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ORIGINAL ARTICLE

AN OVERVIEW OF NUTRITIONAL STATUS OF CHILDREN IN INDIA

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Abstract:

Nutritional status is one of the crucial indicator of health services and economic development of the nation. India is one of the countries where 40% children are mal nourished. There are various reasons for malnourishment. Due to poverty parents are not able to feed their children with appropriate nutrients, vitamins and minerals. To prevent malnutrition government of India has launched very prestigious programme "Integrated Child Development Scheme" with the assistance of UNICEF. Under this programme supplementary feeding programme, immunization, growth monitoring, health checkup, supplementation for the pregnant and lactating mothers, early childhood education etc, programmes are being provided. Inspite of such efforts there is high incidence of morbidity which leads malnutrition among the children. Diarrhea, dysentery, jaundice, typhoid are the main illnesses that instigates malnutrition among children. The details about the status of children are discussed in this paper. Secondary data collected/reported in various government documents is used to explain the causes.

KEYWORDS:

Nutritional status, malnutrition, energy intake, pregnant and lactating mother, poverty, morbidity, infection, growth monitoring, immunization.

INTRODUCTION

It is well acknowledged that investment in human resource development is a pre requisite for any nation to progress. Children of today are citizens of tomorrow, and hence improving nutritional status of children becomes extremely important. Early childhood, that is the first six years constitutes the most crucial period in life, when the foundations are laid for cognitive, social and emotional language, physical/motor development and cumulative lifelong learning. The young child under 3 years is most vulnerable to the vicious cycles of malnutrition, disease/ infection and resultant disability all of which influence the present condition of a child at micro level and the future human resource development of the nation at the macro level. The assessment of the ground reality as reflected by the statistics on nutritional status of children becomes very significant in this context.

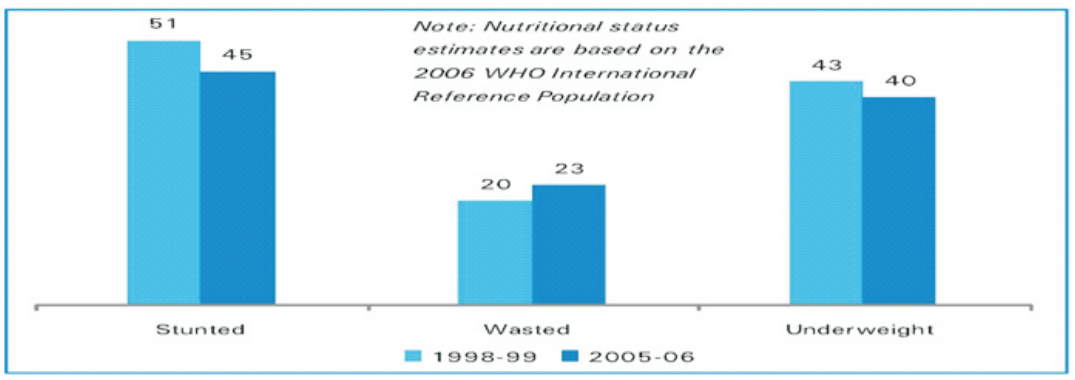
The consequences of child malnutrition for child morbidity and mortality are enormous and there is an adverse impact of malnutrition on productivity so that a failure to combat child malnutrition reduces potential economic growth at the macro level. At the micro level, malnutrition both protein energy malnutrition and micronutrient deficiencies directly affects children's physical and cognitive growth and increases susceptibility to infection and diseases. It is obvious that there is urgent need to focus on the nutritional and overall developmental needs of children. The golden interval for intervention is believed to be from pregnancy to 2 years of age, after which under nutrition may cause irreversible damage for future development. Poor fetal growth or stunting in the first two years of life leads to irreversible damage. Inadequate cognitive or social stimulation in first two to three years has lifelong negative impact on educational performance and psycho-social functioning.

Title: "AN OVERVIEW OF NUTRITIONAL STATUS OF CHILDREN IN INDIA" .Source: Review of Research [2249-894X] V.V. KULKARNI AND USHA VERGHESE yr:2014 vol:3 iss:4

India is one among the many countries where child malnutrition is severe and also malnutrition is a major underlying cause of child mortality in India. The problem has caught the attention of policy makers and researchers for several decades. Various studies and surveys have been conducted to find out the root causes of child malnutrition. All these studies including the three National Family Health Surveys (NFHS) reveal that malnutrition is not the result of a single cause; the problem is multifaceted, the causes acting singly or in combination with other complex factors like poverty, purchasing power, health care, ignorance on nutrition and health education, female illiteracy, social convention etc.

Globally, more than one third of under-five deaths are attributable to under-nutrition. About 20 per cent of children under-age five in India are wasted, 43 per cent underweight and 48 per cent stunted(NFHS 2005-2006). In terms of numbers about 54 million children under five years in India are underweight which constitutes about 37 percent of the total underweight children in the world(SOWC 2010). In India, 25 million children under five years are wasted and 61 million are stunted, which constitutes 31 per cent and 28 per cent of wasted and stunted children respectively in the world. Figure 3 depicts the trends in stunting, wasting and underweight status(NFHS India Factsheet: For studying the trends in underweight the NCHS reference population has been used and children under age three have been considered. Data for wasting and stunting is not available for NFHS1. The UNICEF report titled 'Tracking Progress on Child and Maternal Nutrition – A survival and development priority' released in November 2009, has re-calculated the underweight rate for children under age 5 (MDG 1 indicator on hunger) with NCHS reference population. According to the recalculation the underweight rates for the years 1992-93, 1998-99 and 2005-06 are 54, 49 and 48 per cent respectively). It is clear that India is not likely to reach the MDG on child malnutrition, which uses children underweight as the indicator. Since the MDGs were adopted in the year 2000, knowledge on causes and consequences of under-nutrition has greatly improved(, UNICEF 2009). It is now being recognized that the greatest vulnerability to nutritional deficiencies is during the period of the mothers' pregnancy and continues until age two.

