

## ORIGINAL RESEARCH

# AN ANALYSIS OF INDIA'S RIGHT TO FOOD ACT: THE CORRELATION OF HUNGER, POVERTY AND FEMALE LITERACY

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## ABSTRACT

**Background & Objectives:** The Government of India has introduced the National food security act, which has been dubbed the world's greatest welfare project, ever. The act uses poverty line indicators to identify the beneficiaries, and for implementation of the scheme, designates the eldest woman in the household as head of the family. This study was undertaken to determine if equating poverty with hunger is a fair and operable assumption and to ascertain if female literacy can have a bearing on the nutritional status of families and consequently positively impact food security.

**Methods:** The study utilizes the 'India State Hunger Index', an adaptation of the 'Global Hunger Index' to compare the rankings of states on the index with their rankings on the below poverty line and female literacy charts.

**Results:** There was a close correlation in rankings of states on the hunger index with their ranks on the below poverty and female literacy front, but with a few caveats. Poverty was not always synonymous with hunger and the relationship between hunger and the proportion of literate women in the state was complex.

**Conclusions:** This study establishes that a stratagem of combatting hunger based on the provision of food grains to people below the poverty line is to a large extent, feasible. The empowering stipulation of the eldest woman as family head should benefit the cause of female literacy in the long run, however low levels of female literacy are generally prevalent in the hungrier states.

**Key words:** India state hunger index – below poverty line – female literacy rate – poverty - hunger

## INTRODUCTION

In September 2013 the Indian Government passed the National Food Security Act, 2013<sup>[1]</sup> more popularly known as the Right to Food bill, This bill aims to provide subsidized food grains to 800 million Indians, roughly two thirds of India's population. The Commission on Agricultural Costs and Prices, Government of India referred to the act as the biggest welfare experiment ever in the world to provide subsidized food<sup>[2]</sup>. The bill was estimated to cost the government between 1, 25,000-1, 50,000 crores yearly<sup>[3]</sup> (between 20-24 billion US \$). The bill evoked criticism from the political opposition, who questioned the motives of passing the bill 8 months before a general election and from economists who were aghast at the high cost of implementing this legislation enacted act. Agriculture experts meanwhile warned that agricultural production would shift to a bias towards cereals, affecting pulses and oil-seed production and thus fuelling inflation<sup>[4]</sup> [5]. The bill's supporters acclaimed the bill as an investment in human capital and a major step in eradicating hunger, poverty and malnutrition<sup>[6]</sup>.

The bill will benefit 50% of the urban population and 75% of the rural population, Antyodaya (below poverty

line) households would receive 35 kilograms of food grains per month and priority households would receive 5 kilograms of food grains per person per month. Millets, wheat and rice would be supplied at prices ranging from 1 rupee to 3 rupees per/kilogram (1.5C to 5C), pregnant women and children below 14 years would have additional benefits, The eldest woman in the household, provided she is above the age of 18 years would be designated as head of the household for issuance of the benefits, the purpose of this provision is to boost women's empowerment and aid in improving transparency.

The Global hunger index<sup>[7]</sup> is a statistical tool used by the International Food Policy Research Institute to determine the level of hunger prevailing in 120 developing countries. The index is determined using 3 indicators, all 3 indicators have equal weightage. The percentage of the population who do not get adequate calories for consumption, proportion of underweight children below 5 years of age and the under 5 mortality rate per hundred live births are the 3 parameters used to calculate the index. Higher the index, worse is the hunger situation in that particular country. The India State Hunger index<sup>[8]</sup> was developed by researchers at the

Department of economics, University of California with support from the International Food Policy Research Institute and the NGO Welthungerlife, The parameters used to calculate this index are similar to the methodology adopted to determine the Global Hunger Index. But, is a distribution of food resources at subsidized cost based on an income cut off and parameters like the Below Poverty Line (BPL) objective and equitable? Can Poverty be always equated with hunger, or are there other factors that could have a bearing on calorie deprivation and starvation.

