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Nutritional Deprivation in the State of Jharkhand

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Abstract
Under-nutrition is an ugly face of deprivation witnessed in the country that is experienced by adults and children alike. The phenomenon of under-nutrition has a regional divide within the country and makes population groups of specific characteristics and identity more vulnerable than others. With this pretext, the present study is a modest attempt at understanding the dynamics of the nutritional deprivation in the state of Jharkhand with the dual distinction of poverty and predominance of tribal population.
The unit level National Family Health Survey data was employed to report the under-nutrition among children according to the three anthropometric measures- stunting, wasting and underweight. Logistic regression was run to analyse the effect of various predictor variables on the three measures. Almost 50% of children were stunted, 57% under-weight and 35% wasted in the state. Not surprisingly, it was commonly the children who belonged to tribal communities and hailed from poorer households. The result of the multivariate analysis reveals that age, mother's education status and household wealth status determined stunting among the children in Jharkhand; whereas for underweight it was mother's education status, her nutritional status and household status. Finally for wasted, mother's nutritional status, schedule caste category and her employment status had severe influence.
Keywords*:* Under-nutrition, deprivation, anthropometric, stunting, wasting, underweight, tribal, Jharkhand

1. Introduction

The developing countries in general are characterised by the low human development and socio-economic indicators, where under-nutrition is one of the major problems which has severe consequences on child mortality. It has been widely argued by various scholars that the impact of under-nutrition is manifold. *First,* under-nutrition causes many health disorders such as low-birth weights, 60 per cent of neonatal deaths, irreparable mental and physical impairment to infants, reduction in immunity power, susceptibility to fatal childhood ailments like diarrhoeal diseases and respiratory infections (Gillespie and Haddad, 2006 & Hungama Report, 2011). *Secondly,* it is argued that under-nutrition limits intellectual growth and development, which will result in late enrolment in school, leading to 15-point decrease in IQ level thereby dropping the earnings by 10 per cent (Hunt, 2005). Similarly, Grantham et al (2007) argues that undernourished adults earn almost 20 per cent less than their counterparts, therefore contributing for the loss of 3 per cent India's GDP annually. Thus adequate nutrition is considered to be indispensable not only in reducing child mortality but also for development of the nation as a whole as it is correlated with other functions *inter alia* education and job market.

The burden of under-nutrition is highest in India, despite impressive economic growth achieved in the recent years. According to Hungama Report (2011), India's position in under-nutrition is worse compared to the most disadvantageous countries in the Sub-Saharan Africa (SSA), where only 22 per cent of children under-five years of age are underweight i.e. 50 per cent lower than that of India[1]. This phenomenon is often called the 'Asian Enigma'[2]. Hence, reduction of child under-nutrition is one of the major challenges the country is facing today. Therefore, to cut down the under-nutritional rates cannot be viewed as economic issue alone, but can be seen from a broader perspective of welfare, social protection and human rights issue (Pathak and Singh, 2011). As seen from the national figures, under-nutrition is a prime concern in almost all states; however it is more prominent in some of the Empowered Action Group (EAG) states viz. Bihar, Jharkhand, Uttar Pradesh, Madhya Pradesh and Rajasthan.

In this regard, the paper attempts to investigate the nutritional pattern of children in Jharkhand. The state of Jharkhand has remained under scanner since its inception in 2000, earlier part of Bihar, for reasons like poor governance, high poverty levels, high mortality rates, low income etc. The National Family Health Survey report indicates Jharkhand is one amongst the other EAG states which has high infant mortality rates and under-nutrition rates. Despite the vast prevalence of under-nutrition in the state, the literature on the factors and determinates of under-nutrition is rather scant. Therefore, the present study is an attempt to understand the

[1] The India's precarious situation can be better understood from the Global Hunger Index (GHI) developed by the International Food Policy Research Institute (IFPRI) in 2006, which shows that India stands in the 96th place out of 119 countries; however, it stands almost in the last (117 among 119 countries) when ranked in child under-nutrition (Braun, Ruel, & Gulati, 2008).