Figure 1: Trends in stunting, wasting and underweight status of children age three years, India - 1998-1999, 2005-2006



Therefore, there is a critical window of opportunity to prevent under-nutrition – while the mother is pregnant and during child's first two years of life – when proven nutrition interventions offer children the best chance to survive and reach optimal growth and development; after that window closes, the damage to children is largely irreparable. There is a growing emphasis on the problem of stunting (measured by height for age) and anaemia in the first two years of life as they not only impact child survival and growth, but also result in diminished cognitive development, school performance and physical development. This also has an adverse inter-generational impact in terms of productivity, poverty, and for women, higher risk of pregnancy-related complications and low birthweight babies which in turn, reinforces the vicious cycle of undernutrition. Therefore, there is a need to increase the programme focus on chronic under-nutrition in particular.

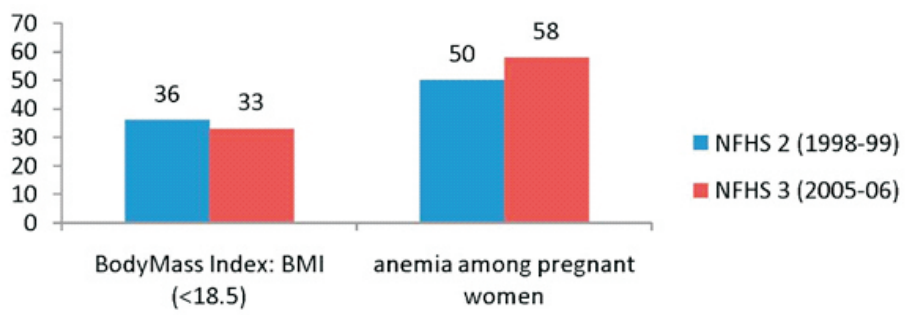
Marked reductions in child under-nutrition can be achieved through improvements in women's nutrition before and during pregnancy, early and exclusive breastfeeding in the first six months of life, and good quality complementary feeding with continued breastfeeding for children 6-23 months old with appropriate micro-nutrient interventions(UNICEF 2009). It has already been seen above that the nutritional status of women in the reproductive period is poor and breastfeeding practices rates are sub-optimal and micronutrient intake is far from satisfactory. Complimentary feeding practices (which is considered to be most effective intervention for reducing stunting) are low as only 57 per cent(DLHS 3,

2005-2006) of infants 6-9 months are fed complementary foods in a timely manner and only 22 per cent of breastfed children 6-23 months old are fed with three or more food groups and minimum number of times(NFHS 3, 2005-2006).

Measuring malnutrition among children...

Birth weight is an important indicator which reveals the health condition of a child at birth. There is a close relationship between maternal and child health. Weak, undernourished anaemic women give birth to low birth -weight babies.

Figure 2 Nutritional status of pregnant women in India



The prevalence of low birth weight babies (less than 2.5 kg at birth) is 22.5% as estimated by NFHS 3, but In NFHS 3 birth weight was reported only in 34.1% of cases of live births (60% of urban and 25% of rural). Since in 75% cases in rural areas, birth weight was not recorded, and health conditions are poorer in rural areas, actual percentage of low birth babies could be more than the reported figure.

The following anthropometric indices are considered to assess the physical development of children.

Height-for-age - inadequate Height-for-age indicate stunting
Weight-for-height - inadequate weight-for-height indicate wasting
Weight-for-age - inadequate weight-for-age indicate underweight

Height-for-age (stunting)

Children whose height-for-age is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age (stunted) and are chronically malnourished. Children below minus three standard deviations (-3 SD) from the median of the reference population are considered to be severely stunted. Stunting reflects failure to receive adequate nutrition over a long period of time. Height- for-age, therefore, represents the long-term effects of malnutrition in a population and does not vary according to recent dietary intake.

Weight-for-height (wasting)

The weight-for-height index measures body mass in relation to body length and describes current nutritional status. Children who are below -2SD from the median of the reference population are considered thin (wasted) for their height and are acutely malnourished. Wasting represents the failure to receive adequate nutrition in the period immediately preceding the survey and may be the result of inadequate food intake or a recent episode of illness causing loss of weight and the onset of malnutrition. Children whose weight-for-height is below -3 SD from the median of the reference population are considered to be severely wasted.

Weight-for-age (underweight)

Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic malnutrition. Children whose weight-for-age is below minus 2 SD from the median

of the reference population are classified as underweight. Children whose weight-for-age is below minus 3 SD from the median of the reference population are considered to be severely underweight.

