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Nutritional status of infants and young children in Harpur panchayat, Pusa block, Bihar: A cross-sectional study

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Abstract

Introduction: Being a major public health concern, malnutrition is quite common in India. More importantly, it affects infants and young children the most resulting in tragic health problems. So, to combat this, we focussed on the identification of malnourished children in the study area.

Methods: A cross-sectional study among 268 mothers of six to twenty-four months old children was conducted in Harpur panchayat, Pusa block, Samastipur district, Bihar. A pre-structured standard questionnaire was used and both general and anthropometric information were collected. Nutritional status of infants and young children was determined by processing the data on excel sheet, using descriptive statistics.

Results: The prevalence of severe acute malnutrition was 5.97 per cent where as severe stunting and severe underweight were 1.49 per cent each. Besides, the outbreak of moderate wasting, moderate stunting and moderate underweight rate were 5.22, 13.06 and 5.22 per cent whereas mild wasting, mild stunting and mild underweight rate were found to be 13.06, 33.21 and 20.90 percent respectively. On the other hand, 9.71 per cent children were coming under overweight and obese category while 2.60 per cent children were significantly tall than those of well nourished infants and young children.

Conclusions: Considering the high prevalence of malnutrition in the study area, it was suggested that proper preventive measures ought to be taken as soon as possible.

Keywords: Malnutrition, wasting, stunting, underweight, infants and young children

Introduction

Studies indicated that the first 1000 days of life right from conception till first two years of life is regarded as a critical window for boosting optimum growth, behavioural development and health. It provides opportunity for boosting the health and protecting the body from diseases among infants and young children which ultimately lay a strong foundation for physical and mental performance in their coming years and better quality of life (FAO, 2018) [4]. Undoubtedly, linear growth and brain development are very rapid during first two years of life and are more prone to growth failure and developmental delays (WHO, 2012) [11]. Definitely, malnutrition itself is not an illness, but it is the cause for bringing illnesses due to poor availability of nutrients and immunity to fight against infection (Gillespie and Flores, 2000) [5]. It includes both over nutrition, and under nutrition. Over nutrition is the result of excess of calorie, protein or other nutrient consumption, resulting in overweight, obesity among people while under nutrition occurs due to lack of consumption of calorie, protein or other nutrients, constituting acute malnutrition, chronic malnutrition and micronutrient deficiencies.

Acute malnutrition occurs from abrupt declines in food consumption or diet quality and is defined using anthropometric cut-offs and clinical signs (Lenters, *et al.*, 2016) [8]. Acute malnutrition is further classified on the basis of severity into two categories: moderate acute malnutrition (MAM) and severe acute malnutrition (SAM). Moderate acute malnutrition possess weight-for-height Z- score (WHZ) between -3 and -2, while severe acute malnutrition possess weight-for-height Z-score (WHZ) less than -3 or mid-upper arm circumference (MUAC) less than 115 mm or presence of bilateral pitting oedema or both. SAM is associated with higher mortality rates and other chronic health outcomes and is characterized by poor mental development, low intelligence levels, behaviour problems, and poor school achievement in later childhood (Grantham-McGregor, 1995).

Moreover, its prevalence is high in India i.e. 7.5 per cent as per NFHS-4 report (Kulkarni & Mamidi, 2020) [7]. Chronic malnutrition occurs due to inadequate consumption of nutrients for a long period of time and a complex interaction between intergenerational and environmental factors, resulting in stunting. In stunting, height-for-age Z- score (HAZ) goes below -2 SD (WHO, 2017) [2]. Protein-energy malnutrition weakens immune system, making malnourished children more susceptible to common diseases, extending or worsening illness, raising the unfavourable effect of toxic substances, resulting short stature and decreased physical work ability, and heightening the future risk of heart diseases. Childhood under nutrition is even linked with high blood pressure, elevated glucose concentrations, and impaired blood lipid profiles in later years of life, although this malnutrition is corrected with rapid weight gain, particularly after infancy. Furthermore, mental illnesses along with decreased human capital results due to under nutrition during the first two years of life. Specifically, permanent impairments occur due to the damages in this early life of an individual (Victora, *et al.*, 2008) [14]. Thus, the aim of this study is to determine the nutritional status of infants and young children in Harpur panchayat of Samastipur district, Bihar. It also aims to find out the magnitude of problem related to health and nutrition among the infants and young children.

