

Nutritional Status among the Children Living in Predominantly Tribal Block of Jhadol in District Udaipur, Rajasthan, India: A Cross Sectional Study

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ABSTRACT

BACKGROUND: India has achieved remarkable economic progress in the last couple of decades but the fruit of progress has failed to assure better nutritional status to our children. The child nutritional situation remains grim for most of the states, especially in the tribal region. This paper is an attempt to measure the extent of under-nutrition in terms of height/length-for-age (stunting), weight-for-height/length (wasting), and weight-for-age (underweight) for children less than five year of age in predominantly tribal block Jhadol of district Udaipur, Rajasthan, India.

METHODS: World Health Organization (WHO) child growths standard has been used as reference population to measure the percentage prevalence of stunting, wasting and underweight children from its median. Total of 1286 children (623male and 663female) have been considered for this study. WHO Anthro software has been used for analysis and interpretation of results.

RESULTS: The results show severe undernourishment among the children in this part of Rajasthan. About 63% children are moderate to severely stunted (short for age), 46% have been found to be acutely malnourished and the composite index weight-for-age shows that 69% children are moderate to severely underweight. Against the popular facts that girls are more malnourished, boys of Jhadol block reported to be more undernourished.

CONCLUSIONS: The high prevalence of chronic malnourishment in this part of Rajasthan is a matter of grave concern. This paper calls for a region specific policy based on holistic approach of better healthcare, ensuring food security, access to drinking water, and sanitation.

Key words: under-nutrition, anthropometric study, under -five- year children, tribal

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INTRODUCTION

India, the world's largest democracy and third largest economy in terms of purchasing power parity (PPP), is home to almost one

-third of the world's total malnourished children [1]. The widely prevalent under-nutrition affects all aspects of an individual child, also wastage of human resources as lost productivity results in the underperformance both physically and

intellectually when malnourished children become adults [2], which ultimately perpetuate poverty.

The dismal profile of malnutrition in India is where the distributions of children's age-standardized weight and height are dramatically skewed left of the global reference standards [3]; causing a major under-nutrition problem in India. The 2005-06 National Family Health Survey (NFHS) with reference to World Health Organization (WHO) growth standards of 2006 indicates that about 43% of children under five years of age are moderate to severely underweight (weight for age), which is twice higher than the average figure of sub-Saharan Africa region (22%) [4]. An unbelievable phenomenon commonly referred as 'South Asian Enigma' [5]. About 20% of the children are moderate to severely wasted (thin for height) and 48% are moderate to severely stunted (short for age). With the present unimpressive rate of decline the prevalence of underweight will come down to 33% (children under 3 years of age), thus, missing the Millennium Development Goals (MDG) target by almost 10 percentage point [3]. The recent ruckus over Hunger and Malnutrition survey (HUNGaMA) report [4], described as the 'national shame', points to a serious concern for unacceptably high occurrence of under nourishment.

Malnutrition assumes several forms that may be reflected in combination like protein energy malnutrition (PEM) and deficiencies in micronutrients. There are large inter-state variations reported in the prevalence of underweight in India. The four major states are home for about 43% of the total underweight children in India: Uttar Pradesh, Madhya Pradesh, Bihar and Rajasthan [3]. Many of the states have shown a declining trend in the underweight prevalence during the 1990s and later (NFHS-1, NFHS-2, NFHS-3).

Rajasthan, the largest state of the Republic of India, which boasts of rich traditions and glorious past, has been performing moderately in Human Development Index (HDI) (17th among 28 states, 2007-08) during the last two decades. Interestingly it has registered an increase in total underweight prevalence (during NFHS-1 and NFHS-2). Not surprisingly, disaggregating underweight statistics (NFHS-3) by demographic groups reveals that weight-for-age underweight prevalence is higher in Scheduled Castes (47.9 %) and Scheduled Tribes (54.5 %) than in other castes (33.7 %).

Under-nutrition, poverty and disease form a vicious circle that contributes to the presence and permanence of each other [6], this plays havoc in tribal concentrated areas like south Rajasthan. Public nutrition studies, an emerging paradigm, focuses on the presentation of the situation that leads to devising concerted intervention efforts in order to address the pernicious problem of under-nutrition.

In this backdrop, this paper is an attempt to discuss the issue with two specific objectives:

1) to find out the nutritional status of children less than five years of age of Jhadol block by applying three anthropometric indices i.e. weight-for-height, height-for-age, weight-for-age and comparing the results in terms of Z-score classification system in relation to WHO standard reference population; 2) to find out the situation on stratifying the results according to age group and sex.

