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Trends in Nutritional Security: An Analysis of Indian States

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Abstract

Nutritional security represents basically a system of protection of individuals who are in need of adequate nutrition. The paper has attempted to look into the changes in the nutritional intake among inhabitants across major states of India. Hunger has been a concern for generations and has continued to plague hundreds of millions of people in the country. Although many efforts and interventions have been devoted to reduce hunger; challenges such as growing competitions for natural resources, emerging climate changes and natural disasters, poverty, illiteracy, and diseases are posing threats to food security and intensifying the hunger crisis. It is, therefore, imperative to look at the entire system of food production, food procurement and the release and distribution of food for achieving food and nutritional security in the country. Diversifying demand patterns need to be appreciated for holistic approach to food and nutritional security.

Keywords: Nutritional security, Welfare schemes, Sustainable development, National Food Security Act

JEL Classification: Q18, Q01, E23, F 52

Introduction

Foodsecurityisanimportantdevelopmental strategy to combat multifaceted issues like malnutrition, poverty and hunger. Food security refers to " all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO 2015). Food security and nutrition are inter-linked in a way that it determines how a person will perform various activities throughout his / her course of life. UNICEF in 1995 defined nutritional security as "adequate nutrition in terms of protein, energy, vitamins, and minerals for all household members at all times." Globally, nearly 195 million people are undernourished of which one-quarter is constituted from India. Right to food is enshrined in the Constitution thereby the State shall raise the level of nutrition and living standard and improve public health of the people. India showed its commitment to alleviate poverty and hunger related issues through many policies devised from time to time. However, an important changes taking place in the size and composition of Indian economy, involving a decline in the relative shares of output and employment in agriculture, rapid pace of urbanization and a discernible increase in integration with global value chains. These

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changes have brought to the fore some pertinent questions about the preparedness of India to ensure adequate nutrition and food security to an entire nation of 1.2 billion inhabitants. India has dealt with the problems of managing production, procurement and distribution of food grains both for open market and for the numerous beneficiaries covered under a public distribution system (PDS). The literature on Indian context suggests that even revamped PDS has not worked well. It has benefited only the rich and not the poor. The Targeted Public Distribution System (TPDS) was adopted in 1997 with the intention to focus on poor (Kattumuri 2011). The entire population was divided into three categories – BPL (Below Poverty Line), APL (Above Poverty Line) and AAY – Antyodaya Anna Yojana (destitute). Nevertheless, the revised TPDS was also criticised. It was pointed out that the allocation of ration for BPL family is grossly inadequate[1] There is evidence to suggest that there has been a diversion of PDS grains to the open market and it remains a serious cause of concern (for details refer Khera, 2011). Researchers have also highlighted the positive impact of PDS. For instance, a household level analysis from the Vidarbha region of Maharashtra, one of the most distressed regions of India, has shown that the public distribution system contributes significantly to the food security of poor families and that the inclusion of families above poverty line would enhance further the benefits of PDS (Parasuraman and Rajaretnam, 2011).

Some of the studies have pointed out that for the country as a whole and for a large number of states, only a small proportion of households with ration card, depended upon the PDS. In general, even the Antyodaya and BPL card households obtained only about 30 per cent of their food consumption from the PDS. This could be because of either inadequate PDS entitlement or reasons like poor quality, high transaction costs, inadequate physical access and availability. The studies also argued that the estimates of food insecurity in India are generally made with reference to outdated norms worked out during the 1960s/1970s. Estimates of buffer stock, if based on similar norms, would be overestimates (Rao, 2000, 2005; Suryanarayana, 2009).In sum, these set of studies suggested that the need of the hour is not universalisation of the PDS but a revision of the food security norm, BPL-friendly PDS and its efficient functioning.

The studies conducted from the perspective of the integration of world grain markets and its potential impact on the developing nations highlighted the importance of trade in maintaining the food-security. For instance, Beghin *et al.* (2003) showed that food security via production targets and reliance on imports would be more palatable to consumers and trade partners, while preserving income transfer to the farm sector. Dorosh (2004) argued that trade liberalisation, which permitted the import of rice and wheat by the private sector, has enhanced national food security in Bangladesh. A study by Bhalla and Hazell (1997) shows that with an anticipated rise in the growth rate of per capita income in India during 1991 to 2020 from 3.0 to 5.5 per cent per annum, there would be an appreciable acceleration in the growth rate of demand for food grains. These results are contrary to the assertion of some scholars who have argued that with an expected acceleration in per capita income to 5.0 to 5.5 per cent during the coming decades, there would be a decline

in demand for food grains and hence that India's prospects for wheat and rice exports are bright. Their view is that Herculean efforts would be required for stepping up food production even if domestic demand is to be satisfied from domestic sources. Another study pointed out that rural food markets in the Third World are thin and isolated, leading to a high variance in food prices and a high covariance between individual and market supply. Staple consumption, on the other hand, is essential for survival. Consequently, staple food expenditures have low income elasticity. The combination of both elements leads to a situation in which food security at the household level is best achieved by a high degree of food self-sufficiency (Fafchamps, 1992).