[2] The Asian enigma was termed by Ramalingaswami, Jonson and Rhode, in 1996. According to them, despite improvements made in the determinants of child and women's nutritional status, South Asia (SA) suffers higher malnutrition rates than the most disadvantageous SSA countries.

prevalence of under-nutrition across age, household status and social groups and factors that contribute for the under-nutrition.

2. Data

The present study is based on the unit level data provided by the National Family Health Survey, round three, 2005-06. The NFHS is the most popularly used data source which provides information on under-nutrition of children and adults in India. The data is collected through survey across nations on maternal and child health characteristics by the International Institute of Population Sciences (IIPS). NFHS III surveyed approximately 124,000 ever married women which belonged to age group of 15-49. Height and weight measurements of women, men and children provided in the data set can be used to analyse the nutritional status of adults and children. The NFHS III, for the first time provides information on men and unmarried women. Along with this it also provides estimates of HIV prevalence for India as a whole based on blood samples collected in every state in the country.

For the state Jharkhand, the survey was based on a sample of 2,483 households that is representative at the state level and within the state at the rural and urban level. A total of 2, 983 women aged 15-49 were and 996 men aged 15-54 were interviewed to obtain information on population, health and nutrition. Since, the first and the second round of NFHS does not provide data for the state of Jharkhand (since Jharkhand came into existence in 2000), the analysis would be done solely from the third round of NFHS.

3. Measures

The three anthropometric measurements used by WHO standards (WHO, 1995) are height-for-age, weight-for-age, and weight-for-height. For each of these anthropometric indicators of under-nutrition mentioned above, a cut-off point of -2 standard deviations (-2 SD) below the median of the WHO reference population was used. The cut-off point -2SD refers to moderate under-nutrition, while -3SD is severe under-nutrition.

3.1 Height-for-age: It means low height as per age or stunting of a child resulting from chronic under-nutrition or genetic factors. It can also be associated to a number of other long-term factors such as insufficient protein and energy intake, frequent infection, inappropriate feeding practices and poverty.

3.2 Weight-for-age: It indicates thinness for age or underweight reflecting chronic and acute under-nutrition. Generally associated with reasons such as infant mortality rate, energy intake per capita, mother's education, governmental social support, level of income, access to safe water and region.

3.3 Weight-for-height: This shows thinness as per height or wasting due to acute starvation, disease or dietary deficiency. It is an indicator of acute under-nutrition.

The three indicators are expressed in standard deviation units (z-scores). According to the WHO standards, a child having a Z-score below -2SD is considered stunted, wasted or underweight and a Z-score below -3SD is considered as severely stunted, severely wasted or severely underweight. However, in the analysis below, the figures for severely stunted, wasted or underweight has not been shown separately.

4. Statistical Methods

In this study both bivariate and multivariate methods are employed to detect the patterns and determinants of under-nutritional status of children and adults in the state of Jharkhand. In the bivariate analysis, the chi-square test was employed to analyse the association between each of the independent variables considered in the study. The nutritional status of children is measured by stunting, wasting and underweight for children. The acceptance and rejection of the null hypothesis was decided at p-values at less than 0.10 (10 per cent), 0.05 (5 per cent) and 0.01 (1 per cent).

Since the bivariate analysis fails to capture the confounding effects, the net effect of each independent variable is estimated after controlling the other variables using logistic regression analysis. The model significance has been tested using the log likelihood ratio test. The models have also been corrected for hetroscedasticity and multi-collinearity. The odds ratio (OR) which is determined by the logistic regression is used to interpret the results. The OR represents the changes in likelihood of outcomes to that of changes in predictors. OR greater than one implies that the risk of under-nutrition is more likely to happen in relation to the reference category. While OR less than one would indicate that the risk of is less likely than the projected reference category. However, an OR equal to one means there is no change.

