# Child Undernutrition in India - An Inter-State Analysis

ABSTRACT:

One of the continued concerns in the development discourses of the present times is the coexistence of affluences with deprivations. There are several dimensions of such asymmetries - *spatial, inter-temporal or even interpersonal,* and each such dimension merits specific investigations and critical analysis. One such dimension is the coexistence of nutritional deprivation or undernutrition with the success in development. Nutritional status of children under five years of age in particular is often considered as one of the most important indicator of a household's living standard and an important determinant of child survival. The India Health Report (2015) says that though India has shown significant improvements in agricultural productivity, household income and child survival, yet the rates of child undernutrition is among the highest in the world.

Therefore, this study was placed in the context of development of the Indian economy, and tries to obtain directions for fresh policy interventions to achieve the target of lower incidence of undernutrition among children and mothers.

The present dissertation is titled 'Child Undernutrition in India –An Interstate Analysis'. It tries to answer the where, when and the why child undernutrition prevails in India and its major states. The principal indicators used to study child undernutrition are stunting, wasting and underweight. This height-for-age (HAZ) is an indicator of linear growth retardation. Children whose height-for-age z score is below minus two standard deviation (-2 SD) from the median of the reference population are considered as stunted or too short for their age. They are also referred to as chronically under-nourished. Wasting reflects too thin for height and is due to acute food shortage or disease. It is also known as acute under-nutrition and is reflected by a rapid deterioration in nutritional status over a short period of time generally the period preceding the survey for children under the age of five. Underweight or weight-for-age is a composite index of height-for-age and weight-for-height. Thus underweight takes into account both acute and chronic under-

nutrition. Here too, children whose weight-for-age (WAZ) is below minus two standard deviation from the median of the reference population are considered as underweight.

The major departures of the present dissertation from the earlier studies is that, firstly, the present dissertation attempts to place the problem of child undernutrition in the context of development of the Indian economy and explain inter-state diversity in the pattern of child undernutrion in the Indian states.

Secondly, this dissertation recognizes the fact that need for appropriate combinations of socio-demographic factors with health care practices, maternal resources for childcare and household resources, supported by community and government, the potential risks associated with high under-nutritional outcomes of children and mothers, in analysing the factors underlying child undernutrition among the Indian states.

Thirdly, this dissertation is an attempt to use large unit level comparable data from NFHS 3 and NFHS 4 in identification of determinants of child undernutrition in Indian states, role of dietary diversity and mothers' health conditions and many of the behaviorial results estimated would constitute advancement from the existing literature and so on.

Finally, the dissertation attempts to link the state level macroeconomic indicators like economic growth or GDP with the nutritional deprivation of children using panel data econometrics and this constitute a departure from the literature on existing studies.

The objectives of the present dissertation are the following:

1. To understand the extent of inter-state differences in child undernutrition for selected states in India.
2. To examine the position of different states in comparison to the nation as a whole with regard to various child undernutrition parameters.
3. To study the interplay of various socio-demographic variables and the status of child undernutrition in India using controls at individual, maternal, household and community characteristics.
4. To understand the position of different states of India with respect to its under-nutrition status on the basis of the determinants of Minimum Acceptable Diet.

5. To explore the relationships of Minimum acceptable diet to childhood under-nutrition parameters for different states in India, when control variables related to maternal, child and household characteristics are accounted for.
6. To examine the link between economic growth and nutritional outcomes of the few selected states in India.

The study focused mainly on the dataset from NFHS 3 and NFHS 4. Several results emerged from the study. It can be seen that the z-scores have improved for all the states of our country from NFHS 3 to NFHS 4. When we compare the positions of the states in the two NFHS it can be seen that some states have improved their position considerably from NFHS 3 to NFHS 4. In terms of change in z-scores over a period of ten years from NFHS 3 to NFHS 4, it was observed that while some states have taken strides to improve their position, others have been lagging behind. In order to have a better view of the extent of child undernutrition over time we calculated the RUN. We observesd that though certain states have recorded their improvement in reducing the prevalence on child undernutrition their contribution to the overall reduction of the country's child undernutrition problem is not that impressive.

We then used the compatible data from NFHS 3 and NFHS 4 for children of less than five years old to estimate the z-scores of CIAF- a combined measure suggested by Svedberg (2000) - for the 29 states of India to gauge the pattern of inter-state variations in under five child undernutrition, we found that overall the incidence of child undernutrion is higher through CIAF compared to three separate indicators in both NFHS 3 and NFHS 4. As child undernutrition is internationally recognized as an important public health indicator for monitoring nutritional status and health in populations, therefore there is a need to identify those states where more progress is required. Here, the percentage of different conventional parameters of undernutrition was taken from the four rounds of NFHS published reports, in order to maintain the parity across all the four rounds. We calculated the range between the states and also tried to understand whether there had been any decline in the range as well as national average across the various rounds of NFHSs for all the three conventional parameters of child undernutrition. It was found that the HAZ and WAZ percentage has declined over time. The national percentage for these

indicators, namely stunting and underweight have also shown certain percentage reduction. But the percentage of WHZ has remained stagnant not only over time, but also the national average. Hence, it could be concluded that India is yet to take the control of acute undernutrition problem of children under five years of age.

