AN EPIDEMIOLOGICAL STUDY OF MALNUTRITION AMONG UNDER FIVE CHILDREN LIVING IN PREDOMINANTLY TRIBAL BLOCK OF JHADOL IN DISTRICT UDAIPUR, RAJASTHAN

Social Science

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ABSTRACT

To determine the prevalence and risk factors of under-nutrition amongst under-five children living in Jhadol Block of Udaipur, a cross-sectional survey of 350 randomly selected under-five children was carried out. The selected samples were taken out of the total 48426 children living in Jhadol Block. The findings reveal that 41.1% of the children were found to be stunted, 26% of them wasted and 20.3% of them were under-weight. Female children, children aged 48-59 months, children born to older mothers aged 20-29 years, children with 1-2 siblings, low-birth-weight, having an illiterate mother or unskilled labourer father were observed to be at the highest risk of being under-nourished. Birth spacing of <2 years, incomplete vaccination status, frequent infections and worm infestation were also found to be important predisposing factors for childhood malnutrition. The study demonstrates the multiple risk factors for childhood malnutrition, requiring a multi-pronged and multi-sectorial approach in the fight against the silent killer of childhood malnutrition.

KEYWORDS

Under-five, Under-nutrition, NCHS standard

INTRODUCTION:

In India malnutrition among under – five children is a very serious concern for the health.¹ Statistics shows that the prevalence of under-weight children in India is highest in the world and approximately double than the sub-Saharan Africa.² Round about 2.3 million deaths among 6-60 months that is preschool aged children in developing countries are observed with malnutrition every year, which is forty one percentage of the overall deaths in this age group of pre – school children.³

Malnutrition is both under nutrition and over-nutrition ranging from severe nutrient deficiencies to extreme obesity.⁴ Nutrition plays a key role in mental, physical, and emotional development of children and much emphasis has been given to provide good nutrition to growing populations especially in the early years of life.⁵

Therefore assessment of malnutrition of pre-school child is a sensitive indicator of health of the child as well as community health and nutrition.

According to the target set by Millennium Development goals (MDGs), under mal - nutrition should be halves by 2015 which was not achieved while sustainable development targets to end all forms of by 2030 including stunting and wasting.⁴

Thus, the regular growth to monitor investigations are compulsory to get the data regarding the current status of under nourished of the important pre-school age group of under-five years.

OBJECTIVE

- To assess the prevalence of undernourished pre-school children using various available indicators of predominantly tribal area in district Udaipur of Rajasthan.

METHODOLOGY AND MATERIAL:

Study type: Observational Cross- Sectional study

Study Population: Pre – School children belong to under five years age group.

MATERIALS AND METHODS:

The population of children of age 0 – 6 that is under five years in Jhadol

Block of Udaipur district is 48426 according to Census 2011 which is 19 % of the total population. Out of that 24738 are male children and 23688 are female children between the ages 0 – 6 years.

Jhadol is one of the 23 blocks (Tehsils) of 5 districts of Rajasthan comes in the category of scheduled area under the Fifth Schedule of the Constitution of India. The Provision of 5th Scheduled become a safeguard to the Tribal People living in scheduled area of 9 states in India against alienation of their lands and natural resources to non-tribal people.

In present study a total of 350 children were selected randomly in the age of under five years for the cross sectional study. Out of that 191 (54.6%) were Male and 159 (45.4%) were female with male: female ratio 1.2:1.

The anthropometric measurements of male and female children were calculated using WHO standard techniques. Most of all possible measurements were taken for accuracy of the age of children under study. Also the age of the child was recorded in complete months. The body measurements and anthropometric indices were used for the present study to measure and assess the nutritional status. Anthropometry is a universal inexpensive, applicable, non- invasive, immediate applicable technique to assess children's development patterns during early age of life.^{6,7} The z score classification system express anthropometric value in terms of standard deviation or above reference mean or median value.

Classification of children using z-score among underweight, stunning and wasting.