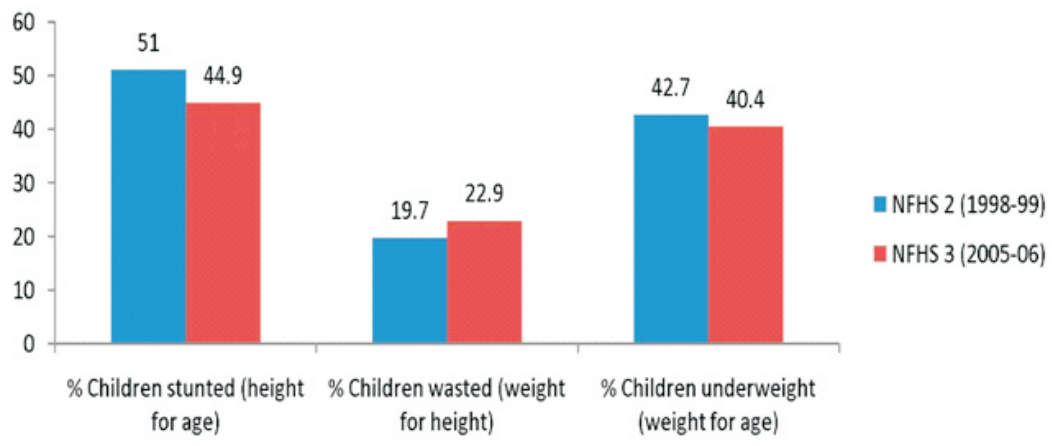
The Percentage of children below 5 years classified as malnourished according to these three anthropometric indices of nutritional status in India as revealed by NFHS 3 (2005-06) is indicative of the significant malnourishment among Indian children. 48% of children under age five years are stunted (too short for their age) which indicates that, half of the country's children are chronically malnourished. Acute malnutrition, as evidenced by wasting, results in a child being too thin for his or her height. 19.8% of children under five years in the country are wasted which indicates that, one out of every five children in India is wasted. 43% of children under age five years are underweight for their age. Underweight status is a composite index of chronic and acute malnutrition.

Table 1 Malnourishment in children below 5 year (%) : ALL India

Height for Age(Stunting)	<-3SD (Severe)	23.7
	-3SD to - 2SD (Mod)	24.3
	Total	48
Weight for Height (Wasting)	<-3SD (Severe)	6.4
	-3SD to - 2SD (Mod)	13.4
	Total	19.8
Wei g ht for age (Underweight)	<-3SD (Severe)	15.8
	-3SD to - 2SD (Mod)	26.7
	Total	42.5

Source: National Family Health Survey, Ministry of Health and Family Welfare

Figure 3 Nutritional Status of Children under three years of age in India



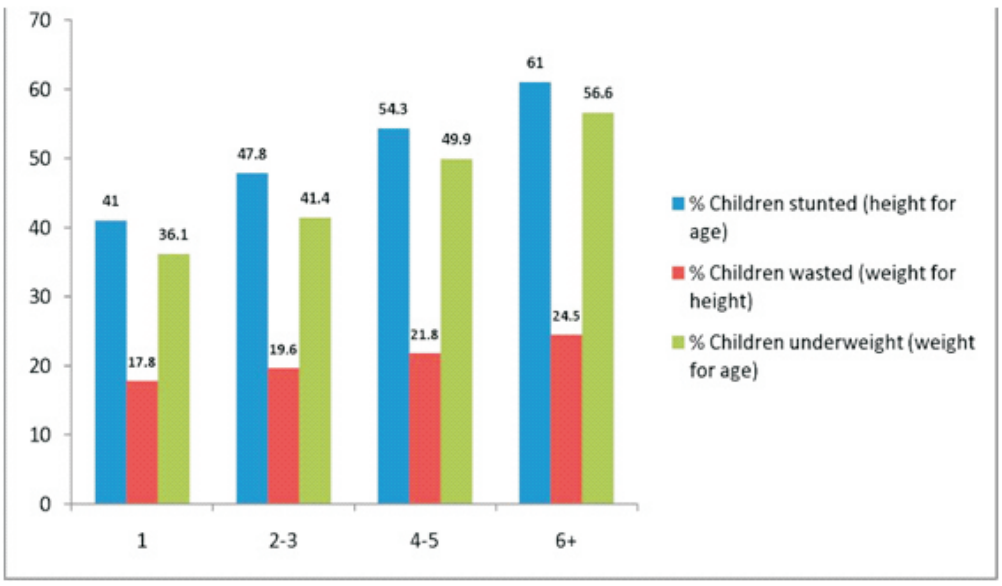
Source: National Family Health Survey, Ministry of Health and Family Welfare

During the period between NFHS 2 (1998-99) & NFHS 3 (2005-06), decline has been observed for stunting and underweight among children under 3 years of age, whereas the percentage of children wasted has increased. However, it may be noted that, the degree of decline was very low for both categories of children (< 3 years) reported stunting and underweight as the per year decline were less than one percentage point in both cases. Further, the increase in the percentage of children wasted over years indicates a worsening situation, though the per year increase was less than one percentage point.