Against this backdrop, Government of India (GoI) has enacted a comprehensive legislation - The National Food Security Act (NFSA) 2013- comes as a major landmark and culmination of a series of public policy initiatives. NFSA also called as Right to Food Act and seeks "*to provide for food and nutritional security in human life cycle approach, by ensuring access to adequate quantity of quality food at affordable prices to people to live a life with dignity and for matters connected therewith and incidental thereto*" for all citizens of the country.[2] About two thirds (approx. 67 per cent) of the population are supposed to entitled to receive subsidized food grains under NFSA. It covers up to 75 per cent of the rural population (with at least 46 per cent belonging to the priority group) and up to 50 per cent of the urban population (with at least 28 per cent belonging to the priority group) and provide them 5 Kg food grains per capita per month at Rs. 3, Rs. 2, and Rs. 1 per kg for rice, wheat and coarse grains (millet), respectively, subject to the maximum of 25 kg per household per month. Pregnant women and lactating mothers are entitled to a nutritious "take home ration" of 600 Calories and a maternity benefit of at least Rs 6,000 for six months. The poorest that are covered under the Antodaya Yojna are entitled to get 35 kg grains under the mentioned scheme. At present, food security covers almost 807 million people of the country. Moreover, in case of non-supply of food-grains, entitled persons will be provided food security allowance by the concerned State/ Union Territory Governments (GOI, 2011-12). Himanshu and Sen (2011) argued in this regard that food security cannot be attained without addressing the issues of physical availability, distribution and stock management. Moreover, Himanshu and Sen (2013) argues that NFSA 2013 is not perfect and in fact satisfy nobody since according to them legal commitment is limited with only best endeavour promised on the availability and absorption. On availability of cereals alone, does not even commit to adequate stocks at all places and all time. On absorption important matters elation to safe drinking water, sanitation and health are relegated to a simple list of goals for progressive realisation. Some empirical support for the claim that the NFSA can increase PDS consumption is highlighted particularly in Chhattisgarh by the study carried out by Krishnamurthy *et al*. (2014) and implied that such increase might not be substantial or sustained in the absence of comparable political and social efforts. George and Mckay (2019) reviewed 23 studies to and investigate the role, impact, and effectiveness of PDS in addressing food insecurity. They highlight ineffectiveness and inefficiencies of PDS but it may reduce the

level of hunger if implemented effectively and suggested the integration of PDS with other interventions which will increase transparency and accountability. Shankar et al. (2017)maintained the need for national strategies to alleviate malnutrition and needed understanding on "integrate the socio-cultural context of food acquisition and intra-household aspect of food consumption in India".They have found community-based education and interpersonal counselling for the better outcome for the Infant and Young Child Feeding (IYCF).Also multi-sector approach is suggested to address nutritional security as the nutritional status involved number of factors starting from food, health services and government schemes (Sharma 2019).

It is to be understood that food availability is only one aspect of food security, though an important one. The others are economic access to food and its absorption by people for better nourishment. It is here that India has faced its biggest challenge and paradox. Despite buoyant economic growth in recent years, around one-third of India's population, i.e. 400 million people, still lives below the poverty line (in 2010) as per World Bank's definition of USD 1.25/day. Using the multi-dimensional poverty index (MPI1)[3] of UNDP, India ranks at 75 among 109 countries in 2011, much worse than the other BRIC countries-indicating extent of deprivation in terms of living standards, health, and education. According to National Family Health Survey, from estimated 52 per cent in 1990, *the proportion of underweight children below 3 years* is required to be reduced to 26 per cent by 2015. The proportion of underweight children has declined by 3 percentage points during 1998-99 (NFHS -2) to 2005-06 (NFHS-3), from about 43 per cent to about 40 per cent and at this historical rate of decline, it is expected to come down to about 33 per cent only by 2015. The HUNGaMA (Hunger and Malnutrition) Survey conducted by Nandi Foundation across 112 rural districts of India in 2011 showed that 42 per cent of under-five children are underweight and 59 per cent are stunted. All these estimates point to the existence of food insecurity at the micro-level in terms of either lack of economic access to food or lack of absorption of food for a healthy life.

Another challenge is how to establish a functional food security scheme for the entire country on the structure, composition and region specific pattern of food production in India. This in turn will lead us to a national debate involving all leading practitioners of the policy community- academic scholars, administrators, parliamentarians and the media - on the need for public policy interventions that can help transform and sustain the food grain economy of India as one both remunerative and competitive in the global market.

Data Sources and Methodology

The study is based on the secondary data. The data pertaining to the nutritional intake in India is gathered from different quinquennial surveys of the National Sample Survey Organisation (NSSO) on consumer expenditure conducted during 27th, 38th, 43rd, 50th, 55thround and 68th round, respectively. The data thrown out by NSSO in its various rounds mainly focuses on intake of nutrients by households in terms of protein, fat and carbohydrates and their conversion into energy units in terms of calories derived from consumption of different groups of food

items.

