

Capability Approach to the Analysis of Child Deprivation in India: Focus on Inter-State Variation

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Abstract

As per UNDP's definition, human development is a process of enlarging human's choices. The essence of sustainable human development is that everyone should have equal access to development opportunities now and in future. Amartya Sen in his book 'Development as Freedom' (2000, oxford university press) established a relationship between human capital and human capabilities as an expression of freedom. The role of human capabilities manifests in three ways: a) their direct relevance to the wellbeing and freedom of people (generation of income); b) their indirect role through influencing social changes (ensuring better health and education) and c) their indirect role through influencing economic productivity (skilled contribution to economic development). The relevance of the capability perspective incorporates each of these contributions. Child deprivation is a global problem that persists both in developed and less developed countries but in different forms. This paper is an attempt to study the child deprivation in terms of capability approach focusing on mainly health and education. Depriving children of access to basic health may adversely affects the socio-economic conditions which usually stunts their growth, makes them physically weak, exposes them to high level of mortality. Children living in poverty are unable to fulfill their basic need-education. Financial deprivation compels them to perform as child labour, involve them in activities, such as to collect fuel, fodder, water away from home that abducts their schooling opportunities. If quality education, skill and expertise through proper training are not imparted to them, then future human capital may not be adequate for the sustainability requirements of an economy. Because today's children are future performers as productive capital in diverse fields. Therefore, proper care of children should be taken to have their skilled contribution to a country's development.

Keywords: Deprivation, IMR, MMR, Immunization, Stunting, Wasting, Underweight, Nutrition, low BMI, full ANC, institutional delivery, Sanitation facilities.

1. Introduction

The Capability approach for assessing the quality of life was developed by Nobel Laureate Amartya Sen. According to him, (1999) "The freedom that a person has in terms of the choice of functioning, given his personal features and his command over commodities"...can be termed as capabilities. This approach has been used in the context of poverty measurement, gender issues, political freedom, and standard of living

assessment. The most important attempt to make the approach operational was the creation of the Human Development Index by UNDP. The way country's rank in terms of HDI tends to differ from those rankings based solely on income per capita. According to Sen (1985), when an individual is capable of purchasing any commodity with his ability and convert the characteristics of commodities into functioning, then the possibility of well-being comes into force. The conversion of commodity into functioning depends on three types of categorical factors: First, Personal factors (such as health index, sex, level of education etc) influence how a person converts the available commodity into functioning. Disabilities drastically hinder this conversion. Second, Social factors (social norms, discrimination etc) and third, Environmental factors (climate, infrastructure, institution, public services etc) also play a role in conversion of the availability of commodity into individual functioning.

In almost every developing country in the world, children are more likely to be living in poverty than adults. Their particular living standard makes them more vulnerable to its devastating effects with potential life-long consequences for their social, physical and cognitive development. The harmful effects for societies, economies and future generation can be felt nationally, regionally and even globally. In 2007, the UN General Assembly stated that 'children living in poverty are deprived of nutrition, water and sanitation facilities, access to basic-health care services, shelter, education, participation and protection, and that while a severe lack of goods and services hurts every human being, it is most threatening and harmful to children, leaving them unable to enjoy their rights, to reach their full potential and participate as full member of society. So child poverty is the resultant of deprivation of all basic needs of the children. Sen (1999, Development as Freedom, chapter-4) has explained this poverty as the deprivation of capabilities. Now it is a challenge which should bind us globally.

Childhood and adolescence is a critical stage in the formation of individual capacities and deprivation during these stages can send children into a life-long trajectory of low education levels, marginalization and reduced productivity, leaving them unable to realize their full potential and contribute to their communities and societies. Without the availability of a proper nutritional diet, children suffer from stunted growth (low-height for age), wasting (weight-deficit for height) and being underweight (weight-deficit for age). Hence, the need arises for ensuring that children within a population receive sufficient wherewithal so that they can adequately contribute to an improved use of physical and natural capital. Consequently, depriving children of access to basic health and educational attainments can blight the progress of a nation to a sustainable society. With more than a third of its population below the age of eighteen, India has the largest child population in the world. Although India has made some significant commitments towards ensuring the basic rights of children, there is serious doubt about its performance in terms of ensuring adequate facilities for the children in terms of the provisioning of basic health, nutrition and education.

CHILD DEPRIVATION AND ITS FORMS:

Child deprivation is a global problem that persists both in less developed as well as in developed countries but in different forms. It is a multidimensional phenomenon that can be analyzed from different points of view. In this context the research objectives are to

study the child deprivation focusing on health and educational perspectives across the states in India.

Health Deprivation:

Successful sustainable development of a country is influenced by the maintenance and future enhancement of the volume of productive capital. This productive capital is basically composed of human, physical and natural resources. In this context it can be said that the capability of present children needs to be well maintained or improved over time because today's children are future performers in diverse fields. Therefore adequate care is needed to have their skilled contribution to development. Depriving children of access to basic health care facilities may adversely affect the socio-economic condition which usually stunts their growth, deprives them of nutritious food and comfortable shelter that render them physically weak, exposes them to high level of mortality, compels them to perform collection jobs involving fuel, fodder or water that strips them off schooling opportunities. This form of child deprivation may be captured by different forms of health related deficiencies such as infant mortality rate (IMR), no medical attention during birth, less than full immunization (BCG, measles, 3 doses each of polio and DPT) of children, stunting, wasting, underweight and unavailability of sanitation facility.

Poor nutrition is the main driving force of children's cognitive and physical damage and as such is tantamount to violation of a child's human rights. Without the availability of a proper nutritional diet, children suffer from stunted growth, wasting and being underweight.

Stunting (height-for-age)

Height-for-age is a measure of linear growth retardation and cumulative growth deficits. Children whose height-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age (stunted), or chronically undernourished. Children who are below minus three standard deviations (-3 SD) of median score, are considered severely stunted. In India, NFHS-4 (2015-16) estimates 38% of children under age five years as stunted (too short for their age) which signify chronic under-nutrition. The prevalence of stunting has decreased from 48% in 2005-06 to 38% in 2015-16. Stunting is observed to be higher among children in rural areas (41%) than in urban areas (31%). The prevalence of stunting in children under age five is the highest in Bihar (48%), followed by Uttar Pradesh (46%), Jharkhand (45%), and Meghalaya (44%), and lowest in Kerala and Goa (20% each)

National Nutritional Mission (NNM) commencing in 2017-18 set a target to reduce under-nutrition and low birth weight by 2% each year, decrease stunting from 38.4% (NFHS-4) to 25% by 2022.