Material and Method

A community-based, cross-sectional study was performed in the Harpur panchayat of Pusa block in Samastipur district, Bihar. All the thirteen anganwadi centres of Harpur panchayat

were covered under this investigation. A total of 268 infants and young children, aged between six to twenty-four months were selected as the subjects and their mothers as respondents. A questionnaire was prepared for easy collection of data and necessary general information like age, gender, socio-economic information like education and occupation of parents, family income, family type, family size of infants and young children were collected with the help of their mothers. Anthropometric parameters like weight, length or height and mid-upper arm circumference of the subjects were taken using instruments like digital salter weighing machine, infantometer and flexible tri-colour measuring tape with standard criteria and minimum error.

Besides, presence of clinical signs like oedema, loose skin, dry and atrophic skin etc. was observed. After that nutritional status of infants and young children were determined based on WHO cut-off criteria (Table 3). The data were entered on excel sheet and processed using descriptive statistics and expressed in terms of frequency, percentage, mean and standard deviation.

Results

General information of infants and young children

Among the total 268 infants and young children, included for the research, a total of 41.42 per cent of them belonged to 6 to 12 months of age group followed by 36.57 per cent to 13 to 18 months and 22.01 per cent subject in the age group of 19 to 24 months age group. It was seen that among all subjects, 52.98 per cent were boys while the remaining 47.02 per cent were girls.

Table 1: General information of infants and young children

Particulars	Subjects (N=268)	
	n	%
Age (months)		
6-12	111	41.42
13-18	98	36.57
19-24	59	22.01
Gender		
Male	142	52.98
Female	126	47.02

Socio-economic information of infants and young children

It is evident that almost 50.37 per cent had small family with one to four family members followed by middle sized family by 34.70 per cent where as only 14.92 per cent of subjects had large family with eight to ten family members. Monthly income of the family was found to be less than 10,000 rupees among 56.34 per cent respondents, while 38.06 per cent families had this income between the range of 10, 000 to

20,000 rupees. Only 5.60 per cent of subjects were living in the family having monthly income more than 20,000 rupees. Fathers of most of the children (46.27%) were engaged in agriculture, 36.57 per cent belonged labourer category, 10.44 per cent had government job while only 6.72 per cent were dependent on their business for their livelihood.

Table 2: Socio-economic information of infants and young children

Particulars	Subjects (N=268)	
	n	%
Educational level of mother		
Illiterate	37	13.81
Only can write name	128	47.76
Primary	57	21.27
Middle	32	11.94
Secondary	14	5.22
Father's occupation		
Labour work	98	36.57
Business	18	6.72
Agriculture	124	47.27
Govt. job	28	10.44
Mother's occupation		

Home maker	150	55.97
Labour	61	22.76
JEEVIKA member	57	21.26
Educational level of mother		
Illiterate	37	13.81
Only can write name	128	47.76
Primary	57	21.27
Middle	32	11.94
Secondary	14	5.22
Family size		
Small (1-4)	135	50.37
Medium (5-7)	93	34.70
Large (8-10)	40	14.93
Monthly family income		
< 10,000	151	56.34
10,000- 20,000	102	38.06
>20,000	15	5.60

On the other hand, mothers of 55.97 per cent subjects were home maker whereas those of 21.27 per cent were JEEVIKA member. Only mothers of 22.76 per cent children were working as labour to support their family. While concerning the educational level of mother, majority of them (47.76%) only could write their names while 13.80 per cent were illiterate. On the other hand, 21.26 per cent mothers had completed their primary level of education, while 11.94 per cent had achieved education up to middle level and only 5.22 per cent mothers had completed their secondary level of

education.