MATERIALS AND METHODS

Jhadol, the area of this study, is a predominantly tribal block (69.73% of population, 2001 Census of India) located in the south-west of district Udaipur. Jhadol is one of the 23 blocks of five districts of Rajasthan comes in the category of scheduled area under the Fifth Schedule of the Constitution of India. The provision of the Fifth Schedule is a safeguard to the tribal people living in the Scheduled Areas of nine states in the country against alienation of their lands and natural resources to non-tribal people.

A total of 1286 children (623 males and 663 females) in the age group of 0 to 5 years were selected for this cross-sectional study. The anthropometric measurements of boys and girl children were undertaken using WHO standard techniques. All possible measures were taken to ascertain the accuracy of the age of children under study and the age of the child was recorded in complete months.

Anthropometry indices and the use of body measurements were used for this study to measure and assess the nutritional status. Anthropometry is a universally applicable, inexpensive, non-invasive and immediately applicable technique for assessing children's development patterns during the early years of life. It provides useful but currently underused details of nutritional health status from the

public health policy point of view [8, 9].

The Z-score classification system expresses the anthropometric value as a number of standard deviations or Z-scores below or above the reference mean or median value. For population-based studies, a major advantage is that a group of Z-scores can be summarized into statistics, such as the mean and standard deviation. Weight for age, height for age and weight for height were calculated in Z-scores using reference median as recommended by WHO in 2006. Children who were more than two standard deviations below the reference median (<-2 SD) on the basis of weight for age (WAZ), height for age (HAZ) and weight for height (WHZ) nutritional indices were considered to be underweight, stunted and wasted respectively. WHO Anthro software (version 3.2.2, January 2011) has been used for anthropometric reference analysis.

RESULTS

The level of under-nutrition in Jhadol block can be seen in the weight-for-age (Figure 1) distribution where the curve is highly skewed to the left of WHO world standard Normal distribution curve indicates severe malnutrition situation plaguing this part of predominantly tribal region of Rajasthan.

The anthropometry result suggests that out of 1286 children 69% were found to be

moderate to severely underweight (<-2 SD), but 41.3% among all were severely underweight (<-3 SD) for age. As many as 38.3% children under study are severely short for age, with the combined prevalence of moderate to severe figure for stunting being 62.8%. So far the Z-score of wasting (thin for height/length) is concerned, 23% children were under severe category and 46% were moderate to severely (<-2 SD) wasted.

The sex and age group specific nutritional situation (Z-scores classification) on three anthropometry indices (Table 1) indicates that girls were at a less disadvantageous position compared to boys. The prevalence of underweight (WAZ) among boys (71.3%) were relatively more than girls (66.8%). With the progress of age, the prevalence of WAZ was noticed more skewed towards the left of the global standard. The maximum degree of moderate to severe level underweight prevalence among boys and girls is noted in the age group of 48 to 60 months (four to five years of age) i.e. 90.3% and 86.3% respectively. The prevalence percentage was found increasing with the progress in age.

The stunting (short for age) prevalence (<-2 SD) is noted minimum up to five months of age and here also the situation is much better for girls than boys (50.7% among boys and 36.1% among girls). The maximum HAZ among girls is found in the age group of 48 to 60 (71.6%) months. On the other hand, boys experience

FIGURE 1

WEIGHT-FOR-AGE (WAZ) DISTRIBUTION FOR CHILDREN OF JHADOL BLOCK UNDER FIVE YEARS OF AGE COMPARE TO STANDARD WORLD REFERENCE

