Research Paper Economics

Nutritional Status and Food Security: An Analysis for India

SHIVANI GUPTA Assistant Professor, Department Of Economics, Delhi College Of Arts And Commerce, University Of Delhi, India

ABSTRACT

This paper tends to analyze the trends in nutritional status in India and how the goal of ensuring food security has affected these trends overtime. India has always witnessed "high undernourishment and malnourishment problem" and till date the issue of security has not been completely resolved. A country is said to have food security, "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life" (World Food Summit, 1996) and to achieve this goal a country must ensure that food availability, food quality and standards, price stability and also an effective distribution mechanism is in place. This paper also analyzes the trends in expenditure on food subsidy in India during 2000-01 and 2010-11 and relates these trends to the nutritional status in India. This sort of relationship is critical in framing effective policies and welfare programs aimed at ensuring food security in India as also a healthy life for its population.

KEYWORDS Food security, undernourishment, nutritional status, per capita availability of food, body mass index.

1. INTRODUCTION

For a developing country like India which has labour surplus/abundant economy - the most crucial and dependable source of achieving higher and sustainable growth is its human resource, therefore ensuring a certain minimum standard of health for each and every person is critical for all future growth prospects. Indian economy has adopted food security as an important policy measure in 1960's and since then onwards various policies pertaining to availability of food, access to food, proper distribution mechanism for food, price stability and quality of food have been implemented. Also, various programs providing self and wage-employment are used as tool not only to generate employment but also to generate income for people and thus, increasing their access to food by stimulating their purchasing power.

Indian economy achieved self-sufficiency in food grains in 1970's and has been maintaining it since then but despite this "existence of self-sufficiency" from past four decades there has been co-existence of problem of undernourishment and malnourishment. National Nutrition Monitoring Bureau (NNMB) estimated that about half of rural children below five years of age suffered from malnourishment and 40% of the adults suffered from chronic energy deficiency in India during 2000-01. World Bank Data shows that 22% of population was undernourished in 2001 in India. Also, National Family Health Survey (NFHS) using the Child Growth Standards of World Health Organization (WHO) found that 40% of children of age 0-35 months were underweight in 2006. During 2011, 18% of population was undernourished in India which is quite in comparison to just 5% of population being undernourished in Norway, Australia, France and Japan. Also, India is having the highest population among these countries therefore one can easily state that the absolute number of people that were undernourished in 2001 is highest in India that is out of 1.21 billion people in India 217.83 million people were undernourished in 2011. All these estimates reflect the high degree of incidence of undernourishment among children and adults in India and highlight the existence of chronic food insecurity in India.

India since independence framed its own constitution for governance in which people of India have been accorded certain basic, inalienable and fundamental rights to live a life which is full of dignity and respect while the state was obligated to pursue the goal of welfare state as enshrined in Directive Principles of State Policy especially Article 47 imposes a duty on the state to raise the level of nutrition and the standard of living and to improve public health as part of its primary duties. The Basic Minimum Needs (BMN) paradigm for human being is the food, shelter and clothing for bare living and under Article 21 of Indian constitution all persons have been given the right to life and liberty; life being a decent and dignified life and right to food being declared as one of the fundamental rights of individual by the Apex Court. As such, India since the beginning of the planning has implemented many policies to ensure food security but one of the most recent steps taken is National Food Security Bill (2013) (also Right to Food Act) with an objective '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'. Under this bill, each person, below poverty line, will get five kilograms food grains: rice, wheat and coarse cereals at a price of Rs.3, Rs.2 and Rs.1 respectively on per month basis.

This section discusses the background of nutritional status of India so far. In section 2, this paper analyzes the nutritional status in India and studies how the prevalence of undernourishment has changed since 1991.