Underweight	Stunning	Wasting
< -2 SD weight for Age (WAZ)	< -2 SD Height for Age (HAZ)	< -2 SD Weight for Height (WHZ)

SD= Standard Deviation

RESULT AND DISCUSSION:

The anthropometry results suggests that out of 350 children 307 (87.7%) were found malnourished with -2 SD z-score. Out of that 71 (20.3%), 145 (41.4%), 91 (26%) were found underweight, stunning and wasting respectively as per the classification of Z score. In this study chi-square test was used to test the association between different variables and nutritional status.

Table 1: Nutritional Status Of Under - Five Pre - School Children On The Basis Of Socio-demographic Factors

Factors	Underweight (n = 71) (20.3%)	Stunting (n = 145) (41.4%)	Wasting (n = 91) (26%)	Total (n = 350) (100%)	Chi Square Value	P value
Sex						
Male	36(50.7)	68(46.9)	40(43.9)	191(54.6)	0.72	0.69
Female	35(49.3)	77(53.1)	51(56.1)	159(45.4)		
Age group						

0-11 months	15(21.1)	23(15.9)	7(7.7)	59(16.9)	13.5	0.09	
12-23 months	17(23.9)	26(17.9)	15(16.5)	52(14.8)			
24-35 months	12(16.9)	20(13.8)	12(13.2)	46(13.1)			
36-47 months	15(21.1)	30(20.7)	22(24.2)	62(17.7)			
48-59 months	12(16.9)	46(31.7)	35(38.2)	131(37.4)			
Mother's age at child birth							
< 20years	1(1.4)	1(0.7)	1(1.1)	10(2.9)	13.4	0.01*	
20-29 years	52(73.2)	133(91.7)	74(81.3)	216(61.7)			
30-49 years	18(25.3)	11(7.6)	16(17.6)	124(35.4)			
Mother's Education							
Illiterate	25(35.2)	40(27.6)	30(32.9)	72(20.6)	4.9	0.28	
Middle School	26(36.6)	42(29.9)	27(29.7)	163(46.6)			
High school & above	20(28.2)	63(43.5)	34(37.4)	115(32.8)			
Father's Occupation							
Unskilled labor	17(23.9)	12(8.3)	19(20.9)	44(12.6)	13.3	0.01*	
Skilled labor	33(46.5)	95(65.5)	49(53.9)	172(49.1)			
Others	21(29.6)	38(26.2)	23(25.3)	134(38.3)			
Family type							
Nuclear	26(36.6)	47(32.4)	13(14.3)	68(19.4)	12.5	0.00*	
Joint	45(63.4)	98(67.6)	78(85.7)	282(80.6)			
Monthly per capita Family Income							
>399	32(45.1)	97(66.9)	43(47.3)	172(49.1)	13.6	0.01*	
240-399	25(35.2)	29(20)	28(30.8)	106(30.3)			
<240	14(19.7)	19(13.1)	20(21.9)	72(20.6)			

***p<0.05, significant at 5% Level of Significance**

Sex, Age and Mother's education showed no significant correlation with undernourished any combination. ($p>0.05$) Similar results were observed by most of the researchers.⁸⁻¹⁰ However Bhatia et.al found male to be more undernourished than female.¹¹

Age group between 48-59 months age showed height prevalence of 131(37.4%) malnourished of underweight or stunted or wasting or

any combination of these three followed by 36-47 months age group 62(17.7%). Similar results were found in the study done in Tamilnadu.¹² Mother's age of 20-29 years at child birth showed highest prevalence 216(61.7%) of undernourished children followed by 30-49 years age of mothers 124(35.4%). Which showed significantly highly associated with nutritional status. ($p<0.01$) Similarly Father's occupation, Family Type and Monthly per capita Family income also showed significant association with nutritional status. ($p<0.05$) (Table 1)

Table 2: Nutritional Status Of Under-five Pre-school Children On The Basis Of Some Mch Factors.

