IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Horticulture - Nutritional and Health Security (A case study of Telangana State)

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Abstract

The term 'nutritional security' emerged in the mid-1990 and occupied an important place in economy rater than food security.The food consumption by the individual or household and on how that food is utilized by the body becomes more important. In 1995, International Food Policy Research Institute (IFPRI) defined nutritional security as adequate nutritional status in terms of protein, vitamins, energy and minerals for all household members at all times. Malnutrition remains an important health problem in India. Globe Hunger Index (GHI) reveals that malnutrition, stunting, mortality rate of under- five say that one of three children in India has been affected with the growth which occupied 15 percent of total population. The proper social environment provides appropriate growth and development of childhood. Moreover, it promotes health and prevents diseases in adulthood.

In the case of India, average consumption of food in rural area confined to 2,212 calories while urban areas, it was 2,240 calories. However, in the case of Telangana state, it was 2,367 calories in the rural area whereas in urban areas, it was 2455 calories which is highest over other 10 states as per recent report published by Ministry of statistics and implementation, 2025. From the survey,it was revealed that respondents giving much more importance for nutritional gardens which providing daily with fresh vegetables which are nutritional and energy. Similarly, importance is increasing for kitchen gardens where every housewife is converting surrounding vacant land into kitchen gardens. In this way consumption of green vegetables and fruits in Telangana are increasing proportionately.

Keywords: Nutritional Security. IFPRI. GHI. ICMR. Malnutrition.

Introduction: The food consumption of individual or household and on how that food is utilized by the body is known as nutrition security. The concept of food security developed over the last 50 years and addressed. The need of production and access to adequate food grains to feed growing population of India. Later importance of nutritional security arisen

which is more important rater than food security. Global Hunger Index (GHI) reveals that 15 percent of India's population is undernourished and under five year, one in three children having stunted growth in India.The safe diet and proper social environment helps appropriate growth and development in childhood.

In addition to this, it promotes health and prevent diseases in elders. The concept of 'food and nutrition security' integrates both the conceptual frame work of nutritional security and food security. The integration approach reveals that micro nutrient malnutrition is more important rater than food energy deficiency. There is need to tackle non-food factors such as water, sanitation and other core practices. In 2023-24, the horticulture production was 353.19 million tonnes which is 3.17 percentage higher than the previous year. Moreover, it is sufficient for ensuring nutritional and health security.

The International Food Policy Research Institute (IFPRI) in 19995, defined 'nutrition security' as adequate nutritional status in terms of protection, energy, vitamins and minerals for all household members at all times. However, survey indicates that low consumption of fruits and vegetables prevails in India. The annual consumption (kg / person/ annul) of fruits was 15.6(urban) 9.6 (rural) and 11.8 (India) while in the case of vegetables, it was 79.1 (urban) 74.3 (rural) and 76.1 (India). However, National Sample Survey (NSS) revealing that out of 1000 households in India, vegetables consumption was reported by 932 (urban) and 983 (rural) whereas in the case of fruits 777 (urban) and 608 (rural) residents. The expert committee of ICMR recommended in 20424 that each individual should consume at least 400 g. of vegetables which includes Green leafy vegetables: 100 g; roots & tubes: 100 g; other vegetables: 200 g; in a day. In addition to this, fresh fruits 100: g should be taken regularly. However, pregnant women have to take 100 g of leafy vegetables daily which consisting of iron and folic acid. In the case of overweight candidates high-calories vegetables and fruits are to be restricted.

Horticultural production, being perishable item, needs extra care during storage and transportation. There is lack of storage felicities in India. Due to this, farmers are unable to get remuneration prices for vegetables and fruits. The fruits production was 112.72 million tons in 2023-24 which is 2.29 percentage higher comparing to previous year. The growth mainly confined to like mango, banana, lemon, apple and grapes. Similarly, the production of vegetables was 205.80 million tons in 2023-24 which is 1.63 percentage higher than previous year.

Review of Literature:

1) Dr.Chetna Sigh & Prof. Verendra Kumar Paul (2025) " Sustaining Rural Lively hoods Through Horticulture" In which both authors said that horticulture greatly contributes to nutrition and food security of a country. In addition to this, it is creating rural lively hoods and helps for sustainable rural growth.

2) Prahlad Deb & Souvik Ghosh (2025) " Fruit Based Farming Systems for improved Income and Livelihood" in which both authors said that fruit based farming systems represent a informative approach to enhancing agricultural sustainability, economic resilience, and nutritional security in India.

3) Dr. Shashi Bhushan (2025) "Clean plant programme - Revolutionizing Indian Horticulture" in which he said that clean plant programme helps to access to virus-free, high-quality planting material in spite of their landholding size or so ciao-ecnomic background.

4) Dr. Harender Raj Caita & Dr. H.L Sharma (2025) " Food Processing of Horticultural Crops" in which both authors said that utmost care is to be taken for perishable commodities such as fruits and vegetables to optimize nutrient availability and food quality and reduce loses and waste.

