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STUDY OF MALNUTRITION AMONG 0 – 3 YEARS OF CHILDREN IN URBAN SLUM OF JAIPUR

Community Medicine

Dr Sumit Ahluwalia*
Assisant professor, at NIMS Medical College, Jaipur. *Corresponding Author

ABSTRACT

Background: Malnutrition is prevalent in developing countries like India and is mostly seen in lower socio economic strata due to illiteracy and other factors affecting it.
Aims and Objective: to assess the malnutrition and its correlation with socio economic status of family and educational status of mother
Material and Method: Based on reported prevalence of wasting 23% in NFHS-3 (2005-06) sample size was arrived N=1.96 X 1.96 Pq/L2
Results: In present study 54% of the families were of nuclear type and majority of families belonged to Socio-economic class-5 (63.66%), 60% mothers were illiterate. 37% children showed malnutrition as per IAP classification and 59.66% showed stunting while 53% children showed malnutrition as per mid arm circumference measurements.
Conclusion: Proportion of boys who are stunted is more as compared to girls, showing some sort of gender bias. Secondly proportion of children who are stunted is more in lower socioeconomic class and in illiterate mother.

KEYWORDS

Malnutrition, stunting, mid arm circumference, literacy.

INTRODUCTION

According to United Nation's Declaration of Rights of the child– *"CHILDREN'S ARE NATION'S SUPREMELY IMPORTANT ASSET."*

Preschool age is crucial and transitional phase in the development of child and this age is vulnerable to social and health hazards. The child is struggling to strike a balance with ecological forces that are trying to impinge upon their health and future development, so they deserve special attention by their family, community and the Government.

Since antiquity the life of children is conditioned by standard of living, education of family, economic levels in the community and harmony within the family, which constitute the essentials of their daily life and that determines the health and disease state of children. The nutritional status of under five children is one of the indicators of household well-being and the determinant of child survival.[1]

Preschool mortality in India is as high as 4.9 percent of all deaths, malnutrition was shown to be an underlying cause in 3.4 percent of all deaths.[2]

In our country children under three years constitute 11.2 percent of population. Infants (0-1) year constitute 2.92 percent of total population in India, although chances of survival of these newborns has improved by fifty percent in last twenty years, the first few hours, days and months of their lives are crucial.[3]

Child malnutrition is one of the most important causes of infant and child mortality.[4] In Sub-Saharan Africa it accounts for about two percent of deaths in under five children.[5] Malnutrition may adversely affect the child's intellectual development and consequently, health and productivity in later life.[6] The prevalence of moderate to severe forms of malnutrition (thirty to forty percent) was found to be consistently higher during the second/ third year of life. Such findings provide strong basis for targeting preventive strategies for children less than three years of age.[7]

Child malnutrition is one of the health status indicator that the WHO recommends for assessing equity in health.[8]

NFHS -3 reveals stunting in 45 percent, underweight in 40 percent and wasting in 23 percent of children under three years of age. Inspite of declining trend of chronic malnutrition in India concerns remain for its disproportionate burden on the poor.[9] Health vision 2020-India, states that IMR among the poorest quintile of population is 2.5 times higher than among the richest.[10]

AIM AND OBJECTIVES

The aim of this study is to assess health status of children below three years, socio-demographic factors affecting it and determine their status of malnutrition with following objectives:

1. To assess malnutrition in children of 0-3 year age group.
2. To study socio-cultural factors related malnutrition.

MATERIAL AND METHODS

STUDY DESIGN - Cross–sectional community based study. Children under three years of age and the information was obtained from child's mother. An urban slum set up of Jaipur, India from August 2018 to August 2019

SAMPLE SIZE: Based on reported prevalence of wasting in 23 percent of children under three NFHS-3 (2005-06), A sample size of 273 was arrived at by standardized sample technique.

N=1.96 X 1.96 Pq/L2.[11]
3.8416 X 0.23X0.77 / 0.0025 = 272.13
Which was rounded of to 300 study participants

STUDY DURATION – From August 2011 to July 2014.