5. Results

5.1 Bivariate analysis

The Table 1 highlights that almost one half of the child population are stunted (49 per cent), while more than half of them are underweight (57 per cent) and 33 per cent are wasted. Further, the pattern of under-nutrition among children varies across age. Of the total number of children less than six months of age only 14 per cent were stunted. Similarly for underweight and wasted, it was 30 per cent and 41 per cent respectively. However, at higher ages the rates of stunting increased though, not very significantly. In the age group of 12-23 months

almost 60 per cent of the total children were stunted. Similar was the underweight (61 per cent) and wasted (42 per cent) figures.

A child's weight at birth indicates its susceptibility towards illness and survival. As this information is not captured in the NFHS data, a proxy was used by obtaining information regarding the size of the child at birth. It has been observed that a child who is reported as 'very small' or 'smaller than average' faces greater risk of infant deaths (NFHS Report, 2005). From the Table 1 we observe, children who were of very small size during birth witnessed high underweight rates as well.

Birth interval and birth order indicates the child's well-being. Short birth intervals, being associated with low birth weight and with intrauterine growth retardation, increases the levels of stunting and underweight among children. It also has adverse effects on mother's health and risks child survival. As seen in table 1, preceding birth interval of less than 24 months is related to poor nutritional outcomes, whilst intervals of 48 months or longer are associated with better nutrition rates (Mukuria et al 2005). Studies have revealed that the optimal interval between two live births should be 3-5 years, which reduces neonatal and infant mortality (Rutstein, 2002).

Contradictory to the above, higher birth orders indicate poor nutritional status. In Table 1, birth of first child represents lower under-nutrition rates compared to higher birth orders, since the first birth is more likely to be delivered in an institution. This implies increase in under-nutrition rates with subsequent births orders. Not surprising, institutional birth is common only in the case of urban areas in Jharkhand, with 19 per cent of births delivered in a health facility of which 54 per cent in urban areas and only 11 per cent in rural areas (NFHS Report, 2005).

Children's health is closely related with maternal health characteristics. Children whose mothers are underweight i.e. have a BMI of less than 18.5 are more likely to be undernourished as compared to children of mothers having a BMI above 18.5. Mothers having a BMI less than 18.5 had 52 per cent of the total children stunted, 70 per cent of the total underweight and only 40 per cent of the total children as wasted.

Likewise in reference to mother's educational attainment, it is observed that uneducated mothers have undernourished children for the fact that their child bearing and rearing practices would be different from the educated mother. Moreover, uneducated mothers often have little information about the best practices for their child. Her educational status in turn is linked with the higher household income, thereby strengthening her abilities to handle uncertainty either economic or environmental. Analysis reveals (not shown) that almost 70 per cent of children who are stunted, wasted or underweight belong to unemployed mothers.

Father's education although does not directly influence the child's nutritional status like the mother's but it does in terms of household income (Mosley and Chen, 1984).

Mother's employment status indicates her economic well-being. It has been found that mother's employment status has a direct impact on the nutritional status of children. Table 1 shows higher under-nutrition rates for children whose mothers are working than unemployed mothers. This could be due to poor affordability of resources in the household which necessitates mothers to undertake work. However, income alone cannot be blamed for high under-nutritional status of children if the family can afford proper food and health care. Time constraint on the part of mother who has to work to supplement the family income, can be an important factor. The role of care givers is seen to have a significant relationship with the nutritional outcomes, which again depends on the household's economic status (Bégin et al 1999).

Moreover, mother's exposure in terms of education or employment influences her decision making behaviour in regard to her antenatal care, child's health and hygiene. Almost 44 per cent of children whose mother had no antenatal care were either found to be stunted, wasted or underweight. Moreover, of the total children whose mothers received antenatal care, 44 per cent were stunted, 64 per cent were underweight and 32 per cent wasted. As recommended by the WHO, during pregnancy mothers should have one or more visits with a skilled medical attendant (WHO and UNICEF, 2003) as this contributes to improved birth outcomes.

