

Food Production and Consumption in Relation to Food Insecurity and Under nutrition in India

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Abstract:

Food security is essential for human development and economic growth, yet India struggles with ongoing food insecurity and undernutrition, despite being a leading food producer. This study delves into the links between food production, consumption patterns, and the issues of food insecurity and undernutrition in India. It scrutinizes agricultural production trends, emphasizing the reliance on cereals and the insufficient diversification towards nutrient-dense crops. Moreover, it evaluates evolving food consumption and household expenditure trends in both rural and urban contexts. The research identifies that food insecurity stems not just from availability issues but also from access, affordability, dietary quality, and socio-economic disparities. Utilizing measures such as the Global Hunger Index (GHI), the study indicates that while India has made strides in reducing hunger and undernutrition, serious concerns persist, particularly for children and vulnerable populations. The analysis concludes that undernutrition is a multifaceted issue, linked to insufficient nutritious food intake, inadequate health and sanitation, and poor execution of welfare programs. To achieve food and nutritional security, the paper advocates for a holistic policy strategy that includes agricultural diversification, efficient food distribution systems, better implementation of nutrition-focused welfare initiatives, nutritional education, and the adoption of sustainable, climate-resilient farming practices.

Keywords: Food Security; Undernutrition; Malnutrition; Agricultural Production; Food Consumption; Global Hunger Index; Public Distribution System; Nutrition Policy; India.

1. INTRODUCTION:

Food security is a fundamental requirement for human development and economic growth. According to the Food and Agriculture Organization (FAO), food security exists when all people have physical and economic access to sufficient, safe, and nutritious food at all times. Despite being one of the largest producers of food grains in the world, India continues to face serious challenges related to food insecurity and undernutrition. High levels of poverty, inequality, and uneven access to food have resulted in widespread malnutrition, particularly among children and women. This paper seeks to analyze how food production and consumption patterns influence food insecurity and undernutrition in India. The Govt of India passed the law Right to Food to maintain the nutrition level in India.

Objectives of Study:

1. To find out the relationship between agricultural production and food security in India
2. To find out the relationship between agricultural production and consumption expenditure in India.
3. To find out the relationship between consumption expenditure and food security in India.

Hypothesis:

1. There is a positive relationship between lowering agricultural production and food insecurity.
2. There is a positive impact of low agricultural production on increasing consumption expenditure.

2. REVIEW OF LITERATURE:

FAO and Earthscan published a book in (2011) The state of the world's land and water resources for food and agriculture managing systems at risk. In this book, the issue addressed related food demand in 2050.

It is expected that the world population will grow from the current about 6.9 billion to about 9 billion in 2050. Demand for food and fiber will grow more quickly as incomes and standards of nutrition rise and populations

move towards more land and water-intensive diets, in particular the consumption of more meat and dairy products. Current trends and model simulations indicate that global cereal demand will grow from roughly 2.1 billion tonnes today to about 3 billion tonnes in 2050 (FAO, 2006b). Thus, by 2050, the world will be demanding the production of almost an extra billion tonnes of cereal grain annually, and 200 million additional tonnes of livestock products.

R K Sing and others (2015) find out how technological interventions increase production and productivity of particular crops. The selected farmers of the demonstrations also acted as sources of information and pure seed under keen supervision of scientists for wider dissemination of improved pea seed to the other farmers. The productivity gain under demonstrations over conventional practices of field pea cultivation created greater awareness and motivated the other farmers to adopt appropriate recent production and protection technologies of field pea in the district. The selection of critical inputs and participatory approach in planning and conducting the demonstrations definitely helped in the transfer of technology to the farmers. It helps to achieve food security of particular crops consumption.

Sultan Singh Jaswal (2014) finds in his study on Challenges to Food Security in India. Food security in India aims to eliminate starvation but does not address food adulteration, which poses safety risks. Public food institutions must ensure that the food provided is safe and nutritious. This requires an organized inspection system, including testing facilities, even in villages, to guarantee the wholesomeness of distributed food. A state-sponsored food safety foundation is necessary, with trained personnel to enforce standards and legislative support for a food safety police force. Current challenges include the shortcomings of the Food Safety Bill and rising food prices, calling for amendments and regulations to ensure affordable, safe food for all. Ultimately, genuine food safety is essential for societal well-being and contentment.

Chakravarty and Dand (2005) the authors investigate the persistent food insecurity in India, highlighting that, despite a marginal decrease in the percentage of malnourished individuals by 1% during the 1990s (FAO, 2002), the absolute number of malnourished people increased by approximately 18 million. The authors argue that the issue of food insecurity does not stem from a general systemic failure tied to supply shortages but rather from specific vulnerabilities faced by particular sectors, notably the rural agrarian population and the urban informal workforce. They pinpoint key determinants of food insecurity, including declining incomes in

Crop	2019-20 (1st Advance Estimates)	Average (2013- 14 to 2017-18)	Absolute Difference (2019-20 over average)	Percentage Increase/ decrease (+)/ (-) in 2019-20 over average
Foodgrains	140.57	132.13	8.44	6.39
Oilseeds	22.39	20.22	2.17	10.76
Sugarcane	377.77	349.78	27.99	8
Cotton@	32.27	33.22	-0.95	-2.87
Jute& Mesta*	9.96	10.87	-0.91	-8.38

these sectors and the ineffectiveness of government policies aimed at combating poverty. Central to their analysis is the near collapse of the Targeted Public Distribution System (TPDS) in various regions, which exacerbates the problem. The study leverages existing academic literature and conventional data to elucidate the extent of food insecurity in India today, as well as to examine the multifaceted causative factors at play.