Nobel Laureate Amartya Sen in his Seminal essay 'Food, Economics, and Entitlements' argues that an entitlement to adequate food through relative price determination would be invaluable in combatting hunger due to recession, famine, drought and general inflationary pressure [9]. Little attention has been paid by community practitioners to food insecurity and an integrative approach to food security that pays attention to distribution and consumption is required [10].

Therefore we made an attempt to study (i) The correlation between poverty and hunger based on a comparison of the India state hunger index and the below poverty line rankings of 17 major Indian states, and (ii) to determine if female literacy has an influence on the nutritional status of families and as a consequence have a bearing on a successful implementation of the National Food Security Act.

## MATERIAL AND METHODS

Data from the India State Hunger Index for 17 major Indian states was obtained from the study published by the Department of Economics, University of California.

The ranking of states for the percentage of population below poverty line was determined from the press note on poverty estimates [11], 2011-2012, published by the Planning Commission, Government of India in July 2013.

Since under the act, the eldest woman in the house would be the designated head of the household, female literacy could become an important factor for determining success of the food security act. Therefore statistics on female literacy rate [12] in Indian states were obtained from provisional reports of the Census of India 2011 published by the Office of the Registrar General and Census Commissioner of India. The female literacy rate for the same 17 major states was analyzed and the states were ranked in descending order. The ranking thus obtained were analyzed and compared against the ranking of states based on the percentage of population below poverty line and the India State Hunger Index. Wherever there was a mismatch or disparity in the compared rankings, the underlying components of the India State Hunger Index were further analyzed to study the probable causes of mismatch.

## RESULTS

The India State Huger Index was determined from 3 equally weighted underlying components. All three parameters were considered equally and the India State Hunger Index was computed. The data on the India Sate Hunger Index is provided in Table 1. The States were ranked in descending order, with the best performing state on top, Punjab was the number one state with an India State Hunger Index of 13.63, Madhya Pradesh was the state with the worst performance with an index of 30.87.

**Table 1: The India State Hunger Index [8]**

State	Prevalence of calorie undernourishment (%)	Proportion of underweight among children < 5 yrs (%)	Under five mortality rate (deaths per hundred)	India state Hunger index
Punjab	11.1	24.6	5.2	13.63
Kerala	28.6	22.7	1.6	17.63
Andhra Pradesh	19.6	32.7	6.3	19.53
Assam	14.6	36.4	8.5	19.83
Haryana	15.1	39.7	5.2	20.0
Tamil Nadu	29.1	30.0	3.5	20.87
Rajasthan	14.0	40.4	8.5	20.97
West Bengal	18.5	38.5	5.9	20.97
Uttar Pradesh	14.5	42.3	9.6	22.13
Maharashtra	27.0	36.7	4.7	22.80
Karnataka	28.1	37.6	5.5	23.73
Orissa	21.4	40.9	9.1	23.80
Gujarat	23.3	44.7	6.1	24.70
Chhattisgarh	23.3	47.6	9.0	26.63
Bihar	17.3	56.1	8.5	27.30
Jharkhand	19.6	57.1	9.3	28.67
Madhya Pradesh	23.4	59.8	9.4	30.87
<b>India</b>	<b>20.0</b>	<b>42.5</b>	<b>7.4</b>	<b>23.30</b>

The percentage of population below poverty line (BPL) for the same 17 states was obtained from data published by the planning commission, the population as on 1<sup>st</sup>

March 2012 was used for estimating number of people below poverty line. Kerala had the least (7.1%) and Chhattisgarh had the most (39.9%) persons below the

poverty line. Census 2011 figures were used to determine the female literacy rate in percentage. Kerala was the best performing state again (91.9%) and Rajasthan had the least percentage of female literates (52.6%). Data on the comparison is provided in Table 2.

Once the rankings were determined a separate table without figures and statistics but just the name of the states with rankings was devised to shed light in a simpler mode without the accompanying bells and whistles which could cloud and obscure the bigger picture. The Rankings are provided in Table 3.