In Jharkhand, the median age at first marriage for women between 20-49 years of age is 16.2 years and it is 20.8 years for men aged 25-49 years. It is observed that, 63 per cent of women who belonged to the age category of 20-24 years (at the time of the survey), had actually married before attaining the legal minimum age of 18 years. Whereas for men belonging to 25-29 years of age, around 47 per cent of them had married before attaining the legal minimum age of 21 years. It is thus observed that, at the age between 15-19 years, more than one-quarter (28 per cent) of women already started childbearing. This is very high and prevalent in the rural areas compared to urban areas.

Additionally, Jharkhand has the highest prevalence of teenage motherhood in India. These young and undernourished mothers have a high chance of delivering low birth weight babies. Younger women usually have low BMIs compared to older women and tend to have higher risk of low birth weight infants (Karim and Taylor 1997). In the case of Jharkhand, 52 per cent, 58.8 per cent and 32.8 per cent children were stunted, underweight and wasted respectively born to mothers who were less than 20 years of age during delivery.

Huge differences exist in the rural-urban under-nutritional rates for children. The reasons for such differences could be because of the immediate causes which include improved accessibility to food in all seasons and health

care in urban areas, women's educational attainment, availability of water and sanitary facilities, socioeconomic status, women's decision making power, access and utilization of antenatal and delivery care, quality of complementary feeding and immunization (Smith et al 2004).

Variations also exist in the levels of under-nutrition across broad caste categories. Jharkhand is inhabited by 28 per cent of the tribal population, of which 65 per cent is underweight, 52 per cent are stunted and 40 per cent are wasted. Existing studies (Desai et al, 2010 & Radhakrishna et al 2004) have revealed that under-nutrition outcomes are higher among these disadvantageous groups than the other groups.

One of the main religions followed in the state is Hinduism; but the tribal populations mainly follow Christianity or Sarna. Analysing the groups based on religion, it is observed that, in the case of children belonging to Christian population, 61 per cent were stunted, 67 per cent underweight and 44 per cent wasted. Whereas, among the children from the Hindu population, 48 per cent were stunted, 56 per cent were underweight and 31 per cent wasted. Results reveal that when under-nutrition is examined using the three measures, Hindu population with better household status seems to have better nutritional level than the Christian population. A study by Sabharwal (2011) for India found that among the SC population, Christian had better nutritional outcomes relative to those from Hindu and Muslim groups.

Association between the variables and the measures of under-nutrition was also carried on to analyse the effect of predictor variables. The Pearson Chi-Square was used to analyse the association between the independent variables used in the study and the dependent variable i.e. the three measures of nutritional status. The chi-square values were taken to be significant at p value less than 0.05 (5 per cent level of significance). Based on this significance level, we accept or reject the hypothesis.

In the case of stunting, under all categories-demographic, maternal, social and economic, all variables show significant contribution to the under-nutritional status of a child except for sex of child and employment status of mother. Likewise, in the case of underweight, excluding sex of child and preceding birth interval, all other variables are significant. The variables sex of child, birth interval, birth order, religion of child, employment status of mother and delivery age have no influence on the weight-for-height of a child.

However, from the above analysis only the gross differentials can be seen, hence in the subsequent section of the study, multivariate analysis has been used to see the net effect of individual predictor on the dependant variables.

5.2 Multivariate analysis

As discussed above the limitations of the bivariate analysis, this section deals with the multivariate analysis which is one of the most common and widely used applications in the field of public health and nutritional research. Multivariate analysis is employed to understand the net effects of each predictor variables or background factors on dependent variables after controlling for other independent variables in the model.

We estimate both unadjusted odds ratio (UOR) and adjusted odds ratio (AOR) of each of the 16 predictor variables on the three measures-stunting, underweight, and wasting. The results of the three logit model performed in the SPSS package are detailed below in Table 2. The three anthropometric measures have different effects on the nutritional status of children. Stunting is a deceleration or cessation of growth, which has a long-term effect; while wasting is a short-term response to inadequate intakes, commonly assessed by weight relative to height. Under-weight could be low because of stunting (short stature) and/or wasting (recent weight loss). For this reason, the three measures have been interpreted separately.