Table 1: Production in Kharif 2019-20 and 2018-19 (Million Tonnes)

Source: Directorate of Economics & Statistics, Department of Agriculture, Cooperation & Farmers Welfare

In Table no 1 The First Advance Estimates for 2019-20 concerning kharif season foodgrain production in India indicate a total output of 140.57 million tonnes, marking an increase of 8.44 million tonnes compared to the average production from the previous five years (2013-14 to 2017-18). Specifically, the production of kharif rice is estimated at 100.35 million tonnes, which is 6.80 million tonnes higher than the five-year average of 93.55 million tonnes. Additionally, kharif nutri/coarse cereals production is projected at 32.00 million tonnes, a rise of 1.01 million tonnes compared to 30.99 million tonnes in 2018-19. Kharif pulses production is estimated at 8.23 million tonnes, increasing by 1.00 million tonnes over the previous five-year average of

7.23 million tonnes. In terms of oilseeds, the total production for 2019-20 is 22.39 million tonnes, reflecting an increase of 1.11 million tonnes from 21.28 million tonnes during 2018-19 and exceeding the average of the last five years by 2.17 million tonnes. The sugarcane output is predicted to reach 377.77 million tonnes, which is 27.99 million tonnes more than the five-year average of 349.78 million tonnes. Cotton production is expected to be 32.27 million bales (170 kg each), marking an increase of 3.56 million bales over the previous year's production of 28.71 million bales. Lastly, jute and mesta production is estimated at 9.96 million bales (180 kg each), exceeding the production figures of 2018-19.

Food Production in India

India's agricultural sector plays a vital role in ensuring food availability. The Green Revolution significantly increased the production of wheat and rice, making India largely self-sufficient in food grains. However, agricultural growth has been uneven across regions and crops. While cereal production has increased substantially, the production of pulses, fruits, and vegetables has lagged behind, affecting dietary diversity. Small and marginal farmers continue to face challenges such as low productivity, climate change, and limited access to technology, which impact sustainable food production.

3. FOOD CONSUMPTION PATTERNS IN INDIA

Food consumption patterns in India vary widely across regions, income groups, and rural–urban areas. A significant shift has been observed from traditional diets towards processed and calorie-dense foods, particularly in urban areas. Although calorie intake may be adequate for some sections, the intake of essential nutrients such as proteins, vitamins, and minerals remains insufficient for many. Low-income households often depend on cereal-based diets due to affordability constraints, leading to nutritional imbalances and undernutrition.

Household Consumption Expenditure from 2011–12 to 2022–23
Changes in Monthly Per-capita Expenditure (MPCE)

The analysis of average monthly per capita expenditure (MPCE) reveals significant trends and variations over time. In rural areas, MPCE has escalated from rupees 1,430 in 2011–12 to 3,773 in 2022–23, marking an impressive growth of approximately 164%. This growth, however, is not uniform across all states. For instance, West Bengal experienced a MPCE increase from 1,291 to 3,240, equating to a 151% growth. In contrast, Tamil Nadu demonstrated a more substantial rise, with an increase from 1,693 to 5,314, reflecting a 214% growth. Notably, Sikkim, a smaller northeastern state, reported an extraordinary increase of 394%, soaring from 1,565 in 2011–12 to 7,730 in 2022–23.

Similarly, urban MPCE witnessed growth, elevating from 2,630 in 2011–12 to 6,459 in 2022–23, which constitutes a growth of about 146%. As with rural areas, this growth varies by state. For example, Gujarat's MPCE rose from 2,581 to 6,620, a 156% increase, while Uttar Pradesh's MPCE increased from 2,051 to 5,042, representing an increase of roughly 146%. Additionally, Sikkim's urban households also exhibited significant growth, with their MPCE climbing 364% from 2,608 in 2011–12 to 12,106 in 2022–23.

Overall, the findings indicate that rural households experienced a higher rate of expenditure growth compared to urban households, with rural households seeing an increase of 164% compared to 146% for urban households.

4. FOOD INSECURITY IN INDIA

Food insecurity in India is largely influenced by economic and social factors rather than food availability alone. Poverty, unemployment, landlessness, and regional disparities contribute to inadequate access to food. Vulnerable groups such as children, women, tribal populations, and migrant workers are disproportionately affected. Seasonal unemployment and price fluctuations further aggravate food insecurity, especially in rural areas.