Socio-economic scale – Modified *PRASAD'S CLASSIFICATION* for the year 2011 was be used for determining the socio-economic status.

Social Class	Per Capita Monthly Income	
	Prasad's Classification	Urban Modified for 2011
1. Upper High Class	100 & Above	10,000 & Above
2. High Class	50-99	5000-9999
3. Upper Middle	30-49	3000-4999
4. Lower Middle	15-29	1500-2999
5. Poor	Below 15	500 -1499
6. Very Poor / BPL		Below 500

Multiplication factor= 0.53 multiply[12] CPI of that year for industrial worker in Jaipur for 2011 was 190 and CPI for commodity group of Rajasthan was 211.15.[13]

NUTRITIONAL ASSESSMENT

Mean height and weight of study population was compared with *WHO-NCHS STANDARDS*.[14]

Assessment of Malnutrition was done by *IAP CLAASSIFICATION*

Nutritional Status	Weight for Age (Percent of Expected)
Normal	>80
Grade-1 PEM	71-80
Grade-2 PEM	61-70
Grade-3 PEM	51-60
Grade-4 PEM	<50

HEIGHT FOR AGE BY WATERLOW'S CLASSIFICATION

Nutritional Status	Height for Age (Percent of Expected)

Normal	>95
1st Degree	90-95
2nd Degree	85-90
3rd Degree	< 85

MID ARM CIRCUMFERENCE

Was measured accurately at mid-point of left upper arm hanging at the side of the trunk employing firm pressure during measurement and was assessed by *ARNOLD'S CLASSIFICATION* :

1. Normal- greater than 13.5 cm
2. Mild to moderate PEM - 12.5 -13.4 cm
3. Severe PEM – less than 12.4 cm

OBSERVATIONS AND RESULTS

Table-1 : Distribution of families according to their type and Religion

Type of family	Hindu (no, %)	Muslim (no %)	Total (no %)
Joint	28 (35.44%)	51 (64.55%)	79(45.40%)
Nuclear	54 (65.8%)	41 (43.15%)	95 (54.5%)
Total	82 (47.1%)	92 (52.8%)	174 (100%)

Table-1 shows that 64.55% Muslim and 35.44% Hindu families were joint and it is also seen that 54.59% families were nuclear and 45.40% were of joint type. Majority of families 28(35.44%) were Hindu joint.

Table 2. Distribution of Children as per Socioeconomic Class and Literacy status of Mother

Socioeconomic class of Mother	No. (%)	Education status of mother	No. (%)
SE-2	2 (0.6)	Illiterate	180 (60.0)
SE-3	11 (3.66)	Primary	26 (8.66)
SE-4	88 (29.33)	Secondary	43 (14.33)
SE-5	191 (63.66)	Higher Secondary	37 (12.33)
SE-6	8 (2.66)	Graduate	14 (4.66)
Total	300 (100)	**Total**	300 (100)

Table-2 shows191 (63.66%) belong to SE class -5, there were only 8(2.66% of children in socio-economic class-6. Thus both constituted 66.32% of total children. 11 (3.66%) and 88 (29.33%) belonged to SE Class 3 and 4 respectively and only 2 (0.6%) belonged to SE class 2.

Majority 180 mothers (60.00%) were illiterate, 43(14.33%) mothers had secondary level of education, 37(12.33%) had higher secondary, 26(8.66%) mothers had primary and 14(4.66%) were graduate.

Table – 3 : Degree of malnutrition of study subjects based on IAP Classification.

W/A	Male	Female	Total
Normal (>80%)	92	97	189
Grade-1 (71-80%)	32	43	75
Grade-2 (61-70%)	19	12	31
Grade-3 (51-60%)	3	2	5
Grade-4 (<50%)	0	0	0
Total	146	154	300

Table-3 shows that Overall, 111 (37%) children were malnourished, 75 (67.56%) belong to grade 1, 31 (27.92%) showed grade 2 and 5 (4.50%) showed grade 3 malnutrition. 54 (48.6%) boys are malnourished as compared to 57 (51.35%) girls.