Table 2 Nutritional status of children (< 5years) NFHS 3 (2005-06)		
	Male Female	**Male Female**
% Children stunted (height for age)	48.1 48	48.1 48
% Children wasted (weight for height)	20.5 19.1	20.5 19.1
% Children underweight (weight for age)	41.9 43.1	41.9 43.1

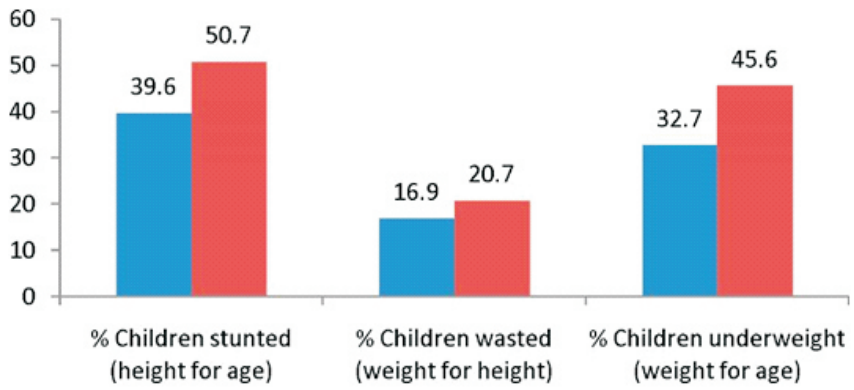
Higher is the percentage of underweight female children (< 5 years) than male children, whereas females are in a slighlty better position compared to male children (< 5 years) while considering stunting and wasting. The NFHS 3 results also indicates that malnutrition is more prevalent among children in the higher birth order category.

Figure 4 Birth order and Malnourishment in children



Source: National Family Health Survey 2005-06, Ministry of Health and Family Welfare

Figure 5 Malnutrition in Children in Urban and Rural India

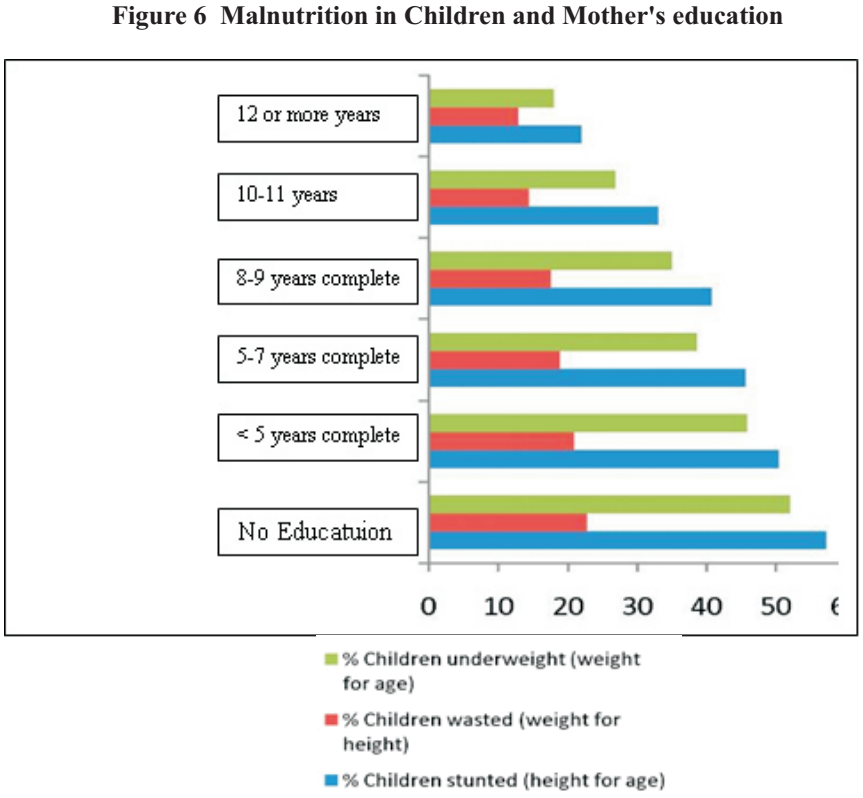


Source: National Family Health Survey , 2005-06, Ministry of Health and Family Welfare

The rural India is witnessing more malnutrition among children < 5 years as higher percentage of stunted, wasted and underweight children were reported from rural areas.

NFHS 3 data confirms that, Mother's education has a direct impact on the nutritional status of the children. As evident from Figure 3.5, high malnutrition of all types prevails in the group of illiterate mothers and mother's with less than 5 year's education.

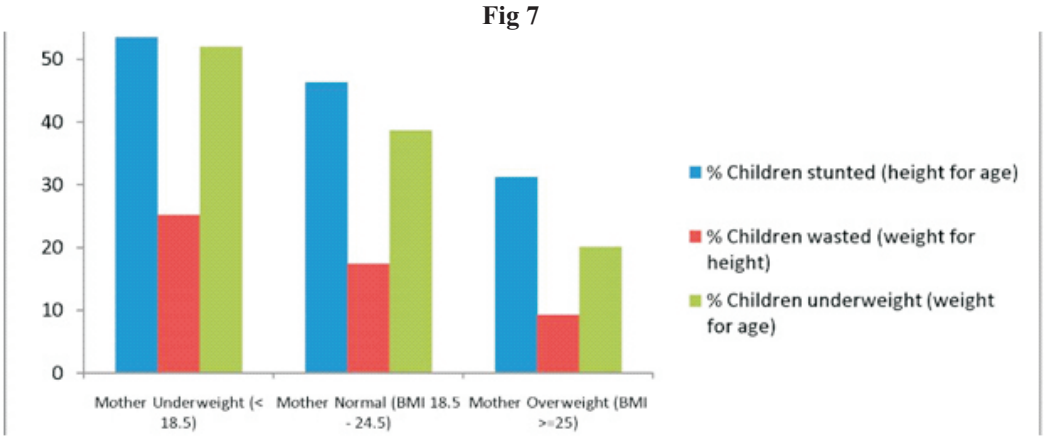
Figure 6 Malnutrition in Children and Mother's education



(Source: National Family Health Survey , 2005-06, Ministry of Health and Family Welfare)

It is a well known fact that, the nutritional status of pregnant and lactating mothers has a very significant bearing on the nutritional status of children. The NFHS 3 results support this as malnutrition among children is highest for underweight mothers.

