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Has ‘Capability Deprivation’ been Ignored as a Determinant of Malnutrition?

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ABSTRACT

The traditional concept of poverty has now been expanded to a renewed focus on Capability Deprivation, which involves ill-health and illiteracy, besides income. Hitherto, malnutrition has been considered to be associated with low level of income, both as cause and consequence of poverty. However now, as per Sen, non monetary factors such as health and education have also become important determinants of poverty and hunger. These are acknowledged as developmental challenges because of its implication on human capital and in a wider context on human welfare. Since it leads to substantial long term impact, it is important to look into these challenges more deeply as it further undermines government capacity to reduce poverty. India figures at the bottom of the Global hunger index, faring even worse than Bangladesh and Sub-Saharan Africa. Bihar happens to be the state with the highest child undernourishment rate in India. The article summarizes a study involving all 38 districts of Bihar, envisaging both monetary and non monetary factors, having influence on malnutrition. Significant correlation was seen between BPL and Malnutrition ($r > 0.35; p < 0.05$) and rise in PCY is inversely correlated with Stunting ($r = -0.25, p > 0.05$). For capability deprivation indices, female literacy ($r = -0.308, p < 0.05$), and women educated till class 10th showed, inverse correlation with Stunting ($r = -0.277, p = 0.09$). Availability of Full ANC varies widely in districts of Bihar (from 1-9%). Full ANC has significant correlation with Stunting ($r = -0.412, p < 0.01$).

Keywords: Poverty, Hunger, Malnutrition, Capability Deprivation, Bihar, Determinants of malnutrition

1. INTRODUCTION

A person is said to be undernourished if he/she doesn't get enough food to meet calorie requirements. FAO equates hunger with chronic undernourishment. About 900 million (or 1 in 7) are undernourished in the world. (Source FAO, 2011) **(1)**. Half of these are in Asia - Pacific and one fourth in Africa. Underweight babies are born to undernourished babies, who die more frequently as compared to normal children, esp in developing countries. Every year, as many as 17 million children are born malnourished. Malnutrition contributes to child mortality in 33% of cases. A third of all deaths in children under the age of five in developing countries are linked to undernutrition. (Source UNICEF, 2007). **(2)**

The child is most vulnerable to malnutrition in the first three years. Adequate diet (including breast feeding) is most crucial to prevent undernourishment in this period. Its a matter of just 10 to 15 Rs a day to provide the vital nutrients to a small child.

While it is mostly perceived that hunger and malnutrition are a consequence of poverty, i.e. lack of income in a family; the "Capability Approach" put forward by Prof Amartya Sen argues that the non-monetary poverty in the form of lack of basic necessities like health, education, medical care, etc., too predisposes humans to 'poverty' and malnutrition. **(3)**

Given the above background, this study has been designed to have a holistic approach to poverty, by not just examining the economic attributes, but also measures of human rights and access, namely health and education, as determinants of hunger in the society. The state of Bihar has been chosen for this study, for the simple reason that it has high rates of hunger and undernutrition in India. The study aims at determining the association of income poverty with malnutrition as against the association of capability deprivation with malnutrition in the state of Bihar.

2. LITERATURE REVIEW

World poverty, hunger and malnutrition have a common thread running through them. They exhibit an inherent relationship between poverty and its impact on the health as it leads to both physical and mental sufferings. Malnutrition blocks economic growth and promotes poverty. As a consequence chronic undernourishment and food insecurity are under scanner of the world forum. It was pledged to reduce hunger by half by 2015, in the Millennium Development Goals. **(1)**

Despite the fact that agriculture produces higher amount of food today, than ever before, persistent under-nutrition remains a hard reality. Statistics show, that world over agriculture production can produce enough, without putting pressure on prices, indicating that, food distribution is skewed. Undernourishment and hunger are important causes of poverty. Measures to reduce malnutrition are imperative to reduce poverty as it reduces the capacity for physical activity thereby adversely affecting the productivity of labour, retard child growth reduce cognitive development thus hugely affect the outcome of investment in education and ultimately causes economic, social and political instability. **(2)**

