Burden of Malnutrition among under Five Year Children in Field Practice Area of Rural Health Training Center (RHTC) Attached to SMS Medical College, Jaipur (Rajasthan) India

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Abstract*—Malnutrition in under five children is a very important public health problem of developing countries like India. Malnutrition in children is a important risk factor for child mortality. So this study was conducted on 700 under five children to find out prevalence of various types of malnutrition in under five children of rural community of field practice area of RHTC attached to SMS Medical College, Jaipur (Rajasthan) India. Prevalence of under-weight, stunting and wasting was found 32.40%, 39.29% and 20.14%, respectively in present study as per 'Z' score criteria. As per Shakir's tape 14% of under five children were in red zone and 26.57% were in yellow zone. According to Mid Upper Arm Circumference (MUAC) classification, 31.0% were had severe wasting while 60 % had mild to moderate wasting condition. It is concluded from this study that prevalence of under-weight, stunting and wasting was quite high in present study. So there is strong need for researches to find out associating factors of these malnutrition and to make aware the mothers of under five children about healthy development of under five children.*

Keywords: Malnutrition, Under Five Children, Stunting, Wasting, Underweight.

I. INTRODUCTION

The optimal growth of infants & young children is fundamental for their future. Malnutrition is one of the most important public health problems in developing countries, including India

In India, like many developing countries, the most common nutritional problems in infancy and early childhood are stunting, wasting; iron-deficiency anaemia, poverty and low birth weight.[1,2] Malnutrition during the first two years of life can lead to mortality and morbidity in childhood[3,4] and is one of the most preventable risk factors for mortality.[5] According to NFHS-4[6] 38%, 21%, 7.5% and 35.7% of under-5 children were stunted, wasted, severely wasted and underweight respectively in India.[6]

Systematic reviews of the effectiveness of some of the major nutrition interventions, such as promotion of breastfeeding,[7] promotion of complementary feeding through education or food provision[8,9] and supplementation with single or multiple nutrients[10,11] usually show significant impacts on behaviour but modest and context dependent impacts on malnutrition prevalence[12]. Moreover, few children in the developing world currently benefit from optimal breastfeeding practices, as well as sufficient dietary diversity and meal frequency.[3]

In particular, a reduction in the mortality of children is a key Millennium Developmental Goal (MDG), and a reduction in malnourishment among children is an important indicator of progress towards that goal.

Various studies[4,6,13-15] were conducted to find out the burden of malnutrition in under five children in various regions of the country. So this study was conducted to find out prevalence of malnutrition among under five years of children in field practice area of Rural Health Training Centre, Naila Jaipur (Rajasthan) India.

II. METHODOLOGY

This cross sectional type of observational study was conducted on 700 under five children of rural community of Jamuwaramgarh block infield practice area of Rural Health Training Centre, Naila Jaipur (Rajasthan) India in year 2019.

Sample size was calculated at 95% confidence level assuming a prevalence of malnutrition 41.3% among under five children.[4] At the relative allowable error of 10% of prevalence, required sample size was 568 under five children. Assuming non-response rate to be 10%, minimum target sample size was 640. However, best efforts will be made to increase sample size as maximum as possible to enhance the precision. Finally 700 under five children were taken for this study.

Present study was conducted at 10 anganwadi centres out of 25 anganwadi centers of Naila which were selected randomly. Complete list of families covered by selected anganwadi centers was procured and 50% of the families from the list were selected to be included in the study using random number table. It was decided that if selected family is not available at the home at the time of survey for two attempts, it was replaced by its immediate next family in vicinity. This process was repeated till desired sample size of 700 of children less than 5years are achieved.

After approaching to the selected family, nature and purpose of the study was explained to the head of family. After obtaining there written consent, detailed history regarding their socio -demographic characteristics and obstetric, immunization, breast feeding and weaning history was taken.

For study purpose stunting was defined as height-for- age Z-score < -2SD, wasting was defined as weight for height Z score <-2SD and under nutrition defined as weight for age Z score <-2SD.[16]

Data thus collected were compiled in the form of master chart in Microsoft Excel 2010. Qualitative data were expressed in percentage and proportion and quantitative data were expressed in means with standard deviation.

