

# An Observational Assessment of the Prevalence of Malnutrition among Children Aged 6-59 Months and its Associated Socio-Demographic Factors

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## Abstract

**Aim:** To assess the prevalence of malnutrition among children aged 6-59 months and its associated socio-demographic factors.

**Material & Methods:** The study was conducted in Department of Pediatrics, ANMMCH, Gaya, Bihar, India over a period of 2 years. Overall 650 children were screened.

**Results:** Out of total 650 children screened, 32.1% were found underweight, 47% were stunted and 9.5% were wasted. Children with all three types of malnutrition showed statistically significant association with growth monitoring and immunization status.

**Conclusion:** The absence of strong individual risk factors in our study suggests that a combination of life course factors, particularly those associated with pregnancy and birth, which we could not accurately measure, and collective exposures, over which individuals have little control, likely play a predominant role. Thus, a joint and coordinated effort between government, community, and nongovernmental organizations operating in the country is necessary to improve the nutritional status of children, focusing on effective programs and policies that reinforce the removal of collective risk factors such as lack of safe water and basic sanitation, and the provision of adequate and accessible education and health services to the population to enable effective health education actions as well as prevention and treatment of child malnutrition at the individual level.

**Keywords:** Anthropometric measurements, nutritional status, socio-demographic factors, underweight, stunting, wasting

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## Introduction

Globally, malnutrition continues to be a major public health challenge affecting the health, growth and development of children. Particularly young children in their 2–3 years of life are critically at greatest risk for malnutrition. Malnutrition is the common term for both excessive and under-nutrition. The causes of under-nutrition are insufficient consumption of

nutrients or disrupted absorption of one or more nutrient [1].

Under nutrition is detrimental to individuals, households and the broader community. Undernourished children have an increased risk of mortality, are more likely to suffer a childhood illness, be cognitively impaired, perform poorer in

school, have lower earning potential and carry higher risks for non-communicable diseases in later life. [2]

These effects of poor nutrition start in utero and span generations. Undernourished women have a higher risk of giving birth to low birthweight babies, who in turn have a higher risk of suboptimal growth and development. [3]

The WHO, in response to this evidence, set goals to reduce the number of stunted children by 40% and to maintain childhood wasting to less than 5% by 2025. [4] These goals have been further reinforced by the second Sustainable Development Goal. [5] Determinants of under nutrition have been well documented in the literature. The UNICEF Conceptual framework for causes of malnutrition categorizes these determinants into immediate (dietary intake and disease), underlying (household food security, care and feeding practices, unhealthy household environment and inadequate healthcare services) and basic causes (geographical location, lack of capital and resources). [6]

Lack of basic amenities at household level and unhygienic surrounding increase the chances of infection, which contributes to malnutrition among children residing in slum area. Data on malnutrition from slum area of Jaipur city will definitely add on the existing knowledge.

The objective of the study was to assess the prevalence of different grades of malnutrition among children aged 6-59 months and to study its associated socio-demographic factors.

### **Material & Methods:**

The study was conducted in Department of Pediatrics, ANMMCH, Gaya, Bihar, India over a period of 2 years. Overall 650 children were screened.

**Inclusion criteria:** All the children in the age group of 6-59 months coming

to Department of Pediatrics, ANMMCH, Gaya, Bihar, India.

**Exclusion criteria:** Children who were terminally ill, suffering from genetic diseases, mentally retarded and having cardiac problems were excluded from the study.

Ethical approval was taken from the Departmental Ethical Committee before the commencement of the research work. A questionnaire was prepared to collect the data on the socio-demographic profile of children.

Nutritional status was assessed according to WHO weight-for-age, height-for-age, weight-for-height reference chart. Underweight, stunting and wasting were defined as z-score < -2 SD from the median WHO child growth standards. Severe underweight, stunting and wasting were defined as z-score < -3 SD from the median WHO child growth standards.

Pre-structured questionnaire was used to assess the socio-demographic profile of study subjects and utilization of ICDS services.