The Capabilities Approach Theory by Prof Amartya Sen (3)

The Capabilities Approach theory was put forth by Prof Amartya Sen. Here poverty may be defined as a state when a person is not able to meet the basic needs such as food, shelter etc. Hitherto - main cause of poverty was low income which was accepted as a standard criterion to identify poor. Poverty line is

calculated with the help of purchasing power parity, upgraded time to time internationally. Thus Poverty line divides population into two groups BPL (poor) and APL (non-poor). Overwhelming focus on monetary factors has been criticized for undervaluing well-being. UN Human Development Report 1990 for the first time incorporated - Health, education and income as important measure affecting poverty; as lack of these factors was considered as vital source of poverty.

Dr. Sen has developed a more comprehensive measure of Poverty. According to him there is strong influence of Capability Deprivation on poverty thus there is a need to create a balance of monetary (material) and non-monetary (non-material) factors in evaluating human welfare. Capability deprivation-factors (health and education) are seen to be vital for wellbeing and contribute to poverty alleviation, besides the role of conventional monetary indicators of poverty.

3. METHODOLOGY

The present work is an exploratory study where data has been gathered using 'Secondary data collection' methods. The study was undertaken from June to December 2016. Since all the requisite variables are not available at a single source, various data sources elaborating relevant social, economic, demographic, medical and malnutrition related data, over the past decade or so, were searched. These included:

1. National Family Health Surveys (NFHS 1 to 4), Census data, Niti Aayog reports, State reports, CAG Reports, Economic surveys, etc.
2. Reports from WHO, UNICEF, etc
3. **Critical appraisals** from independent bodies and Press have also been utilized.

Data Extraction: A critical review of relevant literature was undertaken. Literature with respect to poverty, hunger and capability deprivation with particular reference to state of Bihar has been studied. The relevant variables were enumerated on an excel sheet and data entry was done from the above mentioned sources.

Ethical Considerations: Being a programme analysis using secondary data, no ethical issues were envisaged.

Statistical Analysis: The data has been analyzed using SPSS and interpreted with view to understand the causes and implications of variables amounting to capability deprivation in addition to those that qualify to be defined as 'poverty' in the classical sense.

4. RESULTS AND DISCUSSION

Correlations between Traditional Determinants of Poverty and Malnutrition

In the present study, per capita income and population below poverty line are taken as traditional determinants of poverty. The correlations between these two parameters and malnutrition (Stunting, Wasting and Underweight) has been calculated. The results are summarized in **table 1** below:

Table 2.1
Correlation (r) : Gross per capita GDP and population below poverty line (BPL) with Malnutrition (Stunting, Wasting and Underweight)

Parameter	Stunting	<i>p</i>	Wasting	<i>p</i>	Severe Wasting	<i>p</i>	Underweight	<i>p</i>
Per capita income	-0.25	0.14						
Population below poverty line (BPL)			0.35	0.03	0.38	0.02	0.38	0.02

When we see the traditional indicators of poverty, it is observed that there is a correlation between these indicators and malnutrition. When districts are compared with respect to population below poverty line, it is seen that with increasing BPL, the prevalence of malnutrition also increases. This trend is consistently seen for Wasting, Severe Wasting and Underweight, with correlation that is good and statistically significant ($r > 0.35; p < 0.05$) for all these indicators. It is also observed that a rise in the per capita income is inversely correlated with Stunting, even though it is not statistically significant.