Wasting (weight-for-height)

Weight-for-height index measures body mass in relation to body height or length and relates to current nutritional status. Children with Z-score less than minus two standard deviations (-2 SD) from the median of the reference population are considered thin (wasted), or acutely undernourished. Children with weight-for-height Z-score less than minus three standard deviations (-3 SD) from the median of the reference population are

considered severely wasted. Wasting may result from inadequate food intake or from a recent episode of illness causing weight loss. As per NFHS-4 (2015-16) survey, 21% of children under age five years are wasted (too thin for their height), which signify acute under-nutrition. The prevalence of wasting has remained the same since 2005-06 to 2015-16. Jharkhand has the highest level of wasting (29%) among the States in the period 2015-16. The lowest levels of wasting are observed in Manipur (6.8%) and Mizoram (6.1%).

Underweight (weight-for-age)

Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic under-nutrition. Children whose weight-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are classified as underweight. Children whose weight-for-age Z-score is below minus three standard deviations (-3 SD) from the median are considered severely underweight. NFHS-4 results reveal that, 36% of children under age five years are underweight. Jharkhand has the highest levels of underweight (48%). The lowest level of underweight is observed in Manipur (14%) and Mizoram (12%).

Immunizing children against vaccine preventable diseases can greatly reduce childhood morbidity and mortality. Unless, the full course of immunization measures are applied, children run the risk of being easily exposed to a number of serious diseases including polio, tetanus, pneumonia, and diphtheria. Although the current immunization program targets twenty-seven million infants and pregnant women every year and is one of the largest immunization programs in the world, immunization rates through the national program are uneven across twenty-eight states in India. The proportion of children under age five who are vaccinated exceeds 70 percent in only eleven states; it drops below 53 percent in eight states that are also the most populous.

Poor sanitation can also lead to poor child health resulting from inadequate absorption of nutritive elements. Better sanitation provision reduces the spread of intestinal worms, schistosomiasis and trachoma, which are neglected tropical diseases that cause suffering for millions and it may also promote school attendance: girls' school attendance is particularly boosted by the provision of separate sanitary facilities. Deprivation of sanitation is reflected in the lack of access to non-shared toilet of piped sewer systems, septic tanks, and pit latrines; ventilated improved pit (VIP)/biogas latrines; pit latrines with slabs; and twin pit/composting toilets. The percentage of households practicing open defecation has decreased from 55 percent in 2005-06 to 39 percent in 2015-16 (NFHS-4). The ministry of water supply and sanitation reported that the national sanitation programme or Swachh Bharat Mission (SBM) has increased the national rural sanitation coverage which has increased from previous 34% to 98% during 2014-18.

Widely practiced non-institutional delivery mainly observed in rural areas of developing or less developed Countries results in higher rate of both infant and mother mortality. Knowledge about the symptoms and danger signs of severe maternal illness will influence the decision of whether to seek assistance at the time of delivery. This is important because unless proper care is imparted at the child birth stage, both infant mortality and adverse effects on child's health are likely to increase. Proper delivery care by a doctor or nurse / LHV/ANM or other health personnel is necessary for both maternal and postnatal health and it is accessible only under institutional delivery. But in rural India 12%

potential cases (NFHS-4) are still practising non-institutional delivery by unskilled or untrained health personnel.

The flagship program POSHAN was initiated by GOI (2017) with an objective to improve nutritional outcome for children, women and lactating mothers. The school level nutritional program such as cooked mid-day meal (CMDM), supplementation of iron and folic acid (IFA), regular health screening at school level or national de-worming drive etc have an impressive effect on the improvement of nutritional and health status of the children but it is quite far away from our SDG agenda.

Educational Deprivation:

Children living in poverty are often unable to fulfill their basic need for education. If quality education, skill and expertise through proper training are not imparted to them, then future human capital may not be adequate for the sustainability requirements of an economy. The educational deprivation of children may be defined by the illiteracy rate at elementary level (6-14 years). We consider illiteracy rate (under achievement of education) as an indicator of child educational deprivation. This arises because of non-enrolment or admission mainly because of low-family income, low female literacy and less infrastructural facilities such as no electricity, sources of drinking water away from home, improper sanitation facilities, debility in health in attending school etc.

In Indian constitution, article 21 (right to a life with dignity), article 21A (Right to free and compulsory elementary education for all children in the 6-14 year age group) and article 23 (right to protect from being trafficked and Prohibition of Employment of child labour) ensure the children to enjoy their basic rights of education, hygiene and dignity. Further, availability of clean and safe drinking water near the site of their house, electricity facility, availability of clean fuel for cooking etc serve as important facilities that may provide children much leeway in attending school and be literate. Unsafe and dirty drinking water is the cause of a number of water borne diseases and has an adverse impact on child nutrition. While drinking non-potable water is a threat to child health, fetching safe water from distant sources (more than 30 minutes) also has an adverse impact on their physique, wastes time which could be devoted to study and weakens the zeal to go to school. These factors cause the high dropout or create obstacles to complete their basic education. Borkotoky K and Unis Sayeed (2015) showed that economic condition of the household, existence of the problem of child labour, less importance of girls education as they have to stay at home to take care of their younger siblings or help their mother in household activities, inaccessibility of schools and lack of proper facilities for girls and female literacy are some of the main reasons for educational deprivation of children India.

Although India has made some significant commitments in constitution towards ensuring the basic rights of children through Right to Education (RTE) Act, there is serious doubt about its performance. The flagship program SarvaSikshaAvijan (SSM) has made some success in improving the Gross Enrollment Ratio (GER) but it has failed in reducing drop-out rate and narrowing the gap between boys and girls enrollment ratio while the Mid Day Meal (MDM) has a positive impact in reducing drop out and increasing enrollment. The central government scheme, BetiBanchao and BetiParao and Kanyashreepkalpa in West Bengal are also two important initiatives in reducing school drop-out and preventing early marriage.

Health, Nutrition and Education play a vital role to human capital formation, growth and development of a nation. India had poor health and nutritional status at the time of independence. Thus to form more productive human capital in future, capability of children in present generation needs to be well nourished because today's children are the concealed savings for generating the future human capital. So, additional care should be required to have their skilled contribution to development. It has been observed that huge development in USA in 1960's was due to their productive human capital.

Therefore, it is important to measure and analyze the nature of child deprivation with regard to aspects of health and education in major Indian states. In doing so new introspection can be developed to frame new policies in removing the obstacles that hinder the children's performance.

In this context the objectives of the study are: (A) to develop a health deprivation index of children based on a number of health related parameters, (B) to highlight on the educational deprivation of children in terms of illiteracy rate at elementary level, (C) to analyze the determinants of health and educational deprivation based on well conceived explanatory variables in an interactive way, (D) to prescribe appropriate policy directives to resist the process of child deprivation.