**Table 2: Comparison of the India State Hunger Index<sup>[8]</sup> with Below Poverty Line<sup>[11]</sup> and Female Literacy<sup>[12]</sup>**

State	India State Hunger Index	Rank	Population below Poverty line (%)	Rank	Female Literacy (%)	Rank
Punjab	13.63	1	8.3	2	71.3	4
Kerala	17.63	2	7.1	1	91.9	1
Andhra Pradesh	19.53	3	9.2	3	59.7	13
Assam	19.83	4	32	13	67.2	8
Haryana	20.00	5	11.2	4	66.7	9
Tamil Nadu	20.87	6	11.3	5	73.8	3
Rajasthan	20.97	7	14.7	6	52.617	
West Bengal	20.97	8	20	9	71.1	5
Uttar Pradesh	22.13	9	29.4	11	59.214	
Maharashtra	22.80	10	17.4	8	75.4	2
Karnataka	23.73	11	20.9	10	68.17	
Orissa	23.80	12	32.6	14	64.3	10
Gujarat 24.70	13	16.6	7	70.7	6	
Chhattisgarh	26.63	14	39.9	17	60.5	11
Bihar	27.30	15	33.7	15	53.3	16
Jharkhand	28.67	16	37	16	56.2	15
Madhya Pradesh	30.87	17	31.7	12	60.0	12
<b>India</b>	<b>23.30</b>	<b>-</b>	<b>21.9</b>	<b>-</b>	<b>65.4</b>	

**Table 3: Ranking of States**

Rank	India State Hunger Index	Population Below Poverty Line (%)	Female Literacy (%)
1	Punjab	Kerala	Kerala
2	Kerala	Punjab	Maharashtra
3	Andhra Pradesh	Andhra Pradesh	Tamil Nadu
4	Assam	Haryana	Punjab
5	Haryana	Tamil Nadu	West Bengal
6	Tamil Nadu	Rajasthan	Gujarat
7	Rajasthan	Gujarat	Karnataka
8	West Bengal	Maharashtra	Assam
9	Uttar Pradesh	West Bengal	Haryana
10	Maharashtra	Karnataka	Orissa
11	Karnataka	Uttar Pradesh	Chhattisgarh
12	Orissa	Madhya Pradesh	Madhya Pradesh
13	Gujarat	Assam	Andhra Pradesh
14	Chhattisgarh	Orissa	Uttar Pradesh
15	Bihar	Bihar	Jharkhand
16	Jharkhand	Jharkhand	Bihar
17	Madhya Pradesh	Chhattisgarh	Rajasthan

From the table above, certain facts and truths become self-evident, and certain other details are perplexing to any observer, the states with the best India State Hunger Index generally have the least people below the poverty line, i.e. the poorer states are hungrier states. But there are exceptions, Assam which is ranked at no.13 in the BPL rankings is the 4th best state in terms of India State Hunger Index. Gujarat ranked 7<sup>th</sup> in the BPL ranking is however a distant 13<sup>th</sup> in the Hunger Index. Rajasthan which has a relatively decent hunger index <sup>(7)</sup> and BPL ranking <sup>(6)</sup> is the worst performer and ranked last in terms of female literacy, this relative disempowerment could affect the implementation of the act as its execution depends on the eldest female member as des-

ignated head of the family. Three states, Kerala, Punjab and Andhra Pradesh figured among the top 3 in both the hunger index and the BPL ranking. Ten States figured among the top eleven states in the hunger index and BPL rankings, the exceptions- Gujarat and Assam. Five states- Orissa, Chhattisgarh, Bihar, Jharkhand and Madhya Pradesh featured among the bottom six in both lists. Gujarat's poor ranking on the Hunger index is mainly due to the high percentage of underweight children among its under 5 years population (44.7%). Assam's stellar performance on the hunger index is mainly due to a good percentage of its populace getting adequate calories (85.4%). While the southern states generally outperform their counterparts from the north, east

and west, their performance on one particular component of the hunger index, i.e. prevalence of calorie undernourishment was dismal. This can probably be explained to an extent by the variation in diet.

States with a better hunger index but poor performance on the female literacy rate were Rajasthan and Andhra Pradesh, otherwise the states with a good hunger index rank also had a higher female literacy rate, The five states which figured among the bottom six in the hunger index were also placed in the lower rungs of the female literacy list. This indicates a close correlation between female literacy and nutritional status. The poor female literacy rate among the states with a lower hunger index can lead to potential problems in implementation.