2. ANALYZING THE NUTRITIONAL STATUS IN INDIA

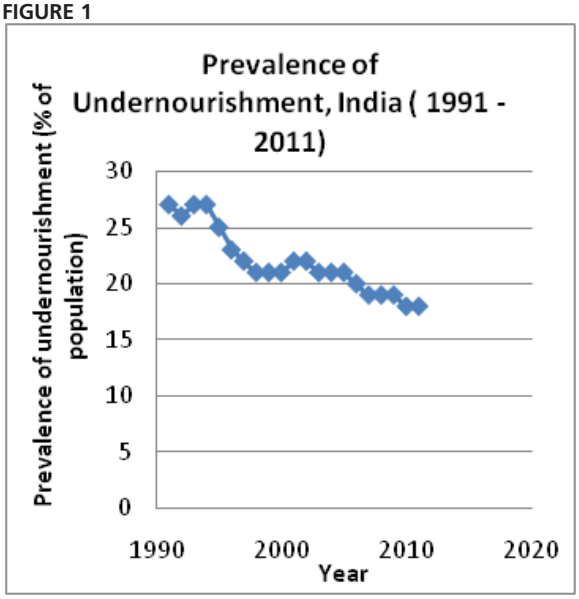
As discussed in section 1, the nutritional status in India has been extremely poor with almost 18% of population being undernourished in 2011. The incidence of undernourishment has been always significantly high in India even after adopting food security as a major policy goal. This section tends to analyze the trends in various indicators of nutritional status in India over past years and thus, tries to explain possible causes that can be attributed to realization of trends that were experienced. Section 2.1 discusses the trends in prevalence of undernourishment in India during 1991-2011. Section 2.2 discusses the trends in body mass index (BMI) as a measure of nutritional status. The lower is the value of BMI more worse is the nutritional status. Section 2.3 discusses nutritional status of children in India.

2.1 PREVALENCE OF UNDERNOURISHMENT DURING 1991-2011

Prevalence of undernourishment has been considerably high in India during 1991-2011 though it has been declining over time. Figure 1, shows that more than 18% of the population was undernourished for the entire period of 1991-2011, with highest prevalence rate 27%. This decline in prevalence of undernourishment indicates towards the effectiveness of the policies in lowering the prevalence of undernourishment and

thus, ensuring food security to some extent.

FIGURE 1



Source: World Bank Data

Despite the fact that prevalence of undernourishment exhibits a downward trend in India yet it is argued that achievement of food security did not trickle down to household and individual level. This argument is justified as 217.83 million people were undernourished even in 2011. Therefore, in recent years there has been a policy shift towards ensuring food security at household level and per capita consumption was taken as a measure of food security so that further significant declines in undernourishment can be experienced not only at national but also at household level.

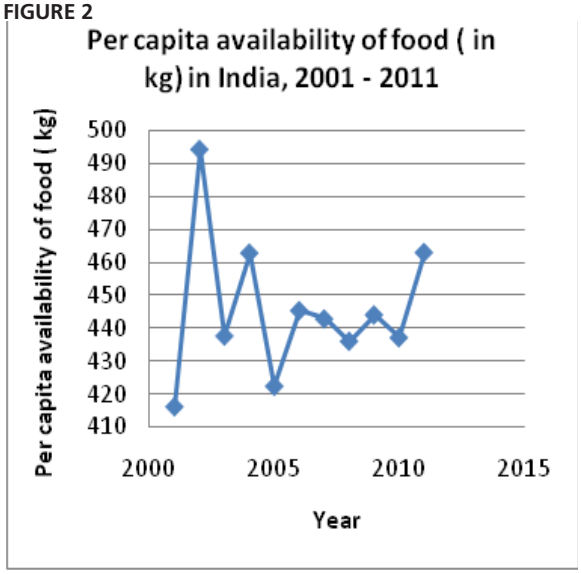
Programmes implemented to ensure food security such as food for work programme, mid-day meal scheme for school going children, integrated child development securities (ICDS) etc. have contributed to this improvement in nutritional status. Apart from this various health care and employment generation programme have also indirectly helped to improve the nutritional status in India.

Other factors like per capita availability of food, production of cereal and pulses, per capita availability of certain important consumption articles like edible oil, vanaspati, sugar etc. can also affect the nutritional status of people. These factors are analyzed in sections 2.1.1 and 2.1.2.

