



ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN ATTENDING ANGANWADIS IN URBAN SLUM

Community Medicine

Dr Reema Wankar	Assistant Professor, Dept of Community Medicine, HBT Medical College Dr R N Cooper Hospital Juhu, Mumbai
Dr Sanjay Panchal	Associate Professor, Dept of Community Medicine, HBT Medical College Dr R N Cooper Hospital Juhu, Mumbai
Dr Kirti Kinge*	Assistant Professor, Dept of Community Medicine HBT Medical College Dr R N Cooper Hospital Juhu, Mumbai. *Corresponding Author
Dr Ashirwad Nagpurkar	Junior Resident, Dept of Community Medicine, HBT Medical College Dr R N Cooper Hospital Juhu, Mumbai

ABSTRACT

INTRODUCTION: Malnutrition is a major public health problem in developing countries. The consequences of malnutrition are high level of morbidity, mortality, and disability apart from poor physical growth and development. **AIM:** The study was undertaken to assess the nutritional status of the children (up to 6 years) in Anganwadi Centres and its association with sociodemographic factors. **MATERIAL & METHOD:** Total of 348 children of both the genders up to 6 years of age was included. All mothers were interviewed, and weight of children was recorded. Data were analyzed using SPSS version 21.0 and Chi-square test was used to find out the association between two qualitative variables. **RESULTS:** Mean age of the children in our study was 2.38 years ($\pm$ SD 1.36), 54.6% were males and 45.4% were females. Out of 348, 57.47% were normal, 42.53% children were malnourished i.e. 27.87% underweight and 14.66% were severe underweight. The factors associated with malnutrition were mother's educational status and socioeconomic status of the family with statistical significance ($p < 0.05$). **CONCLUSION:** The findings of the present study revealed high proportion of underweight in the children of urban slum. Socioeconomic development along with nutrition education among the urban slum population needs to be ensured which is an important factor to combat malnutrition.

KEYWORDS

Underweight, urban slum, Anganwadi centres.

INTRODUCTION

Malnutrition is a major public health problem in developing countries. The consequences of malnutrition are high level of morbidity, mortality, and disability apart from poor physical growth and development.⁽¹⁾ Malnutrition is called an Invisible Emergency because, much like an iceberg, its deadly menace lies mostly hidden from view. Preschool children are most vulnerable to the effect of undernutrition because of rapid growth and thus their nutritional status is considered to be sensitive indicator of community health.⁽²⁾ Globally, 7.5 million under-five children are wasted and 16.4 million are severely undernourished.⁽³⁾ Globally under five mortality rates is 43 per 1000 live birth in 2015. Undernutrition contributes to nearly half of all death in children under five.⁽⁴⁾

National Family Health Survey 5 (NFHS 5) data revealed that among under five children, underweight was seen in 32.1% children (27.3% in urban area and 33.8% in rural area).⁽⁵⁾ The basic tool to quantify this burden is growth assessment in the form of anthropometry which is done under a national program called Integrated Child Development Services (ICDS).⁽⁶⁾ The most vulnerable groups are children under 5 years of age. Hence, nutritional status of these children is a very sensitive indicator of the community health. The consequences of malnutrition are high level of morbidity, mortality, and disability apart from poor physical growth and development.⁽¹⁾

With this background current study was planned to detect undernutrition at initial stages to prevent the occurrence of severe morbidity and mortality among children. This study was undertaken to assess the nutritional status of the children (up to 6 years) in Anganwadi Centres and its association with sociodemographic factors.

MATERIAL & METHOD:

A cross-sectional study was carried out in 11 Anganwadis of a metropolitan city where health camps were organized for children for 2 months, 2 days in a week, between 10 am and 1 pm. All the Anganwadi Workers were informed about the study. The objectives and procedure were explained to all of them and required data was entered in the pre designed questionnaire. Children whose parents did not give consent to participate were excluded from the study. Total of 348 children of both the genders up to 6 years of age were included in the study. The data collection tool included the sociodemographic variables such as age, gender, socioeconomic status, mother's occupation and education, and anthropometric variable. Detailed history of any illness along with already known disorders was taken into consideration. The age of the child was confirmed either by parents or immunization card/birth certificate or local calendar event system.