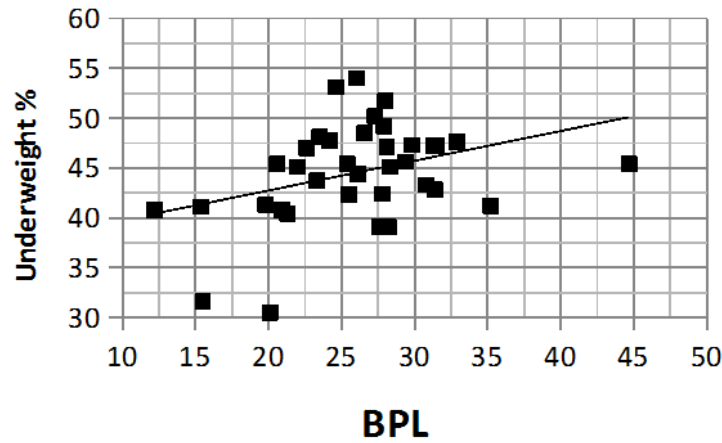


Figure 2.1

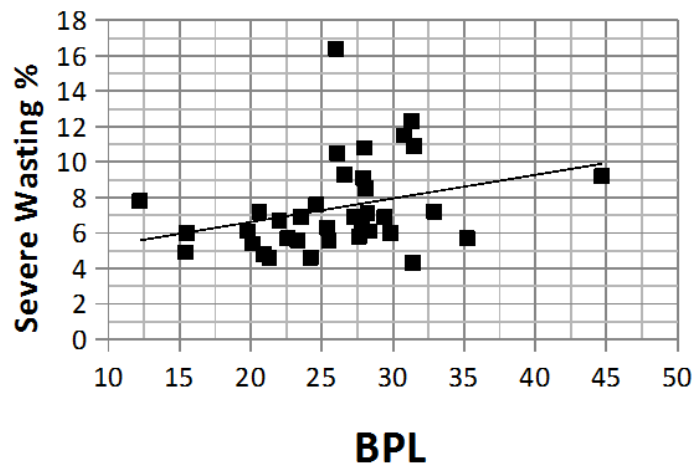


Figure 2.2

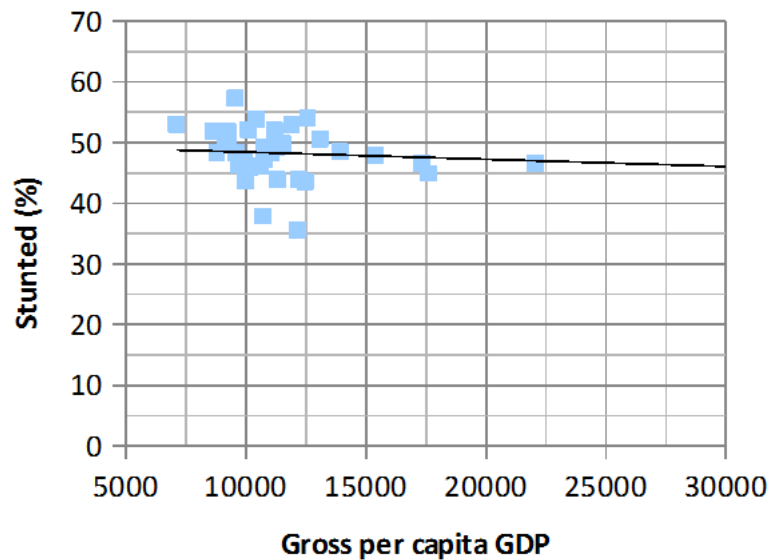


Figure 2.3

Economic parameters of the country (GDP) or state (NSDP): Traditionally the so called economic determinants are considered to be driving the financial well-being of a country, state or a family. Health or nutrition, and as a corollary, malnutrition can thus be taken as a function of these 'economic determinants'. The importance of 'Economic determinants' can be understood in context of :

1. The Economic parameters of the country (GDP) or state (NSDP) and its subsequent impact on malnutrition
2. The economic condition of the family (measured in terms of the household income)

State NSDP & Malnutrition: Overall, even though stunting is lower in higher income states, there is significant variability in this relationship. Even for the same level of state NSDP, stunting levels vary tremendously. In 2013-14, the average national per capita NSDP at constant (2004-5) prices was Rs 48,753. Punjab reflects Indian average per capita income (Rs 49,529). Here stunting prevalence was 30.5% as compared to Indian average of 39%. Tamilnadu and Gujarat have similar incomes; Stunting in TN is merely 23.3% as against 41.8% for Gujarat. Uttarakhand and Kerala have similar incomes but much different stunting rates. Conversely Kerala and Goa have lowest stunting rates (19.5% and 21.3% respectively) but Kerala's NSDP is less than half of Goa. (4)

Economic Condition of Family/Wealth Quantiles: Even though malnutrition is seen in families of all economic strata, it is highest at 60 percent in the lowest wealth quantile. (5,6) But the children in families with higher income are relatively not much better than those children with lower incomes. The past two decades have seen improvements in household incomes, agricultural productivity and child survival. Between 1990 and 2015, as the income of average Indian rose by 4.7% and crop yields rose by 2.3%, the child malnutrition rates didn't fall dramatically. (4) It is estimated that in the long run, a 10% increase in GDP can lead only to a 6% decline in malnutrition.