The analysis is completed through a number of interlinked sections. Section 1 has covered the introduction part. Section 2 represents a survey of related literature, section 3 describes data sources, section 4 analyzes the methodology of the study and the theoretical framework, section 5 is devoted to the analysis of main findings and the final section is left for concluding remarks and policy prescriptions derived from the study.

2. Literature Review

A study by International Food Policy Research Institute (IFPRI, 2016) compared two rounds of (NFHS) data: 2005-06 and 2015-16 and examined trends in anemia for children 6 to 24 months old and pregnant and non-pregnant women 15 to 49 years old and also found that factors such as women's low BMI accounted for 19% of the difference between the low versus high- burden district. Others influential gender related factors included maternal education (12%), age at time of marriage (7%) and antenatal care (6%). Children's diets (9%), assets (7%), open defecation (7%) and household size (5%) were also influential. Improved sanitation played a role (9%) in reducing anemia in pregnant women, and yet only 50% of the households improved sanitation facility, according to NFHS-4. India's national anemia program started a weekly IFA supplementation program for adolescents in 2013.

According to QaziMoin's (2018) study, India is home of the world's hungry. The dismal health of Indian women and children is primarily due to lack of food security. Nearly one-third of adults in the country have a body mass index (BMI) below normal just because they do not have enough food to eat. Overall, India accounts for more than three out of every 10 stunted children globally. This is largely owing to lack of quality food, poor care and feeding practices and inadequate water, sanitation and health services in the country. The chronic impact of stunting has adverse impact on lifelong learning and adult productivity, in addition to increased disease susceptibility.

It is interesting to note that some states in the Northeast have largely conquered the battle against malnutrition among women. In particular, less than 10% of women in Mizoram, Arunachal Pradesh and Manipur have low BMI. Only 6.4% of Sikkim's have low BMI.

Even Nagaland and Meghalaya have a lower malnutrition among woman than most Indian states.

Spencer (1991) while working on Child poverty and deprivation in the UK observed an overall trend of inequality of health outcomes between the social groups. Income inequalities have become wider; children in lone parent and large families have been most affected by this trend. Gunn and Duncan (1997) summarized the strength and consistency of association across child poverty and a wide range of measures of children's well-being. Among health measures, childhood obesity was 40% more prevalent among poor families; asthma was 30% more common; and, children in poor families were 4 times more likely to be in fair or poor health. For education, grade repetition and dropping out of high school were approximately twice as likely among poor as non-poor children. Children who were poor were nearly 9 times more likely to have very low food security and almost 7 times more likely to become a teenage mother.

In order to measure deprivation in terms of physical development and calorie intake of children in two villages in Orissa, Swain (2008) focused on nutritional deficiency arising out of income poverty, as the main cause of health deprivation of children. Most of the children work in fields or forests to collect Sal leaves and work long hours for a little pay sacrificing their health and childhood. Poverty is the chief cause of child labor. The children in the study areas are deprived not because of natural blessing and materials efforts from their parents but because of lack of material and non material assets. According to the author, ending poverty and access to education are the crucial tools in the fight against deprivation of children in nutrition and health related matters. Coffey et al. (2014) observed a strong positive association between these two, explained by the fact that wealth allows people to afford better food, medical care and home environments. High income group in the societies have the capacity to accommodate better health and educational facilities for their children. Borooah (2014) suggested that living in a forward state (compared to living in a backward state) and belonging to a relatively affluent society improved four health outcomes (the age at death, the self- assessed health status of elderly persons, the likelihood of elderly persons and the likelihood of receiving parental and post natal care). The main conclusion of his paper is that if a child stands at the bottom of the social ladder in India, his risk of suffering premature death, poor health, and lack of access to treatment and care is substantially higher. In a multilevel analysis relating to child malnutrition and health deprivation, Hallerod and Ekbrand's (2018), study reveals that child malnutrition decreases with increased command on the household resources by mothers and that will likely to reduce the probability of health deprivation. An increase in mother's education has not only an impact on socio economic status but also a protective effect on her children's health. The paper also concludes that mothers, rather than fathers, are the key agents to deal with the resources optimally to improve children's living condition in both rich and middle income countries. Banerjee, Deaton and Duflo (2002) in their survey on health care and economic development in rural Rajasthan established a negative relationship between income and mortality. Individual's health is negatively affected by relative deprivation within a reference group. People live longer and healthier in rich groups than in poor groups because the households above poverty line spend a considerable fraction of their monthly budget compared to the households living under BPL category. Dreze and Khera (2012) focused on a regional pattern of human and child deprivation in India based on district level data.

They have used two indices: a standard HDI for human deprivation and a normalized variant of Achievement of Babies and Children (ABC) especially for deprivation of children. This ABC index is constructed following the HDI method. It is based on four important indicators relating to the well being of children- probability of surviving of children until age five, proportion of children fully immunized in the age group of 12 -23 months, female literacy rate in the age group 10 – 14 years and proportion of children in age group 12-35 months who are not underweight. Lower the value of ABC lower is the level of children's development and higher is the degree of deprivation of children and vice versa. Their study shows that state average of component indices concentrates in the northern region of India (states like U.P, Uttarakhand, Rajasthan, Bihar, and Jharkhand) indicating higher regional deprivation of human and children compared to the southern and western region states like Kerala, Tamilnadu, Gujarat and Punjab. Sadhana (2009) who has worked on the Dalit children in rural India indicates that Dalits in rural India are economically and socially depressed group, with most of the developmental indicators like nature of occupation/livelihood, employment rates, poverty rates and literacy rates being worse off than that of the non-SC/ST social group.

