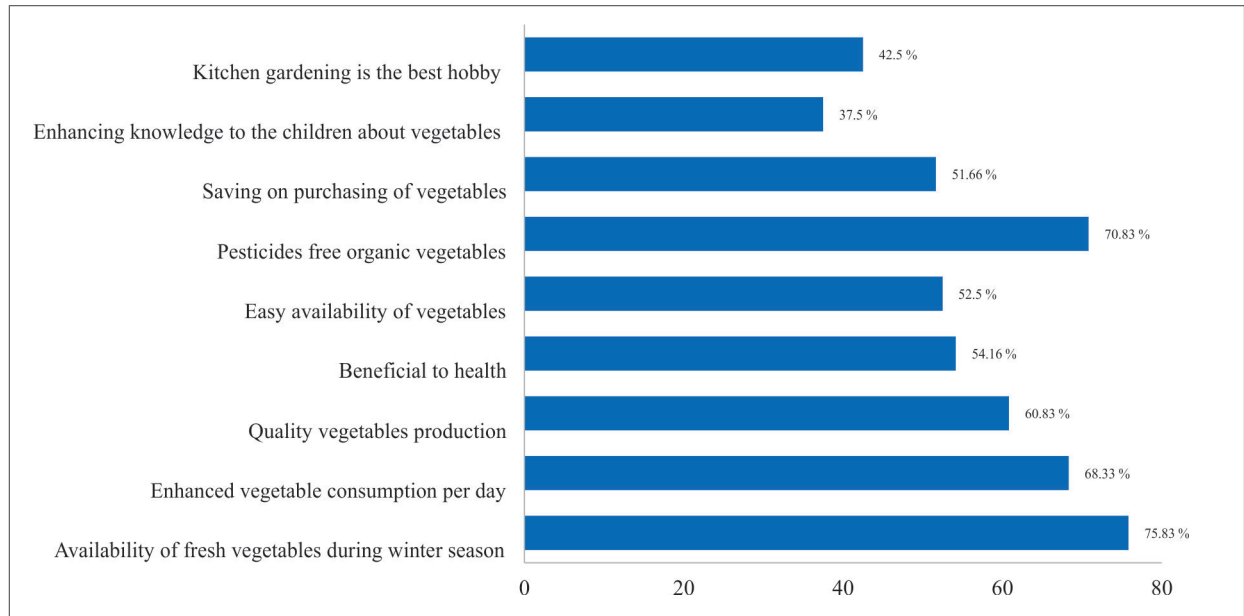


Figure 2. Perceptions of the respondents about nutri-garden

CONCLUSION

Adequate and good nutritious food is an important aspect of a healthy lifestyle. Hence, there is need to promote awareness among the rural households of the nutrients contained in foods in relation to their roles in health maintenance and growth. In addition, there is need to promote healthy habits of nutritious food consumption among rural households for food and nutritional security. Given the health benefits of fresh vegetables, nutri-gardens should be promoted among rural households in order to improve nutritional security at the household level.

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