5.2.1 Stunting

The results indicate that several variables have significant influence in determining whether a child is stunted, wasted or underweight. As explained earlier there exist conflicts between the unadjusted and adjusted odds ratio for place of residence, mother's employment, sex of child, initiation of breastfeeding, ARI symptoms and birth order.

Results show that most of the demographic characteristics had significant influence on the height-for-age of children. Children who belong to age group 12-23 months were almost 1.5 times more likely to be stunted than children who belonged to age group 48-59 months.

Studies have shown that, the rates of stunting are seen to be higher in the age group 18-23 months (Mukuria et al 2005 & NFHS Report, 2005). It decreases with increase in the age. This can probably be attributed to the feeding pattern of the children.

Mother's education did have an important role to play in deciding the child's nutritional status which is evident from the high odds ratio. The UOR reported for mother's education exceeds that of the AOR for all sub-categories. This can be explained by the absence of other confounders which makes the former more pronounced. Children of mothers who were not educated were almost 4 times more likely to be stunted than children whose mothers were educated for more than 10 years. The AOR for mother's educational status also stands highly significant with high odds ratio. As can be seen from the Table 2, children of mothers who were not educated were almost 3 times more likely to be stunted when compared to those who had education above ten years.

The UOR for the place of residence being less than one implies that children belonging to the urban areas are 0.47 times less likely to be stunted when compared to the children from the rural areas. The AOR for place of

residence becomes insignificant after including control variables; hence it is not an important determinant of stunting.

Higher education is often a driving factor for better employment opportunities. In such cases, where mothers are away for work, the children often suffer from nutritional failures in the absence of any other care givers**.** However, in the case of stunting, mother's employment status has no effect on the under-nutritional status of children.

The UOR against the household status shows that children belonging to poorer group are more likely to be stunted than those belonging to the richest class (reference category). Similar reasoning can be provided for the AOR.

From the above analysis, we see that in the case of UOR, age of child, place of residence, mother's education and wealth status were significant. While the AOR for age of child, age at delivery, size at birth, mother's education level, sex of child, initiation of breastfeeding, religion and wealth status were significant.

On the other hand, there were few variables which did not show any significant effect on stunting both in the case of adjusted and unadjusted odds ratio such as, mother's employment status, BMI status, ARI symptoms, diarrhoea, caste, birth order, and fever. Thus, the variables including age, mother's education level and wealth status had more pronounced unadjusted and adjusted odds ratio as compared to other factors. This implies these variables were important determinants as they remain significant with the inclusion of control variables.

5.2.2 Underweight

Next we move on to discuss the underweight status of children in the state (Table 2). As already discussed, underweight reflects chronic or acute under-nutrition; hence often believed to express the overall nutritional status of a child (Rahman and Nasrin, 2009). From the table below (Table 2), we find almost similar results for children belonging to urban areas (OR=0.41).

Similarly, the UOR for educational status was higher than the AOR. In other words, the effect of mother's education has reduced after controlling other variable, but it still remains significant, implying mother's education remains a dominant determinant of underweight among children.

Mother's employment status which was significant when a separate regression was run (i.e. UOR), was no more significant after inclusion of other factors. The unadjusted and adjusted OR of BMI was high and significant. In the case of AOR, children born to mother's having a BMI less than 18.5 were 2.1 times more likely to be underweight than the reference category.

The UOR for delivery age infers that children delivered at the age less than 20 were 1.45 times more likely to be under-weight than those delivered between age group 20-34. However, this variable does not remain significant after controlling for other variables, hence not important.

The lower OR (both unadjusted and adjusted) for size at birth less than one shows the limited influence the variable has in determining the nutritional status of children. The UOR for religion holds significant, however, loses significance once it is controlled for other variables.

