

Urban Poor in India: the Burden of Child Malnutrition

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Introduction

Child malnutrition is worldwide the underlying cause of death of 2.2 million children under 5 [1]. Child malnutrition is a state of physical weakness resulting from a lack of vitamins and nutrients, leading to poor cognitive, intellectual and physical development, almost impossible to reverse after three years of age. It generally occurs as the conjunct effect of insufficient feeding practices and poor health, which underlying causes are as diverse as mother own malnutrition, mother education level, household poverty, poor water and sanitation, or lack of access to health services. Misconceptions link child malnutrition to rural areas and Africa, whereas the problem is widespread in Asia and hits urban poor just as hard as rural poor. While rural poor may have opportunities of land farming and housing extension, such solutions for urban poor are constrained by congested spaces and dependency on food purchase. Urban poor are expected to reach a worldwide figure of 2 billion slum dwellers by 2030. In this context, it is crucial to identify the causes of child malnutrition among urban poor and find adapted solutions. As per 2011 census, India already counts 95 million of urban poor. In spite of a long-running national program, ICDS¹, providing nutrition and health services to mothers and children, levels of child malnutrition still remain high. Prevalence of stunting among children under 5 only decreased from 51% in 1999 (NFHS-2²) to 45% in 2006 (NFHS-3³), and improvement has been the least among the poorest [2]. According to the World Bank [3], ICDS has not sufficiently reached children under 3 and overly focused on supplementation when child malnutrition is actually multicausal. Hence the present study targets children under 3 and intends to look at a wide range of determinants at mother, child, and household levels, unveiling their respective importance in the degradation of the child's nutritional status.

Data and Methods

Since child malnutrition generally onsets by 18-24 months of age, it was decided to study children aged within one year of this age range (6-36 months). The sample was built from NFHS-3 with 691 children under 3, living in urban areas, and whose household wealth index belongs to one of the two lowest quintiles of India. The measures of every child, height and weight, were compared to mean values defined by WHO [4] and allowed classifying

¹ ICDS: Integrated Child Development Scheme, started by the Government of India in 1975

² NFHS-2: Second National Family Health Survey of India, 1998-1999

³ NFHS-3: Third National Family Health Survey of India, 2005-2006

children into three categories of growth: not stunted, mildly or moderately stunted, severely or acutely stunted, and three categories of weight: not underweight, mildly or moderately underweight, severely or acutely underweight. After parallel assumption testing, partial proportional odds models were subsequently run on stunting and underweight, followed by simulations of predicted probabilities.

Research Findings

Among urban poor, the burden of child malnutrition is considerable: only 11% slip through the trap of malnutrition while as many as 72% are both stunted and underweight. Both conditions actually persist and worsen with age. It is all the more true between age groups 6-11 months and 12-23 months, when risk of stunting is multiplied by four and risk of underweight is multiplied by two, confirming the inadequacy of diet diversification. It also reveals that either caretakers do not recognize the malnutrition status of their child or they do not find the means to alleviate it. In a population where 89% of children are thin or short, mothers may not be able to identify the problematic condition of their child.

Short breastfeeding duration (less than twelve months) is a major determinant of child malnutrition. Being breastfed for less than 12 months entails an increased risk of stunting (OR=1.9) and underweight (OR=3.2). Indeed, relying on infant formula before 12 months, among unhygienic settings, can only increase diarrhoea incidence - which is generally high at that age. However, children who are not breastfed anymore are more likely to keep away from underweight⁴. This reverse relationship was found in previous studies [5] and actually reveals that children who are perceived as weak by their own mother tend to be breastfed longer. Two other determinants have a major influence on child nutritional status. Children not receiving routine doses of vitamin A face an important risk of being severely underweight (OR=3.0), probably increased by their likely deprivation from access to basic health care. Similarly, children whose households do not get assistance food from ICDS program may lack access to the other health and services nutrition proposed by ICDS. Hence they are unsurprisingly more likely to be stunted (OR=2.0). To a thinner extent the nutritional status of the mother influences the nutritional status of the child. If the mother is underweight, or if she delivered a low-birth-weight newborn, the child is more likely to be stunted or underweight (OR=1.7). The problem is all the more amplified among urban poor, since 42% of mothers are underweight and 25% of children are low-birth-weight. The same level of risk comes from the lack of diet diversity: children not consuming any important food group⁵ are more likely to be

⁴ Among children not breastfed anymore, the predicted probability of being underweight is 74% instead of 84%.