Socioeconomic class is calculated by Modified B.G. Prasad Scale.⁽⁷⁾

Anthropometry of all the recruited children was recorded to evaluate the nutritional status. Weight (up to nearest 100 g) of the children were measured using standard anthropometric equipment. The overall nutritional status of children was assessed according to the Z-score or standard deviation (SD) classification to grade Undernutrition using the WHO growth standards (2006). This system allows us to express the results in terms of Z-scores or SD units from the median of the international reference population. Children falling below -2 standard deviation (SD) cut-off were considered as Underweight (MAM) – while those falling below -3 SD were considered as Severe Underweight (SAM).⁽⁸⁾

The collected data was entered and analysed using SPSS version 21. Descriptive statistics were obtained for different parameters and Chi-square test was used to find out the association between two qualitative variables and $P < 0.05$ was considered as statistically significant.

RESULTS:

Out of 348 children, 54.6% were males and 45.4% were females. Mean age (in years) of all the children was 2.68 ($\pm$ SD $\pm$ 1.34). In the present study, 42.53% children were malnourished whereas 57.47% were normal. Out of 348, 27.87% underweight and 14.66% were severe underweight. Fig. 1 shows that more malnutrition was seen in females i.e. 45.26% compared to males i.e. 39.24%.

Majority of the children were in age group of 1 to 3 years of age group i.e. 49.13. Around 93.68% mothers of children were educated upto 12th standard. Only 2.3% mothers were illiterate. Upto 79.2% mothers were unemployed. Around 76% children belonged to Class I, II and III. Only 5.5% belonged to lower socioeconomic class.

Fig 1: Chart showing Nutritional Status of Children:

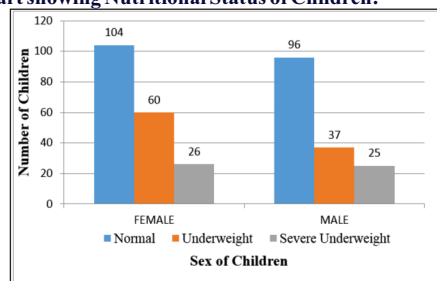


Table 1: Distribution of children and their mothers in relation with sociodemographic variables:

VARIABLES	No.	%
AGE		
0-1 yr	12	3.45
1-2 yrs	85	24.43
2-3 yrs	86	24.71
3-4 yrs	75	21.55
4-5 yrs	57	16.38
5-6 yrs	33	9.48
GENDER		
Males	158	45.4
Females	190	54.6
MOTHER'S EDUCATION		
Illiterate	8	2.30
Upto 12 th	326	93.68
Graduate	14	4.02
MOTHER'S OCCUPATION		
Unemployed	276	79.2
Employed	72	20.7
PER CAPITA INCOME		
Class I	12	6
Class II	52	26
Class III	88	44
Class IV	37	18.5
Class V	11	5.5

Table 2 shows that underweight (MAM) was seen more in the age group of 2-3 years (33%) while severe underweight (SAM) was more among 3 – 4 years children (27.5%) but the difference was not statistically significant ($p > 0.05$). Around 62% females were underweight and 51% were diagnosed as severe underweight in comparison with male in whom 38.1% underweight and 49% were severe underweight ($p > 0.05$).

Table 1: Distribution of children in relation with their Nutritional Status:

VARIABLES	NORMAL		UNDERWEIGHT		SEVERE UNDERWEIGHT		P-VALUE
	No. (n=200)	%	No. (n= 97)	%	No. (n= 51)	%	
AGE							
0-1 yr	10	5	1	1	1	2	P= 0.08
1-2 yrs	53	26.5	22	22.7	10	19.6	
2-3 yrs	44	22	32	33	10	19.6	
3-4 yrs	35	17.5	26	26.8	14	27.5	
4-5 yrs	38	19	9	9.3	10	19.6	
5-6 yrs	20	10	7	7.2	6	11.8	
GENDER							
Males	96	48	37	38.1	25	49	P= 0.238
Females	104	52	60	61.9	26	51	
MOTHER'S EDUCATION							
Illiterate	1	0.5	4	4.12	3	5.88	P=0.046*
Upto 12 th	184	92	90	92.78	46	90.2	
Graduate	15	7.5	3	3.09	2	3.92	
MOTHER'S OCCUPATION							
Unemployed	166	83	72	74.23	38	74.51	P= 0.151
Employed	34	17	25	25.8	13	25.5	
PER CAPITA INCOME							
Class I	12	6	4	4.1	4	7.8	P= 0.001*
Class II	52	26	26	26.8	8	15.7	
Class III	88	44	41	42.3	25	49	
Class IV	37	18.5	22	22.7	13	25.5	
Class V	11	5.5	4	4.1	1	2	

*Chi-square test, significance: $p < 0.05$.