2.1.1 PER CAPITA AVAILABILITY OF FOOD AND PRODUCTION OF CEREALS AND PULSES

Per capita availability of food is the most important aspect that determines nutritional status for any country. As shown by figure 2, there as has been a rise in per capita availability of food on an average in India during 2001-11. This shows self-sufficiency of India in terms of food production and its availability. But availability does not guarantee access to food by everyone that is why the prevalence of undernourishment in India is still so high. If this rise in per capita availability of food in supplemented by a proportional rise in access to food through an effective distribution system, then this will result into a drastic fall in undernourishment prevalence and a subsequent rise in nutritional status at national as well as at household level.

FIGURE 2



SOURCE: Department of Agriculture and Cooperation

To test whether per capita availability of food has a significant impact on nutrition status in India during 2001-10, a regression analysis is conducted using prevalence of undernourishment as measure of nutritional status. Following regression is tested for using ordinary least squares method:

$$Y_t = \alpha_0 + \alpha_1 X_t + \varepsilon_t$$

Where, Y_t denotes prevalence of undernourishment and X_t denotes per capita availability of food, t stands for time period (in years), α_0 is intercept term, α_1 is the slope coefficient denoting the average effect of a unit point increase in per capita availability of food on prevalence of undernourishment , ε_t is the error term.

Table 1 shows results of estimation of above regression for India for period 2001-10. TABLE 1

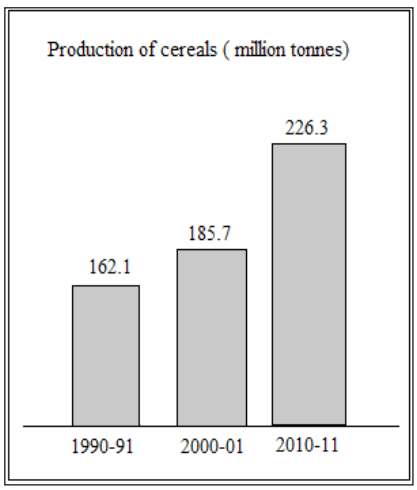
X_t regressed on Y_t	Coefficient	Standard error	t-value
α_1	0.0137878	0.0222112	0.62
α_0	14.08068	9.868434	1.43

Table 1 show that the per capita availability of food has an insignificant effect on the prevalence of undernourishment in India during 2001-10. This result is in accordance to the argument that has been discussed earlier that an increase in per capita availability of food does not necessarily imply increase in access to food and thus does not imply a decrease in prevalence of undernourishment or improvement in nutritional status in India.

On the other hand, levels of production of cereals and pulses also have an impact on nutritional status of a country. Figure

3 shows the levels of production of cereals and pulses in India during 1990-91 and 2010-11.

FIGURE 3



SOURCE: Economic Survey

Figure 3 shows that production of cereals has increased over time in India from 162.1(million tonnes) during 1990-91 to 226.3 (million tonnes) during 2010-11 in India. Therefore, one can conclude that tremendous rise in production of cereals over the past two decades have contributed to the decline in undernourishment and thus, towards the improvement in nutritional status in India.

2.1.2 UNDERNOURISHMENT AND OTHER IMPORTANT ARTCLES OF CONSUMPTION

This subsection analyzes the impact that other important articles of consumption might have on prevalence of undernourishment in India during 1991-2011. Other factors might have an impact on prevalence of undernourishment are edible oil, vanaspati, sugar tea etc. Here in this subsection, per capita availability of edible oil is considered and existence of any significant relationship between prevalence of undernourishment and per capita availability of edible oil is tested for the period of 1991-2011. For this a regression analysis is conducted in which per capita availability of edible oil is regressed on prevalence of undernourishment. Following regression is tested for using ordinary least squares method:

$$Y_t = \beta_0 + \beta_1 EO_t + \varepsilon_t$$

Where, Y_t denotes prevalence of undernourishment and EO_t denotes per capita availability of edible oil, t stands for time period (in years), β_0 is intercept term, β_1 is the slope coefficient denoting the average effect of a unit point increase in per capita availability of edible oil on prevalence of undernourishment , ε_t is the error term.