Capability Deprivation Determinants of Poverty and Malnutrition : Historically, in the first decade of the century, India’s GDP increased by 40% in real terms. In spite of rising prosperity and falling poverty, malnutrition declined only by only 6.1% (from 51 to about 45%). This indicates that increase in Income doesn’t automatically translate into malnutrition control. This warrants a closer look at other determinants of malnutrition. **(4)**

Economic development alone or even the sufficiency of food at family levels is not enough for satisfactory nutrition of children. Given the key roles that the women play in child rearing, certain attributes of women, i.e. their knowledge and abilities, physical health, social status, and decision-making are critical in maintaining child nutrition.

Capability deprivation has been exemplified by indicators pertaining to health and education levels of the population, in this study. Hence, correlations of education and health indicators with malnutrition would give an indication of the relative importance of these in ‘determining’ malnutrition. The results are summarized in subsequent tables and paragraphs.

Effect of Female Literacy on Malnutrition

Table 2.2
Correlations between Education parameters and Malnutrition: Districts of Bihar (2016)

<i>Parameter</i>	<i>Stunting (r)</i>	<i>p</i>	<i>Severe Wasting (r)</i>	<i>p</i>
Female Literacy	-0.308	0.05		
Women studied up to Class 10th	-0.277	0.09	-0.225	0.18

It is evident from **table 2** that female literacy showed a fair inverse correlation with Stunting ($r = -0.308$), which is a form of chronic or long term malnutrition. The correlation was found to be statistically significant. Likewise, a fair correlation was also seen between women educated till class 10th and malnutrition stunting / severe wasting, but it was not found to be statistically significant.

There are plenty of studies documenting benefits of maternal education and schooling on infant mortality, under 5 child mortality and child malnutrition. For instance, NFHS2 survey depicts a steep decline in child malnutrition with maternal schooling. **(5)** Children of mothers without any education are two times more likely to have under nutrition than children of mothers with middle level schooling. Carrying the same argument forward, it was further seen that children of mothers with middle level education may have two times as much malnourishment, than those with senior secondary schooling. **(5)**

The NFHS 3 data too, substantiates the same findings of mother’s literacy having a effect on malnutrition. Illiterate mothers and mother’s with not even primary education, tend to have high chances of malnourished children. When the difference in malnutrition between two extremes of mothers [without any education (74.5%) and 12 or more years of education (55.4%)] is analysed, impact of mother’s education on child nutritional becomes evident. **NFHS3 (6)**

The same effect is seen in the current surveys as well. With increasing mother’s education, there is a decrease in prevalence of malnutrition (RSOC-2014). **(4)** As in 2014, the proportion of married women with 10 or more years of education is 21.4% in India. (RSOC-2014). A comparison of the NFHS-3 (2005-06) and RSOC (2013-14) surveys show a distinct rise in completed median years of schooling.

The level of women's education differs significantly across the Indian states. The states with high prevalence of undernutrition are invariably seen to be having low literacy. As per Census of India (2011) Bihar ranks at the bottom of the 'literacy rate table of India' amongst all States and UTs and the malnutrition rates are among the highest in Bihar.

As per 2011 census, Bihar has low literacy (61.8%). Even though there has been some improvement on the literacy rates in Bihar by about 17.9 percentage points between 2001 and 2011, its association with malnutrition remains consistent.