Table-4 : Grades of stunting according to Waterlow's Classific ation.

Grades	Male	Female	Total
Normal (>95%)	59	62	121
1st degree (90-95%)	38	37	75
2nd degree (85-90%)	37	38	75
3rd degree(<85%)	12	17	29
Total	146	154	300

Table-4 shows that out of 179 (59.66%) subjects who depicted stunting, 75 (41.8%) were 1st degree, 75 (41.8%) were 2nd degree and 29 (16.20%) were 3rd degree.

Table – 5 : Sex wise distribution of malnourished children based on Mid-arm circumference in children 6-36 months of age.

MID ARM circumference (cms)	Male		Female		Total	
	No.	%	No.	%	No.	%
Normal (>13.5)	72	57.6	53	42.4	125	46.12
Moderate (13.4-12.5)	42	43.75	54	56.25	96	35.42
Severe malnourished (<12.4)	22	44.0	28	56.0	50	18.45
Total	136	50.18	135	49.81	271	100.0

Table -5 shows Moderate and severe degree of malnourishment was more in females 54 (56.25%) and 28 (56.0%) respectively, similarly figures for males are 42 (43.75%) and 22 (44.0%) as per mid arm circumference measurements.

Table– 6 :Sex wise distribution of stunting in relation to Socio- Economic Status.

SE Status	Degree-1		Degree-2		Degree-3		Total
	Male	Female	Male	Female	Male	Female	
SE2	0	1	0	0	0	0	1
SE3	0	1	1	1	2	0	5
SE4	17	14	9	9	2	8	59
SE5	20	20	26	28	8	8	110
SE6	1	1	1	0	0	1	4
Total	38	37	37	38	12	17	179

X2=1.022 df=1, P>0.05

Table-6 shows that though proportion of stunted children is higher 114 (63.68%), in lower socioeconomic group of 5 and 6, the statistical association between normal children (121) and stunted (179) with socio-economic status was found to be non significant.

Table–7: Sex wise distribution of stunting in relation to mothers education.

Education	Degree-1		Degree-2		Degree-3		Total
	Male	Female	Male	Female	Male	Female	
Illiterate	26	19	22	27	8	9	111
Primary	2	2	4	2	0	1	11
Middle	5	10	6	5	0	2	28
Secondary	4	6	5	2	3	3	23
Graduate	1	0	0	2	1	2	6
Total	38	37	37	38	12	17	179

X2=0.741 df=1, P>0.05

Table-7 shows that out of 180 mothers who are illiterate, 111 (61.6%) children show stunting, and out of 120 literate mothers 68 (56.66%) children are stunted. Though proportion of stunted children is more in illiterate mothers, the association between mothers literacy status and stunting in study population is statistically insignificant.

DISCUSSION

In urban slum 49.50 percent were joint families and 54.59 percent were nuclear famiies. Similar findings were seen by Madhu B Singh. [15]

and Sandeep Sachdeva .[16] where 59.5 percent and 61 percent were nuclear, in contrast to his findings Tamoghna Biswas. [17]observed that 94.2 percent families were nuclear.

in urban slum 47.26 percent were Hindus and rest 52.87 percent were Muslims, similar to findings of Sandeep Sachdeva..[16] where 51.46 percent children were Muslims. But different finding was noted by S.Malik.[18]where 66 percent children were Hindus and 34 percent were Muslims.

in urban slum also 92.9 percent belonged to same class 63.66percent class 5 and 29.33percent to class 4 respectively, quite similar findings were observed by A.L. Soni.[19] where 72.8 percent belonged to SE Class 4 and 5, Kamruzzaman MK[20] where all respondents were low to lower middle class, Sandeep sachdeva[16]where 76.5 percent were lower socio-economic group, Tamoghna Biswas.[17] found 52.7 percent belonged to SE class 4, while contrast findings were seen by Jayant Despande D[21] where majority were SE Class 3 and 4, 28 percent and 31 percent respectively.