Hunger is primarily associated with the discomfort from insufficient calorie intake. The Food and Agriculture Organization (FAO) defines food deprivation as the routine consumption of calories below the minimum necessary for a healthy, productive life, tailored to individual characteristics such as sex, age, body size, and physical activity level. Undernutrition encompasses more than just calorie deficits, including deficiencies in energy, protein, vitamins, and minerals. It arises from inadequate food intake both in quantity and quality as well as poor nutrient absorption due to disease, compounded by factors like food insecurity, poor maternal health, and lack of access to health services and sanitation.

Malnutrition includes both undernutrition and overnutrition, the latter being due to excessive calorie consumption even when dietary imbalances exist. Overnutrition leads to health issues such as obesity and noncommunicable diseases, becoming prevalent worldwide, raising concerns for health policies and food systems. The Global Hunger Index (GHI) specifically emphasizes undernutrition, measured through indicators like undernourishment, child stunting, child wasting, and child mortality, collectively highlighting both calorie and micronutrient deficiencies.

Table no. 2 India's Rank in GIH 2021 as per GHR 2021

Rank	Country	2000	2008	2016
102	India	38.1	34.6	29.3
123	Somalia	64.3	60.5	49.4

- India's **GHI score declined from 38.1 in 2000 to 29.3 in 2016**, indicating a **gradual improvement in hunger and undernutrition levels**.
- This reduction suggests progress in Food availability and calorie intake, Child nutrition outcomes, Health interventions, and mortality reduction. However, a score of **29.3 still falls under the "serious" hunger category**, highlighting persistent problems of Child stunting and wasting, Micronutrient deficiencies, and Inequitable access to nutritious food, healthcare, and sanitation. This aligns with the earlier discussion that **undernutrition in India is not only due to insufficient calories but also poor dietary quality, disease burden, and social factors**.
- Table no. 2 illustrates that while **India has made progress in reducing hunger and undernutrition**, it continues to face serious nutritional challenges as defined by the GHI framework. The data reinforces the broader understanding that **hunger is multidimensional**, extending beyond calorie intake to include protein and micronutrient deficiencies, health access, and living conditions—key issues emphasized in the discussion above.

Undernutrition remains a major public health concern in India, manifested in forms such as stunting, wasting, and underweight among children. Undernutrition results from insufficient intake of nutritious food, poor health conditions, and lack of sanitation. Food insecurity directly contributes to undernutrition by limiting access to diverse and balanced diets. Long-term undernutrition adversely affects physical growth, cognitive development, and productivity.

The Government of India has implemented several policies to address food insecurity and undernutrition. The Public Distribution System (PDS) aims to ensure access to subsidized food grains for the poor. The National Food Security Act (NFSA) provides legal entitlement to food for vulnerable populations. Nutrition-specific programs such as the Integrated Child Development Services (ICDS) and the Mid-Day Meal Scheme play a crucial role in improving child nutrition. Despite these initiatives, issues related to implementation and coverage persist.

5. CHALLENGES

Major challenges include inefficiencies in food distribution, post-harvest losses, regional inequalities, and climate-related risks to agriculture. Inadequate focus on nutrition-sensitive agriculture and lack of awareness about balanced diets further hinder efforts to reduce undernutrition.

6. SUGGESTIONS AND POLICY MEASURES

The paper outlines five key suggestions and policy measures aimed at improving agricultural practices and nutritional outcomes:

A. Promote Diversification of Agriculture Towards Nutritious Crops:

Shift focus from staple cereals like rice and wheat to nutrient-rich crops such as millets, pulses, oilseeds, fruits, and vegetables. This diversification is vital for improving dietary diversity and addressing micronutrient deficiencies. Government support through minimum support prices (MSP), input subsidies, and assured markets can enhance farmer income and nutrition.

B. Strengthen Food Distribution and Storage Infrastructure:

Improving food distribution systems is essential to ensure vulnerable populations receive adequate and quality food. Enhancing the Public Distribution System (PDS) with better targeting and digitization can minimize leakages and boost access. Investments in modern storage, cold chains, and warehouses will also help reduce post-harvest losses and maintain food quality.

C. Improve Implementation of Nutrition-Related Welfare Schemes:

Effective execution of government nutrition programs like the Integrated Child Development Services (ICDS) and Mid-Day Meal Scheme is crucial to combat malnutrition. This requires sufficient funding, regular monitoring, and interdepartmental coordination, particularly focusing on high-risk groups such as pregnant women and children.

D. Enhance Nutrition Education and Awareness:

Nutrition outcomes depend significantly on knowledge and practices. Initiatives to promote nutrition education through schools and community programs can empower households to make informed dietary choices. Campaigns should underscore the importance of balanced diets and proper feeding practices, specifically targeting women to influence child nutrition positively.

E. Encourage Sustainable and Climate-Resilient Farming Practices:

Addressing climate change is key to food security. Implementing sustainable agricultural practices like drought-resistant crops and efficient water management ensures long-term food availability and helps farmers adapt to climate change, thereby lowering the risk of hunger and undernutrition.

7. CONCLUSION

The study concludes that food insecurity and undernutrition in India are not solely the result of inadequate food production but are deeply linked to issues of access, affordability, and nutrition. An integrated approach combining increased food production with improved consumption patterns and effective policy implementation is essential to achieve food and nutritional security in India.

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