Nutritional status of children studied in relation with various sociodemographic variables showed statistical significance with mother's education and per capita income ($p < 0.05$). Around 42.3% underweight and 49% severe underweight belonged to Class III.

DISCUSSION:

Present study showed that out of 348, 42.53% children were malnourished (27.87% underweight and 14.66% severe underweight). The factors associated with malnutrition were mother's educational status and socioeconomic status of the family ($p < 0.05$). In studies conducted by Sengupta P *et al* (29.5%),⁽⁹⁾ Rao VG *et al* (32.9%),⁽¹⁰⁾ Murarkar S *et al* (35.4%)⁽¹¹⁾ and Popat C *et al* (32.4%)⁽¹²⁾ the proportion of underweight was lower than our study. While, Sahoo DP *et al* (52.2%),⁽¹³⁾ Singh JP *et al* (53.86%),⁽¹⁴⁾ and Baghel AS *et al* (47.4%)⁽¹⁵⁾ reported higher proportion of underweight compared to our study. The difference may be due to wide distribution of regions where the studies were conducted.

Mean age of the children was 2.38 years ($\pm$ SD 1.36) with majority in age group of 1 to 3 years (49.13%). Underweight and severe underweight was seen mainly in the age group of 2-4 years with not statistical difference ($p > 0.05$). Similar finding were reported by Sahoo DP *et al* (55.7%)⁽¹³⁾ while Singh JP reported underweight more prevalent in 4-5 years age children ($p < 0.05$).⁽¹⁴⁾ None of the studies showed higher proportion of underweight in infants.

Current study reported higher males (54.6%) than females (45.4%). More females were suffering with underweight while more males were suffering with severe underweight but difference was not statistically significant. Singh JP *et al* reported malnutrition more in males compared to females.⁽¹⁴⁾ Equal proportion of malnutrition amongst males and females was shown by Sahoo DP *et al*.⁽¹³⁾

Around 93.68% mothers of children were educated upto 12th standard while only 2.3% mothers were illiterate which was very less compared to others studies. This association was statistically significant and in accordance with studies done by Sahoo DP *et al* (26.7%)⁽¹³⁾ Khargekar NC *et al* (45.33%)⁽¹⁶⁾ and Shenoy AG *et al* (20.37%).⁽¹⁷⁾ This can be explained by the fact that mother's educational status is directly correlated with the knowledge about proper child-rearing practices, better health-seeking attitude, awareness about breastfeeding and complementary feeding. Overall maternal education has a profound effect on nutritional status of the child.

In the study, the association between lower socioeconomic status and underweight was statistically significant ($P = 0.001$). Studies conducted by Sahoo DP *et al*.⁽¹³⁾ Silva VG *et al*.⁽¹⁸⁾ Dwivedi SN *et al*.⁽¹⁹⁾ and Avachat SS *et al*⁽²⁰⁾ came up with similar inferences. Better socioeconomic conditions of family are associated with more spending capacity on food, better living conditions and more availability of the resources per member. Current study reported association of mother's working status with underweight in their children ($p < 0.05$) similar to other study done by Sahoo DP *et al*,⁽¹³⁾ Joshi HS *et al*.⁽²¹⁾

Conclusions and Recommendations:

The findings of the present study revealed high proportion of underweight in the children of urban slum. Socioeconomic development along with nutrition education among the urban slum population needs to be ensured which is an important factor to combat malnutrition. Also, continuous monitoring and surveillance of Anganwadis could help in identifying underlying factors of malnutrition, thus help in the planning of preventive strategies.