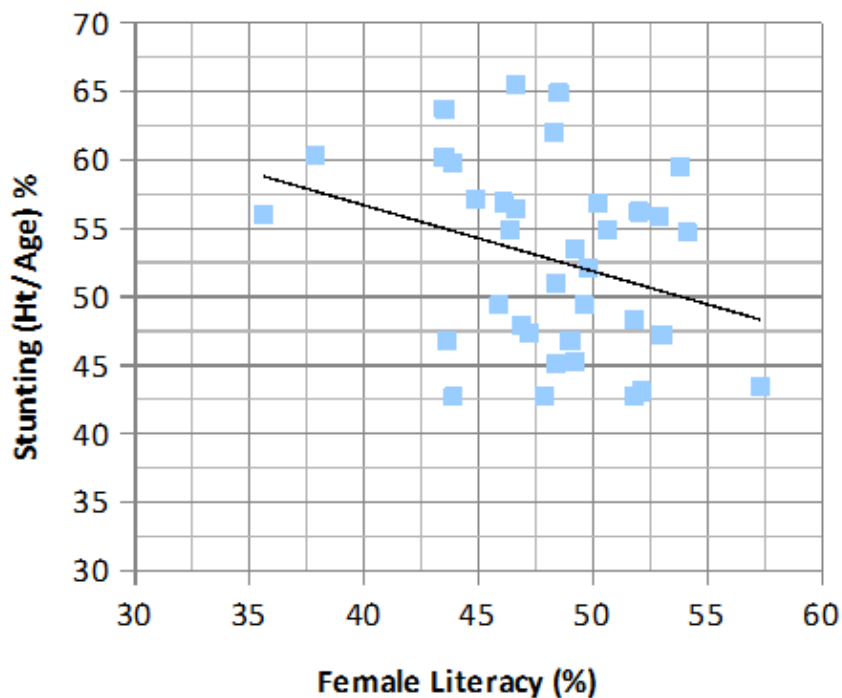


Figure 2.4

Role of Women's Education in improving nutrition status of children : There may be many reasons or mechanism through which female literacy contributes to prevention or control of child malnutrition. If a mother is educated and is aware of health foods, she will incorporate the same in the daily diet. She can even use her kitchen garden / field to grow or include such food (eg. green vegetables) in her menu. Education gives her a sense of power and a heightened status. She can then have a say in matters of child feeding, weaning practices, right cooking practices and to resist unhealthy rituals and practices.

It is a myth that mere prosperity can cut down malnutrition. As per a UNICEF study (1991), only 13 percent of rural families in Punjab were below poverty line, the infant mortality rate and number of low birth weight babies continued to be high. It was also found that besides an expected high rate of under nutrition amongst children of low Socio-economic status (SES), even about one third of the girls and one fourth of the boys from middle SES, also suffered from moderate level of malnutrition (7).

This is owing to the fact that unless education has an imprint in the mother it is very difficult to offset the age-old food habits, customs, traditions and taboos, that perpetuate malnutrition.

A literate mother can take better care of child nutrition and keep undernutrition, low birth weight and infant deaths at bay. Merer economic, financial and nutritional adequacy therefore is not sufficient to bring about a change in the malnutrition map of India, unless female education is ensured not only in the state of Bihar, but also in other states. Even if a family is living in poverty, the health and nutrition status could be much better, if people are more aware about the correct food practices, which could come through good general education and nutrition education for mothers and children themselves.

Effect of Health Parameters on Malnutrition : Akin to female literacy, health of mother and child too have an impact on prevalence, prevention and control of undernutrition, which might be independent of the economic status of a family. With this premise, the NFHS4 data was analysed with respect to the state of Bihar. The findings are summarised in **table 3** below and discussed in subsequent paragraphs.

Table 2.3
Correlations (*r*) between Health parameters as Capability Deprivation (poverty) Indicators and Malnutrition

<i>Parameter</i>	<i>Stunting</i>	<i>p</i>	<i>Wasting</i>	<i>p</i>	<i>Severe Wasting</i>	<i>p</i>	<i>Underweight</i>	<i>p</i>
Full Ante Natal Care	-0.412	0.01					-0.25	0.17
Malnourishment amongst women (BMI <18.5)	0.485	0.001			0.078	0.64	0.512	0.001
Anaemia in women			0.25	0.15			0.231	0.16

Health and Nutrition of Women : Health of a woman has definite implications on nutrition and health of her foetus, infant and child. It also has inter-generational consequences, through ‘transmission’ of malnutrition to the next generation. The Body Mass Index (BMI) of woman, her anaemia status, and the medical care she receives (esp. during pregnancy) determine the nutritional status of her child. These parameters are discussed in detail with special emphasis on Bihar.