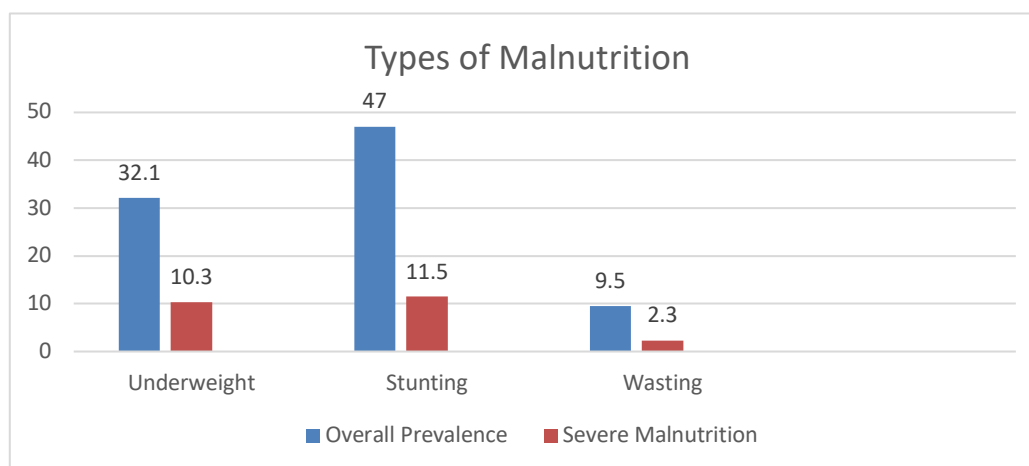
Anthropometric parameters such as age, weight, height and MUAC were recorded using standard tools and techniques. Weight was recorded using digital baby and toddler weighing scale with minimum and maximum weighing capacity of 5 g and 30 kg, respectively. Weight was recorded in kilograms and grams. Length was recorded for children less than 2 years of age and for children who were not able to stand properly, by using Prestige height length measuring board having graduation from 1 mm. Height of children more than 2 years of age was recorded using Prestige portable stadiometer with graduation from 1 mm.

Descriptive statistics such as frequencies and percentage were used for univariate variables. Chi-square test was used to assess the association of malnutrition with

study variables at 5 and 1% level of significance.

Out of total 650 children screened, 32.1% were found underweight, 47% were stunted and 9.5% were wasted. [Figure 1]

### Results:



**Figure 1: Prevalence of different types of malnutrition among under 5 children**

Social determinants such as age of child, caste, and birth weight, education status of the parents and economic status of the family were positively associated with underweight and stunting. There was no significant association between gender and type of the family with malnutrition (Table 1).

**Table 1: Percentage of distribution of malnourished children according to various socio-demographic parameters**

Variables	Different types of malnutrition					
	Under Weight <-2 SD	Chi-square (p-value)	Stunting <-2 SD	Chi-square (p-value)	Wasting <-2 SD	Chi-square (p-value)
<b>Age</b>						
6-11 months (< 1 year) (N = 107)	43	22.62 (0.001)*	54	729.917 (0.001)*	14	48.83 (0.001)*
12-35 months (1-3 years) (N = 342)	267		432		127	
36-60 months (3-5 years) (N = 201)	182		312		76	
<b>Gender</b>						
Female (N = 442)	321	0.739 (0.681)	334	5.629 (0.442)	80	6.72 (0.472)
Male (N = 208)	172		180		98	
<b>Family type</b>						
Nuclear (N = 317)	291	6.372 (0.552) <sup>NS</sup>	201	5.72 (0.629)	122	5.72 (0.662)
Joint (N = 333)	305		321		67	
<b>Birth weight (kg)</b>						
≤2.5 kg (N = 347)	228	271.63 (0.001)*	6	442.72(0.001)*	170	729.77 (0.001)*
2.5-3.5 kg (N = 210)	164		150		39	