60.0 percent in urban slum were illiterates and 40 percent were literates, similar findings were seen by S. Malik.[18] where 56.66percent were illiterates R.J. Yadav[22]. where 52.45 percent were illiterates, Census[23]. literacy for Rajasthan was 43.9 percent which matches with urban slum, Rahman M[24] showed that 78.3 percent of respondents were illiterate, Pragati chabra[25] found 54.4 percent mothers to be illiterate, Sandeep Sachdeva[16] found 60.89 percent mothers were illiterates.

In urban slum 37 percent are underweight (48.64 percent were males and 51.35 percent were females). and 59.66 percent (48.60 percent were males and 51.39 percent) similarly 67.56 percent had first grade and 27.29 percent and 4.50percent had second and third grade malnutrition 41.8 percent,41.8 percent and 16.20 percent are having first, second and third degree stunting respectively, Bhanderi D[26] found prevalence of underweight 43.67percent and stunting in 50.3percent similar to our findings higher prevalence was noted by Madhu B Singh. [15] under nutrition in (81 percent). Singh MB[27]. found stunting in 53 percent and underweight in 60 percent, A.L. Soni[19]. noted very high prevalence of malnutrition 82.5 percent While findings of Sandeep Sachdeva[16] shows lower prevalence as compared to our study, 27.56 percent were underweight and 29.7 percent were stunted, while higher prevalence was noted by Tamoghna Biswas[17] 64.9 percent stunted and 64.9percent wasted.

Moderate and severe degree of malnourishment was more in females 54 (56.25%) and 28 (56.0%) respectively, similarly figures for males are 42 (43.75%) and 22 (44.0%). Jayant, Despande D[21] found 57 percent were malnourished as per mid-arm circumference.

Proportion of stunted children is higher 114 (63.68%), in lower socioeconomic group of 5 and 6 it is not statistically significant.

Out of 180 mothers who are illiterate in urban slum, 111 (61.6%) children show stunting, and out of 120 literate mothers, 68 (56.66%) children are stunted. Though proportion of stunted children is more in illiterate mothers , the association is statistically insignificant.

Bhandari D, and Choudhary SK[26] studied on an epidemiological study of health and nutritional status of under five in semi urban community of Gujrat observed that the prevalence of underweight (W/A less than two SD) in 43.67 percent, stunting in 50.3 percent with higher prevalence in second year life. Prevalence of wasting (W/H less than two SD) in 23.2 percent, with peak in third year of life. Nutritional parameters showed a significant association with parent's education, Socioeconomic status, family size and environmental condition.