III. RESULTS

Out of 700 children covered, 37% were below 1 year and 47.3% were 1-3 years of age group. There not much difference in numbers of male (51.7%) population and female population (48.3%). The mean age of under-five children was almost 22.03months with standard deviation of 16.47 months. Majorities (90%) of the households were Hindus. And 29% of the households were nuclear families, while 48% were joint families. The average family size was 7.45 (±3.3). Around one thirds household were ST/SC categories and 38.7% were OBC while 27.7% were general caste. (Table 1).

Table 1
Socio-demographic characteristics of study population

S. No.	Socio-demographic Variables		Number	Percent
1	Sex	**Males**	362	51.71
		Females	338	48.29
2	Age (in months)	0-6	145	20.71
		6-12	116	16.57
		13-36	331	47.29
		37-59	108	15.43
3	Type of Family	Nuclear	208	29.71
		Joint	337	48.14
		Extended	155	22.14
4	Family Size	1-4	140	20.00
		4-9	376	53.71
		≥10	184	26.29
5	Religion of Family	Hindu	632	90.29
		Muslim	68	9.71
6	Caste of Family	General	194	27.71
		O.B.C	271	38.71
		S.C/S.T	235	33.57

Majority (98%) children were delivered in hospital/institution. Premature birth was found in 17.6% and Low Birth Weight babies was found in 23.1%. First birth order of under fives were in 40.6% of children followed by 2nd, 3rd and 4th birth order which was 36.6%, 16.9% and 6% respectively. Exclusive breast feeding was practiced by 77.7% mothers of under fives and bottle feeding was practiced in 40.4% mothers of under five children. The mean body weight of study population was 8.86±3.33 Kg while average height was 76.45±14.36 Cm. (Table 2)

Table 2
Personal Characteristics of study population

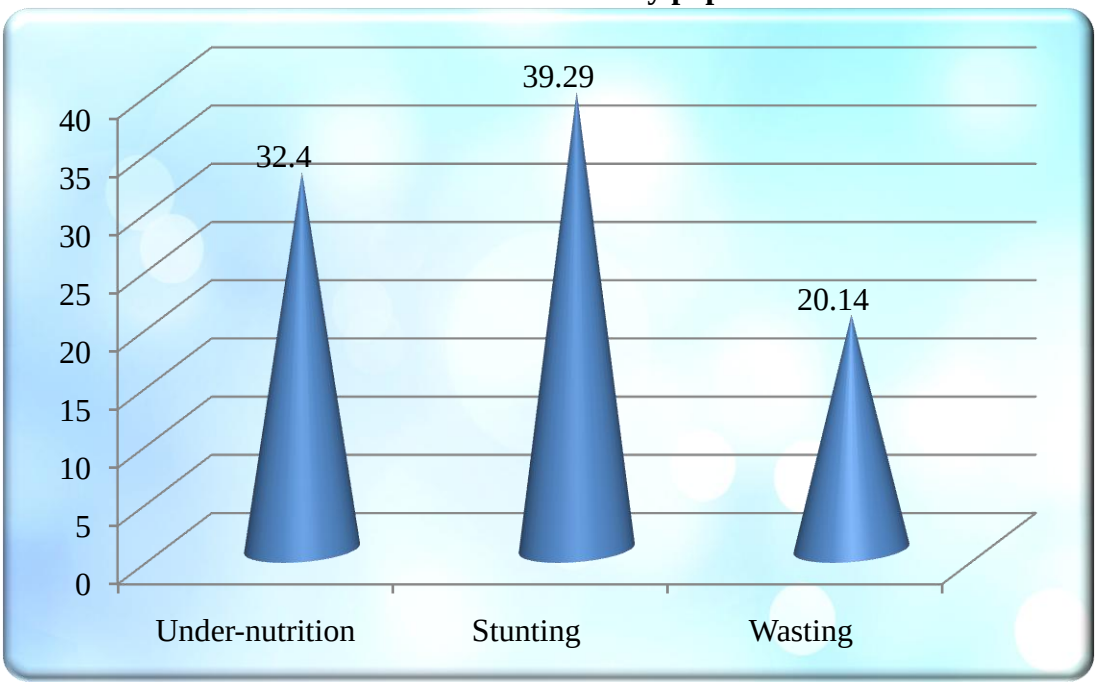
S. No.	Personal Characteristics		Number	Percent
1	Place of delivery	Home	14	2.00
		Hospital	686	98.00
2	Premature birth	Yes	123	17.57
		No	577	82.43
3	Low Birth weight	Yes	162	23.14
		No	538	76.86
4	Birth order	1	284	40.57
		2	256	36.57
		3	118	16.86
		4	42	6.00
5	Exclusive breast feeding	Yes	544	77.71
		No	156	22.29
6	Bottle feeding	Yes	283	40.43
		No	417	59.57
7	Anthropometry	Weight of child	8.86±3.33 (Mean ± SD in Kg)	
		Height of child	76.45±14.36 (Mean ± SD in Cm)	
		MUAC	12.92±1.18 (Mean ± SD in Cm)	