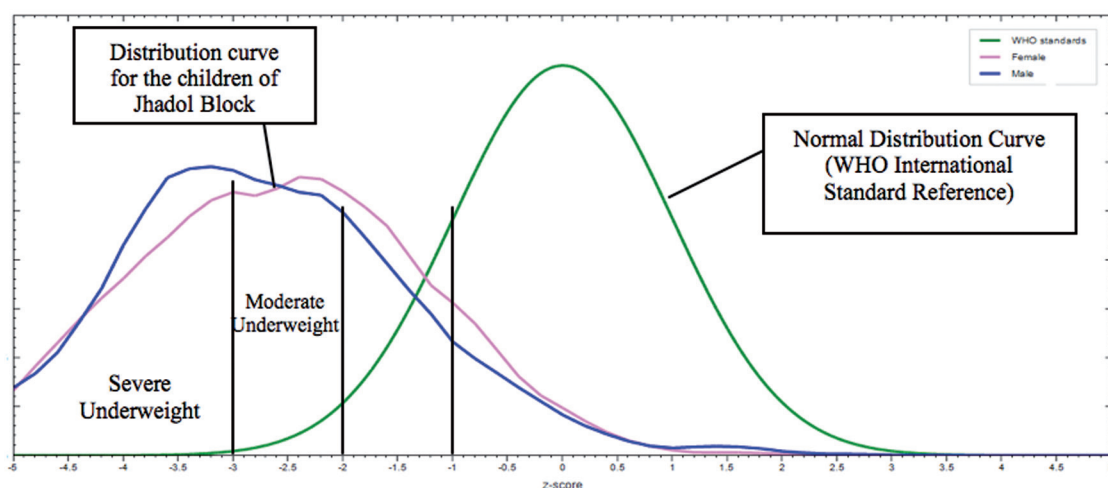


TABLE 1

PREVALENCE (%) OF UNDER-NUTRITION BY GENDER AND AGE GROUP WISE 0-60 MONTHS								
AGE GROUP (IN MONTHS)	BOYS				GIRLS			
	n	UNDERWEIGHT % (<-2SD WEIGHT FOR AGE)	STUNTING % (<-2SD HEIGHT FOR AGE)	WASTING % (<-2SD WEIGHT FOR HEIGHT)	n	UNDERWEIGHT % (<-2SD WEIGHT FOR AGE)	STUNTING % (<-2SD HEIGHT FOR AGE)	WASTING % (<-2SD WEIGHT FOR HEIGHT)
0-5	140	45	50.7	20.7	122	32.8	36.1	18.9
6-11	78	65.4	56.4	43.6	68	63.2	55.9	36.8
12-23	107	72.9	72.9	52.3	125	68.8	61.6	45.6
24-35	112	79.5	69.6	57.1	141	75.2	69.5	48.9
36-47	93	84.9	78.5	60.2	112	76.8	68.8	47.3
48-60	93	90.3	65.6	74.2	95	86.3	71.6	57.9
Total	623	71.3	65	49.4	663	66.8	60.6	42.5

maximum moderate to severe stunting prevalence in the age group of 36 to 47(78.5%) months leading to the cumulative figure of 61% and 65% among girls and boys respectively.

Wasting (thin for height) prevalence, another viable anthropometric index, was found to be 42.5% and 49.5% among girls and boys respectively. The wasting of moderate to severe level (<-SD) was noticed maximum 58% for girls and 74% for boys in the age group of 48 to 60 months. The minimum level of wasting was noted up to the five months of age. The figure was almost similar for both sexes (19% and 21% among girls and boys respectively).

DISCUSSION

The anthropometric study in one of the predominantly tribal block of Jhadol in south Rajasthan suggests that the under-nutrition in the form of underweight, stunting and wasting was found to be widely prevalent among children less than five years of age.

Each index gives particular information regarding body growth and composition. Information regarding linear growth retardation and cumulative growth deficits is given by height-for-age indicator (stunted). In the case of Jhadol, 62.8% children are chronically malnourished (<-2SD from the median of

the reference population) and from public health significance the cut off value of more than 40% of stunting is considered 'very high prevalence' [7,8] putting them at greater risk of illness and death. Stunting results in the poor intellectual development and contributes to the intergenerational cycle of malnourishment. Stunting is the long term malnourishment.

Weight-for-height index represents the current nutritional status. Children whose Z-score wasting falls below -2SD from the median of reference population are considered as acutely malnourished. 46% child under study of the Jhadol block comes in the same category which is 31% point above the cut-off point figure from public health point of view (WHO 1995) and is considered as 'highly critical'.

The composite weight-for-age index takes into account both height-for-age (stunting) and weight-for-height (wasting). From public health significance point of view the status of more than 30% underweight children is considered 'very high prevalence' of underweight and the 69% prevalence of underweight (<-2SD) speaks volume about the sorry state of affairs. The under-nutrition status among different age group (Figure 2) deteriorates with the progress in age except in the case of stunting which improves a bit in the age group of 48 to 60 months.

Integrated Child Development Services (ICDS) scheme, launched way back in the year