Fig 7



Source: National Family Health Survey, 2005-06, Ministry of Health and Family Welfare

The economic condition of the family is another factor which has a strong impact on the nutritional condition of children as is evident from Figure 3.7. The percentage of underweight children in the lowest wealth index category (56.6%) is nearly 3 times higher than that in the highest wealth index category (19.7%).

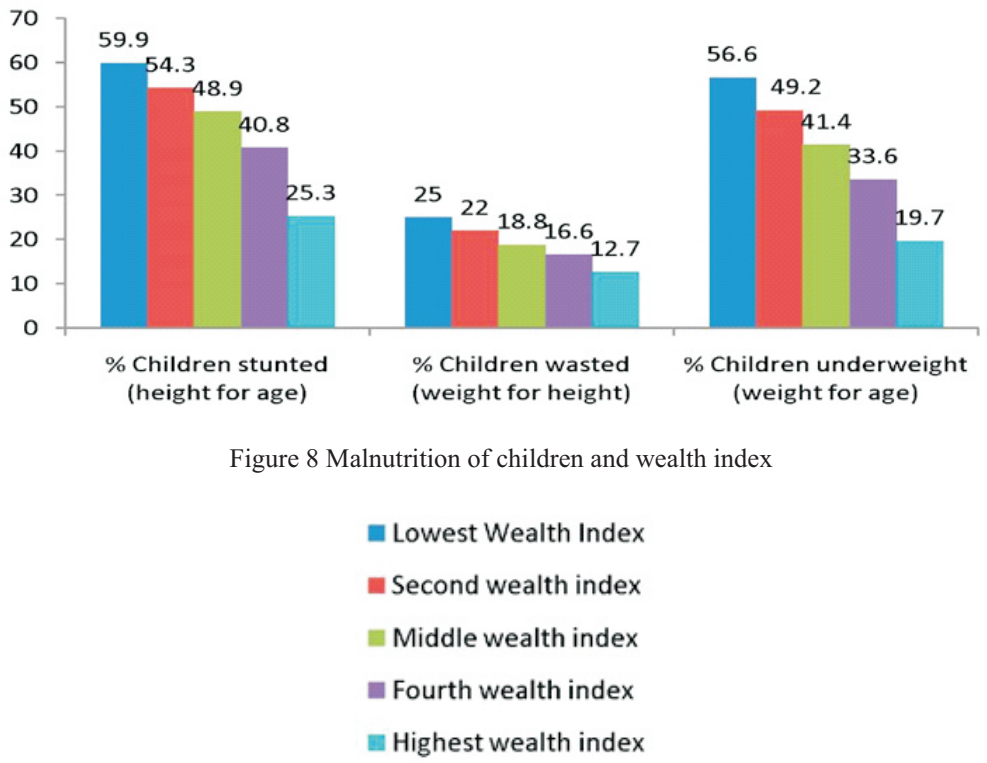


Figure 8 Malnutrition of children and wealth index

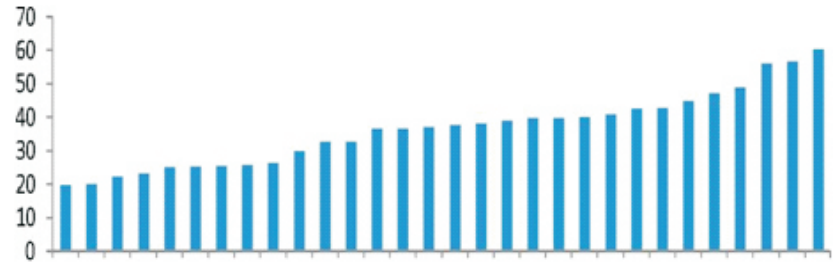
Source: National Family Health Survey, 2005-06, Ministry of Health and Family Welfare

The problem of underweight children was higher among Schedule tribes (54.5%), Schedule Castes (47.9%) and Other backward classes (43.2%), while the category of 'others' and 'Caste not known' reported 33.7% and 35.1% underweight children respectively. The variation in percentage of underweight children among various religions is also very striking. Among Hindu children, 43.2% and among Muslim children 41.8% were underweight children, while among Christian, Sikh and Jain communities, the underweight children were 29.7%, 22%, and 24% respectively.

Underweight children < 5 years - Profile of States/ Uts

The 2011 census estimates the population of children below 6 years at 158.8 million. Nearly 40 % of these children are undernourished that is more than 63 million children are suffering from malnutrition. Nutritional problems are substantial in every State in India. The proportion of children under age five years who are underweight was lowest in Sikkim (19.7%) followed by Mizoram (19.9%). The States with more than 50 percent children under five years of age underweight are Madhya Pradesh (60%), Jharkhand (56.5%) and Bihar (55.9%). Other states where more than 40 percent and upto 50% of children are underweight are Meghalaya, Chhattisgarh, Gujarat, Uttar Pradesh, and Orissa. Although the prevalence of underweight is relatively low in Mizoram, Sikkim, and Manipur, even in those states more than one-third of children are stunted. Stunting was more prevalent in Uttar Pradesh (56.8%), Bihar (55.6%), and Meghalaya (55.1%). Wasting is most common in Madhya Pradesh (35%), Jharkhand (32%), and Meghalaya (31%). These results reveal that, the severity of child malnutrition varies across States.

