A descriptive cross-sectional study to assess prevalence of mal-nutrition in children under five years age in rural community Bikaner, Rajasthan

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ABSTRACT

Background: Malnutrition among children below five years continues to be one of India major human development challenges. In spite of tremendous economic progress made in the last two to three decades. The objective of the study was to assess prevalence of mal-nutrition in children under five years age in rural community Bikaner, Rajasthan.

Methods: The study was cross-sectional community based study. The study was conducted in village udairamsar in Bikaner rural. It is a Rural Health Training Centre Sardar Patel Medical College Bikaner. Under five year children with sample size of 657 was taken for study.

Results: It was observed that out of 657 children, 367(55.86%) were males and maximum (22.83%) children were belong 48-59months age group. All three parameters of malnutrition i.e., wasting, underweight and stunting were more common in males (21.80%, 37.06%, and 29.16% respectively) than females (16.55%, 26.21% and 21.72% respectively). Highest proportion (25.19%) of wasting was found in age group 36-47 months followed by age 12 to 23 months (23.88%).

Conclusions: Majority of under five children were malnourished and malnutrition common in males than females.

Keywords: Malnutrition, Wasting, Stunting, Underweight, Children

INTRODUCTION

Malnutrition is defined as a pathological state resulting from absolute or relative deficiency or excess of one or more of the nutrients that are considered essential for normal life.1

Malnutrition among children below five years continues to be one of India major human development challenges. In spite of tremendous economic progress made in the last two to three decades. Malnutrition among children in rural India still claims many lives. However, mounting cases of malnutrition has caught the public eye and so healthcare providers as well as the government are taking the necessary steps to improve the current status of nutrition for children in India.

According to UNICEF to Pneumonia (30%) and Diarrhoea (27%) are directly related to over 50% childhood deaths, 35% of all deaths was caused because child was undernourished.2 There is high under five morbidity and mortality in India.3 Protein energy malnutrition is major contributory factor in majority of these childhood morbidities and mortalities. At present 65% under five children are underweight which includes 47% moderate and 18% severe case of malnutrition (UNICEF 2006 state of words children).4
Need of study

In the purview of above mentioned facts it is well obvious that undernutrition is a serious concern for our nation. It jeopardizes children survival, health, growth and development. They are much more likely to suffer from a serious infection and die from common childhood illnesses such as diarrhoea, measles, and pneumonia. Therefore there is a felt need to study undernutrition and its epidemiology in depth.

METHODS

The study was cross-sectional community based study. The study was conducted in village udairamsar in Bikaner rural. It is a Rural Health Training Centre Sardar Patel Medical College Bikaner. Under five year children with sample size of 657 was taken for study.

Anthropometric measurements were carried out following standard methods. The data included weight, recumbent length (for children less than 24 months of age) and height (for children more than 24 months of age). Weight was measured to the nearest 0.1 kg and salter weighing machine was used for weight measurement. Height was measured against a non-stretchable tape fixed toa vertical wall with the participant standing on level of surface and it was measured to the nearest 0.5 cm. Recumbent length was measured by using an infant measuring board. Socio-economic status was determined by using modified Prasad scale.5

Standard statistical method was used in the analysis of the data with use of MS Excel and EPi-info software 3.4.3. P value was used to examine the relation between variable. Data of the nutritional survey were analysed using WHO Anthro for personal computer, version 3.1.2010.6

WHO classification was used for the assessment of malnutrition. Based on age, body weight and height, a number of indices such as height-for-age, weight-for-age and weight-for-height have been suggested.7 The children are classified using three categories: underweight (low weight for age), stunting (low height for age) or wasting (low weight for height). Low anthropometric values are those more than 2 SD away from the CDC 2000 (centres for disease control and prevention) standards.7,9

RESULTS

It was observed that out of 657 children, 367 (55.86%) were males and maximum (22.83%) children were belong 48-59 months age group.

As shown in the above table highest proportion (25.19%) of wasting was found in age group 36-47 months followed by age 12 to 23 months (23.88%). Wasting among age group 24 to 35 months was only 8.33%.

Similarly underweight children were highest (38.00%) in age group 48 to 59 months followed by age group 24 to 35 months ye(36.67%). Highest 38.33% of stunted children were found in age group 24-35 months followed by 30.67% in age group 48 to59months. The statistical association between age and wasting and stunting was found to be very significant and highly significant respectively whereas the same between age and underweight was not significant.