The trend analysis across states has been carried out in terms of per capita and per consumer unit intake of calorie, protein and fat during 1972-73 to 2011-12. The percentages of calories and protein intake from different food items have also been computed for the period 1999-2000 to 2011-12. Furthermore, the percentage changes in meals taken at home over the last 18 years have been worked out for comparable major states as well as for both the rural and urban sectors. The results and discussion are presented in next section.

Results and Discussion

It is imperative to look at the changes in the nutritional intake among inhabitants across major states of India. Before proceeding to the analysis, we note the following.

It is needless to emphasize the importance of data on intake levels of nutrients of the people of a country for understanding their general health status. The measures of nutritional intake status also reflect the adequacy of available food to the people. However, a wide range of nutrients are necessary to a person for performance of various bodily functions and also to lead a healthy life. The major components of food are: carbohydrates, proteins, fats, vitamins and minerals. These are called nutrients. These nutrients are chemical ingredients which are present in the food consumed. The foods containing these nutrients which we consume daily are classified as cereals, pulses, nuts & oilseeds, vegetables, fruits, milk & milk products and also foods fleshy in nature (fish, meat & poultry).

Just to consider the calorie requirement of a person in terms of age and/or sex is a much simplification of the real situation, since other conditions such as body weight, height, nature of work, state of health and so on cannot be overlooked as determinant cofactors. Thus requirement of calorie per consumer unit in reality is not a fixed amount but a variable depending upon all these factors. Nutritionists, attempting to assess calorie requirements per consumer unit, differ in their approaches, , some specifying calorie requirement as function of body weight, while others assign requirements depending on nature of work (sedentary/moderate/heavy). From the 26th round,the NSSO has been using a level to the tune of 2700 calories per consumer unit per day as a standard and this standard can be compare with the actual intake. This level (2700 calories per consumer unit per day) is referred to and reported as the "norm" level of calorie intake. [4]

It is important to underline that the estimate of average per capita calorie intake perdiem, so derived, may not necessarily represent the 'true' level of intake of a household for two reasons. Firstly, there may be members of the household who might have consumed food from their employers (without payment) or while as guests in other households or children in the household may have received free mid-day meals from schools. These free mealseaten outside home and hence their nutrient content would be omitted from the consumer expenditure of the recipient households as recipients would not be able to recollect the detailed ingredients going into the meals eaten outside. Secondly, persons other than the household members might have been entertained as guests during ceremonies or on any other occasions with food which though not consumed by household members, gets included in the consumer expenditure of

the meals-serving household but the guests are justifiably not counted as members of households. While the former is likely to depress the reported per capita level of calorie intake of the household, the latter will have a tendency to inflate it. Hence, to bring the estimate of calorie intake level closer to 'true' intake, NSSO has started collecting information from 38th round on the number of meals eaten by household members at home and those served to guests and employees as well as free meals eaten outside home by household members.

Table 1, 2 and 3 shows the changes in average per capita intake of calorie, protein and fat per diem for both the rural and urban population, state-wise rural population and state-wise urban population respectively. Table 1 suggests decreasing trend for average per capita intake of calories and protein per diem over different rounds for rural population. Conversely, per capita fat intake for rural area is increased from 24 gm in 1972-73 to 41.6

Table 1: Changes in average per capita intake of calorie, protein and fat per diem per day over NSS Rounds in India

Per capita per diem per day intake of			
Calorie (Kcal)			
Round	**Year**	**Rural**	**Urban**
27th	1972-73	2266	2107
38th	1983	2221	2089
50th	1993-94	2153	2071
55th	1999-2000	2149	2156
61st	2004-05	2047	2020
68th	2011-12	2099	2058
Protein (gm)			
27th	1972-73	62.0	56.0
38th	1983	62.0	57.0
50th	1993-94	60.2	57.2
55th	1999-2000	59.1	58.5
61st	2004-05	57.0	57.0
68th	2011-12	56.5	55.7
Fat (gm)			
27th	1972-73	24.0	36.0
38th	1983	27.0	37.0
50th	1993-94	31.4	42.0
55th	1999-2000	36.1	49.6
61st	2004-05	35.5	47.5
68th	2011-12	41.6	52.5

Source: NSSO Report No.513: Nutritional intake in India, 2004-2005; NSS Report No.560: Nutritional Intake in India, 2011-12.

gm in 2011-12. For urban population the similar increase is observed from 36 gm in 21972-73 to 52.5 gm in 2011-12 in average per capita fat intake. For average per capita protein intake in urban setting shows marginal increase from the year 1972-73 to 1999-00 and starts declining thereafter.

Significant inter-state variation in the per capita intake of calorie, protein and fat is observed in both rural and urban sector (Table 2 & 3).

Some states at the higher end of the average per capita intake of calorie per diem were Uttar Pradesh (2436), Punjab (2328) and Haryana (2254) in the rural areas and again Uttar Pradesh (2379), Punjab (2172) and Haryana (2165) in the urban areas during 2011-12. On the other hand, Gujarat (1915), Tamil Nadu (1926) and Kerala (1975) in the rural areas and Tamil Nadu (1975), Karnataka (2007) and Madhya Pradesh (2029) in the urban areas were found to have much lower intake of calorie than the national average during 2011-12.In terms of per capita calorie intake, Andhra Pradesh, Bihar, Haryana, Madhya Pradesh, Odisha, Punjab, Rajasthan, Uttar Pradesh and West Bengal were higher than the national average of 2047 Kcal in rural India for 2011-12.