When we attempted to study the interplay of socio-demographic variables and the status of child undernutrition in India using controls for various traditional and accepted predictors of undernutrition at individual, maternal, household and community characteristics, it was found that better nutritional status was enjoyed by the children living in urban parts of the country having favorable socio-demographic background. This also emphasizes that the differences in the availability of resources to the families in urban and rural parts of the country act as an important determinant to child undernutrition.

Again, when we attempted ti understand the association between Minimum acceptable diet and child underuntrition controlling for other covariates at different levels, it was found that the Minimum acceptable Diet is influenced by many factors such as agro-climatic conditions, and other possible socio-demographic factors. It was observed that compared with the West Coast Plain, other agro-climatic regions had higher risk of child stunting and underweight. The study also suggested that that households with regular income have significantly associations with the reduction of child undernutrition parameters.

We then attempted to study the inter-relationship between the indicators of child undernutrition in our country at the state level with the macroeconomic aggregates likes the per capita NSDP or the rate of growth the states' NSDP over time, controlling for important social factors like mothers' anaemia or their levels of education as measured by the mothers' literacy. From the analysis of this chapter it was clear that there is a negative relationship of Economic growth, measured by percentage change in per capita net state domestic product, with all the different child undernutrition parameters, namely, stunting, wasting, undernutrition and CIAF. It was also observed, that there is also a negative association of female literacy with the mentioned child undernutrition measures. That shows that as Economic Growth and state female literacy increases, the incidence of child

undernutrion falls. Nevertheless, there are differences when we consider the relationship between mother's anaemia and child undernutrion variables.

The dissertation made a reasonable attempt to understand the inter-state variations in child undernutrition in India. Several observations emerge from the findings of the dissertation. The states which have fared better overtime from NFHS-3 to NFHS-4, are the states of Kerala. Tamil Nadu, Himachal Pradesh and Haryana. UttarPradesh, Bihar, Madhya Pradesh, Rajasthan, Jharkhand showed maximum percentage of stunted children in the country. The percentage of stunted children in Gujarat , Maharashtra and Assam is also high in both the NFHSs. There has been an increase in the prevalence of child wasting from NFHS 3 to NFHS 4 in the states of Maharashtra, Gujarat, Uttar Pradesh, Andhra Pradesh and Delhi. Jharkhand, Karnataka and Chattisgarh also show a huge percentage of wasted children.

The study had he following Recommendations:

Since, it has been observed that there are large inter-state variations in child undernutrition status, hence, the existing ICDS scheme may be reformed. Apart from following uniform ICDS scheme throughout the country, special and specific intervention is required depending upon the needs of a particular state and particular agro-climatic zone. It is also observed that the rural-urban disparity in the states is quite widespread in India. Hence, an appropriate guideline that focuses more on the children belonging to the rural areas should be given importance. It is also observed that communities belonging to SC and ST and non-availability of piped water are more probable from suffering from child wasting. Hence special focus needs to be given to improve the nutrition status of these marginalized groups.

Provision for proper drinking water and sanitation facility should be given serious importance as availability of clean water in the household would help to prevent the transmission of various water borne diseases which might help in the reduction of the incidence of child wasting in the states of our country.

Mother's education affects the child's health not only at the household level, but also at the state level. Therefore, there is a need to focus on the implementation of education programme to target women education. It was also seen that women with greater autonomy towards taking medical help for self also positively influences the nutritional

status of children. Hence, improving the quality of primary education and subsequently higher education will enrich the decision making power among women.

Efforts should also be given towards easy accessibility for essential maternal and child health services, including skilled birth attendance, essential newborn health, early initiation of breastfeeding, and maintaining the parameters of Minimum acceptable diet.

The dissertation revealed the child undernutrition performance of the states in India by considering data mainly from NFHS 3 and NFHS 4. But, in NFHS 4, data related to several districts within a state and Union Territory is also available. So further research is possible by taking into consideration the undernutrition status of various districts within each state and UT of the country. Similarly, including nutrition data at the state levels at intervals that are more frequent would enable researchers to test for the robustness of macroeconomic propositions that would guide effective formulation of the policy.

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