Assessment of nutritional status of infants and young children: From perusal of Table 3, it is evident that 5.97 per cent children out of the total 268 are severely wasted while 1.49 per cent children belonged to severely stunted and severely underweight categories. Moderate wasting, moderate stunting and moderate underweight affected about 5.22, 13.06 and 5.22 per cent children respectively.

Table 3: Anthropometric information of infants and young children

Anthr Opome Tric index	Nutritional status	Z-score (WHO, 2008, 2019) ^[12].	%
W/H	Severe wasting	< -3	5.97
	Moderate wasting	-3 to -2	5.22
	Mild wasting	-2 to -1	13.06
	Normal	-1 to +1	50.37
	Overweight and obesity	> +2	25.38
	W/A	Severe underweight	≤ -3
Moderate underweight		-3 to -2	5.22
Mild underweight		-2 to -1	20.90
Normal		-1 to +1	69.40
Overweight		> +2	2.99
H/A		Severe stunting	< -3
	Moderate stunting	-3 to -2	13.06
	Mild stunting	-2 to -1	33.21
	Normal	-1 to +1	46.27
	Tall	> +2	5.97

Simultaneously, 13.06, 33.21 and 20.90 percent children were mildly wasted, stunted and underweight respectively. As far as the clinical signs are concerned, it is observed that all

children are devoid of oedema, loose skin, dry and atrophic skin (Table 4).

Table 4: Clinical information of infants and young children

Particulars	Subjects (N=268)	
	n	%
Presence of oedema		
If yes	0	0
If no	268	100.0
Presence of loose skin		
If yes	0	0

If no	268	100.0
Presence of dry and atrophic skin		
If yes	0	0
If no	268	100.0

n denotes frequency and % denotes percentage

Discussion

The prevalence of severe wasting in Harpur panchayat was found to be 5.97 per cent while 1.49 per cent children belonged to severely stunted and severely underweight categories. In moderate form, these wasting, stunting and underweight percentages were 5.22, 13.06 and 5.22 while these in mild form were 13.06, 33.21 and 20.90 respectively. According to NFHS 4 (2015-16) ^[9], Bihar has the highest share of severely stunted children among under 5 (23.10%). Out of 55.90 per cent malnourished children, the percentage of stunted and wasted children are 48.30 and 20.80 per cent respectively. Furthermore, seven per cent of children are severely wasted. Low birth weight babies constitute about 15 per cent. Out of them, the percentage of underweight children is 43.90 per cent, consisting 15.20 per cent as severely underweight children. Houghton *et al.* (2018) ^[6] reported 39 per cent case of stunting, 31 per cent underweight, and 10 per cent wasting among children of 1 to 2 years old living in a slum area of South- Delhi. Sailaja *et al.* (2016) ^[10] found out the prevalence of underweight, stunting, and wasting among infants and young children aged 6 to 24 months to be 44.60, 37.70, and 20.78 per cent respectively. In their study, Dhanalakshmi and Selvaraj (2019) ^[3] revealed prevalence of underweight, wasting, and stunting was found to be 31.65, 15.00 and 45.60 per cent respectively.

Conclusions

The prevalence of stunting, wasting and underweight rate among the infants and young children of six to twenty-four months found to be 33.21, 13.06 and 20.90 per cent respectively while the outbreak of severe stunting, severe wasting and severe underweight were 1.49, 5.97 and 1.49 per cent respectively. Simultaneously, 9.71 per cent children are overweight and obese while 2.60 per cent children were significantly tall than those of well-nourished infants and young children. Although, about 50.00 per cent children are of adequate nutrition, the rest children are malnourished requiring utmost consideration.