Table 1: Distribution on demographical profile.

| Variable               | Level of variable | frequency | %   |
|------------------------|-------------------|-----------|-----|
| Age(months)            | 0-6 months        | 42        | 6.39|
|                        | 6 to 11 months    | 76        | 11.57|
|                        | 12 to 23 months   | 134       | 20.40|
|                        | 24 to 35 months   | 120       | 18.26|
|                        | 36 to 47 months   | 135       | 20.55|
|                        | 48 to 59 months   | 150       | 22.83|
| Gender                 | male              | 367       | 55.86|
|                        | female            | 290       | 44.14|
| Religion               | Hindu             | 602       | 91.63|
|                        | Muslim            | 55        | 8.3 |
| Mother education       | Educated          | 307       | 46.72|
|                        | Non educated      | 350       | 53.27|
| Socio-economic status  | I                 | 6         | 0.91 |
|                        | II                | 78        | 11.87|
|                        | III               | 202       | 30.75|
|                        | IV                | 370       | 56.32|
|                        | V                 | 1         | 0.15 |

Table 2: Occurrence of malnutrition in children by age.

| Age in months | Mal-nourishment present | Mal-nourishment absent | %   | total |
|---------------|-------------------------|------------------------|-----|-------|
| 0-5           | 11                      | 31                     | 26.19| 42    |
| 6-11          | 24                      | 52                     | 31.58| 76    |
| 12-23         | 65                      | 69                     | 48.51| 134   |
| 24-35         | 63                      | 57                     | 52.50| 120   |
| 35-47         | 62                      | 73                     | 45.93| 135   |
| 48-59         | 69                      | 81                     | 46.00| 150   |
| total         | 294                     | 363                    | 44.75| 657   |

| X²           | 15.034                  |
| df           | 5                       |
| P value      | <0.05                   |
In present study the total numbers of children below 6 months of age were 6.39% and between 6-11 months were 11.57%. The maximum number of children was there in 48-59 months of age groups i.e. 22.83% followed by 36-47 months age group. Total numbers of children in 12-23 months of age group were 20.40%. The present

### Table 3: Occurrence of wasting, underweight and stunting in children by age.

| Age in months | Wasting yes | no  | %   | Underweight yes | no  | %   | Stunting yes | no  | %   | Total |
|---------------|-------------|-----|-----|-----------------|-----|-----|--------------|-----|-----|-------|
| 0-5           | 5           | 37  | 11.90 | 9               | 33  | 21.43 | 05          | 37  | 11.90 | 42    |
| 6-11          | 18          | 58  | 23.68 | 16              | 60  | 21.05 | 04          | 72  | 5.26  | 76    |
| 12-23         | 32          | 102 | 23.88 | 39              | 95  | 29.10 | 35          | 99  | 26.12 | 134   |
| 24-35         | 10          | 110 | 8.33  | 44              | 76  | 36.67 | 46          | 74  | 38.33 | 120   |
| 36-47         | 34          | 101 | 25.19 | 47              | 88  | 34.81 | 34          | 101 | 25.19 | 135   |
| 48-59         | 29          | 121 | 19.33 | 57              | 93  | 38.00 | 46          | 104 | 30.67 | 150   |
| total         | 128         | 529 | 19.48 | 212             | 445 | 32.27 | 170         | 487 | 25.88 | 657   |
| X²            | 16.354      |     |       | 10.963          | 32.652 |
| df            | 5           | 5   |       |                  | 5    |
| P value       | <0.01       |     |       |                  | NS   | <0.001 |

All three parameters of malnutrition i.e. wasting, underweight and stunting were more common in males (21.80%, 23.68%, and 23.88% respectively) than females (16.55%, 26.21% and 21.72% respectively). It was found that there was very significant and highly significant difference with regard to underweight and stunting respectively between male and female children but no significant gender difference was found for wasting.

### DISCUSSION

Protein calories malnutrition is a widespread nutritional disease in developing countries. As well as mentioned by Gupta et al. Under five year children are notoriously fraught with the risk of malnutrition and the prevalence of malnutrition varies between 50-80%. Majority of the children in our study were suffering from protein energy malnutrition. A larger proportion of males were suffering malnutrition as compared to females. Out of 294 malnourished children 179 were males and 115 were female. The same result were found in the study of Zottarelli LK, Mittal et al, and Sengupta et al.

### Table 4: Occurrence of malnutrition in children by gender.

| Age in year | Malnourishment present | Malnourishment absent | % | total |
|-------------|-------------------------|-----------------------|---|-------|
| Male        | 179                     | 188                   | 48.77 | 367   |
| female      | 115                     | 175                   | 39.66 | 290   |
| total       | 294                     | 363                   | 44.75 | 637   |
| X²          | 5.448                   |                       |     |       |
| df          | 1                       |                       |     |       |
| P value     | <0.05                   |                       |     |       |

In present study the number of children in 12-23 months of age group were 20.40%. The present
study showed that about 26.19% babies were malnourished in 0-5 months of age groups. Similar result was found in NFHS III 2005-06 reports. The main reason behind malnutrition among 0-5 months age group are low birth weight, prelacteals and inadequate breast feeding practices. In present study 48-59 months old child had the highest proportion of underweight (38%) Sengupta P et al observed the similar results.\textsuperscript{14}

It was found in study that malnourishment in the form of underweight was most common (32%) in the study sample followed by stunting (25.88%) and wasting (19.48%). similar proportion of wasted children was reported in NFHS-3 (national as well as of Rajasthan) whereas according to NFHS-3, proportion of underweight and stunted children differed nationally as state-wise (43%, 48% in India respectively, 40%, 44% in Rajasthan respectively).

\textbf{CONCLUSION}

Majority of under five children were malnourished and malnutrition common in males than females.

\textbf{Recommendations}

Health care providers to focus on health education among parents especially in mothers on the exact nutritional requirements in terms of quality and quantity of the child at specific age groups.

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