Ante Natal Care (ANC) during Pregnancy : Poor antenatal care happens to be an important determinant of low birth weight (LBW) of the child; and LBW is an important predictor of undernutrition. However distant the connection might appear, but it remains a fact that, ante natal care is important predictor of malnutrition. As per NFHS 4 data, as many as 16 percent women had not registered their pregnancy, so they never went for an ANC check-up, thus exposing themselves to the huge risk of not only poor pregnancy outcome (maternal morbidity and even death during delivery), but also to low birth weight and malnutrition of the child. **(4)**

As per the requirement of safe motherhood norms under the Reproductive & Child Health Programme, the concept of full ANC includes receipt of 3 plus (i.e. four) – ANC checkups, at least one dose of TT vaccination and consumption of 100 or more IFA tablets/three bottles of IFA syrup, during pregnancy. It is observed that the overall level of full ANC is low as only two out of every ten (20 percent) women in the age group 15-49 received the full components of antenatal care. It is however also seen, that level of education is an important driver of receiving full ANC. While less than one in every ten women (9 percent) with ‘no education’ received full ANC, on the other hand, close to three for every 10 women (32 percent) who completed secondary or higher level of education received full ANC. **(4)**

In the present study too, it is found that, availability of Full antenatal care varies widely in various districts of Bihar. It ranges from a mere 1% in districts like Seohar, Begusarai, Medhanpura and Purbi Champaran to the highest in District Siwan at 9%; the next best being Patna at 7.9% and the average for Bihar being only 3.2%. It is evident from **table 3** that full ante natal care of the mother during pregnancy has a significant effect on preventing malnutrition; a significant correlation of full antenatal care seen with Stunting of children ($r = -0.412, p = 0.01$) and also with Underweight (though not statistically significant, $r = 0.25, p = 0.17$).

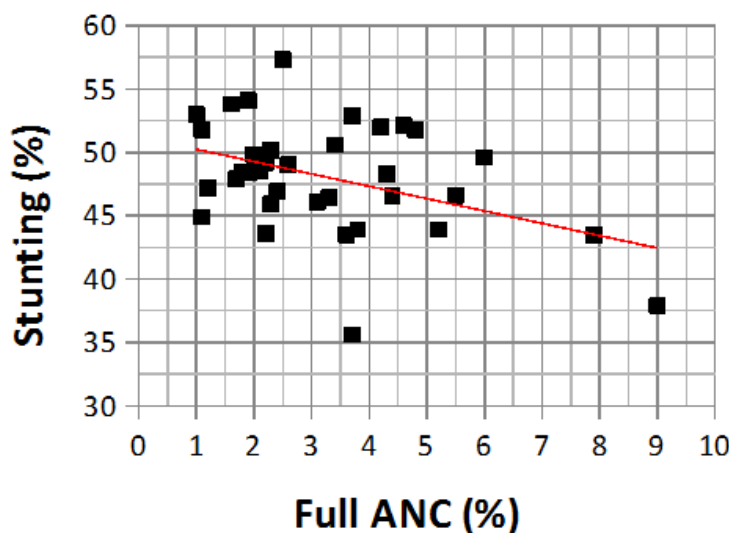


Figure 2.5

As per RSOC data too, in Bihar, though 80 percent or more women received at least one ANC check-up, but when it came to a full antenatal check up, (i.e. 4 ANC visits and other facilities being utilized), its performance dropped. Amongst all the states, for women receiving four or more ANC check-ups, Bihar fared the worst at only 9 percent as compared to Goa and Karnataka where more than 80 percent women received four or more ANC check-ups. In 17 states, levels of 4 plus ANC check-ups were above the national average (45 percent). **(4)** So it is seen that this has further dwindled to an average of just 3.2 % as per the latest NFHS survey.