## DISCUSSION

Mahatma Gandhi famously said 'There are people in the world so hungry, that God cannot appear to them except in the form of bread'. A government scheme designed to provide food and succor to millions of deprived and downtrodden citizens should attract universal acclaim. But, the debate is- how to identify these citizens? The central government has adopted a mechanism that would distribute subsidized grains to 75% of the rural and 50% of the urban population. The population to be covered in each state would be specified by the Centre, this has led to criticism from certain states, especially the more urbanized states. Thirty five kilograms per household would be provided to households covered in the 'antyodaya anna yojana' scheme. The percentage coverage in rural and urban areas for each state is to be determined by the central government. Updating the eligible households and placing the information on the identified eligible households prominently in the public domain are the responsibilities of the state governments. So, both the central and state governments are equating poverty with hunger, a line drawn on the basis of income to determine the calorie deprived. The Economic and Political Weekly in 2010 pointed out that the nutritionally deprived population is significantly larger than the 'poor' population, The Planning commission estimate of rural poverty based on the National Sample Survey of 2004-2005 was 28% but the same survey reveals calorie deficiency in 70% of the rural population. This was more than double the poverty estimate<sup>[13]</sup>. Despite economic reforms spurring rapid growth in per capita income and the percentage of population below the poverty line reducing over the last two decades, a survey by the National Sample Survey Organization showed that daily calorie consumption for the bottom 25 percent of the population had declined from 1683 kilocalories to in 1987-88 to 1624 kilocalories in 2004<sup>[14]</sup>. There is also disagreement on methods to determine indicators of hunger. An article published in Food policy in 2011 suggested that hunger indices ignore distributional issues, neglect the occurrence of food and health shocks, and are sometimes based on unreliable data. The author prefers anthropometric

measurements, stunting in particular as a more valuable tool as an indicator of hunger<sup>[15]</sup>. But an article published by the American Dietetic Association<sup>[16]</sup> revealed that the percentage of children under the age of 5 in South Asia in 2000 who were moderate or severely underweight was 49% and 48% of the children in the same age bracket displayed moderate and severe stunting. This shows a close correlation between malnutrition and the anthropometric measurements advocated in the Food Policy article. There is also a great deal of variation in the success of individual states in implementation of food programs, certain states have very successful mid-day meal programs while other states have faltered and this is independent of their agricultural output. Surprisingly, some states which have insufficient food grain production have a better record of providing food for their poor than states which have surplus food grain production<sup>[17]</sup>. In the present study there was significant parity in the India state hunger index ranks and the below poverty line ranks, when the two rankings were compared, nine states had either the same rank or were one rung below or above their hunger index rank in the BPL ranking. As noted earlier, Gujarat and Assam were the notable exceptions, This indicates that poverty had a close correlation with hunger, but this correlation was not infallible and if poverty is used as a tool or parameter in determining the extent of hungry prevalent in a population, it would be a useful utilitarian indicator, but not *always*. States which had a high degree of poverty did not necessarily have the highest under 5 mortality rate or a greater prevalence of calorie undernourishment. Similar outcomes were seen in other studies, Stephan Klasen examined the relationship between childhood undernourishment, under nutrition and childhood mortality and demonstrated a great deal of interregional paradoxes, while childhood under nutrition is highest in South Asia, undernourishment is however highest in the Caribbean and childhood mortality highest in sub Saharan Africa<sup>[18]</sup>. Interregional paradoxes were also revealed in our study, i.e. the relative poor performance on the southern states and Gujarat on the prevalence of the calorie undernourishment parameter. Among the South Indian states, Andhra Pradesh outperformed its counterparts in the same parameter. All the central and eastern Indian states performed poorly, except Assam and West Bengal. Maharashtra, India's most industrialized state and Karnataka, India's bellwether Information Technology state were placed in the middle of the pack just below Uttar Pradesh, the most populous state in India.

