Prevalence of malnutrition among children 0-5 years in rural area of Shamirpet, Ranga Reddy, India.

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Abstract: Malnutrition continues to be a major problem in the country and worldwide. The nutritional status of children is an indicator of socio-economic development of the country. To determine the prevalence of under nutrition in terms of underweight, stunting and wasting in rural area of Shamirpet Mandal. It is a cross sectional study.400 children were examined for their weights and heights. The relevant information was recorded from each village of the Mandal according to probability proportion to size. The prevalence of underweight among children 0-59 months is 42.5%, stunting 44.75% and wasting 31.5%. Malnutrition continues to be a major problem and requires a great attention as the children are future of the country.

Key words: Malnutrition; Stunting; Wasting; Underweight; Indicator.

Introduction

Malnutrition has been defined as a pathological state resulting from relative or absolute deficiency or excess of one or more essential nutrients. It comprises of four forms. Overnutrition, Imbalance, specific deficiency, and undernutrition. Overnutrition is a pathological state resulting from excessive food intake. Imbalance is a pathological state as a result of disproportion among essential nutrients intake, with or without absolute deficiency of any nutrient. Specific deficiency is relative or absolute lack of a specific nutrient intake. Under nutrition a condition which results from insufficient food intake over an extended period of time. In extreme cases, it is called starvation. Severe forms of malnutrition like marasmus and kwashiorkor represent only the tip of ice-berg, and many mild to moderate forms represent submerged portion of iceberg. The impact of undernutrition on the community has both direct and indirect manifestations. The direct manifestations are frank and sub-clinical nutritional deficiency disorders, such as kwashiorkor, marasmus, vitamin and mineral deficiency disease. The indirect manifestations are high morbidity and mortality, among children under 5 years of age, physical retardation, lowered vitality and low productivity due to subclinical nutritional deficiency, decreased life expectancy. Undernutrition also predisposes the child to infection and infection leads to undernutrition there by setting up a vicious cycle. [1]

According to the UNICEF report on children, anthropometric findings reveal prevalence of moderate to severe undernutrition as 15%, and severe undernutrition 9%, stunting 25% and wasting 8%[2]. The current prevalence of undernutrition in India is higher as compared to neighboring countries like Nepal (underweight 39%, and wasting 13%) and Bangladesh (underweight 41%, stunting 43% and wasting 17%), Sri Lanka (21%, 17% and 15%) and Pakistan (31%, 42% & 14%) respectively.[3]

Undernutrition is most pronounced in states of Madhya Pradesh, Bihar, and Jharkhand. It is higher in Meghalaya and (for stunting) Uttar Pradesh. It is minimal in Mizoram, Sikkim, Manipur, Kerala, Goa and Punjab. In spite of such variability in prevalence, levels of undernutrition are unacceptably high in our country. The report of National Nutrition Monitoring Bureau (NNMB) revealed prevalence of 41.8% underweight for age, 42.1% stunting, 22% wasting. In general the overall prevalence of underweight, stunting and wasting among boys of <5years is 42.1%, 44.3% and 22.5% respectively. In Andhra Pradesh, according to NFHS 3 report, 43%of children under age five are stunted, which indicates that they have been undernourished for some time. 12%are wasted, which may result from inadequate recent food intake or a recent illness.[4]

There have been many studies conducted previously on assessment of nutritional status in children aged 0-59 months. But in Shamirpet mandal (Ranga Reddy district) there have been few studies conducted till now. It is a rural area which is gradually undergoing transformation into an urban area. Aim of the study is

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to determine prevalence of undernutrition in terms of underweight, stunting, and wasting among children.

Materials and Methods

It is a cross-sectional study with study duration of 2 years. Children of the age group under 60 months comprised the study population. The total population in Ranga Reddy district is 52,96,396 and children 0-6 years are 5,95,352 (according to A.P census 2011). Population of study villages is 25,869 (2011 census). It can be expected that there will be 2600 under five children approximately. The study was conducted during August 2013 to November 2013. Sample size was determined adopting the formula $4PQ/L^{2*}$ in which P is the prevalence of under nutrition in children less than 60 months, Q is (1-P) and L is the allowable error i.e., 5% of absolute error. The prevalence is 43% of underweight children according to National Family Health Survey 3. By taking the prevalence as 43%, sample size is obtained. The formula used for sample size calculation = 4x43x57/5x5=392 children. The sample size worked out to 392 children and it was rounded off to 400.Prior to initiation of the study 10% of the sample size was pre-tested to augment the validity of the questionnaire.40 children under 5 years of age were visited, questionnaire was administered to respondent who was the mother of the child under study. After the pre-test corrections that are required were made to the questionnaire and the study was commenced. Sampling was done following systematic random method. At each village anganwadi of that village was visited. From the left of anganwadi the first house is visited. If there are no houses in that direction then, data collection was started from the place where there were group of houses. After the first house, every 5th house was visited, if children under 5 yrs were not present in the house, or the house was locked, the immediate next house was visited. All the 13 villages enlisted under RHTC Aliabad, were proportionally sampled according to size of the population of that village.

Results

Table 1: Prevalence of underweight (Weight for Age) among study population

Weight for Age		Number	Percent
<3SD Severe		92	23
-3 to 2SD Moderate		78	19.5
-2 to -1SD		128	32
-1 to Median	Normal	63	15.75
>= Median		31	9.75
Total		400	100

In the present study prevalence of underweight among children was 170 (42. 5%). Out of 400 children 78(19.5%) were under weight and 92 (23%) were severely underweight for their age as per WHO classification. The proportion of underweight among children is 42.5%. The total number of underweight children was 170.