5) Dr. Brij Bihari Sharma & Anjali Sharma (2025) "Nutritional and Health Security through Horticulture" in which both authors said that protective nutrients such as vitamins, minerals, antioxidants, folic acid and dietary fibers hence strongly contribute in achieving the goal of nutritional and health security.

6) Dr. Prabhat Kumar (2025) '' Beekeeping - Generating Employment Opportunities" in which he said that promoting scientific beekeeping of honey in a mission mode to tap into its full potential to become a game changer in the 21st century.

Research Gap: The Government of India has launched various schemes to address horticulture sector in which National Horticulture Mission (NHM) is one which launched in 2005. Similarly, another scheme namely Mission for Integrated Development of Horticulture (MIDH) is an umbrella scheme which covers various schemes. The period of 2015 to 2025 is taken for studying of horticultural development.

Scenario of Horticulture in Telangana state: Telangana, newly formed state , is endowed with more of resources such as fertile soils and diversified cropping pattern. Agriculture is way of life, tradition that has shaped the culture and economic life of the people of telangana state. The horticulture sector a wide range of crops namely fruit crops, vegetables crops, flower crops, spices and plantation crops. The horticulture has emerged as an indispensable part of agriculture offering a wide range of choices to the farmers for crop diversification horticulture.

Impact of horticulture: Horticulture has become an important source of income to Telegana state. There is a favourable climate conditions for horticulture. The major crops such as mango, mosambi, red chilli, turmeric, marigold and vegetables. Horticulture contributes to the extent of 5.16 percent to GSDP and occupied 8th position in producing of fruits and vegetable of India. However, it achieved 1st rank in the case of turmeric production.

Objectives of horticulture:

1) It promotes horticulture.
2) It enhances of income of farmers.
3) It encourages farmer's association.
4) It boosts farmers output
5) It promotes high value added.
6) It helps to expand the cultivation of land.

Hypothesis:

1) It does not promote income of farmers.
2) It does not boost farmer's output.
3) It does not promote high value addd.

Challenges of horticulture: Horticulture is the science and art of growing plants. It comes a part of agricultural and contributes to supply of food and Ecosystem. Horticulture is facing more challenges that affecting productivity, plant health and so on. There is need to understand the challenges and their potential solutions which are involved in horticulture. The major challenges includes the pest and disease management, water management, climate change and weather extremes, soil degradation and nutrient management, labour shortages, weed management, market access to pricing fluctuations and sustainability and environmental impact.

Growing Health - Horticulture in India: Indian people facing a significant challenge with micro-nutrient deficiencies, due to insufficient intake of essential nutrient such as calories, iron, vitamin A, proteins, and calcium lack of which leads to widespread health problems. Mainly iron deficiency anemia (IDA) affecting about 75 of preschool children.

Due to this, 50 percent of children under five are underweight and stunted and even over 30 of adult also affected. Crucially, it is happening due to lack of taking of fresh fruits and vegetables.

Source of Energy and Proteins: Dry pulses are high protein content when compared to vegetables. The protein-rich vegetables are beans, peas, potato,cauliflower beat leaf and onions and other source of protein are given in the table.

Table-1
Horticultural Source of energy and proteins.

Protein	Walnut, almound cashew	Lima bean, broad bean pea, cowpea, pumpkin, drumstick, garlic, celery.
Carbohydrate	Custard apple, cashnew nut, jaun, jack fruit, date fig, dry karonda, dry apricot.	Potato, wseet potatoelephnt foot yam, taro, tapioca, pea, onion bitter gorud, carrot, brussels sprout.
Fat	Avocado, cashew nut, walnut.	Chili, brinjal, Brussels sprout, snake gourd, pointed gourd, lettuce, pink radish, sweet corn hyacinth bean, cluster bean, Bengal gram leaf, small bitter gourd spinach.

Source: NIN, Hyderabad.

From the table-1, it is understood that men and women require various types protein, carbohydrate and fat which are needed for the healthy survival. These are coming from various sources dry pulses and vegetables as shown in the table.

Vitamins and Minerals: A Hidden Treasure for Health: Fruits and vegetables are protective foods which contains sources of vitamins, sugars and minerals which help to maintain proper functioning of the body. Dietary fibers are mainly plant cell walls which containing pectin, xylans and manana. The vegetables and fruits play a significant role in sources of vitamins like A,C, B6 and E. The other important nutrients are potassium and riboflavin. Daily requirement of vitamins and minerals and their source of horticultural crops (per 100 grams) are given in the given table.

Table-2
Daily requirements of vitamins and minerals (per 100 grams)

Vitamins	Daily requirement/Asult/ day	Horticultural sources
Vitamin ‘A’	600 ug	Carrot,sweet potato, mango ripe, drumstick leaves, fenugreek leaves, amaranthus, papaya ripe.