An empowering facet of the bill is the designation of the eldest woman, provided she is above 18 years of age, as the head of the household. Various studies have consistently shown that female literacy has a positive influence on nutritional status. A retrospective cohort study conducted in children of 4434 women in Nicaragua, who were a part of a mass education program showed that mortality rates and malnutrition was significantly lower than in children whose mothers were illiterate and not enrolled in this program<sup>[19]</sup>. A study published in the Journal of Asian and African Studies dem-

onstrated that the proportion of underweight five-year old children varies inversely with living standards and female literacy rate<sup>[20]</sup>. Studies conducted in India too have similar conclusions, the National Council of Applied Economic Research in 1994 analyzed data on 50,000 rural children spread over 1756 villages in 16 states in India. The study concluded that mothers who were literate were more effective in using health care institutions. The study revealed that households headed by women who had better access to information had better nourished children than households where women were not similarly empowered. However, the father's literacy rate did not have a similar bearing on the child's nutritional status<sup>[21]</sup>. A study published in an Indian Pediatric journal concluded that nutritional deficiency signs and malnutrition was more prevalent in the children of illiterate mothers<sup>[22]</sup>. In the present study the ranking of states on the female literacy front usually corresponded to a better performance on the hunger index. Rajasthan, probably India's most conservative and traditional state was the most notable exception. Since female literacy is a major demographical determinant for the success of the food bill, increasing female literacy should get a major boost from state and central authorities. A theoretical model developed in the Harvard Educational Review demonstrated that women's schooling would affect their long term attitudes towards health, child rearing and greater utilization of health services<sup>[23]</sup>. In democracies literacy ensues that the preferences of the public are reflected in policies. In states where newspaper circulation is more and the reach of the media more encompassing, electoral accountability is greater and therefore state Governments are more responsive to fall in food production and crop flood damage<sup>[24]</sup>.

Criticism of the bill has ranged from issues as varied as waste of resources, widening of the fiscal deficit leading to food inflation and problems in storage and distribution of grains. But these issues are in the realm of an economist, and the authors of this study are not qualified to speculate and draw conclusions on that debate. However there are certain other issues raised by commentators which also merit serious discussion. R.P. Mane studied the limitations of the income based targeted public distribution system in India and suggests that it is inferior to an universal public distribution system which has a better chance of providing food security to all<sup>[25]</sup>. A study conducted in the states of Kerala and Karnataka in 1992 revealed several anomalies in the public distribution system, the PDS accounted for 3% of central government expenditure. But various regulatory mechanisms like the limited operating hours of the PDS outlets restricted the relevance of PDS to the end consumer<sup>[26]</sup>. Sometimes centralized government policies are counterproductive. Misplaced priorities in food production and distribution as in North Korea, can severely affect the nutritional status and ultimately result in a continuous cycle of famine and calorie deprivation<sup>[27]</sup>. Even in the United States where the right to food debate has not enjoyed the same resonance, critics have questioned its efficacy. In a study conducted by

researchers from Drexel and Tulane University in 2008, food insecurity affected 11.1% of U.S. households- almost the same rate as in 1995 despite sizable continued investment in federal food assistance<sup>[28]</sup>. That throws up the question, is there an alternative to food security based on an income level right to food approach. Numerous possible substitutes have been suggested, even by the most passionate proponents of the present format. Alternatives to the Below Poverty Line for social assistance based on exclusion criteria such as ownership of assets and inclusion criteria such as illiteracy, households headed by single women, have been proposed<sup>[29]</sup>. Now that the government has introduced Aadhar or unique ID cards, and the availability of these cards have burgeoned, direct cash transfers in place of subsidies have also been proposed. Replacing the targeted public distribution system with a differentiated cash transfer scheme have been analyzed based on biometric unique identification cards, arguing that objections to such a scheme can be circumvented at the design stage<sup>[30]</sup>.

In conclusion the present study shows a close association between poverty and hunger but there can be a minor degree of inconsistency in this association. Some states showed a variation in the hunger index and below poverty line rankings. Similarly there was a close correlation between female literacy and the hunger index, but that association too was not uniform and this correlation could play a major role in determining the extent of success of the food bill. Therefore a right to food program based on poverty indicators and gender empowerment as a valuable goal, while definitely viable and practicable, is however not flawless and perfect.

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