Table 2: Prevalence of stunting (height for age) among study population

Height for Age		Number	Percent
<3SD Severe		81	20.25
-3 to 2SD Moderate		98	24.5
-2 to -1SD		104	26
-1 to Median	Normal	72	18
>= Median		45	11.25
Total		400	100

In the present study prevalence of stunting among children was 179 (44.75). Out of 400 children 98 (24.5%) were severely stunted and 81 (20.25%) were stunted for their age according to W.H.O classification. The proportion of stunted children was 44.75%. The total number of stunted children was 179.

Table 3: Prevalence of wasting (Weight for Height) among study population

Weight for Height		Number	Percent
<3SD Severe		70	17.5
-3 to 2SD Moderate		56	14
-2 to -1SD		91	22.75
-1 to Median	Normal	74	18.5
>= Median		109	27.25
Total		400	100

In the present study prevalence of wasting was 126 (31.5%). Out of 400 children 56 (14%) were wasted and 70 (17.5%) were severely wasted as per WHO classification. The proportion of children with wasting was 31.5%. The total number of children with wasting was 126.

Discussion

The prevalence of underweight out of 400 participant children was found among 170 (42.5%) children. The prevalence of underweight of severe grade <-3SD was found among 92(23%) and underweight (-3SD to -2SD) was found, among 78(19.5%). The data available from National family health survey-2006 indicates that the prevalence of underweight was 43%. According to data available from NNMB[5] third reports (2012) the prevalence of underweight among children of this age group was 41.8%.

The findings of this study are in broad agreement with the data furnished by the above national surveys. It also can be seen that there is no discernible and significant improvement in the underweight of children in spite of some palpable improvement in macro-economic indicators and proximity of the study area to a metropolitan city such as Hyderabad.

Stunting is an indicator of chronic malnutrition among the children. The present study has indicated that out of 400 under five children studied stunting as indicated by height for age is present in 179(44.75%) children. The data obtained by NNMB[5] in Andhra Pradesh indicates that prevalence of stunting in Andhra Pradesh is 44.6%

Similarly, a decrease in national stunting rates is usually indicative of improvement of socio-economic status of the community. The world-wide variation of the

prevalence of low height-for-age is considerable, ranging from 5 to 65% among the less developed countries. In many such settings, prevalence starts to rise at age about 3 months; the process of stunting slows down at 3 years of age, after which mean heights run parallel to the reference. Therefore, the age of the child modifies the interpretation of the findings. For children aged 2-3 years low-height-for-age reflects a continuous process of stunting or failing to grow. For older children, it is a state of having failed to grow or being stunted.

The present study has also brought out that out of 179 children who are stunted 81 (20.25%) were having severe stunting (<-3 SD) and remaining 98 children (24.5%) were having moderate stunting (3SD -2SD). Overall prevalence of stunting in this study works out to 44.75%.

NNMB[5] data for Andhra Pradesh during the period 2011-12 has indicated that prevalence of severe stunting was 16.3% and moderate stunting was 32.4%. Thus it can be seen that the findings of this study and NNMB data agree broadly with respect to the prevalence of overall stunting.44.6% and 48.7%. But when it comes to the prevalence of severe stunting it was 20.25% and 16.3% respectively. Similarly, prevalence of moderate stunting was 24.5% and 32.5% respectively. Thus, in the study area there is higher prevalence of severe stunting and lesser prevalence of moderate stunting. This discrepancy can be resolved only by further study in this area which brings out area specific risk factors of severe stunting.

Wasting or thinness in most cases indicates recent and severe process of weight loss, which is often associated with acute starvation and/or severe disease. However, wasting also may be a result of chronic unfavorable condition. Provided there is no severe food shortage, the prevalence of wasting is below 5% even in poor countries. The Indian sub-continent where higher prevalence is found is an important exception. A prevalence exceeding 5% is alarming giving parallel increase in mortality that soon becomes apparent. On the severity index prevalence between 10-15% are regarded as serious and above or equal to 15% as critical. In general, the prevalence of wasting, weight-for-height peaks in the second year of life. Lack of wasting in a community does not imply absence of current nutritional problems: stunting and other deficits may be present.

Further perusal of data from different studies conducted by several other investigators reveal the following: According to NNMB[5] the national statistics have shown the prevalence rates to be 41.8%,42.1% and 22% for underweight, wasting and stunting respectively. Prema Ramchandran[6] *et al.,* have given the figures as 42.5%,48% and 19.8%. Vijaya Shree Mathad[7] revealed their figures to be 26.55%, 31.38% and 7.59%. Meshram[8]*et al.,* found out the figures as 39%, 30% and 22%. Suparna Ghosh[9] from Madhya Pradesh have

given figures as 59.1%, 57.3% and 27.7%. Madhu B Singh[10] revealed underweight in terms of 60%,53% and 28%GangamSukhdas[11] *et al.,* have revealed the figures to be 48.27%, 23.59%, and 23.59%. Paramita Sengupta[12] *et al.,* have found out the prevalence of underweight to be 29.5%, 74% and 42%.

Thus it can be seen that there is wide variability in the prevalence of wasting ranging from 7.59% to 42%. This variability may be due to a variety of factors such as chronic infections, fluctuations in food availability, absence of food security to certain sections of the population and whether study population belongs to urban slum or village or tribal hamlets etc. Prevalence of wasting in the present study is definitely on higher side and the underlying reasons deserve a careful and well planned longitudinal study.

Conclusion
Undernutrition among children is a problem that has reduced in magnitude but still continues to be a major public health issue in rural area of Shamirpet Mandal. It requires a great attention and care as children are the future of the nation, social investment of the economy and indicator of social and economic development of the country.

Acknowledgement

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