FIGURE 2

NUTRITIONAL STATUS IN DIFFERENT AGE GROUP

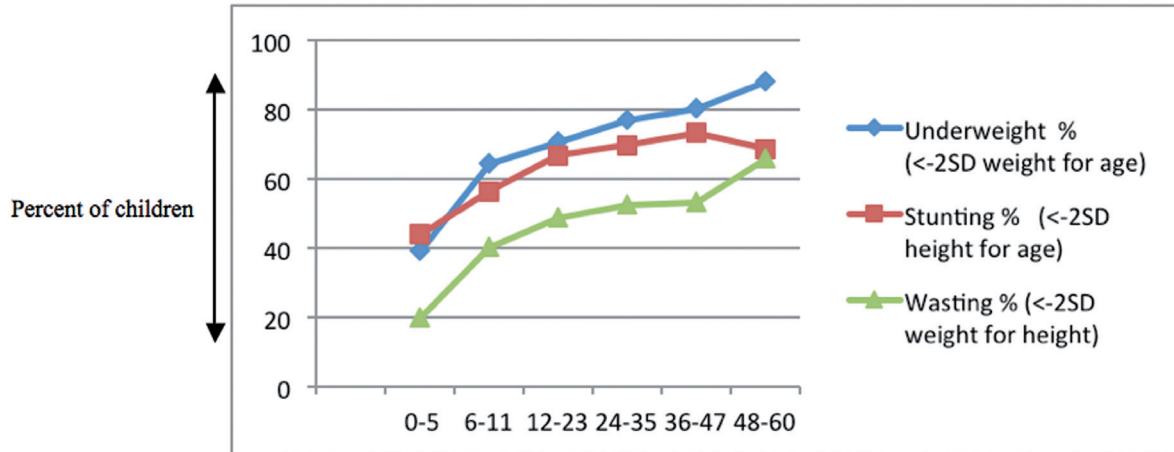
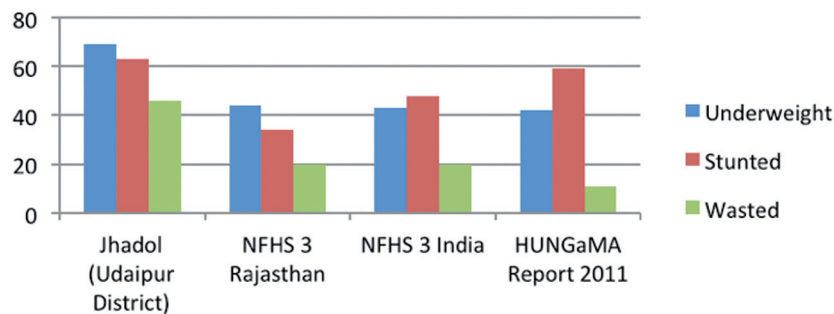


FIGURE 3

COMPARES THE RESULTS OF JHADOL STUDY WITH THE NFHS-3 DATA ON UNDER-NUTRITION FOR THE STATE OF RAJASTHAN AND INDIA, HUNGAMA REPORT 2011



1975, represents as World's largest programme for early childhood development with improving the 'nutritional and health status of children in the age group of 0-6 years' as one of the objectives. The services under ICDS include supplementary nutrition, immunization, health check-up, referral services, and pre-school non-formal education [16]. A nutritional evaluation under National Center for Health Statistics (NCHS) guidelines of 1012 children (Age 2-6 years) from 20 ICDS centers of a Panchayat in an eastern Indian state of West Bengal [17] shows that the overall (age and sex combined) prevalence of stunting, under weight and wasting were found to be 26.6%, 63.3% and 50.0%, respectively. As under-nutrition prevalence rates, especially stunting, are always higher in WHO growth standards than the NCHS guidelines [18], the ICDS study [17] shows a grim picture of nutritional status of children even if they are availing themselves of services

of local ICDS centers. A similar kind of study on Shabar tribal children (age 5-19 years) residing in rural, urban and forest areas of another tribal dominated state, Orissa [19], and on Muslim children population in Darjeeling, West Bengal [20] paints the same dismal picture of abject under-nutrition. Discussed studies also suggest that boys are more undernourished than girls.

Figure 3 compares the results of Jhadol study with the NFHS-3 data on under-nutrition for the State of Rajasthan and India. The recently released HUNGAMA 2011 report [4] has also been compared with the same. The year 2012 edition of global hunger index report of International Food Policy Research Institute (IFPRI) in which under-nutrition of children is one of the three equally weighted indexes places India with Nepal and Bangladesh in the 'alarming' category [9]. In this view, situation must be considered 'critically alarming' for

Jhadol. An overall enhanced action is required to tame this 'silent emergency'.

This nutrition study also has its share of some limitations. The data for the study is taken from a baseline food fortification project study that lacks qualitative information that could have provided better insights into the daily living conditions, dietary patterns, cooking processes of families. Although the data is gathered in predominantly tribal block, it lacks specific information of children regarding their caste, tribal groups, sect etc. that forms the subject of study. Further research would help develop better understanding of different dimensions of the issue of such high importance.

CONCLUSION

Child malnutrition is critical for the achievement of almost all the MDGs where it is implicitly or explicitly linked to its different targets [10]. More importantly, under-nutrition is the underlying cause of child deaths associated

with diarrhea, pneumonia, measles and malaria. The outcome of 'interconnection between the access to water, energy and land property rights' makes it clear that mere opening of more ICDS (Integrated Child Development Services) centers and malnourishment treatment centers cannot address the persisting problem of malnutrition.

We supposed to switch over to an 'adaptive system' to be based on holistic approach which can understand the changing interaction patterns of healthcare, food insecurity and at times cultural barriers in order to control the mala fide malnourishment.

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