⁵ Four food groups are referred to as *important food group*: animal protein (meat/fish/eggs), legumes (nuts/beans/lentils), dairy products (milk/yogurt/cheese), vitamin A-rich fruits and vegetables (e.g. carrots, spinach, pumpkin).

stunted or underweight (OR=1.6), whereas children consuming at least two important food groups are more protected from being stunted or underweight⁶. Although breastfeeding is generalized among urban poor, the introduction of semi-solid food into the child's diet comes too late along with insufficient diversity: between 6 and 12 months, four children out of five do not consume any important food group, and between 12 and 23 months, it still concerns one child out of two. Overall, four children out of five do not consume any animal source food, which is nevertheless an incomparable source of nutrients. Besides, lack of diet diversity is not compensated by supplementation: only 2% of children get iron supplementation, whereas 82% are anaemic, and as low as 10% of children get vitamin A. Water and sanitation have also a significant impact on child nutritional status. Among urban poor, 65% of children use open fields for defecation, and 70% have no water available in their household, making basic hygiene rather difficult. Hence children using open field or shared toilet facilities are almost two times more likely to be stunted (OR=1.8); children availing water in their household's premises have more opportunities of hygiene and are more protected from underweight⁷.

Conclusion

The present study highlights the multifactorial aspect of child malnutrition, in particular the importance of mother nutritional status, diet diversity, water and sanitation. Fighting child malnutrition necessarily means addressing all its causes in an integrated manner. Moreover the present study reveals that malnutrition appears early, around the time of diet diversification (6-12 months), and keeps worsening with age, suggesting a cruel lack of medical supervision among urban poor children. Basic routine interventions such as vitamin supplementation and food assistance seem to be mainly out of reach of urban poor. Indeed urban poor often live in informal settlements or unauthorized slums, confined to dumping grounds in the city outskirts. When slums are visible, authorities wish they were hidden, regarding them as a threat to security or a downgrade to the image of the city. The temporary aspect of urban poor inhabitations may also hinder authorities in their potential willingness to develop services and infrastructures nearby. However, given the ever growing mass of urban poor, tackling child malnutrition across India necessarily means for stakeholders to implement sustainable solutions for urban poor.

⁶ Among children consuming at least two important food groups, the predicted probability of being underweight is 78% instead of 84%; the predicted probability of being stunted is 76% instead of 83%.

⁷ Among children availing water in their household, the predicted probability of being stunted is 78% instead of 83%.

Odds ratios for the child to worsen his/her nutritional status

Height for Age / Stunting			Weight for Age/ Underweight		
Factors	Adjusted Odd Ratio (OR)		Factors	Adjusted Odd Ratio (OR)	
Child Age child age group (ref: 6-11 months)			Child Age child age group (ref: 6-11 months)		
12-23 months	4.0	(2.5-6.2) ***	12-23 months	1.8	(1.1-2.9) **
24-35 months	5.7	(3.5-9.5) ***	24-35 months	2.8	(1.7-4.7) ***
Mother nutritional status mother underweight status (ref: not underweight)			Mother nutritional status mother underweight status (ref: not underweight)		
yes, underweight	1.4	(1.0-1.9) *	yes, underweight	1.6	(1.1-2.2) **
delivered low-birth-weight (ref: no)			delivered low-birth-weight (ref: no)		
yes, low-birth-weight	1.7	(1.2-2.4) **	yes, low-birth-weight	1.7	(1.2-2.4) **
Breastfeeding and food intake breastfeeding duration (ref: > 12 months)			Breastfeeding and food intake breastfeeding duration (ref: > 12 months)		
less than 12 months	1.9	(1.0-3.6) *	less than12 months	3.2	(1.6-6.3) ***
breastfeeding status			breastfeeding status		
not breastfed	0.6	(0.4-1.0) *	not breastfed	0.4	(0.3-0.7) ***
diet diversity (ref: at least 2 important food groups)			diet diversity (ref: at least 2 important food groups)		
1 food group	1.6	(1.0-2.5) *	1 food group	1.5	(0.9-2.3)
0 food group	1.6	(1.0-2.5) *	0 food group	1.6	(1.0-2.6) *
Water and sanitation toilet shared (ref: private toilet)			meal frequency (ref: sufficient meal frequency)		
toilet shared	1.8	(1.1-3.1) *	insufficient	1.3	(1.0-1.9)
water on premises (ref: yes, water on premises)			vitamin A (ref: received vitamin A)		
no water on premises (i)	1.5	(1.0-2.3)	no vitamin A(i)	1.0	(0.5-2.0)
	0.7	(0.4-1.0) *		3.0	(1.3-7.1) *
Food affordability and household size received food assistance (ref: yes)			Food affordability and household Size household size (ref: 2 to 5 members)		
no food assistance	2.0	(1.2-3.4) **	6 or more members	1.5	(1.0-2.2) *
			Mother education mother education level (ref: secondary)		
			primary	1.7	(1.0-2.8)
			no education	1.5	(1.0-2.2)
*p<.05; **p<.01; ***<.001; () = CI: Confidence Interval					
(i) When there are two values of odd ratios for the same variable: the first one corresponds to the transition from “not stunted” (/underweight) to “mildly/moderately stunted” (/underweight), the second one to the transition from “mildly/moderately stunted” (/underweight) to “severely/acutely stunted” (/underweight).					

References

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