Utilization of ANC facilities are extremely variable, dependent upon State, socio-cultural milieu, age of woman, education, awareness, availability of health facilities, etc. At a national level, in 2014 (RSOC), although close to 85 percent of women had one or more ANC check-up done; 63% had three or more only 45 percent received the recommended four or more.

Women belonging to the marginalized communities and financially weaker sections are less likely to receive the recommended four plus ANC check-ups, as it is seen that 42 percent of the women from SC families and 37 percent of the women from the ST families received four or more ANC check-ups in comparison to higher proportion (54 percent) of the women from Other categories. Similarly, close to one-fourth women belonging to the poorest families received four or more check-ups, in contrast to close to two-third of the women (64 percent) from the richest families. **(4)** The prevalence of malnutrition is higher amongst these poorer families.

Anaemia : Anaemia is a state of low haemoglobin levels in the body. It can be graded as mild moderate or severe depending on the haemoglobin state. As per NFHS3, more than 70% children (<5 years age) suffer from anaemia in Bihar. Likewise, more than 50% women in their reproductive age (15-49 years) suffer from anaemia.

It is seen from a pooled data on India that, of about 82 % severely anaemic mothers, their children were anaemic too. On the other hand, 62 % mothers without anaemia had had anaemia among their children. The children of severely anaemic mothers had about seven times higher incidence of anaemia, as compared to those with non-anaemic mothers. (NFHS3)

The highest prevalence of anaemia in children is seen in Bhojpur, Banka and Bhagalpur districts being more than 70%. The highest prevalence of anaemia amongst women is seen in the Banka, Kishangarh and Purnia districts, all more than 67%. There was a fair correlation between anaemia in children and anaemia in mothers, $r = 0.44, p < 0.05$.

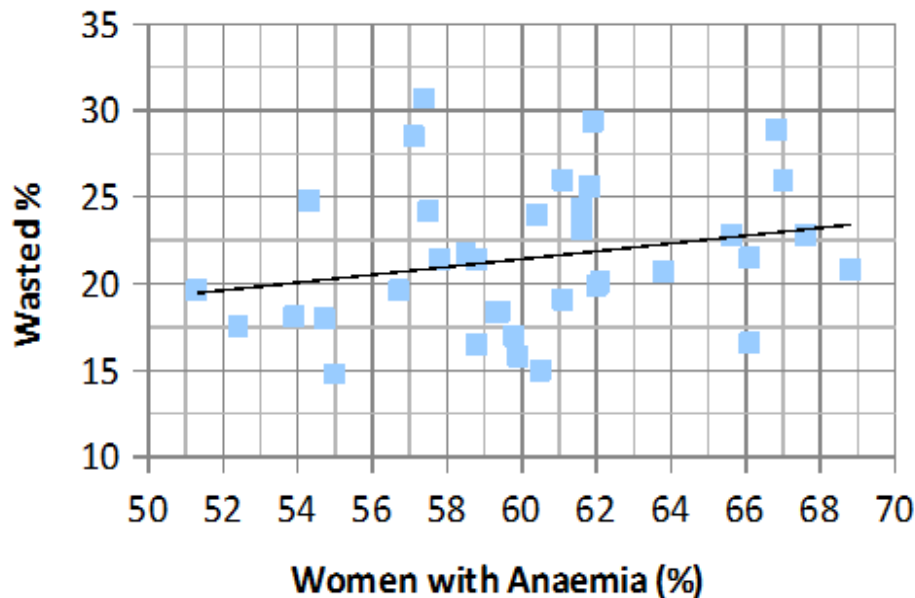


Figure 2.6

In the present study, though anaemia amongst women is found to be fairly correlated with malnutrition (wasting and underweight) in children, but it is not statistically significant.