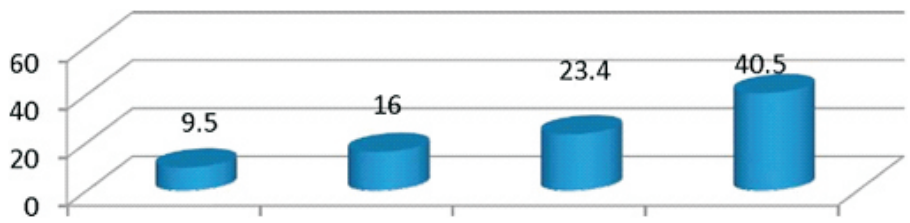
Figure 9 Percentage of under weight children (<5 years in India & State/ UTS)



Source: National Family Health Survey, Ministry of Health and Family Welfare

Initiation of breastfeeding immediately after childbirth, preferably within one hour is a recommended practice which is encouraged for a number of reasons, the most important being that, the first breast milk is highly nutritious and it improves the immunity power of the child. However, District level Household Survey (DLHs -3 2007-08) shows only 40.5% children are fortunate to be breastfed within one hour of child birth.

Figure 10 Percentage of children less than three years breastfed within one hour after birth



NFHS1(92- 93) NFHS2(98-99) NFHS3(5-6) DLHS (7-08)

Exclusive breast feeding for 0-6 months and receiving solid/ semi- solid food alongwith breastfeed during 6-9 months are conditions which ensure better nutrition for children. NFHS 3 (2005-06) and DLHS (2007-08) reported 46% exclusive breastfeeding for 0-6 months children and 54.8% of 6-9 months old children were receiving solid/ semisolid food along with breastfeed.

Prevalence of anaemia among Children

Anaemia, the condition of low level of haemoglobin in blood is a serious concern as it can result in impaired cognitive performance, behavioural and motor development, coordination, language development, and scholastic achievement, as well as increased morbidity from infectious diseases.

Table 4.3 Prevalence of Anaemia among children (%)

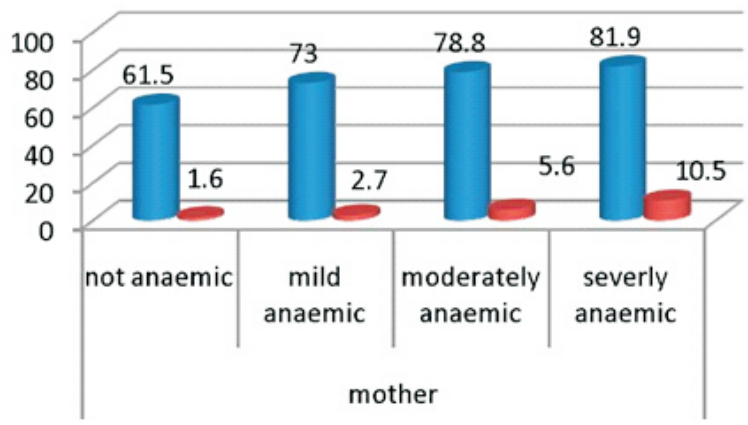
age in months	any anaemia (<11.0 g/dl)	severe anaemia (<7.0 g/dl)
6-8	79.7	1.6
9-11	81.7	2.4
12-17	84.5	4.6
18-23	81.6	4.4
24-35	74.6	3.9
36-47	63	2.7
48-59	53	1.2

Source: NFHS 3 (2005-06)

Among male and female children (6-59 months) the percentage of children with any anaemia was reported as 69% and 69.9% respectively, severe anaemia was reported for 3.2 % male children and 2.7% female children. Anaemia was more prevalent in Rural areas (71.5%), than Urban areas (63%). The data further shows significant gap between the prevalence of anaemia among children of mothers with no education (74.5%) and mother's with 12 or more years of education (55.4%) underlying the impact of mother's education in children's nutritional status.

High rates of maternal under-nutrition measured by low body mass index and anemia adversely affect the health and survival of mothers and newborns. For 81.9% severely anaemic mothers, their children were anaemic whereas 61.5 % mothers without anaemia reported anaemia among children. Percentage of children with severe anaemia among severe anaemia mothers was nearly seven times higher than that among mothers not anaemic.