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REFERENCES:

- Lal S. Combating malnutrition in India through community efforts. *Indian J Community Med* 2003;27:99-106.
- Lal S, Adarsh, Pankaj. Text book of Community Medicine; 3rd edition. New Delhi: C.B.S publishers, 2011.
- UNICEF. Levels and trends in child malnutrition UNICEF-WHO-World Bank Group joint child malnutrition estimates: key findings of the 2015 edition. New York: UNICEF, WHO, World Bank Group; 2015.
- UNICEF/WHO/World bank group. Joint child malnutrition estimate. 2017 Available at <https://data.unicef.org/topic/nutrition/malnutrition/>.
- National Family Health Survey 5; India Factsheet 2019-2021. Available at: http://rchiips.org/nfhs/NFHS-5_FCTS/India.pdf.
- Kapil U. Integrated Child Development Services (ICDS) scheme: a program for holistic development of children in India. *Indian J Pediatr*. India; 2002 Jul;69(7):597-601.
- Khairnar MR, Kumar PG, Kusumakar A. Updated BG prasad socioeconomic status

- classification for the year 2021. *J Indian Assoc Public Health Dent* 2021;19:154-5.
8. World Health Organization. WHO child growth standards: Methods and development: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age. Geneva: World Health Organization; 2006.
 9. Sengupta P, Philip N, Benjamin AI; Epidemiological correlates of under-nutrition in under-5years children in an urban slum of Ludhiana. *Health and Population: Perspectives and Issues*, 2010; 33 (1): 1-9.
 10. Rao VG, Yadav R, Dolla CK, Kumar S, Bhondeley MK, Ukey M. Undernutrition & childhood morbidities among tribal preschool children. *Indian J Med Res.*, 2005; 122: 43-47.
 11. Murarkar S, Gothankar J, Doke P. et al. Prevalence and determinants of under-nutrition among under-five children residing in urban slums and rural area, Maharashtra, India: a community-based cross-sectional study. *BMC Public Health* 20, 1559 (2020). <https://doi.org/10.1186/s12889-020-09642-0>.
 12. Popat C, Chaudhari A, Mazumdar V, Patel SV. A cross sectional study to measure the prevalence of malnutrition and factors associated with malnutrition among under five children of an urban slum of Vadodara city. *J Res Med Dent Sci* 2014;2:59-64.
 13. Sahoo DP, Dehmubed A, Jajulwar MB. An epidemiological study of acute malnutrition in children of age 6 months to 5 years in an Urban Slum of Mumbai, Maharashtra. *J Datta Meghe Inst Med Sci Univ* 2017;12:181-6.
 14. Singh JP, Gupta SB, Shrotriya VP, Singh PN. Study of Nutritional Status Among Under Five Children Attending Out Patient Department at A Primary Care Rural Hospital, Bareilly (UP) *Scholars Journal of Applied Medical Sciences* 2013;1(6):769-773.
 15. Baghel AS, Kale S, Verma A, Chourasiya SK. Study of Nutritional Status of Children Attending Anganwadi Centers of a District in Central India. *Nat J Community Med* 2018;9(7):546-550.
 16. Khargekar NC, Khargekar VC, Shingade PP. A cross-sectional study to assess the protein energy malnutrition in children between one to five years of age in a tribal area Parol, Thane district, Maharashtra, India. *Int J Community Med Public Health* 2016;3:112-20.
 17. Shenoy AG, Baravakar JP, Shinde RD. An epidemiological study of malnutrition in children from six months to five years of age to assess the prevalence and factors related to it, in a rural area of Palghar district of Maharashtra. *Int J Community Med Public Health* 2020;7.
 18. Silva VG, Silva SG. Nutritional Status of Anganwadi Children under the Integrated Child Development Services Scheme in a Rural Area in Goa. *Int J Sci Stud* 2015;3(7):217-221.
 19. Dwivedi SN, Banerjee N, Yadav OP. Malnutrition among children in an urban Indian slum and its associations. *Indian J Matern Child Health* 1992;3:79-81.
 20. Avachat SS, Phalke VD, Phalke DB, Aarif SM, Kalakoti P. A cross-sectional study of socio-demographic determinants of recurrent diarrhoea among children under five of rural area of Western Maharashtra, India. *Australas Med J* 2011;4:72-5.
 21. Joshi HS, Gupta R, Joshi MC, Mahajan V. Determinants of nutritional status of school children – A cross sectional study in the Western region of Nepal. *NJIRM* 2011;2:10-5