Malnutrition in Women (BMI < 18.5) : Maternal malnutrition (*i.e* low BMI and anaemia) adversely affects health and survival of neonates. In the present study, the highest rates of maternal malnutrition (as measured from the percentage of women with BMI less than 18.5) were seen in Purnia, Araria and Jamui districts (all more than 37.5%)

A good correlation is seen between malnutrition amongst women (BMI <18.5) and child malnutrition. It was seen to be statistically significant for stunting ($r = 0.48, p = 0.001$) and Underweight ($r = 0.51, p = 0.001$).

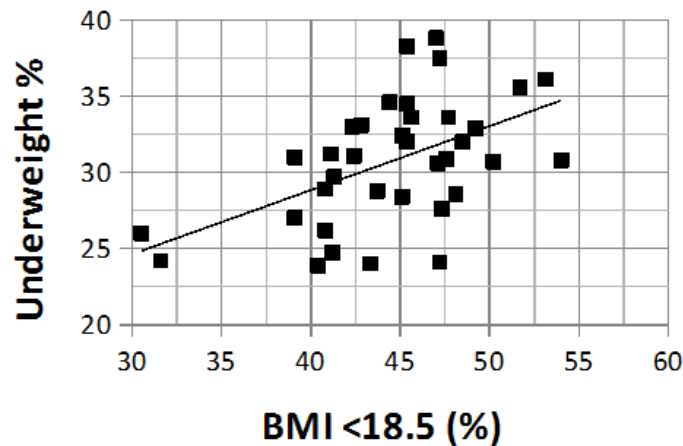


Figure 2.7

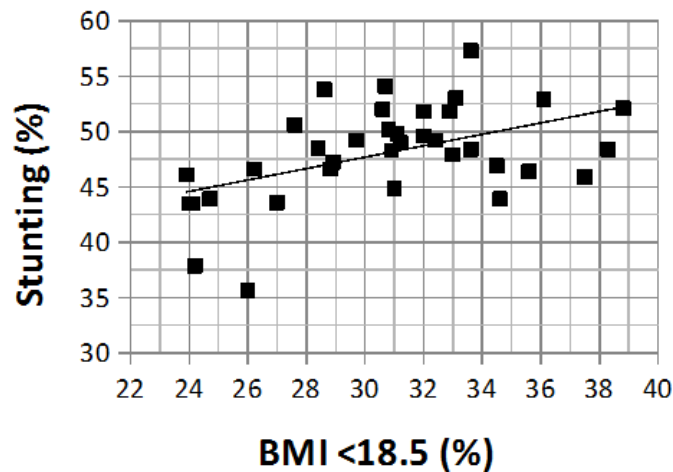


Figure 2.8

Child Health : Malnutrition leads to poor child health leading to infections like diarrhoea, Acute Respiratory Infections, measles, etc. They further restrict any further improvement in nutrition. This illness in the family, forces the family to visit a private doctor, esp when the public hospitals are either ill equipped or lack sufficient qualified manpower. The government spending on the public health system is low at less than 1% of GDP. This leads to large amount of health spending as out of pocket expenditure, for the family, thus further compromising the precarious economic condition of the family.

5. CONCLUSION

Contrary to the popular belief, various studies suggest that child malnutrition is if at all, only weakly associated with income. In India too, the rate of improvement in nutritional status has not kept pace with the significant gains made in economic prosperity and agricultural productivity during recent decades. To some extent stunting might decline with economic progress, but economic growth cannot by itself, reduce under-nutrition. This indicates that there are factors other than 'financial' ones, responsible for malnutrition.

Capability deprivation factors play significant role in determining malnutrition. Factors like sex ratio, early marriage, full ANC, education, female-literacy, anaemia, malnourishment amongst mothers have huge implications on incidence and prevention of child-malnutrition. Conclusions from the present study substantiate the importance of non-monetary poverty in determining malnutrition, in India.

This paradigm shift from 'economic determinants of malnutrition' to 'capability deprivation indicators' has significant implications on policy making for malnutrition control. Increase in per capita income would translate into improvements in child nutrition, only if economic gains facilitate improvement in conditions related to diet and disease. In other words, with little priority and policy shift, capability deprivation can be turned into capability empowerment, eliminating malnutrition as a fringe benefit.

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