Only Bihar, Haryana, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh showed higher per capita intake of protein than the national average(57.0 grams) in the rural area in 2011-12.Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan Tamil Nadu and Uttar Pradesh reported more per capita fat intake than the national average (35.5 grams) in the rural areas during 2011-12. However, in urban areas about 12 major states were above the national average of 2020 Kcal in terms of per capita calorie intake. Six major states reported higher per capita protein intake than the national average of 57.0 grams. In terms of fat intake, ten states are above the national average of 47.5grams during 2011-12.

Trends in total intake of calorie and protein obtained from different groups of food items in rural and urban sectors are shown in Table 4 and 5 respectively. These trends were shown for different states and for all India level. The data presented reveals, by and large, marginal decline in proportions of calorie intake for both rural and urban areas particularly in the consumption of cereals (I) whereas we observed a marginal increase of calorie intake from the consumption of other food (II). In an overall situation, out of the total calorie intake, about 61.10 per cent calorie intake in the rural areas and 51.64 per cent in urban areas were derived from cereals alone in 2011-12. This percentage was 67.71 for rural areas and 55.14 for urban areas in 1999-2000. Of the average intake of protein in the country, 62.45 per cent in the rural sector and 53.69 per cent in the urban sector was derived from cereals during 2011-12. The corresponding figures for 1999-2000 were 67.43 per cent and 62.45 per cent, for rural and urban area respectively.

This picture is true for the states as well. For all the states, cereals are the primary source of calories and protein in both rural and urban areas. In the rural areas, pulses are the next major source of protein for Assam, Bihar, Maharashtra, Madhya Pradesh, Karnataka, Odisha and Tamil Nadu whereas the second major group from which protein is derived is milk and milk products for the people of Haryana, Punjab, Rajasthan and Gujarat in

Table 2: State-wise changes in average per capita intake of calorie, protein and fat per diemper day over NSS rounds for rural India

State	Calorie (kcal)						Protein (gm)						Fat (gm)					
	27th	38th	50th	55th	61st	68th	27th	38th	50th	55th	61st	68th	27th	38th	50th	55th	61st	68th
	1972-73	1983	1993-94	1999-2000	2004-05	2011-12	1972-73	1983	1993-94	1999-2000	2004-05	2011-12	1972-73	1983	1993-94	1999-2000	2004-05	2011-12
Andhra Pradesh	2103	2204	2052	2021	1995	2186	53.0	56.0	50.8	49.4	49.8	53.6	21.0	24.0	27.2	29.5	33.5	43.4
Assam	2074	2056	1983	1915	2067	2010	53.0	52.0	49.5	47.7	52.7	49.3	15.0	18.0	21.0	22.3	26.7	26.1
Bihar	2225	2189	2115	2121	2049	2057	65.0	65.0	60.2	58.7	57.8	57.3	17.0	20.0	23.0	26.5	28.4	33.9
Gujarat	2142	2113	1994	1986	1923	1915	58.0	59.0	55.6	54.2	53.3	50.8	40.0	44.0	47.4	53.8	50.9	56.5
Haryana	3215	2554	2491	2455	2226	2254	90.0	78.0	78.4	75.3	69.6	67.9	47.0	47.0	53.6	59.1	55.4	62.7
Karnataka	2202	2260	2073	2028	1845	2003	57.0	60.0	55.1	54.2	48.8	50.4	23.0	26.0	28.6	36.6	33.9	44.0
Kerala	1559	1884	1965	1982	2014	1975	38.0	47.0	50.8	52.4	55.4	54.6	19.0	32.0	32.7	38.8	40.8	44.7
Madhya Pradesh	2423	2323	2164	2062	1929	2110	68.0	68.0	63.0	58.2	58.8	61.8	21.0	25.0	28.3	31.3	35.1	41.6
Maharashtra	1895	2144	1939	2012	1933	2103	54.0	62.0	54.8	56.5	55.7	56.0	24.0	30.0	33.5	39.7	41.5	52.1
Odisha	1995	2103	2199	2119	2023	2116	49.0	51.0	52.7	49.9	48.3	49.9	8.0	13.0	14.8	16.3	17.8	24.4
Punjab	3493	2677	2418	2381	2240	2328	85.0	79.0	74.7	71.7	66.7	66.4	50.0	52.0	59.8	58.7	58.7	64.7
Rajasthan	2730	2433	2470	2425	2180	2263	84.0	75.0	79.4	76.9	69.6	68.4	46.0	42.0	52.8	53.5	50.9	57.7
Tamil Nadu	1955	1861	1884	1826	1842	1926	49.0	47.0	46.8	44.9	44.9	48.8	18.0	22.0	24.7	29.5	29.6	39.0
Uttar Pradesh	2575	2399	2307	2327	2200	2436	76.0	73.0	70.4	69.7	65.9	68.2	28.0	29.0	35.5	37.6	37.5	52.8
West Bengal	1921	2027	2211	2095	2070	2092	50.0	52.0	54.8	51.6	52.0	51.7	13.0	17.0	21.4	24.2	26.5	32.4

Source: NSS Report No.560: Nutritional Intake in India, 2011-12.