In a [UNICEF](#) report (2014) related to child poverty and deprivation in Uganda, child poverty is defined as children being deprived of two or more of seven dimensions that include nutrition, health, water, sanitation, shelter, education and information. Under-nutrition is the most common form of deprivation of Ugandan children. Further it is found that children, especially females, who have to bear the task of fetching water from a distance suffer most from under nutrition. [Jose and Hari\(2015\)](#) highlighted on the contribution of Rajmata Jijau mother- child health nutrition mission (RMCHNM) in reducing under nutrition among children less than two years in Maharashtra between 2005-06 and 2012. Maharashtra while economically booming, is burdened with both chronic and acute under- nutrition. They clearly estimated a progressive trend in anthropometric indicators of child under- nutrition; stunting (declining by 14.3% for boys and 17.1% for girls), wasting (declining by 1.8% for boys and 6.2% for girls) and under weight (declining by 6.3% for boys and 8.5% for girls). The extent of decline is larger among children belonging to 6-8 months in all the three indicators. Borkotoky K. and Unish Sayeed(1997) pointed out that economic condition of the household, existence of child labor, less priority on girl's education or parental attitude towards daughters by shifting the onus of caring for their siblings while making them stay back at home or help their mother in household activities, inaccessibility of schools and lack of proper facilities for girls, are the main causes of children's educational deprivation. Bhatti Kiran (1998) in her article on educational deprivation in India identified three obstacles against universal elementary education-poverty, inadequate parental motivation (parental priority for male children where as marriage consideration plays an important role in parental decision relating to female education). Brown Gordon (2012), in his paper indicated how low family income causes children out of school and compels them to be trapped in the worst form of child labor. This is not only the problem of India; it has now become the global epidemic. Education has a vital role to play in changing this picture. According to him, education has to be integrated into wider national policies for eliminating child labor through strategies that combat poverty, inequality and vulnerability including social protection and targeted support. In an analysis of education scenario in India, Kumar and Nayak (2009) pointed out that out of school children's problem has emerged a burning

issue in our country. They hypothesized that educational deprivation among children is mainly caused by multiple factors such as poverty and child labor, literacy among parents, parental pressure, migration and poor infrastructure of schools. But the only factor which is hindering in achieving cent percent literacy is the multi-sector coordination failure and lack of parental involvement. Khera (2012) worked on regional pattern of human development and child deprivation in India and she observes that 87 per cent of the children in rural areas were not attending school due to non-economic reasons such as meeting the labor shortage in the household, acquiring skills, lack of school facilities, meeting own expenses for not currently attending school etc. On the other hand, only 13 per cent of the children reported economic reason, i.e. lack of affordability as the main cause for not attending school. Importance of health cannot be over stated especially for children as it leads to better attendance in school and to higher level of knowledge attainment. The evidence in this study indicates that Dalits in rural India are economically and socially depressed group, with most of the developmental indicators like nature of occupation/livelihood, employment rates, poverty rates and literacy rates being worse off compared to the non-SCs/STs social group.

A study of slum children in Delhi by Yuko Tsujita (2009) overviews the deprivation of education among slum children aged 5 to 14 in Delhi and highlights the difference between slum and other children. The study found that drop out ratio of girls (16.8%) is lower than that of boys (23.1%). The main reasons of this drop out are cost of schooling, negative perception of education by parents. Though the schools have enough facilities (such as free supply of text books, uniforms, stationery, shoes, provisions of various scholarships and mid day meals) and proper pupil- teacher ratio, social distance between teachers and students is the main reason for low quality of education in government primary schools. In a study related to the educational deprivation of children in Calcutta, Nambissan (2003) identified dropout and never enrolled children are the indicators of educational deprivation. This out of school children (OOSC) are mainly from poor and traditional social groups (such as dalits, adivasi and muslim). She emphasizes on the linkage between poverty, child labor and non-enrollment in schools. Though poverty is the main constraint in the education of children of Calcutta's poor, cost of schooling, unattractive school environment, inaccessibility of schools and parental negligence are critical factors standing in the way of universal elementary education.

From the review of the literature it is obvious that no single study tries to develop a separate composite index of child health deprivation which takes account the under-achievement of different health facilities and educational deprivation which could be explained by relevant variables identified from the literature survey. Moreover the couplet aspects of health and educational deprivation have not been discussed simultaneously in the papers alluded to above. This research gap is supposed to fill up in the present study.

3. Sources of the Data

This analysis is mainly based on secondary data. In order to derive the child health deprivation index we consider the variables such as infant mortality rate (IMR), percent of live births where the mothers did not receive medical attention from any health personnel at delivery, less than full immunization of children, percentage distribution of children under 5 years classified as malnourished (in terms of nutritional indicators-

stunting, wasting and underweight), and unavailability of sanitation facilities within the premises. To analyze the determinants of the health deprivation index, we consider the variables like female literacy rate, low body mass index (BMI) of mother, percentage of household below poverty line (BPL), institutional birth, health insurance, and number of female headed family. For this purpose data are collected from the website of ministry of women and child Development, Registrar General of India, planning Commission, NSSO Round (Data book-2014-15), Central Bureau of Health Intelligence, Ministry of Health and Family welfare GOI, census of India, National Family Health Survey (NFHS-3, 2005-06, and NFHS-4, 2015-16) and Statistics on Children in India (Hand Book 2012 & 2018) covering all the major states in India. On the other hand, the determinants of educational deprivation index measured in terms of illiteracy rate (at Elementary Level, 6-14 years) are explained using the variables like percentage of household having no electricity or solar energy, female literacy rate, number of female headed households, child labour, percentage of children covered under cooked mid day meal program (CMDM) and estimated value of health deprivation index. For this purpose different secondary sources; such as population census of India 2001 and 2011, NFHS rounds, ministry of child health and development, children in India 2012 - GOI, Ministry of Statistics and Programme Implementation, Ministry of Human resource and development (MHRD), GOI have been used for data collection.

4. Methodology of the study

Since there are large differences across state specific values of the different indicators of child health deprivation, each indicator has been ‘‘normalized’’ using the UNDP goal-post method to ensure better comparability of the data.

$$X_i = (x_i - x_{\min}) / (x_{\max} - x_{\min})$$

Where X_i is the normalized indicator for state i , x_i is the corresponding pre-normalization figure, x_{\max} and x_{\min} are the maximum and minimum values of the same indicator across all states. The normalized indicator takes a value ‘0’ representing the lower end of the state’s scale of deprivation while, ‘1’ indicates top end of the state’s degree of deprivation for all the individual categories of indicators, and which varies between ‘0’ and ‘1’ for all states. A similar approach has also been followed to normalize the illiteracy rate for assessing educational deprivation of children. Based on the aforesaid normalized figures, principal component analysis (PCA) has been applied to calculate the health related deprivation index of children. Its value may be greater than ‘1’ indicating higher incidence of deprivation. In order to avoid the problem of multi-collinearity and to reduce the number of explanatory variables, we have used PCA.

Recursive simultaneous equation system has been used to explain the variation of health deprivation as well as educational deprivation of children across Indian states over different time period. Finally, we have checked the values of VIF (Variance Inflating Factor) to quantify the severity of multi-collinearity problem in our regression analysis. To prepare an overall health deprivation index of children on the basis of principal component method requires the consideration of diverse individual categories of under-achievement.