The UOR for household status is significant while the AOR is insignificant. The presence of other predictors causes the household status to be insignificant. Similarly it was seen for caste.

The UOR for age of child, place of residence, age at delivery, BMI, size at birth, mother's education level, mother's employment status, diarrhoea, religion, caste, birth order, fever and wealth status were significant. Conversely for the AOR, only few variables *viz.* age of child, mother's education level, BMI, size at birth, diarrhoea, fever, religion, and wealth status were left significant. Again, the odds ratio for mother's education level and BMI are more pronounced, hence considered as important determinants of underweight.

5.2.3 Wasting

Table 2 reports the results of logistic regression to analyse the effects of various predictors on wasting of a child. As can be observed, the odds ratio of age groups is large, however not all categories are significant in both the cases-unadjusted and adjusted OR. A child of age group less than 6 years is almost 1.7 times more likely to be wasted compared to a child who is 48-59 months old.

Mother's education which had been a dominant determinant of stunting and underweight was seen to be insignificant in the case of wasting i.e. as other variables were included; mother's education lost its significance. It was statistically significant and the risk of low birth decreased with increase in educational status as shown in the UOR column.

However, mother's nutritional status strongly influences the nutritional status of children as can be seen from the high unadjusted and adjusted OR. Mothers having BMI less than 18.5, have children who are almost 4 times more likely to be wasted than mothers, having BMI more than 18.5. Birth size does matter when we see the wasting rates (less than one) for children i.e. it is less likely to affect children's nutritional status.

Breastfeeding within one hour although significant was less likely to influence wasting as compared to the breastfeeding within one day (reference category). The UOR is high and significant for one category of caste i.e. Schedule Tribe. Further, it remains to be insignificant when controlling for other variables. The household status for wasting although proves to be a significant determinant of wasting, loses significance when controlling for other variables.

Thus for wasting, the UOR for age, place of residence, mother's education, BMI, size at birth, diarrhoea, type of caste and wealth index were significant. However, when other predicators were included most of the variables lost significance. Other variables influencing wasting were age of child, BMI, caste and size at birth.

Therefore from the foregoing analysis it can be concluded that based on the UOR all variables excluding employment, sex of child, initiation of breastfeed, prevalence of diarrhoea, ARI symptoms and fever were significant. While for the AOR, mother's education, BMI, delivery age and initiation of breast feed, sex of birth, birth order, religion, type of caste are significant at p-value <0.01, 0.05 and 0.10. The variables strongly contributing to the under-nutritional status were age (less than 6 and 12-23 months category), employment status, BMI and type of caste (ST category).

6. Conclusion

The nutritional status of children below age five years is distributed disproportionately in the state across different background characteristics. From the above analysis we found that 50 per cent children are stunted, 57 per cent are underweight and 35 per cent are wasted. The analysis indicated that the under-nutrition in Jharkhand is grave and is contributing largely to the severe public health problem and as a result the country suffers.

The results of the multivariate analysis reveals that the age (although mildly influencing), mother's education status and household wealth status determined stunting among the children in Jharkhand. Whereas, the important indicators for underweight as found in the logistics regression, which ominously contributes were mother's education status, her nutritional status and household status. Finally for wasted we found, it was mother's nutritional status, Schedule Caste category and her employment status had severe influence. Apart from this, age (less than 6 and 12-23 months category) also had considerable influence on the wasting of a child.

Thus we can conclude that the dominant determinants for a child's nutritional status, controlling for other predictors, are the mother's education status, her nutritional status, her work status and the household wealth status. Evident from the existing studies, it is disquieting to find certain variables like caste, place of residence etc. insignificant. The probable reason behind such unexpected results is the small sample size for the state of Jharkhand.

One of the major limitations of this study is depending on one time period due to unavailability of the data for the recent years. The NFHS is one of the largest surveys focusing in child health, last conducted in 2005-06. The next round of survey is likely to be conducted in the year 2013-14. Therefore, this data lacuna restricts in depth analysis for the state.