Table 3: State-wise changes in average per capita intake of calorie, protein and fat per diemper day over NSS rounds for urban India

State	Calorie (kcal)						Protein (gm)						Fat (gm)					
	27th	38th	50th	55th	61st	68th	27th	38th	50th	55th	61st	68th	27th	38th	50th	55th	61st	68th
	1972-73	1983	1993-94	1999-2000	2004-05	2011-12	1972-73	1983	1993-94	1999-2000	2004-05	2011-12	1972-73	1983	1993-94	1999-2000	2004-05	2011-12
Andhra Pradesh	2143	2009	1992	2052	2000	2150	51.0	50.0	49.6	50.8	50.9	54.2	31.0	32.0	34.9	41.5	43.2	49.9
Assam	2135	2043	2108	2174	2143	2038	56.0	52.0	53.5	56.5	55.9	52.1	25.0	25.0	30.8	38.7	36.8	37.1
Bihar	2167	2131	2188	2171	2190	2080	61.0	61.0	61.4	61.0	62.2	58.4	25.0	26.0	32.7	34.2	40.4	38.9
Gujarat	2172	2000	2027	2058	1991	2070	57.0	55.0	54.9	54.7	57.3	54.1	58.0	53.0	57.9	67.0	63.5	69.8
Haryana	2404	2242	2140	2172	2033	2165	67.0	67.0	63.6	62.5	60.5	61.6	42.0	49.0	49.4	56.3	54.4	65.2
Karnataka	1925	2124	2026	2046	1944	2007	46.0	55.0	53.1	53.5	52.2	51.9	32.0	36.0	37.6	45.1	43.3	50.6
Kerala	1723	2049	1966	1995	1996	2030	44.0	51.0	52.4	55.2	56.7	56.8	27.0	38.0	37.0	42.9	44.9	49.1
Madhya Pradesh	2229	2137	2082	2132	1954	2029	61.0	62.0	59.8	60.6	58.2	58.0	34.0	36.0	40.3	43.5	43.4	50.2
Maharashtra	1971	2028	1989	2039	1847	2039	55.0	56.0	55.5	55.9	52.1	55.2	41.0	45.0	47.9	52.6	50.1	58.7
Odisha	2276	2219	2261	2298	2139	2094	55.0	56.0	57.2	57.8	55.2	52.8	23.0	24.0	28.1	27.4	28.3	34.0
Punjab	2783	2100	2089	2197	2150	2172	70.0	63.0	61.8	64.8	63.4	62.0	52.0	49.0	53.7	57.9	61.0	64.6
Rajasthan	2357	2255	2184	2335	2116	2151	70.0	69.0	66.5	70.4	64.0	62.7	47.0	47.0	51.6	61.5	56.4	61.6
Tamil Nadu	1841	2140	1922	2030	1935	1975	44.0	45.0	48.7	51.7	49.2	51.1	23.0	29.0	33.9	43.2	41.1	46.7
Uttar Pradesh	2161	2043	2114	2131	2124	2379	62.0	62.0	63.2	62.0	65.1	66.2	35.0	34.0	41.2	45.5	46.1	57.7
West Bengal	2080	2048	2131	2134	2011	2026	58.0	55.0	56.6	55.5	55.1	53.8	31.0	31.0	34.2	40.2	39.1	43.8

Source: NSS Report No.560: Nutritional Intake in India, 2011-12.

2011-12. The people of rural areas of Kerala and West Bengal have reportedly depended on the second major group meat, fish and eggas the source for protein intake next to cereals. The picture is somewhat similar in case of urban areas so far as the proportion of intake of protein from sources of food other than the dominant one of cereals is concerned. Among the states, Kerala (43.22%), Tamil Nadu (38.95%), Punjab (37.15%), Haryana (36.41%) and Karnataka (35.11%) have reported the second highest percentage of total intake of protein from pulses, milk and milk products and meat, fish and egg respectively as sources in urban areas.

However, marginal increase in intake of proteins has been observed in terms of sources other than the cereals and pulses when compared with 55th round (1999-2000) of NSSO for both rural and urban areas of the country against 68th round (2011-12). For instance, protein intake from milk and milk products has marginally increased to 10.56 per cent (2011-12) as compared to 9.19 per cent (1999-2000) for rural India. This is increased to 13.57 per cent in 2011-12 from 12.43 per cent for urban India. Similarly, protein intake from egg, fish and meat products has shown marginal increase both in rural and urban India in 2011-12 against 1999-2000. The mixed trend has been observed for different states for both rural and urban areas in this regard (see Table 4 and 5).

We have also attempted to study whether the number of meals taken at home has undergone any change over 50th round (1993-94). The information is provided in table 6.