>3.5 (N = 93)	5		2		2	
<b>Educational status of mother</b>						
Illiterate (N = 261)	221	43.82 (0.001)*	219	57.52 (0.001)*	87	67.82 (0.001)**
Primary (up to 5th) (N = 167)	99		102		29	
Secondary (5th-12th) (N = 201)	87		172		43	
Higher (above 12th) (N = 21)	14		12		6	
<b>Educational status of father</b>						
Illiterate (N = 24)	2	72.80 (0.001)*	18	682.76(0.001)*	19	23.81 (0.001)*
Primary (up to 5th) (N = 121)	73		88		21	
Secondary (5th-12th) (N = 462)	352		436		97	
Higher (above 12th) (N = 43)	32		33		8	
<b>Per capita/per person/per month</b>						
100-500 (N = 56)	23	13.84 (0.001)*	35	20.63 (0.001)*	7	83.66 (0.001)*
501-1000 (N = 248)	117		205		58	
>1000 (N = 346)	280		327		166	

Children with all three types of malnutrition showed statistically significant association with growth monitoring and immunization status. Malnutrition was found significantly higher among children who did not undergo regular growth monitoring and who were not immunized. (Table 2)

**Table 2: Distribution (%) of malnourished children according to utilization of ICDS services**

Variables	Different types of malnutrition					
<b>Regularly weighed</b>						
Yes (N = 442)	372	271.77 (0.000)**	320	293.151 (0.000)**	138	33.98 (0.000)**
No (N = 208)	180		188		62	
<b>Immunization status</b>						
Immunized (n = 504)	472	38.91 (0.000)**	382	18.981 (0.000)**	162	39.91 (0.000)**
Not immunized (n = 146)	78		81		27	

### Discussion:

The prevalence of stunting found in this study, considered high according to WHO standards [7], was slightly higher than that

found in the United Nations Children's Fund (UNICEF) survey conducted in Angola in 2009 (29%), whereas the one found for underweight, considered

medium by WHO, was slightly lower (16%) [8]. More recent data released by the Joint Malnutrition Estimates in 2016 show estimates of 4.9% (4.6% in urban area) and 37.6% (31.8% in urban area) of underweight and stunting in Angola, respectively [9].

In the African region, existing data show that the continent has been making slow progress in reducing stunting over time. From 2000 to 2015, although stunting prevalence among children under 5 decreased from 38 to 32%, the number of stunted children increased from 50.4 million to 58.5 million [9]. Considering that the first of six global targets set by Member States in the 65th World Health Assembly, to be achieved by 2025, is to reduce by 40% the number of stunted children, then the region is not making a good response [9].

Maternal stature is a combined indicator for both genetic and environmental stresses on a woman during the key growth years. Women of short stature have a higher risk of having a baby that is small-for-gestational age or low birth weight (LBW). These babies are at greater risk of infections and when infected do not absorb nutrients, leading to stunted growth. [10] Risk of infection is higher in Bougainville where most households do not have adequate toilet facilities and sanitation. This intergenerational cycle of poor maternal nutrition and poverty [11] was highlighted for action by the United Nations Standing Committee on Nutrition. [12] Breaking this intergenerational cycle to ensure babies optimally grow requires specific interventions targeting women and children at critical life stages. Women during their adolescence and when pregnant are key periods for interventions, whereas for children, the first 1000 days of life are critical. [13]

Children from food insecure household were more likely to be wasted, stunted, and underweight than children from food secured household. This finding is in line

with some of the studies conducted in India, Indonesia, South Africa and South Ethiopia [14-17].

Caste was also significantly associated with malnutrition as prevalence of underweight, stunting and wasting was found highest in children belonging to schedule caste followed by Minority and OBC community. Similar results were reported by Tiwari et al. [18,19].

### Conclusion:

The determinants of malnutrition includes age, caste, number of siblings child has birth order of the child, birth weight, educational and economic status of the parents, poor growth monitoring and low vaccination status of the children.

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