Also, in the absence of studies solely focusing in the under-nutritional status of Jharkhand, the findings of this study could be useful in understanding and identifying categories of children who face higher risks of under-nutrition. Findings also suggest that prevalence of under-nutrition can be evaded by improving the condition of mother's in Jharkhand by bringing awareness and improving their utilization of various interventions.

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Table 1 Percentage of children stunted, under-weight and wasted according to household characteristics

Variables	Category	Stunted (SD)	Underweight (SD)	Wasted (SD)	Total
Demographic Characteristics					
Age of child in months	< 6	14.3*	30.3*	40.8*	98
	6-12	31.1*	48.2*	35.2*	164
	12-23	59.9*	60.6*	42*	269
	24-35	57*	62*	28.1*	256
	36-47	56.4*	62.3*	27.4*	321
	48-59	49.1*	57.8*	29.4*	282
Sex of child	Male	52.1	58.4	33.4	664
	Female	47.7	55.8	31.8	726
Birth order	1	46.5*	54.9*	34.2	357
	2 to 3	46.9*	53.1*	29.8	557
	4 to 5	55.3*	62.8*	33.7	309
	6+	55.7*	64.1*	36.5	167
Size at birth	Average or Larger	48*	55*	31.1*	1075
	Small	50.5*	58.9*	33.3*	214
	Very Small	66.7*	74.5*	46.2*	93
Preceding Birth interval	<24	57.9*	60	27.6	280
	24-47	48.8*	56.7	32.2	541
	48+	47.2*	57.7	37.7	212
Maternal Characteristics					
Body-Mass-Index of mother	Less than 18.5	51.7*	62.9*	40*	638
	18.5-24.5	49.2*	53.2*	26.8*	708
	25 or >	25.7*	28.6*	11.4*	35
Mother's Education in Years	No Education	54.2*	62.9*	35.5*	912
	< 5	46.6*	57.3*	28.1*	89
	5 to 9	49.8*	50.8*	30.2*	258
	10+	21.4*	28.2*	19.8*	131
Employment status of mother	Not Employed	48.8	54.8*	32.7	985
	Employed	52.6	62.9*	32.2	399
Antenatal Visits	None	53.8*	63.8*	38.2*	390
	1-3	43.9*	50.1*	32.1*	601
Age at Delivery	<20	52*	58.8*	32.8	1128
	20-34	40.1*	49.6*	31.9	263
Socio-Economic Characteristics					
Type of place of residence	Urban	35.1*	39.6*	24.6*	265
	Rural	53.2*	61.2*	34.5*	1126

Table 1 contd.

Type of caste or tribe	SC	53.4*	56.9*	29.7*	174
	ST	55.2*	65.5*	40.1*	406
	OBC	49*	55.7*	30*	619
	Other	38.1*	43.9*	27*	189
Religion	Hindu	47.8*	56.3*	31.7	952
	Muslim	46.3*	50.4*	31.4	242
	Christian	61.8*	67.3*	43.6	55
	Others	64.5*	69.7*	36.9	141
Wealth Index	Poorest	55.4*	64.5*	35.4*	260
	Poorer	56.6*	65.2*	38.7*	279
	Middle	53*	61*	32.6*	282
	Richer	52.6	57.5	33.8	287
	Richest	32*	37.6*	22.8*	281
Total		**49.8**	**57.1**	**34.6**	

Source: Compiled from NFHS III 2005-06

Note: The total percentage figures of children S, W and U slightly differ from that of the published figures in the India and Jharkhand Report mainly because of the variations in reporting the total number of children in different files used.