Table 2 shows results of estimation of above regression for India for period 1991-2011. TABLE 2

EO_t regressed on Y_t	Coefficient	Standard error	t-value
β_1	-0.9827484	0.1227147	-8.01
β_0	30.55295	1.124022	27.18

Table 2 shows that the per capita availability of edible oil has a significant negative impact on the prevalence of undernourishment in India during 1991-2011. The coefficient β_1 shows that one unit increase in per capita availability of edible oil decreases the average prevalence of undernourishment by 0.98 units. Thus, one can conclude that a rise per capita availability of edible oil has improved nutritional status in India during 1991-2011.

2.2 BMI AS AN INDICATOR OF NUTRITONAL STATUS

Body mass index (BMI) can used an indicator or measure of nutritional status. BMI is derived from ratio of weight and height of an individual. It has been accepted that a BMI < 18.5 indicates chronic energy deficiency in individuals. On the other hand, BMI > 30 is also unacceptable as it denotes the condition for obesity. If prevalence of BMI>30 increases, then other health related issues especially in form non-communicable diseases will emerge and this might pose a new challenge in front of the policy makers. National Family Health Survey (NFHS) for 2005-06, shows that 33% of ever-married women and 28.1% of ever-married men had a BMI<18. And in NFHS-2 (1998-99), it was 36.2% and 31.4% for ever-married women and men respectively. This indicates that prevalence of chronic energy deficiency and lack of proper nutrition is quite high and it is a more severe problem among women though the trends have improved overtime.

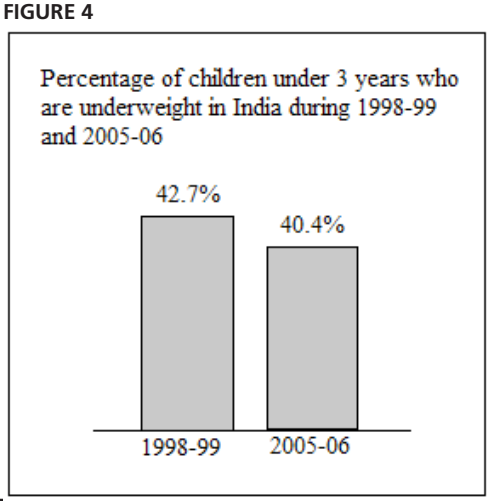
On the other hand, there another challenge that is arising in most developing nowadays is the increase in prevalence of obesity (BMI>30) among their population. For India, NFHS estimated, that 14.8% of ever-married women and 12.1% of ever-married men had a BMI>30. And in NFHS-2 (1998-99), it was 10.6% and 8.7% for ever-married women and men respectively. This states that percentage of obese people has increased at a rapid rate in India and if this trend continues then obesity will lead to rise in prevalence of non-communicable diseases such as diabetes, heart diseases etc. and thus obesity issue will not put forth a new challenge in front of the policy makers but will also obstruct the path of development by giving rise to health problems especially in middle income and higher income group people. That is, on one hand policy makers will have to deal with problems of lack of nutrition and malnourishment for poor households and on the other hand, they will also have to deal with obesity prevalence among middle and high income group people.

National sample survey has found that per capita cereal consumption in rural areas declined from 15.53 kg per capita per month in 1970-71 to 12.7 kg per capita per month in 1999-2000. And in urban areas, it declined from 11.4 kg per capita per month in 1970-71 to 10.4 kg per capita per month in 1999-2000. This declining trend in per capita cereal consumption can be attributed to the changes in pattern of consumption from cereal to non-cereal. People especially in urban areas are shifting their consumption pattern away from food grains and pulses and have shifted more toward packaged and high calorie products. This has not only led to a decline in per capita cereal consumption but has also contributed to the problem of obesity in India.