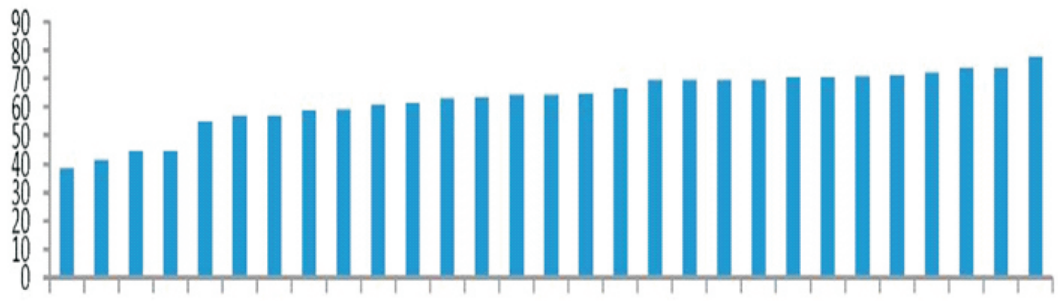
Figure 11 Prevalence of Anaemia in children (6-59 months) and mother's anaemic status



Source: NFHS 3 (2005-06)

It is an established fact that, economic conditions of the family have huge impact on the nutritional status of children, which has been supported by the survey results. NFHS 3 (2005-06), reveals 76.4% of children (6-59 months) in the lowest wealth index are suffering from anaemia whereas 56.2% children of the highest wealth index are suffering from anaemia. This is indicative of the reality that affluence alone cannot rule out anaemia among children.

Figure 12 Prevalence of anaemia among children (6-59 months) in States



Source: NFHS 3 (2005-06)

Though, poverty is one of the main cause of malnutrition among children in India, there are many other conditions which lead to malnutrition and anaemia among children which includes the nutritional status of mothers, educational status of mothers and other social conditions as depicted here.

Anaemia prevalence among children of (6-59 months) is more than 70 percent in Bihar, Madhya Pradesh, Uttar Pradesh, Haryana, Chhattisgarh, Andhra Pradesh, Karnataka and Jharkhand. Anaemia prevalence among children of (6-59 months) is less than 50 percent in Goa, Manipur, Mizoram, and Kerala. For the remaining States, the anaemia prevalence is in the range of 50% - 70%.

Deficiency in Micronutrients intake

Micronutrients are nutrients required by humans and other organisms throughout life in small quantities to orchestrate a whole range of physiological functions, which the organism itself cannot produce. At the 1990 World Summit for Children, the participating nations identified deficiencies in three micronutrients - iodine, iron and vitamin A, as being particularly common and posing public health risks in developing countries. Micronutrient deficiency is a serious contributor to childhood morbidity and mortality. In NFHS 3 (2005-06), data on micronutrient intake was collected on the consumption of vitamin A rich foods and on the administration of Vitamin A supplements. The survey has shown that, socio economic conditions also play some role in the intake of micronutrients, as it had increased with age of children, with mothers education and the wealth index of the household. The data on micronutrient intake of children are depicted below. The Annual Health Survey (2010-11) conducted among the 8 Empowered Action Group States and Assam also collected data on some important indicators related to micronutrient intake nutrition among children.

Table 4 Indicators on Child nutrition – Annual Health Survey 2010-11

States	Children (aged 6-35 months) who received at least one Vitamin A dose during last six months (%)	Children (aged 6 months) who received IFA tablets/syrup during last 3 months (%)
Assam	72	27.7
Bihar	61.9	29
Chattisgarh	71.7	37.7
Jharkhand	60.1	14.2
Madhya Pradesh	54.5	24.8
Odisha	63.4	23.3
Rajasthan	59.4	9.4
Uttar Pradesh	37.2	10.6
Uttara khand	55	14.3

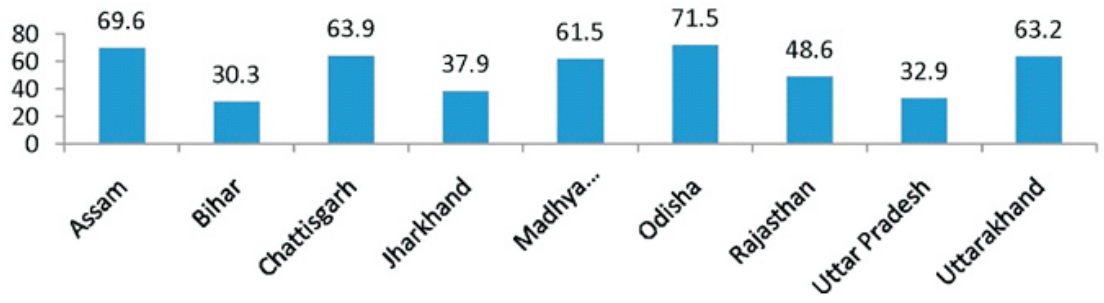
Table 5 Indicators on Child nutrition – Annual Health Survey

	Assam	Bihar	Chattisgarh	Jharkhand	Madhya Pradesh	Odisha	Rajasthan	Uttar Pradesh	Uttara khand
Children whose birth Weight was taken (%)	52.8	31.9	64.4	39.0	70.9	76.5	54.4	26.1	41.0
Children with birth weight less than 2.5 Kg. (%)	26.L	22.4	15.8	36.3	28.6	22.3	38.7	28.2	24.1
BREASTFEEDING AND SUPPLEMENTATION									
Children breastfed within one hour of birth (%)	30.3	63.9	37.9	6L.5	7L.5	48.6	32.9	63.2	30.3
Children (aged 6-35 months) exclusively breastfed for at least six months (%)	28.5	47.5	45.6	36.8	24.8	24.7	17.7	38.2	28.5

Source: Annual Health survey 2010-11, Office of the Registrar General of India

As per the Annual Health Survey 2010-11, among the AHS States, the percentage of children breastfed within one hour was highest (71.5%) in Odisha (71.5%) and lowest in Bihar (30.3%).