The comparison is limited to few comparable major states for different sectors. At all India level the number of meals taken at home had decreased by 6.00 per cent, major states having undergone similar declines were Andhra Pradesh (-15.04%), Maharashtra (-14.16%), Punjab (-14.16%), West Bengal (-13.54%), Rajasthan (-12.44%), Kerala (-8.97%), Haryana (-8.72%), Karnataka (-6.90%) and rest of the states had shown decline less than the national level in the rural area. In urban India prevalence of home-cooked meals had gone down by 8.97% over the last 18 years. The leading contributors were Andhra Pradesh (-21.94%), Karnataka (-20.46%), Gujarat (-14.23%), Odisha (11.37%) and Punjab (-10.18%) whereas it had increased for states like Assam (10.27%) and Haryana (4.09%).

Conclusion and Policy Implications

The paper presents evidence that the average per capita intake of calories and protein per diem has shown decreasing trend over different rounds both in rural and urban areas of the country. Nonetheless, marginal increase in the consumption of fats and protein has observed in rural and urban areas, respectively. It has been found that for all the states, cereals are the primary source of calories and protein in both rural and urban areas. The above analysis also shows that the number of meals taken other than home had increased at all India level in both rural and urban areas. The state-wise picture shows that majority of the states having undergone similar changes. This change has seen more in urban areas of the country. Though India is one of the fast growing economies and is aspiring to be a world power, a large section of people are not yet partners in development. It is just not possible to achieve the above-mentioned aspirations without providing quality nutrition to the population of the

Table 4: State-wise trends in total intake of calorie and protein obtained from different groups of food items in rural India

State(s)	Round	Intake of calorie (%)		Intake of protein (%)				
		I	II	III	IV	V	VI	VII
Andhra Pradesh	55th	72.07	27.93	65.58	11.17	8.00	6.80	8.45
	61st	69.44	30.55	62.14	10.68	8.47	5.91	12.80
	68th	62.12	37.87	56.59	12.08	9.50	8.59	13.24
Assam	55th	75.92	24.08	68.24	8.94	3.90	9.22	9.70
	61st	72.66	27.33	63.48	9.71	4.35	9.48	12.98
	68th	71.38	28.62	64.76	10.59	4.24	10.26	10.15
Bihar	55th	74.33	25.67	73.17	10.57	5.77	2.38	8.11
	61st	73.58	26.40	72.18	9.62	6.98	2.04	9.16
	68th	66.93	33.07	67.58	10.07	9.29	3.10	9.96
Gujarat	55th	56.70	43.30	64.44	12.90	13.55	1.13	7.98
	61st	58.20	41.77	65.20	11.09	12.60	1.06	10.04
	68th	50.96	49.02	58.92	12.85	14.74	2.04	11.45
Haryana	55th	52.56	47.44	58.47	10.29	25.12	0.68	5.44
	61st	54.22	45.77	59.73	6.49	25.22	0.97	7.59
	68th	47.81	52.19	54.51	8.24	28.16	0.74	8.35
Karnataka	55th	64.89	35.11	61.48	13.90	9.85	4.70	10.07
	61st	66.33	33.66	62.68	11.65	9.10	4.57	12.00
	68th	56.09	43.91	54.66	13.66	9.70	6.37	15.61
Kerala	55th	60.79	39.21	49.66	7.94	7.81	20.81	13.78
	61st	54.41	42.49	45.19	7.98	7.80	22.08	15.44
	68th	49.58	48.29	41.59	9.67	7.58	24.28	16.90
Madhya Pradesh	55th	71.70	28.30	74.10	11.56	6.36	1.27	6.71
	61st	69.49	30.45	73.20	9.89	7.78	0.95	8.16
	68th	62.82	37.12	69.77	10.40	8.68	1.30	9.86
Maharashtra	55th	64.30	35.70	66.54	13.37	7.09	2.97	10.03
	61st	61.52	38.13	62.78	11.87	6.65	3.47	15.06
	68th	53.77	45.80	59.60	13.45	7.95	3.26	15.74
Odisha	55th	81.91	18.09	77.26	7.20	2.49	4.33	8.72
	61st	79.47	20.52	73.89	7.98	2.44	4.33	11.35
	68th	73.25	26.75	69.59	9.52	3.68	4.54	12.67
Punjab	55th	50.50	49.50	57.83	11.34	22.21	1.02	7.60
	61st	50.37	49.63	58.06	9.64	23.15	0.59	8.56
	68th	45.34	54.66	54.22	10.18	23.94	0.81	10.85
Rajasthan	55th	65.30	34.70	70.66	6.58	17.18	0.88	4.70
	61st	64.58	35.42	69.31	5.64	18.32	0.49	6.24
	68th	58.35	41.64	66.60	6.16	18.12	0.78	8.34
Tamil Nadu	55th	67.32	32.68	60.36	13.92	7.39	7.37	10.96
	61st	67.98	31.98	61.56	12.98	7.43	5.70	12.30
	68th	57.29	42.65	51.12	15.64	10.82	8.28	14.15
Uttar Pradesh	55th	66.75	33.25	68.86	11.52	9.24	2.33	8.05
	61st	66.91	33.05	69.17	9.61	9.48	1.56	10.16
	68th	61.92	38.07	66.17	10.62	11.42	1.90	9.86
West Bengal	55th	74.43	25.57	68.96	7.47	3.78	9.30	10.49
	61st	73.17	26.82	66.13	6.49	3.98	10.26	13.14
	68th	65.45	34.55	62.18	7.58	4.04	11.47	14.73
All India	55th	67.71	32.29	67.43	10.91	9.19	4.04	8.43
	61st	67.54	32.31	66.37	9.47	9.28	3.98	10.84
	68th	61.10	38.80	62.45	10.57	10.56	4.73	11.69