Computation of Health deprivation index

After normalizing the data of all individual categories following the UNDP goal-post method, EVIEWS software has been used to compute the health deprivation index of Major Indian states over the rounds of NFHS-3 (2005-06) and NFHS-4 (2015-16). Now we consider the health deprivation index to be linearly determined by seven relevant indicators. The indicators are Infant Mortality Rate(IMR), no medical attention during birth, less than full immunization of children, stunting (height for age) percentage below-2SD, wasting(weight for height) percentage below-2SD, and underweight(weight for age) percentage below-2SD, unavailability of sanitation facility within the premises of households. They are denoted as $Z_{1i}, Z_{2i}, Z_{3i}, Z_{4i}, Z_{5i}, Z_{6i},$ and Z_{7i} , respectively. In its latent form the health deprivation index $(Y_1)_i$ can be expressed as

(Health deprivation index) $_i = a_1 (IMR)_i + a_2$ (no medical attention during birth) $_i + a_3$ (less than full immunization) $_i + a_4$ (stunting) $_i + a_5$ (wasting) $_i + a_6$ (underweight) $_i + a_7$ (unimproved of sanitation) $_i + v_i$

$$(Y_1)_i = a_1 Z_{1i} + a_2 Z_{2i} + a_3 Z_{3i} + a_4 Z_{4i} + a_5 Z_{5i} + a_6 Z_{6i} + a_7 Z_{7i} + v_i \dots \dots \dots (1)$$

Where $i=1$ to 21 for NFHS-3 and NFHS-4,

Now let us denote $\lambda_j (j=1, 2, \dots, 7)$ as the j -th Eigen value. Subscripts j refers to the number of principal components that also coincides with the total number of corresponding indicators. $P_j (j=1, 2, \dots, 7)$ is the j -th principal component. We obtain the corresponding deprivation index according to the following weighted average:

$$(Y_1)_i = \frac{\sum \lambda_j P_j}{\sum \lambda_j}$$

According to the principal component analysis, the whole set of causal variables is replaced by a few principal components which account for a substantial percentage of total variation. Here we consider all components as explanatory variables. This is due to our worry to avoid deleting information that could influence the estimates. In the process, 100% of the total variation in the data is accounted for by this procedure.

Table-1 depicts the value of health deprivation index of major Indian states and their respective ranks over the two rounds of NFHS.

Table-1: Values of health deprivation index of major Indian states and their corresponding ranks

India/States	NFHS-3 (2005-06)		NFHS-4(2015-16)	
	Index	Rank	Index	Rank
ANDHRA PRADESH	1.005	6	0.927	8
ASSAM	1.522	13	1.203	14
BIHAR	2.089	19	1.689	20
CHHATTISHGARH	1.765	16	1.431	17
GUJARAT	1.401	12	1.271	15
HIMACHAL_PRADESH	1.089	7	0.656	5
HARYANA	1.249	11	0.901	7
JHARKHAND	2.101	20	1.833	21
J & K	0.969	5	0.601	4
KARNATAKA	1.179	9	1.114	10
KERALA	0.151	1	0.106	1

MAHARASHTRA	1.167	8	1.153	11
MEGHALAYA	1.851	18	1.187	12
MP	2.109	21	1.620	19
ODISHA	1.547	14	1.196	13
PUNJAB	0.737	3	0.436	3
RAJASTHAN	1.656	15	1.304	16
TAMILNADU	0.818	4	0.711	6
SIKKIM	0.638	2	0.331	2
UP	1.845	17	1.585	18
WB	1.244	10	0.986	9

Sources: Authors' calculation from the secondary data.

From the observations of Table-1, it appears that Kerala, Sikkim and Punjab hold the first three ranks in both rounds of the NFHS indicating lowest levels of deprivation suffered by the children in these states. Considering the NFHS-3 round, we find that MP, Bihar, Jharkhand hold the highest three ranks of the table reflecting higher degree of health deprivation of children. In case of NFHS-4 round also Bihar, Jharkhand and MP occupy the highest three ranks representing the persistence of the level of deprivation of children related to the health issues. Surprisingly in both the years of NFHS rounds, top and bottom ranked three states of the table remain the same. Lower level of nutrition, lack of health facilities, unavailability of sanitation facility and pure drinking water within the premises of household drive the children to an extreme form of deprivation in these states.

Computation of Educational deprivation index

The educational deprivation of any country may be defined in terms of illiteracy rate (For this purpose we have taken data of illiteracy rate at elementary level (6-14 years) in the population census of 2001 and 2011 and the normalized form of this un-attainment of education level is known as index of educational deprivation. This form of deprivation is detrimental to the formation of human capital. Low family income or inability to bear the cost of schooling is the chief cause of educational deprivation. Children in poor family help their mothers in bringing drinking water far away from home; take part in collecting fuel or fire wood from forest areas. This depletes their energy and is left with little time to undertake study and are often prevented from getting enrolled in school education system. Further often the absence of electricity facility contributes to discontinuation and staying off from study at early age. Now the picture of the educational deprivation of major Indian states can be understood from table 2.

Table-2: Educational deprivation of major Indian states and their ranks

States	2001		2011	
	EDI	Rank	EDI	Rank
ANDHRA PRADESH	0.692	16	0.809	16
ASSAM	0.628	13	0.677	13
BIHAR	1.000	21	1.000	21
CHHATTISHGARH	0.596	11	0.736	14
GUJARAT	0.476	5	0.495	6
HIMACHAL_PRADESH	0.328	3	0.347	2
HARYANA	0.523	9	0.572	9
JHARKHAND	0.849	20	0.856	19

J & K	0.806	19	0.833	18
KARNATAKA	0.553	10	0.578	10
KERALA	0.000	1	0.000	1
MAHARASHTRA	0.318	2	0.362	3
MEGHALAYA	0.644	15	0.606	11
MP	0.619	12	0.766	15
ODISHA	0.633	14	0.655	12
PUNJAB	0.482	6	0.563	8
RAJASTHAN	0.694	17	0.866	20
TAMILNADU	0.396	4	0.431	5
SIKKIM	0.503	7	0.390	4
UP	0.788	18	0.817	17
WB	0.507	8	0.551	7

Sources: Authors' own calculation from secondary data

It appears from the table -2 that Kerala holds rank 1 in both time periods representing the lowest level of educational deprivation where as Bihar holds the highest rank (21st) indicating highest level of educational deprivation of children in India. It is remarkable to note that in both periods the relative position of three top and bottom ranked states remain the same. The bottom ranked states like Bihar, Jharkhand and Rajasthan suffer from lack of financial support, high women illiteracy, poor electricity condition, and non-coverage of cooked mid day meal (CMDM), problem of child labor etc which drive the children to extreme form of educational deprivation.