Vitamin ‘C ‘	40 mg	Geen chilli, drumctick, cabbage, capsicum, lemon juice, radish leaves, mango ripe guavaparsley, gooseberry, drumstick leaves.
Vitamin ‘D ‘	5 ug	Oyster mushroom, white button mushroom, shitatake mushroom.
Vitamin ‘E ‘	15 ug	Aominds, coconut dry, mace pistachio nuts, broccoli, spinach, curry leaves, turmeric powder, zucchine green.
Vitamine ‘k ‘	120 ug	Turip green, broccoli, parsley, colocasis leaves, knolkhol, spinach. Drumstick Amaranthus.
Thiamin	1.4 mg	Peas, beans, poppy seeds, cashw nuts, pistachio nuts, quinoa, asafoetida.
Biotin	30 ug	Parsley scarlet beans, pistachio nuts, shitatake mushroom, oyster mushroom, knol-khol.
coloRiboflavin	1.6 mg	Drumstick, chenopodium, palak, curry leves, red chilies, Amaranthus.
Folic Acid	100 gm	Parsley, legume vegetables, spinach, Asparagus.
Niacin	18 gm	Beans, peas, red chilies, sweet potato, oyster mushrooms, capsicum, Almond.
Cyanocobalamin	1 ug	Broccoli, Asparagus, spinach.
Pantothenic Acid	5 mg	Rajrme, oyster mushroom, shitatake, cashew nuts, bail fruit,

		garlic.
Pyridoxine	2 mg	Pak choi, oyster Mushroom, muskmelon, garlic(single clove), watermelon, pistachio nuts, walnuts, Muskmelon.

Source: NIN, Hyderabad.

From the table-2, it is understood that fruits and vegetables have been considered rich sources of some essential dietary micro-nutrients and fibers which benefit for health. The fruits, vegetables and nuts in the daily diet which help risk for some forms of heart disease, stroke, chronic of cancer and other diseases. It is also increasing evidence that consumption of whole foods is better than isolated food components.

Telangana top in urban calories in take: Ministry of statistics and implementation published a report recently that men and women in Telangana requires calories as given in the table.

Table-3
Six Dietary Norms (Calories)

Categories	Men	Women
1) Sedentary	2100	1660
2) Little activity	2700	2130
3) Heavy labour	3470	2720

Source: Ministry of Statistics and Implementation, 2025.

From the table-3, it is understood that men requires more calories of food items comparing to women. In the case of sedentary mam requires of 2100 calories rather than of 1660 calories of women. While, in the case of Little activity where men require 2700 calories whereas women requires only 2130 calories of food. Similarly, the variations can be seen in the case of heavy labour where men requires 3470 calories while women requires 2720 calories of food.

The per ca-pita intake of calories is having variation from state to state which can be observed from the table given below.

Table-4
Per Capita Intake (Urban) (calories)

State	Calories per day
1) Telangana	2,455
2) Bihar	2,452
3) Chhattisgarh	2,366
4) Rajasthan	2,364
5) Haryana	2,360
6) Gujarat	2,310
7) Assam	2,310
8) Tamilnadu	2,304
9) Karnataka	2,289
10) Andhara Pradesh	2,285

Source: Ministry of Statistics and Implementation, 2025.

From the table-4, it is understood that Telangana state occupied first place in the case of consumption of calories of food comparing other state. Telangana followed by state of Bihar, Chhattisgarh, Rajasthan, Haryana, Gujarat, Assam, Tamilanadu and Karnataka. The last place occupied by Ahdhara Pradesh state where it is confined to 2,285 calories of food. As per national average of calories of rural area was confined to 2212 whereas the urban area consisting of 2240 calories while in the case of Telangana state, average consumption of urban area 2455 calories whereas rural area of 2,367 calories.

In Telangana state, 100 respondents were selected in which 50 farmers who cultivating fruits and remaining 50 who cultivating vegetables were selected from four districts- Nagonda, Medak, Gadwal and wanaparthy. From each district 25 farmers were selected which includes fruits as well as vegetable cultivators. After collecting and analyzing of data, first hypothesis is not accepted which is going in opposite direction that income farmers are increasing year after year. In the case of second hypothesis, it is not accepted because, output is also increasing of respondents per hector, while in the case of third hypothesis, value added of fruits and vegetables are increasing due to increasing production as well as increasing of prices. In addition to this, survey finding that importance came for nutritional gardens where requirement of fruits and vegetable are available thought year which is low cost sustainable approach for reducing malnutrition problem. Similarly, importance came for kitchen gardens where seasonal vegetables and fruits are grown. In this way, green and green leafy vegetables also increasing proportionately.

Conclusions:

Malnutrition remains an important public health problem in India despite several schemes are created for the issue. The concept of food security developed over the 50 years and addressed. However, nutrition security became a major concept rather than food security. In the case of India, average consumption of food in rural area confined to 2,212 calories while urban area was 2,240 calories. However, in the case of Telangana state, it was confined to 2,367 calories in rural area wheres in urban area was 2455 calories which is highest over other states as per the report recently published by Ministry of statics and implementation. In the survey, it is understood that importance came for nutritional gardens which are providing daily with fresh vegetables rich in nutrients and energy. Similarly, importance is increasing for kitchen gardens where every housewife is converting her surrounding vacant land into a live kitchen garden where vegetables and fruits are grown. Hence, in this way, consumption of green vegetables are increasing proportionately.

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