Note: I=cereals; II= other food; III=cereals; IV=pulses; V=milk & milk products; VI=egg, fish & meat; VII=other food.
Source: NSS: Nutritional Intake in India, 55th (1999-2000), 61st(2004-05) and 68th(2011-12) NSSO rounds.

Table 5: State-wise trends in total intake of calorie and protein obtained from different groups of food items in urban India

State(s)	Round	Intake of calorie (%)		Intake of protein (%)				
		I	II	III	IV	V	VI	VII
Andhra Pradesh	55th	61.40	38.60	56.40	13.04	12.23	6.50	11.83
	61st	60.49	39.51	53.71	11.97	11.80	6.74	15.78
	68th	56.16	43.84	50.95	13.87	11.95	8.45	14.78
Assam	55th	64.59	35.41	57.15	10.95	10.43	11.29	10.18
	61st	63.80	35.98	56.39	11.46	6.33	10.95	14.76
	68th	62.08	37.92	55.98	13.19	5.86	12.92	12.05
Bihar	55th	66.94	33.06	66.97	11.89	7.87	3.82	9.45
	61st	64.11	35.80	64.02	11.02	8.56	2.17	14.18
	68th	64.44	35.56	65.51	10.87	10.45	3.58	9.59
Gujarat	55th	46.48	53.52	55.24	14.33	16.86	2.17	11.40
	61st	46.99	52.94	51.39	12.30	15.99	1.43	18.86
	68th	43.55	56.40	52.58	13.47	17.93	2.27	13.74
Haryana	55th	48.88	51.12	57.15	12.54	20.22	1.33	8.76
	61st	51.02	48.98	57.65	8.89	21.34	1.43	10.68
	68th	43.93	56.07	51.67	11.56	23.37	1.48	11.92
Karnataka	55th	56.99	43.01	53.87	14.64	13.27	6.97	11.25
	61st	56.94	43.05	52.91	12.72	12.55	6.97	14.85
	68th	49.49	50.51	47.44	14.78	12.97	7.36	17.45
Kerala	55th	54.79	45.21	44.88	9.56	9.56	22.25	13.75
	61st	50.82	47.66	41.46	8.56	9.24	23.05	16.98
	68th	46.23	52.74	38.82	10.44	9.61	23.17	17.97
Madhya Pradesh	55th	59.26	40.74	64.53	12.52	10.05	2.47	10.43
	61st	60.26	39.57	65.45	11.23	10.04	1.84	11.36
	68th	56.62	43.22	64.65	11.72	11.82	2.00	9.81
Maharashtra	55th	52.36	47.64	56.10	13.78	11.77	6.10	12.25
	61st	51.62	48.07	54.22	13.20	11.46	5.23	15.75
	68th	46.87	52.79	51.06	14.05	12.03	6.14	16.72
Odisha	55th	72.47	27.53	68.10	9.80	5.57	6.07	10.46
	61st	70.33	29.67	64.44	9.70	7.21	6.76	11.90
	68th	63.52	36.48	60.63	10.71	6.89	6.06	15.72
Punjab	55th	47.56	52.44	54.33	13.79	20.54	1.82	9.52
	61st	47.60	52.36	54.62	10.92	22.92	1.10	10.42
	68th	44.39	55.61	52.16	11.55	24.17	1.43	10.69
Rajasthan	55th	56.03	43.97	64.45	10.72	15.38	1.48	7.97
	61st	57.84	42.15	66.03	6.12	15.47	1.22	11.17
	68th	53.07	46.91	63.05	7.34	18.62	1.42	9.57
Tamil Nadu	55th	54.73	45.27	48.97	14.95	12.99	8.84	14.25
	61st	56.38	43.60	50.26	14.60	13.26	6.93	14.93
	68th	50.06	49.89	44.69	15.67	13.87	9.41	16.36
Uttar Pradesh	55th	57.40	42.60	62.29	12.08	11.76	3.69	10.18
	61st	58.47	41.52	60.70	9.75	10.64	3.33	15.58
	68th	54.81	45.17	60.08	11.62	13.73	3.57	10.99
West Bengal	55th	59.75	40.25	57.42	8.81	7.69	13.09	12.99
	61st	59.03	40.91	53.39	8.09	6.98	13.83	17.67
	68th	54.08	45.92	51.68	8.73	7.05	16.03	16.51
All India	55th	55.14	44.86	57.03	13.10	12.43	5.98	11.46
	61st	56.08	43.80	56.16	11.00	12.33	5.47	14.98
	68th	51.64	48.26	53.69	12.41	13.57	6.39	13.94

Note: I=cereals; II= other food; III=cereals; IV=pulses; V=milk & milk products; VI=egg, fish & meat; VII=other food.
Source: NSS: Nutritional Intake in India, 55th (1999-2000), 61st(2004-05) and 68th(2011-12) NSSO rounds.