Determinants of health and educational deprivation in an interactive framework

The problem of health deprivation of children is largely influenced by socio-economic factors that develop from the child bearing phase of a mother and that may be extended up to the phase of post natal care. Thus the derived health deprivation index (Y_1) can be explained by a number of variables such as women literacy, low body mass index (BMI) of mothers, percentage of families below poverty line (BPL), institutional birth, household covered by health insurance, percentage of female headed family.

As women literacy (X_1) rises, it leads to an increase in maternal awareness that results in full immunization, better nutrition and improved hygiene condition in the lives of children leading to lower level of deprivation. Low body mass index (X_2) of mothers is likely to result in low birth weight of child, stunting, wasting and it is positively associated with the incidence of deprivation. A child experiences health deprivation in different forms in the formative period of life which is substantially shaped by the financial deprivation of the family. It is represented by the variable percentage of BPL family (X_3). As percentage of families below poverty line increases, the intensity of child health deprivation rises. A household covered by a health scheme or health insurance secures the provision of health facilities and thus reduces the health deprivation of children. Therefore, percentage coverage of health insurance (X_4) is likely to be negatively associated with the level of health deprivation. Practice of non-institutional delivery usually results in higher IMR and MMR. Unless proper care is imparted at the child birth stage, both infant mortality and adverse effects on a child's health increase. That is why institutional delivery (X_5) has positive impact on child health but negative impact on the deprivation of child health. Participation of women in household decision

or female headed family (X_6) is beneficial for proper utilisation of family wealth and undertaking proactive decision with regard to family's health facility. Therefore it is likely to be negatively associated with the problem of child health deprivation.

Now the regression equation relating to the health deprivation index can be written as

$$(\text{Health Deprivation Index})_i = \alpha + \beta_{11}(\text{w.lit})_i + \beta_{12}(\text{BMI})_i + \beta_{13}(\text{BPL})_i + \beta_{14}(\text{H.Ins})_i + \beta_{15}(\text{Inst. Birth})_i + \beta_{16}(\text{F. Headed Family})_i + u_{1i} \text{-----}(2)$$

In terms of notation the equation stands as

$$(Y_1)_i = \alpha + \beta_{11}(X_1)_i + \beta_{12}(X_2)_i + \beta_{13}(X_3)_i + \beta_{14}(X_4)_i + \beta_{15}(X_5)_i + \beta_{16}(X_6)_i + u_{1i} \text{-----}(3)$$

In the similar way the educational deprivation can be explained by the variables such as women literacy (X_1), percentage of household having no electricity or alternative energy (X_7), percentage of children covered under cooked mid day meal (X_8) scheme, problem of child labor (X_9) as well as health deprivation index (Y_1).

In terms of notations the regression equation stands as

$$(\text{Educational deprivation Index})_i = \gamma + \delta(\text{HDI})_i + \beta_{21}(\text{women literacy})_i + \beta_{27}(\text{No Electricity})_i + \beta_{28}(\text{cmdm})_i + \beta_{29}(\text{Ch.Lab})_i + u_{2i} \text{-----}(4)$$

In terms of notations the regression equation can be represented as

$$(Y_2)_i = \gamma + \delta(Y_1)_i + \beta_{21}(X_1)_i + \beta_{27}(X_7)_i + \beta_{28}(X_8)_i + \beta_{29}(X_9)_i + u_{2i} \text{-----}(5)$$

Here two equations (3) and (5) together form a recursive simultaneous equation system. In this way a recursive simultaneous equation is used to analyze the variation and nature of health deprivation of children as well as educational deprivation across major Indian states over different periods. Here the HDI (Health Deprivation Index) is considered to be influenced by some socio-economic variables relating to the status of financial capability of the households and under-achievements of mothers and children's health status. And the educational deprivation index is analyzed by some relevant socio-economic variables along with Hdi. This is the essence of the recursive simultaneous equation. In more general form, the two equation system can be written as

$$(Y_1)_i = \alpha + \beta_{11}(X_1)_i + \beta_{12}(X_2)_i + \beta_{13}(X_3)_i + \beta_{14}(X_4)_i + \beta_{15}(X_5)_i + \beta_{16}(X_6)_i + \beta_{17}(X_7)_i + \beta_{18}(X_8)_i + \beta_{19}(X_9)_i + u_{1i} \text{-----}(6)$$

$$(Y_2)_i = \gamma + \delta(Y_1)_i + \beta_{21}(X_1)_i + \beta_{22}(X_2)_i + \beta_{23}(X_3)_i + \beta_{24}(X_4)_i + \beta_{25}(X_5)_i + \beta_{26}(X_6)_i + \beta_{27}(X_7)_i + \beta_{28}(X_8)_i + \beta_{29}(X_9)_i + u_{2i} \text{-----}(7)$$

The system consists of two endogenous variables Y_1 and Y_2 and 9 predetermined variables viz. $X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8$ and X_9 . The u_{1i} and u_{2i} variables are stochastically independent of the X 's. In each equation the variable, Y with unit coefficient is considered the resultant variable and other Y variable and X 's are considered as the causal variables. In equation (6) the coefficients of the variables Y_1, X_1 to X_6 are non-zeros while the coefficients of the variables X_7, X_8 and X_9 are zeros. In equation (7) the coefficients of the variables Y_2, Y_1, X_1, X_7, X_8 , and X_9 are non-zeros while that of X_2, X_3, X_4 , and X_5 are zeros. Now the model is complete and a reduced form can be found. Here we assume that G_1 indicates the number of included endogenous

variables and G_2 indicates the number of excluded endogenous variables. K_1 stands for the number of included predetermined variables and K_2 stands for the number of excluded predetermined variables in the system. So in equation (6), $G_1=1$, $G_2=1$, $K_1=6$ and $K_2=3$; while in case of equation (7) $G_1=2$ and $G_2=0$, $K_1=4$ and $K_2=5$, the identification problem of the structural equation requires that $K_2 \geq G_1 - 1$. On fulfilling this condition, both the structural equations are satisfied and it is possible to apply the OLS method to derive the consistent estimates of the structural parameters.

Because of the recursive nature of the relation, the individual regression of the two years is run using the OLS technique with White's heteroscedasticity corrected standard errors and the pooled OLS technique is used for the combined case.

Findings of the study

The following tables 3 and 5 highlight on interactive determinants of health and educational deprivation index. The regression result of the table 3 shows the estimated results of the first structural equation corresponding to NFHS-3 (2005-06), NFHS-4 (2015-16) and the combined period. It is observed that the variables such as health insurance and institutional birth have significant expected impact on the HDI in NFHS-3 round. As for the NFHS-4 round, variables like women literacy, BPL and health insurance have the expected sign and are significantly related with the degree of child deprivation. In the combined period women literacy, BPL, health insurance and institutional birth are found to be significant. As the number of BPL family increases, provision of all types of health facilities decrease as it represents the financial incapability of the household. This is the main postulate of the capability approach developed by Amartya Sen. Variables like institutional birth; women literacy and health insurance are also observed to have very relevant significant impact in reducing health deprivation of children in major Indian states.