As per Shakir's tape 14% of under five children were in red zone and 26.57% were in yellow zone. According to Mid Upper Arm Circumference (MUAC) classification, 31.0% were had severe wasting while 60 % had mild to moderate wasting condition. As per Z Score criteria[16] prevalence of underweight was found 32.40% of under five children, among which 3.6% were severely underweight. Stunting was found in 39.29% of under five children, of them, 2.2% were severely stunted. And 20.14% of under five children had wasting, of which 1.63% had severe wasting (Table 3 & Figure 1)

Table 4
Malnutrition Status of study population as per various criteria's

S. No.	Personal Characteristics		Number	Percent
1	**Shakir's tape**	Green	416	59.43
		Yellow	186	26.57
		Red	98	14.00
2	**MUAC (cm)**	<11.5	217	31.00
		11.6-12.4	214	30.57
		12.5-13.4	211	30.14
		13.5 and above	58	8.29
5	**Malnutrition (Z Score Criteria)[4]**	Under-nutrition	224	32.00
		Stunting	275	39.29
		Wasting	141	20.14

Figure 1
Malnutrition Status of study population



IV. DISCUSSION

In the present study, the prevalence of under-weight, stunting and wasting was 32.40%, 39.29% and 20.14%, respectively. In South and South-East Asia, India is the country with a higher prevalence of under-nutrition in rural areas (underweight 38.3%, stunting 41.2% and wasting 21.5%).[3] Neighbor countries, such as Nepal (underweight 39%, stunting 49% and wasting 13%), Pakistan (underweight

38%, stunting 37% and wasting 13%) and Bangladesh (underweight41%, stunting 43% and wasting 17%) had all most same prevalence of under nutrition in rural areas.[3] In most of countries, stunting was the most common malnutrition followed by underweight and wasting. This serial was also found in present study.

Prevalence of underweight is a composite indicator of overall malnutrition. It is an outcome of both chronic as well as acute malnutrition. Prevalence of underweight was found 32.40% in present study. Percentage of underweight reported in the present study was almost similar to the NFHS-4 findings which was 36% for India and 36.7% for Rajasthan, whereas it was higher than the data reported for Jaipur city which was 25.2%.[14] Prevalence of underweight was reported much higher than present study findings in many studies.[15,17-19] whereas much lower in many studies.[20,21]

Prevalence of stunting is the indicator of short height for age and is an outcome of chronic malnutrition. High prevalence of stunting was observed in children as 39.29% in present study. Almost similar observation were made by NFHS-4 i.e., 38% for India, 39% for Rajasthan and 35.7% for Jaipur city.[6] Prevalence of stunting was reported lower prevalence of stunting as compared to the present study.[17,19,20] Singh et al.[18] reported comparable results (43.22%).

Wasting is the result of acute malnutrition and describes current nutritional status. Wasting was found among 20.14% of under five children in present study. These observations regarding wasting in present study was almost similar as NFHS-4 observations for national and state i.e., wasting 21% in India and 23% in Rajasthan. But NFHS-4 observations for wasting for Jaipur city was much lower i.e., 12.8%[6] This present study was conducted in rural area of Jaipur district so this may be the reason of higher prevalence of wasting in present study. As other studies.[15,17-19] compared had also reported higher prevalence of wasting than the observations of present study also.

V. CONCLUSION

In the present study, the prevalence of under-weight, stunting and wasting was found 32.40%, 39.29% and 20.14%, respectively. It is concluded from this study that prevalence of under-weight, stunting and wasting was quite high in present study. So there is strong need for researches to find out associating factors of these malnutrition and to make aware the mothers of under five children about healthy development of under five children.

CONFLICT OF INTEREST

None declared till now.

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