Table 6: Percentage change in meals taken at home over last 18 years for comparable major states as well as for different sectors

State	Rural				Urban			
	2011-12	2004-05	1993-94	% Change 2010-11/ 1993-94	2011-12	2004-05	1993-94	% Change 2010-11/ 1993- 94
Andhra Pradesh	288	314	339	-15.04	242	281	310	-21.94
Assam	403	387	352	14.49	322	267	292	10.27
Gujarat	311	287	318	-2.20	235	278	274	-14.23
Haryana	377	395	413	-8.72	331	346	318	4.09
Karnataka	351	328	377	-6.90	241	263	303	-20.46
Kerala	335	354	368	-8.97	312	337	336	-7.14
Maharashtra	285	313	332	-14.16	252	276	277	-9.03
Odisha	349	366	363	-3.86	265	311	299	-11.37
Punjab	382	439	445	-14.16	344	380	383	-10.18
Rajasthan	338	376	386	-12.44	294	304	316	-6.96
Tamil Nadu	310	314	326	-4.91	287	302	311	-7.72
West Bengal	281	325	325	-13.54	227	238	237	-4.22
All India	**329**	**348**	**350**	**-6.00**	**274**	**296**	**301**	**-8.97**

Source: NSS Report No.513: Nutritional Intake in India, 2004-2005.

country.The above analysis suggests that it is imperative that we look at the entire system of food production, food procurement and the release and distribution of food for achieving food and nutritional security. Trying to correct one segment of this complicated system is likely to end up in failure or, at best, have limited success. While food-grains are central to food security, diversifying demand patterns need to be appreciated for holistic approach to achieve food and nutritional security.

To this end, following questions must be kept in mind while devising holistic approach to ensure nutritional security in the country as well as in the states.

1. Can emerging cropping pattern be harnessed to ensure a regionally balanced food security for the entire country?
2. What are the policies intervention required to sustain agricultural growth that in turn, can generate the required volume of food grains for public distribution as well as for the market?
3. The food subsidy in coming years is expected to expand/rise due to the lower central issue price of grain, a significant rise in the number of entitled beneficiaries and the need to keep raising the Minimum Support Price (MSP) to cover the rising costs of production and to incentivize farmers to increase the production. The existing food security complex of procurement, stocking and distribution would further increase the operational expenditure of the Scheme given its creaking infrastructure, leakages and inefficient governance. In view of this,it

raises the issue of sustainability of the financial obligations entailed in NFSA 2013.

4. One pertinent question arises whether the food under the mid-day meal scheme constitutes at least one nutritious meal a day to poor students or whether it is just something to fill a hungry stomach.

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Appendices

The main problems with the TPDS are set out in two recent documents: (i) Report of the High Level Committee on Long -Term Grain Policy (GoI: 2002) and (ii) Performance Evaluation of Targeted Public Distribution System

(Also available at http://planningcommission.nic.in/reports/peoreport/index.php, accessed on 16/04/2019).

According to these documents, there are basically four problems in the present TPDS: (i) high exclusion errors; (ii) non-viability of fair price shops; (iii) not fulfilling the price stabilization objective; and, (iv) leakages.

The National Food Security Bill (NFSB) was introduced in parliament (LokSabha) on 22nd December, 2011 and refereed to the standing committee on Food, Consumer Affairs and Public Distribution on 5th January on 2012 for examination. The Bill marks a paradigm shift in food security ─ welfare to right's based approach and seeks to address the issue of food security in a comprehensive manner, by adopting a life cycle approach (see for details GOI, 2011-12). However, NFSB has become The National Food Security Act (NFSA) after receiving the assent of the President on 10th September, 2013.

MPI-1 is a global Multidimensional Poverty Index annually reported by the Oxford Poverty and Human development Initiative (OPHI). It is also known as Alkire-Foster Multidimensional Poverty Index.

In the current round (68th) also, the quantity estimates of the food items consumed by a household were measured in units of calorie after application of conversion factors appropriate to the items of food. The estimates of total calorie equivalent of all food consumed by the household during the reference period is derived thus by aggregation over different groups (components) of food. Finally, the required figure on the level of calorie intake per diem per consumer unit was calculated by sub-dividing this aggregate by the product of the number of consumer units in the household. In current round, two types of schedules were used to collect the information: Schedule Type 1 and Schedule Type 2. In this paper, we have used the information based on Schedule Type 1. Schedule Type 1, as far as reference periods were concerned, was a repeat of the schedule used in most quinquennial rounds. For certain categories of relatively infrequently purchased items, including clothing and consumer durables, it collected information on consumption during the last 30 days and the last 365 days. For other categories, including all food and fuel and consumer services, it used a 30-days reference period.

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