2.3 NUTRITIONAL STATUS AMONG CHILDREN IN INDIA

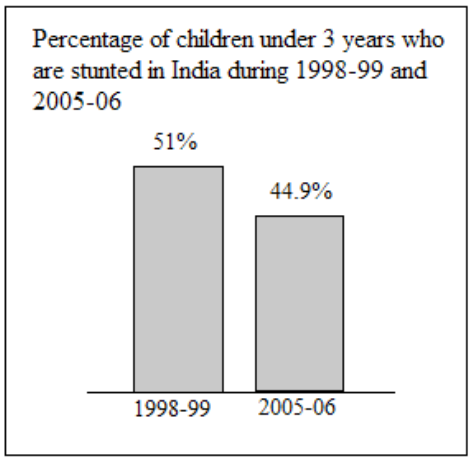
National Family Health Survey has found out that the nutritional status among children in India has been extremely poor and this has significantly contributed to high prevalence of infant mortality in India. Figure 4 shows percentage of children under 3 years who are underweight is 40.4% in 2005-06 and 42.7% in 1998-99. Figure 5 shows percentage of children under 3 years who are stunted is 44.9% 2005-06 and 51% in 1998-99.

FIGURE 4



SOURCE: NFHS

FIGURE 5



SOURCE: NFHS

Figure 4 and 5 indicates that nutritional status among children has improved in terms of decline in percentage of children under 3 years who are underweight and stunted from 1998 to 2006 in India but still nutritional status is poor among children indicating towards the existence of food insecurity. Though the nutritional status among children over time has been improving but the rate of improvement is to low therefore some effective measures needs to take place to speed up the improvement process by and ensure food security among children in India.

3. ISSUES AND CONCERNS IN DISTRIBUTION MECHANISM

India achieved self-sufficiency in 1970's and has been maintaining it since then and this shows that India is capable enough to sustain its entire population's food needs. But despite this there is still high incidence of undernourishment and energy deficiency in India. It means that there is existence of ineffectiveness in the process of distribution of food grains, pulses, cereals etc. India lad established Public Distribution System (PDS) long ago which to some extent had played a major role to combat problems of undernourishment, hunger, energy deficiency etc. but still was not completely successful in terms of targeting the really needy and vulnerable people. This raised a concern regarding the accessibility to food especially by poor people and to resolve this issue policy makers reformed the PDS to get rid of shortcomings of the distribution process. To improve the effectiveness of PDS, Targeted PDS (TPDS) was implemented in 1997. Estimates have shown that under TDPS more people have got to access the subsidized food grains and thus TDPS so far has been successful in improving nutritional status by ensuring access to available food grains. Though in its earlier stages TDPS has led a significant increase in leakages in terms of higher subsidies but since 2004-05 there has been a decline in these leakages and TDPS has effectively managed to reach to poor people since its establishment in India.

4. CONCLUSION

Our analysis of nutritional status in India shows that the measures indicating the nutritional status have improved over past decades but still the existence of food insecurity is quite severe. The indicators such as prevalence of undernourishment, per capita availability of food, production of cereals and pulses, BMI and nutritional status among children have improved as a result of implementation of various policies and establishment of several programmes to ensure food security in India. Despite of the improvements that have been witnessed in past decades there is still prevalence of food insecurity in many regions of India especially in rural areas. Analysis in section 2.1 shows that the prevalence of undernourishment has declined from 27% of population to 18% of population during 1991 to 2011. But 18% of population being undernourished is quite a high figure especially in a country like India which has the second highest population in world. Table 1 show that per capita availability of food could contribute much to reduce the levels of undernourishment. This indicates that per capita availability of food was not effectively translated into per capita accessibility of food or per capita intake of food and this directly reflects the ineffectiveness of the distribution process in India. Though the analysis of the working and effectiveness of PDS and TPDS in section 3 shows that these mechanisms have been successful so far but still there is a long gap in existing and required nutritional levels that is to be bridged by improving effectiveness of existing policies and progrmmes and also by introducing new measures to ensure food security at national as well as at the household level in India at the earliest.

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