List of abbreviations

FAO: Food and Agriculture Organization; WHO: World Health Organization; MAM: Moderate Acute Malnutrition; SAM: Severe Acute Malnutrition; WHZ: Weight for Height Z score; HAZ: Height for Age Z score; W/A: Weight for Age, H/A: Height for Age; W/H: Weight for Height; MUAC: Mid-Upper Arm Circumference; NFHS-4: National Family Health Survey- 4.

Declarations

Ethics approval and consent to participate

This study was approved by the advisory committee of Dr Rajendra Prasad Central Agricultural University, Pusa, Samastipur. Letter of permission was taken from Primary Health Centre, Pusa, and ICDS officer, Pusa. Verbal consent was taken from the respondents of the study.

Consent for publication: Not applicable.

Availability of data and materials: All the relevant data of the study are given in tables.

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Author's contribution

US: Designed the study, read and approve the manuscript. AS: Conducted the study, collected data and performed statistical analysis and result interpretation, prepared the manuscript. SS: Read and approve the manuscript.

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References

1. Child Growth Standards (Internet). World health organization 2019. Available at: <https://www.who.int/childgrowth/standards/en>. Accessed on 25 January 2019.
2. Complementary feeding. WHO 2017. Available at: http://www.who.int/nutrition/topics/complementary_feeding/en/ [Accessed 15 May, 2017].
3. Dhanalakshmi S, Selvaraj R. A study on the prevalence of acute and chronic malnutrition and influence of feeding practices among 6 months to 2 years children in rural field practice area of Kilpauk Medical College, Tamil Nadu. *International Journal of Community Medicine and Public Health* 2019;6(3):1172-1177.
4. FAO. Pakistan Dietary Guidelines for Better Nutrition. Government of Pakistan Planning Commission Nutrition Section 2018.
5. Gillespie S, Flores R. *The Lifecycle of Malnutrition*. International Food Policy Research Institute, Washington 2000.
6. Houghton LA, McIntosh DR, Trilok-Kumar G, Haszard JJ, Gibson RS. Suboptimal feeding and caring practices among young Indian children ages 12 to 24 month living in the slums of New Delhi. *Nutrition* 2020;69:1-6. <https://doi.org/10.1016/j.nut.2019.110553>
7. Kulkurni B, Mamidi RS. Nutrition rehabilitation of children with severe acute malnutrition: Revisiting studies undertaken by the National Institute of Nutrition. *Indian Journal of Medical Research*. 2020; 150:139-152.
8. Lenters L, Wazny K, and Bhutta ZA. Management of Severe and Moderate Acute Malnutrition in children. *Reproductive, Maternal, Newborn and child Health-NCBI* 2020;11:1-21.
9. National Family Health Survey-4 (2015-16). <http://rchiips.org/nfhs/nfhs4.shtml>
10. Sailaja K, Reddy MDR, Jain CS, Thomas SRJ. Nutritional status of children in rural Telangana in relation to complementary feeding practices. *International Journal of Contemporary Pediatrics* 2016;3(2):340-344. DOI: <http://dx.doi.org/10.18203/2349-3291.ijcp20160994>
11. Technical note: supplementary foods for the management of moderate acute malnutrition in infants and children 6–

- 59 months of age. Geneva, World Health Organization. WHO 2012.
12. Training Course on Child Growth Assessment. Geneva: WHO 2008. <https://www.who.int/childgrowth/training/module/en>. Accessed on 25 January 2019.
 13. UNICEF/ WHO/ World Bank Joint Child Malnutrition Estimates (2019). Malnutrition in Children - UNICEF DATA.<https://data.unicef.org/topic/nutrition/malnutrition>.
 14. Victora CG, Adair L, Fall C, Hallal PC, Martorell R, Richter L, Sachdev HS. Maternal and Child Undernutrition: Consequences for adult health and human capital. *Lancet* 2008;371:340-357.