The importance of women literacy has been observed by some studies (Mishra et al., 1999, griffins et al., 2002). According to their studies as women literacy increases women ability to be independent, awareness of personal hygiene and issues about preventive and curative health care rises compared to the less or uneducated women.

Health insurance and institutional birth are, as expected, negatively related with the health deprivation of children at different level of significance indicating that as the practice of institutional birth and provision of coverage of health insurance increase, incidence of health child deprivation decreases. Accordingly, the combined results amply explain the health deprivation of children. It is however notable that both the variables BMI and female headed family are found to be insignificant in both rounds and combined period of NFHS rounds

Table-3: Regression result of children's health deprivation index values

variables	NFHS-3		NFHS-4		Combined Period	
	Coefficients	prob.	Coefficients	prob.	Coefficients	prob.
W. lit(X_1)	-0.009064 (-1.193183)	0.252	-0.025533 (-2.892244)	0.011*	-0.018339 (-3.162975)	0.003*
BMI(X_2)	0.014973 (1.127095)	0.278	-0.000870 (-0.037099)	0.970	0.008627 (0.842324)	0.405

BPL(X ₃)	0.003326 (0.407042)	0.690	0.014182 (1.924558)	0.074	0.010692 (2.303958)	0.027**
H.Insn (X ₄)	-0.033914 (-3.046088)	0.008*	-0.005716 (-2.429189)	0.029*	-0.004661 (-1.976599)	0.056
In.Birth (X ₅)	-0.009046 (-2.169826)	0.047**	-0.001614 (-0.323023)	0.751	-0.005424 (-2.863139)	0.007*
F.H.Fml (X ₆)	-0.004324 (-0.497158)	0.626	-0.007659 (-0.578782)	0.571	-0.011584 (-1.978124)	0.558
Constant	1.946070 (3.287492)	0.005*	2.988243 (2.470767)	0.026*	2.396714 (3.420809)	0.001*
R ²	0.819334		0.832531		0.769911	
F-Statistic	10.58187	0.0001*	11.59958	0.0000*	19.51921	0.0000*

Sources: Authors' calculation from secondary data

Note: Figure in the bracket indicates the value of t-statistic

*Indicates 1% level of significance

** indicates 5% level of significance

This regression model is good fit as reflected by the R² value which is significant at 1% level. In the combined period, data represents a panel consisting of two rounds of NFHS across 21 states. The relatively high R² value can mostly be attributed to the increased size of the sample. The high R² value for the cross section regression corresponding two rounds may partly create the problem of multicollinearity due to the relatively high pair wise correlation values of some explanatory variables. This may be explained with the help of Table-4

Table-4: Pair wise correlations between the explanatory variables for health deprivation index

	NFHS-3 (2005-06)						NFHS-4 (2015-16)						
	W.Lit	L.BMI	BPL	H.Ins.	In.Birt	F.Hd.Fml	W.Lit	L.BMI	BPL	H.Ins.	In.Birt	F.Hd.Fml	
W.Lit	1.00						W.Lit	1.00					
L.BMI	-0.61	1.00					L.BMI	-0.67	1.00				
BPL	-0.60	0.64	1.00				BPL	-0.60	0.69	1.00			
H.Ins.	0.16	0.008	-0.37	1.00			H.Ins.	0.12	-0.45	0.15	1.00		
In.Birt	0.67	-0.46	-0.37	0.02	1.00		In.Birt	-0.09	0.46	0.14	-0.30	1.00	
F.Hd.Fml	-0.59	0.53	0.12	0.31	-0.44	1.00	F.Hd.Fml	-0.69	0.34	0.20	-0.08	-0.14	1.00

Sources: Authors' calculation from secondary data

From Table-4, it is observed that in NFHS-3, institutional birth and women literacy, BPL and low BMI, women literacy and BPL, women literacy and low BMI have rather high values of correlation (≥ 0.6) with their expected sign. Similarly in NFHS-4, women literacy and low BMI, BPL and low BMI, women literacy and BPL are highly pair wise correlated with their expected sign.

Table-5: Regression result of children's educational deprivation index values

variables	2001		2011		Combined Period	
	Coefficients	prob.	Coefficients	prob.	Coefficients	prob.
Hdi(Y ₁)	0.0022583 (0.240009)	0.813	-0.077883 (-703819)	0.492	0.217645 (1.813069)	0.078
Wom. Lit(X ₁)	-0.009024 (-2.569545)	0.021**	-0.019124 (-4.194657)	0.000*	-0.002289 (-0.482654)	0.632
No Elec(X ₇)	0.002339 (2.533993)	0.022**	0.000834 (0.359986)	0.723	0.003780 (1.468976)	0.150
CMDM (X ₈)	-0.002545 (-1.079778)	0.293	-0.000734 (-0.377971)	0.710	-0.007027 (-1.855787)	0.071
Child Lab (X ₉)	0.007060 (-2.012289)	0.062	0.005641 (2.393574)	0.030**	0.002151 (0.315630)	0.754
Constant	1.109827 (3.225875)	0.005*	2.091276 (4.013119)	0.001*	0.451253 (1.016457)	0.316
R ²	0.837798		0.874110		0.339474	
F- Statistic	15.49547	0.0000*	20.83042	0.0000*	3.700403	0.0083*

Sources: Authors' calculation from secondary data

Note: Figure in the bracket indicates the value of t-statistic

*Indicates 1% level of significance

** indicates 5% level of significance

Table-5 represents the regression results of educational deprivation index (EDI) and explains the determinants of the EDI corresponding to the second structural equation. Variables such as women literacy, no electricity, and coverage of children under CMDM, problem of child labor and estimated value of health deprivation index are used to explain the variation in educational deprivation of children. From the table it is clear that in the NFHS-3 round women literacy, no electricity and child labor are found to be significant with their expected signs. In NFHS-4 women literacy and child labor are found as significant with their expected sign. But in the combined period EDI is significantly influenced by estimated HDI and CMDM. In some studies (Barman et.al. 2014) it is explained that educational deprivation in India persists due the problem of child labor.

HDI and CMDM in individual NFHS round are found to be insignificant possibly owing to the small sample size.