Factors	Underweight (n = 71) (20.3%)	Stunting (n = 145) (41.4%)	Wasting (n = 91) (26%)	Total (n = 350) (100%)	Chi square value	P value
Number of Siblings						
None	10(14.1)	38(26.2)	15(16.5)	52(14.8)	9.81	0.04*
1–2	56(78.8)	86(59.3)	62(68.1)	194(55.4)		
3	5(7.04)	21(14.4)	14(15.4)	84(24)		
Preceding Birth Interval						
< 2 years	51(71.8)	109(75.2)	68(74.7)	273(78)	0.29	0.86
years	20(28.2)	36(24.8)	23(25.3)	97(27.7)		
Low Birth Weight						
Yes	29(40.8)	57(39.3)	16(17.6)	123(35.1)	14.32	0.00*
No	42(59.1)	88(60.7)	75(82.4)	227(64.9)		
Exclusive Breastfeeding						
< 4 months	14(19.7)	35(24.1)	14(15.4)	73(20.9)	9.23	0.04*
4 – 6 months	42(59.2)	98(67.6)	62(68.1)	223(63.7)		
>6 months	15(21.1)	12(8.27)	15(16.5)	54(15.4)		
Vaccination Status						
Complete	62(87.3)	136(93.8)	75(82.4)	267(76.3)	7.58	0.02*
Incomplete	9(12.67)	9(6.2)	16(17.6)	83(23.7)		
History of Infections						
Up to 2 episodes / year	29(40.8)	59(40.7)	43(47.3)	159(45.4)	7.08	0.13
3 – 4 episodes / year	19(26.7)	48(33.1)	34(37.4)	130(37.1)		
>4 episodes / year	23(32.4)	38(26.2)	14(15.4)	61(17.4)		
Worm Infection						
Yes	21(29.6)	27(18.6)	14(15.4)	26(7.4)	5.40	0.06
No	50(70.4)	118(81.4)	77(84.6)	324(92.6)		

***p<0.05, significant at 5% Level of Significance**

The risk of being underweight, stunted and wasted is all directly proportional to the number of siblings with maximum proportions in all categories being found in children with 1-2 followed by ≥ 3 siblings. This is statistically significant for underweight ($p<0.05$) and for wasting ($p<0.05$). Benjamin and Zachariah⁸ also found an increasing prevalence of PEM with increasing number of siblings.

Prevalence of Underweight and stunted was found high in the children

having birth placing <2 years however it was not statistically significant. ($p>0.05$) Which was similar to the findings of Rayhan and Khan.¹³

Low birth weight, Exclusive Breastfeeding and Vaccination status found to be significantly associated with the nutrition status of children. ($p<0.05$) In a study by Rayhan and Khan¹³, both bi-variants and multivariate analysis indicated size of the baby at birth as an important risk factor for all these three indices of malnutrition.

Figure 1: Sex Wise Distribution Of Children As Per Nutrition Status

Figure 1 showed all three indices of under nutrition among male and female. In present study male and female did not show any significant difference with respect to nutrition status. Which contradict to the study done by Bhatia et.al.¹¹

CONCLUSION:

In present study the prevalence of underweight children (Second and Third degree malnutrition), stunting and wasting in the population under study was found high. Female children, 48-59 months old, those born to older mothers aged 20-29 years, those having 1-2 siblings, the LBW, those exclusively breast-fed either too long(>6 months) or too less(<4 months), children with an illiterate mother and unskilled laborer father were found to be more risky of being under-nourished. Birth spacing of <2 years, frequent infections, incomplete vaccination status, and worm infestation were also found to be considerable factors for childhood malnutrition. Our study demonstrates the multiple risk factors for childhood malnutrition, encompassing sectors other than health alone, including social and economic sectors, requiring action at all levels and a multi-pronged and multispectral approach in the fight against the silent killer of childhood malnutrition. However future community-based researches need to focus on how to deliver this multi-pronged and multi-sectorial approach with the main challenge of how to engage the stakeholders in an efficient way towards changing the face of urban slums and poverty.

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