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REFERENCES

1. Thomas D, Strauss J, Henriques MH: Child survival, height for age and house hold characteristics in Brazil: Journal of Development Economics 1990,33:197-234).
2. WHO (1995), Bridging the Gaps, The World Health Report, Report of Director General
3. Park K : Park's Text Book of Preventive and Social Medicine ; Jabalpur : M/S Banarsidas Bhanot : 2009.
4. Pevetier DL, Frongillo EA, Schroeder DG, Habicht JP, The effects of malnutrition on child mortality in developing countries: bulletin of WHO 1995, 73(4): 443-448.)
5. Nemer L, Gelband H, Jha P: The evidence base for interventions to reduce malnutrition in children under five and school age in low and middle income countries : Commission on macro-economics and Health, CMH Working paper series, pg no. WGS:11, GENEVA: WHO 2001.
6. WHO: Physical status: the use and interpretation of anthropometry, Technical Report Series No. 854: GENEVA, WHO 1995.
7. Kapur Deeksha, Sharma Sushma and Agrawal Kailash Nath, Dietary intake and growth pattern of children nine to thirty six months of age in an urban slum in Delhi, Indian Journal of Pediatrics, April 17, 2005: 42: 351-356.
8. Braneman P : Monitoring equity in Health: A policy oriented approach in low and middle income countries WHO/CHS/HSS/98.1, Equity initiative paper no. 3, GENEVA, WHO, 1998.
9. Nutritional status of children in India, household SE condition in the contextual determinant : Barun Kanjilal, Papiya G Mazumdar, Moumita Mukerjee and Hafizur Rehman : Indian journal for equity in Health: 21.3.2011.
10. Kishore J: J Kishor's National Health Program's of India, New Delhi, Century Publications; 7th Edition.
11. Lawanga S.K., Cho – Yook Tye, O. Ayeni. Teaching health statistics Lesson and Seminar outlines : second edition WHO, Geneva 1999.
12. Social classification; the need to update in the present scenario, A. K. Agrawal, IJCM, Vol 33, no.1,January -2008 pg 50-51)
13. Oral health status and treatment needs of rural population of Ambala, Haryana, ISPUB: http/www. Ispub. Com/ journal/the internet journal of epidemiology/ Volume,8 accessed on 02/01/2020
14. KE Elizabeth, nutrition and child development, 3rd edition, pg 146-147.
15. Singh MB, Lakshminarayan J, Fotedar Ranjana, Study on nutritional status in desert area of Rajasthan, Public, Health, Nutrition, 2006, 9 (8) ; 190-195
16. Sachdeva Sandeep, Ali Amir, Alam Seema, Khan Zulfia, Najam, Khalique, M.A. Ansari, Global developmental delay and its determinant among urban infants and Toddlers: A cross sectional study, Indian journal of Pediatrics, 2010, 77 : 975-980.
17. M Biswas Tamoghna, Dr. Kumar Mandal Pankaj, Dr Biswas Samarendra, Assessment of Health, Nutrition and Immunization status amongst under five children in migratory brick kiln population of periurban Kolkata, India, 2011, Sudanese Journal of Public Health: 6 (11).
18. Malik S, Mitra S.P, Roy A, Basu S.S., Saha A., Munsi A.K., Malnutrition –A Missed opportunity to treat at Tertiary Care, Indian Journal of Community Medicine, Sep,2006: 31 (3) : 196-197.
19. Soni A.L., Singh R.N. and Gupta B.D., Nutritional Disorders in rural Rajasthan, Indian Journal of Pediatrics, 1980, 47(3) : 199-202.
20. Kamruzzaman MK, Kamrun N, Hamudur R, Salam MA, ASM Mortoza, Jannatal, Feeding Pattern of Children under two years in some selected villages, Bangladesh Journal of Medical Sciences, oct. 2009: 8(4): 110-116
21. Jayant, Deshpande D socio-cultural practices in relation to breast feeding, weaning and in child rearing among Indian mothers and assessment of nutritional status of children under five in rural India, Australasian Medical Journal, July 28,2010.
22. R.J Yadav., Singh P., Immunization status of children in the state of Madhya Pradesh, Indian Journal of Community Medicine, 2004 : 29(3): 2004-07.v
23. Censes India, 2011 (http: // www. Censes India, gov, in) Assessed on 3.10.201
24. Rahman M, Banerjee M, Akhter FU, Vaccination status of tribal mother and their under five children, Mymensingh Medical Journal, January 2006, 15 (1); 55-7
25. Chabra Pragati, Nair Parvathy, Gupta Anita, Sandhir Meenakshi and Kanan A.T., Immunization in urbanized Villages of Delhi, Indian Journal of Pediatrics, feb 2007 : 74(2) :131-134.
26. Banderi D, Choudhary SK. An Epidemiological study of Health and Nutritional status of under five year in semi urban community of Gujarat, Indian Journal of Public Health, October- December 2006, 50 (4) ; 213-9.
27. Singh MB, Fotedar R, Lakshaminarayan J, Anand PK. Studies on nutritional status of children ages 0-5 year in a drought affected desert area of western Rajasthan, India, Public Health Nutrition, December, 2006, 9 (8) ; 961-7.