Table 2 Results of Logistic Regression

Variables		**STUNTED**		**UNDERWEIGHT**		**WASTED**	
		UOR	AOR	UOR	AOR	UOR	AOR
AGE	48-59	1	1	1	1	1	1
	<6	0.17*	0.13*	0.31*	0.26*	1.67**	1.66**
	6-12	0.46*	0.35*	0.68**	0.49**	1.3	1.02
	12-23	1.54**	1.49**	1.12	1.02	1.74*	1.55**
	24-35	1.37***	1.38***	1.18	1.16	0.94	0.83
	36-47	1.33***	1.28	1.21	1.05	0.9	0.77
RESIDENCE	RURAL	1	1	1	1	1	1
	URBAN	0.47*	0.92	0.41*	0.84	0.62*	0.93
MOTHER'S EDUCATION	10+	1	1	1	1	1	1
	NO EDUCATION	4.41*	2.99*	4.24*	2.72*	2.19*	1.53
	<5	3.27*	2.27**	3.36*	2.28**	1.54	1.2
	5-9	3.70*	3.28*	2.58*	2.10**	1.71**	1.44
EMPLOYED	EMPLOYED	1	1	1	1	1	1
	NOT EMPLOYED	0.86	1.1	0.71*	0.96	1.02	1.29***
BMI	25 OR MORE	1	1	1	1	1	1
	<18.5	3.32	1.83	4.38*	2.11***	4.56*	3.50**
	18.5-24.5	3	1.83	2.95*	1.56	2.51***	1.97
DELIVERY AGE	20-34	1	1	1	1	1	1
	<20	1.62	1.41**	1.45*	1.13	1.04	0.85
SIZE AT BIRTH	VERY SMALL	1	1	1	1	1	1
	AVERAGE OR LARGER	0.46	0.40*	0.41	0.37*	0.53*	0.51*
	SMALL	0.51	0.39*	0.48*	0.38**	0.59**	0.52**
SEX	FEMALE	1	1	1	1	1	1
	MALE	1.19	1.34**	1.11	1.25	1.07	1.18
INITIATION OF BREAST FEEDING	WITHIN ONE DAY	1	1	1	1	1	1
	IMMEDIATELY/WITHIN HALF AN HOUR	0.9	0.98	0.78	0.96	0.72	0.79
	WITHIN ONE HOUR	1.18	1.34**	1.09	1.18	0.77**	0.74**
DIARRHOEA	YES	1	1	1	1	1	1
	NO	0.9	0.86	0.70***	0.65***	0.73***	0.82
ARI SYMPTOMS	YES	1	1	1	1	1	1
	NO	0.99	1.04	0.96	1.26	0.85	0.96

Table 2 contd.

RELIGION	OTHERS	1	1	1	1	1	1
	HINDU	0.5	0.41*	0.56*	0.64***	0.79	1.08
	MUSLIM	0.46	0.38*	0.44*	0.47	0.78	1.14
	CHRISTIAN	0.89	0.97	0.90*	1.07	1.33	1.51
BIRTH ORDER	6+	1	1	1	1	1	1
	1	0.68	0.85	0.69**	0.97	0.91	1.08
	2-3	0.69	0.81	0.64*	0.82	0.74	0.81
	4-5	0.98	0.95	0.95	1.02	0.89	0.89
TYPE OF CASTE	OTHERS	1		1	1	1	1
	SC	1.85	1.47	1.68**	1.17	1.13	0.91
	ST	1.98	0.95	2.44*	1.25	1.80*	1.62**
	OBC	1.55	1.21	1.62*	1.14	1.15	0.92
FEVER	YES	1	1	1	1	1	1
	NO	0.86	0.9	0.74**	0.71***	0.86	1.01
WEALTH INDEX	RICHEST	1	1	1	1	1	1
	POOREST	2.63*	1.62***	3.01*	1.32	1.84*	1.17
	POORER	2.75*	1.72**	3.10*	1.51***	2.12*	1.45
	MIDDLE	2.38*	1.50***	2.58*	1.34	1.63*	1.08
	RICHER	2.35*	1.51***	2.23*	1.28	1.72*	1.43

*p<0.01, **p<0.05 and ***p<0.10