Figure 13 Children breastfed within one hour of birth (%) EAG States & ASSAM (2010-11)



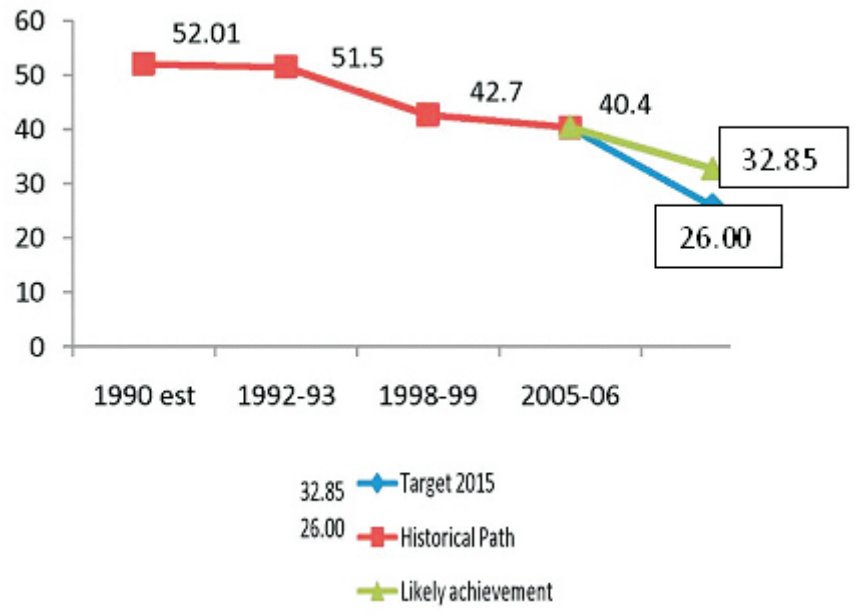
Source: Annual Health survey 2010-11

The Annual Health Survey further throws light into the disparities existing in the micronutrient intake and feeding practices in rural and urban areas as well as districts within the States. In the States of Assam, Madhya Pradesh, Uttar Pradesh and Uttarakhand the percentage of children breastfed within one hour of birth was lower in urban areas than rural areas.

Child nutrition: Status of achieving Millennium Development Goals

The Millennium Development Goal l is 'Eradicate extreme poverty and Hunger' Under Goal l, target 2 states, 'halve, between l990 and 20l5, the proportion of people who suffer from hunger' with the indicator 'Prevalence of underweight children under three years of age'. India is therefore, committed to halving the prevalence of underweight children by 20l5. All-India trend of the proportion of underweight (severe and moderate) children below 3 years of age shows India is going slow in eliminating the effect of malnutrition. From estimated 52% in l990, the proportion of underweight children below 3 years is required to be reduced to 26% by 20l5. The proportion of underweight children has declined by only 3 percentage points during l998-99 to 200506, ie from about 43% to about 40% and at this historical rate of decline, the measure is expected to come down to about 33% only by 20l5.

Figure l4 Prevalence of Under Weight Children < 3yrs in India



CONCLUSION

Infant and young child feeding practices in particular continue to be a serious challenge to reduce malnutrition among children. In spite of unprecedented economic growth, improvements in childhood nutritional status in India over the last decade have been slow. The status of various aspects of nutrition among children points towards urgent need to take the call for aggressive awareness campaigns along with improved health care

Sources of Data and Notes for Statistical Profiles of States

General: Only l8 major states (population more than 5 million) have been included as data for many of the indicators included in the profiles were not available for smaller states. Among the major states Jammu & Kashmir and Uttarakhand are not included as sufficient data was not available.
Demographics: The projected population are derived estimates based on 'Population Projections for India and States200l-2026 , Office of the RGI'; Mortality estimates from Sample Registration System (SRS) and MMR from Special Bulletin on MMR 2004-06, Office of the RGI
Infant mortality rate: Sample Registration System (SRS), 2008
Components of under five mortality: Sample Registration System (SRS), 2008
Child under-nutrition: National Family Health Survey (NFHS) 2005-06; based on WHO reference population
Trends in child under-weight: NFHS 2005-06; based on NCHS reference population
Child immunization: NFHS for l992-93, l998-l999, 2005-06 and DLHS for 2007-08
Continuum of care for reduction of neo-natal mortality rate: DLHS for 2007-08 and SRS 2008
Skilled attendance at birth: NFHS for l992-93, l998-l999, 2005-06 and DLHS for 2007-08
Literacy rate: Census l99l and DLHS, 2007-2008
School attendance: Census l99l and NSSO (Report 532), 2007-2008
Educational attainment: DLHS 2007-08
Source of drinking water: DLHS 2007-08
Sanitation coverage: DLHS 2007-08
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1.National Family Health Survey 3 (2005-2006) : WHO reference; Moderate and Severe (below -2 SD)
2.SOWC 20l0: The number has been estimated from SOWC 20l0. India constitutes 20 per cent of under-five children in the world.
3.UNICEF 2009:Tracking Progress on Child and Maternal Nutrition: A survival and development priority,
4.DLHS 3 (2005-2006): Complementary feeding rate is defined here as the percentage of children age 6-9 months who receive complementary foods while continuing to be breastfed.
5.NFHS 3 (2005-2006): It is recommended that breastfeeding children age 6-23 months should be fed from three or more different food groups. Moreover, infants' age 6-8 months should be fed at least twice a day and children age 9-23 months should be fed at least three times a day.