Table6. Pair-wise correlation between the explanatory variables for educational deprivation index

	2001					2011				
	hdi	w.lit	no elec.	cm dm	ch. lab	hdi	w.lit	no elec.	cmd m	ch. lab
hdi	1.00					hdi	1.00			
w.lit	-0.77	1.00				w.lit	-0.81	1.00		
no	-0.61	-0.53	1.00			no	0.69	-0.64	1.00	

elec.						elec.					
cmdm	-0.52	0.64	-0.39	1.00		cmdm	-0.55	0.58	-0.54	1.00	
ch. lab	-0.15	0.11	-0.33	0.5	1.00	ch. lab	0.24	-0.23	0.01	-0.06	1.00

Sources: Authors' calculation from secondary data

Table-6 analyzes the interaction between the health and educational deprivation of children in both the NFHS-3 and NFHS-4 rounds and it is explained by the expected sign and significant values of the coefficients of the regression variables and estimated value of HDI.

The entire regression of educational deprivation is found to be a good fit as explained by its high R^2 value which is also significant. This high R^2 value for the cross sectional regression of both the rounds of NFHS may be partly attributed to multicollinearity due to relatively high pair wise correlation of some explanatory variables. It is obvious from the table-6 that in NFHS-3 women literacy and HDI, no electricity and HDI, CMDM and women literacy all are highly pair wise correlated with their expected sign. In NFHS-4, women literacy and HDI, no electricity and HDI, no electricity and women literacy are found pair wise correlated with their high values. In both rounds cooked mid day meal (CMDM) and estimated health deprivation index are relatively correlated. In the combined period the data set reflects a panel consisting of two periods of data across 21 states where R^2 value is found quite low reflecting a milder pair wise correlations resulting from an increased sample size.

Concluding remarks and policy prescription

The whole study highlights the underlying factors of child deprivation in India focusing on health and education aspects with the help of the capability approach. It also explains the nature and causes of variations among major Indian states over the decades. Concluding observations from this study can be summarized as

- a) Children from the states of Madhya Pradesh, Jharkhand and Bihar are the most deprived in the aspects of health and education over the decades. The degree of deprivation of these states is increasing reflecting their bottom end ranks have remained unaltered. The main reasons of such deprivation are the low capability of fulfilling the basic needs of the children (BPL), women illiteracy, and child labor.
- b) Kerala, Sikkim and Punjab rank first three positions in both rounds of NFHS reflecting lowest level of health deprivation. Low incidence of poverty, women literacy, full immunization of children and better maternal awareness of mothers and wide practice of institutional birth are the root causes of their performance.
- c) States like Bihar, Jharkhand and Rajasthan have registered low performance in terms of both HDI and EDI. It is found in our second structural equation that HDI is correlated with the factors (such as poverty, no electricity and problem of child labor) that are highly associated with EDI.
- d) The states with high level of health status ensure better attainment in the level of literacy. It is well explained in our interactive frame work of HDI and EDI.

- e) It is remarkable to note that Jammu and Kashmir having better performance in the field of health shows a poor performance in respect of EDI. It may be partly be due to political instability, bad governance and ongoing violence and inaccessibility of schools which create obstacles to extend government facilities to the intended beneficiaries.
- f) North–Eastern and southern Indian states like Sikkim, Meghalaya, Kerala and Tamilnadu are doing relatively well both in respect of health and education. In the northeastern states, women have more access to improved sanitation facilities at the household level, are better educated and either self employed or working. In addition to these, an increase in the coverage of IFA consumption and ante natal care are the root causes of such success. Only 6.4 percent of Sikkim’s women have low BMI (NFHS-4). Condition of Northern and central Indian states like Uttar Pradesh, Bihar, Rajasthan, M.P and Chhattisgarh remain unaltered at bottom position relative to the south-Indian states indicating higher degree of deprivation of their children. Poverty, unavailability of electricity and sanitation facility of households and women illiteracy are the main causes of this extent of deprivation.
- g) Achievement of West Bengal stands at moderate level in respect of both health and education over the decades with a sign of improvement. This is mainly due to the improvement of women literacy, decreasing child marriage and increasing GER (as a positive impacts of the program, like Kanyashree), percentage coverage of CMDM scheme etc.
- h) It has been observed from our study that the variables, health insurance and institutional birth have become very relevant in determining the health status of both children and mothers as evident from their high association with HDI.
- i) Though the Right To Education (RTE, 2009) has been admitted in Indian constitution, the achievement of universal elementary education is far away from the target level when we observe children (at Elementary Level, 6-14 Years) of a number of Indian states remaining illiterate. Factors such as low capability of the households, cost of schooling, and inaccessibility of schools, non- availability of electricity or solar energy play a significant role in sustaining their illiteracy.

Policy prescription

Health, Nutrition and Education contribute a vital role to human capital formation, growth and development of a nation. India had been witnessing poor child health and nutritional status as well as high level of child illiteracy since the time of independence. So it brings forth the necessity and importance of enunciating policy prescription for reducing such deprivation. A number of measures (National Nutritional Mission, Mid-Day Meal, Ayushman Bharat, Swastha Sathi, Swachh Bharat Mission focusing on ODF (Open Defecation Free) communities or Nirmal Bangla Avijan in West Bengal, MGNREGS) have been launched by the central and states governments during planning period, but still not having substantial impact on eradicating the intensity of child deprivation. Child deprivation experienced in diverse forms is substantially shaped by financial deprivation status of the households; so measures especially for BPL families could include extending financial support or indirect measures through employment generation for the youth generation. Other indirect measures may also include provisions

for delivering nutritious food items through public distribution system, better monitoring of the immunization programs, supplementation of IFA (Iron and Folic Acid) and albendazole tablets, regular health check up at school level, full coverage of the child-bearing mothers of poor families through extension of ICDS and basic health care facilities through rural hospitals or primary health centres. Integrated health and nutrition initiatives with active involvement and proper monitoring of health, women and child development department, extension of electricity facility to households, ensuring better housing conditions, conduct of BPL survey in a proper way, providing benefits or subsidy to the actual beneficiaries, huge investment in basic sanitation and drinking water facility may be proper initiatives for reducing the nutritional and health deficiency in children belonging to the socio-economically vulnerable groups of the society.

Cooked mid-day meal (CMDM) and Sarva Siksha Abhijan (SSA) play a significant role in improving the nutritional status and reducing children illiteracy but far away from reaching the goal. So allocation of funds in this scheme should be increased. Cooked mid deal meal scheme only at school level may be replaced by 'Total Diet Program' through inclusiveness of all people in order to enhance the nutritional level of them. For undertaking substantial investment concerted efforts may be undertaken through PPP mode of governance (public-private partnership), involving cooperatives and even NGOs. Unless such initiatives are envisioned and implemented, children of today will be unable to flourish as potential future productive human capital for sustainability requirements of a society.

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