To Compare Anthropometric Parameters between Control Group and Malnourished Preschool Children

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Abstract: This study was undertaken with the aim of evaluating the nutritional status and associated nutritional deficiencies of malnourished pre-school children (1-5 Years) in relation to anthropometric measurements. A total of 400 pre-school children were evaluated. All the individuals were grouped into 3 groups according to their anthropometric parameters. The anthropometric measurements and if any associated nutritional deficiencies were evaluated and compared amongst the three groups, made on the basis of presence of malnutrition and malnutrition associated with nutritional deficiencies. The present work “A cross sectional study on nutritional status and associated nutritional deficiencies in malnourished preschool children in relation to anthropometric measurements” About 400 children in the age group of 1-5 years were studied for their Anthropometric indices. Age being the only criteria the anthropometric measurements was done to assess the nutritional status. Age was recorded by interviewing the parents or by the birth record of the child. Growth pattern of children were worked out for boys and girls separately, in respect of different body measurements were compared with international and national standards. The current study demonstrates the anthropometric parameters in association with nutritional deficiencies with rising level of malnutrition across the various study groups. All the anthropometric measurements were lower in malnourished children in comparison to their normal counterpart children. Boys had marginally better anthropometric measurements than girls.

Study Design: Cross-Sectional Study.

Keywords: Anthropometric Parameters, Malnourished, Preschool, Control.

INTRODUCTION

A number of studies carried out during emergency and non-emergency situations have demonstrated the association between increased mortality and increasing severity of anthropometric deficits [1, 2]. There is strong evidence that poor growth or small size is associated with impaired development, and a number of studies have also demonstrated a relationship between growth status and school performance and intellectual achievement. However, this cannot be disregarded as a simple causal relationship because of the complex environmental or socioeconomic factors that affect both growth and development [3, 4].

The present study is carried out to find out the patterns of malnutrition in 1-5 years children and dietary factors, so that actions may be taken in future to control malnutrition in community.

MATERIALS & METHODS

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- All children 1 to 5 years of nearby areas of Amaltas Hospital
- Subjects who are having one or more WHO recommended edsign of malnutrition.
- Subjects who are having any of the signs of vitamin deficiency

Exclusion Criteria
- Nonconsenting parents.
- Subjects with diagnosed congenital disorders.
- Subjects with diagnosed major illness.

Methodology (Material & Methods) Materials (Tools)
For Anthropometric measurement
- Electronic weighing machine
- WHO recommended measuring tape
- Infantometer / stadiometer

To assess the nutritional status and causative etiological factors of acute malnutrition in children- Questionnaire

Methodology
- Complete nutritional status and clinical status will be done using the questionnaire and clinical examination. Anthropometric measurements using anthropometric tools.

Measurements were taken using standardized methods
- Height was measured for children (24-60 months). The child was made to stand on the measuring board which was kept vertical. Shoulder blades and buttocks of the child were placed against the board. With her right hand, the headpiece was put on the child’s head, was lowered downward pushed through the child’s hair. Once the position was achieved, the measurement was made to the nearest 0.1 cm.

Weight was measured after minimizing clothing on the child using standard electronic weighing machine. After the value was stable for about 3 seconds, the weight of the child was recorded.

Head Circumference
- Head circumference was measured by afibre s placetrapassingfirmsupra-orbital ridge in front and that part of the occiput which gave themaximum diameter.

Child head was madesteablybyholding at the side and neck[8], it was recorded nearest 0.1 cm.

Interpretation of nutritional indices
- Anthropometric indices can be interpreted as follows:
  - Weight-for-height index: used to compare a child’s weight with the expected value of a normal (NCHS/WHO reference) child of the same height.
  - Low weight-for-height is a measure of wasting.
  - Height-for-age index: used to compare a child’s height with the expected value of a normal (NCHS/WHO reference) child of the same age from reference population, Low height-for-age is a measure of stunting.

Where there is no severe food shortage, v) Low height-for-age (Stunted growth): reflects a process of failure to reach linear growth potential as a result of suboptimal health and/or nutritional conditions.

vi) Low weight-for-age (underweight): is influenced by both the height of the child (height-for-age) and weight (weight-for-height). The midupper arm circumference is a good predictor of immediate risk of death. It is used for rapid screening of acute malnutrition.

The anthropometric data in the present study were compared with the National Growth Data and with the international NCHS standard data. Literacy status of mother was recorded. Nutritional status was graded according to Z-score classification and I.A.P. classification. The reference standard was National Centre of Health Statistics (NCHS) for Z score classification and Harvard Standard for I.A.P. classification. In this study Z score were calculated for all three indices, weight-for-age (underweight), height-for-age (stunting) and weight-for-height (wasting) by using NCHS reference standard.

RESULTS & OBSERVATIONS

| Table 1: Comparison of anthropometric parameter (Head circumference) between Normal-studied group and Malnourished Group in all age groups |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Age in Years    | Normal group    | Malnourished group |                |                |
|                 | Boys | Girls | Boys | Girls |
| 1–2             | 44.2±1.2 | 44.1±1.3 | 43.2±0.66 | 42.7±0.3 | 0.00 |
| 2–3             | 46.3±1.7 | 45.8±0.6 | 45.50±0.8 | 44.60±0.70 | 0.00 |

Thistables show the Headcircumference in differentagesof pre-school malnourishedchildrenand normalgroup. Therewassignificant lower value of allmeasurementsthan their normalcounterpartchildren (P<0.05).

Table 2: Comparison of anthropometric parameter (Weight) between Normalstudied group and malnourished group in all age groups

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Normal group</th>
<th>Malnourished group</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td></td>
</tr>
<tr>
<td>3–4</td>
<td>47.5±1.8</td>
<td>47.1±1.01</td>
<td>0.00</td>
</tr>
<tr>
<td>4–5</td>
<td>48.5±0.6</td>
<td>48.1±2.1</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Table 3: Comparison of anthropometric parameter (Height) between Normalstudied group and malnourished group in all age groups

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Normal group</th>
<th>Malnourished group</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td></td>
</tr>
<tr>
<td>3–4</td>
<td>72.6±3.39</td>
<td>72.4±3.9</td>
<td>0.00</td>
</tr>
<tr>
<td>4–5</td>
<td>79.3±4.6</td>
<td>79.9±3.3</td>
<td>0.00</td>
</tr>
</tbody>
</table>

DISCUSSION
Nutritional anthropometry is concerned with the measurement of variation of the physical dimension and gross composition of the human body. At different age levels and considered to be informative, the best method for assessment of malnutrition. It has the advantage of being easy to perform, rousing no antagonism and requires only simple apparatus. Serious malnutrition is all around us, yet it is not obvious, for it is not visible. The iceberg phenomenon. By Anthropometric assessment, some bodybuilders with reference standard. Thought the data collected by the Indian Council of Medical Research (ICMR) in different parts of the country provide valuable information regarding community average for weight and height, these cannot be used as a reference standard because these were not obtained well to do and well fed Indian children and hence do not reflect optimal growth. W.H.O. has recommended National Centre for Health Statistics (N.C.H.S.) data for reference standard. In our present study, we found the prevalence of malnutrition to be 67.5% by Indian Classification (WHO). Prevalence of undernutrition is 51.8%, while the mean of boys is 48.1%. A study by Bhupeshwar Patel, Dulari Gandhi, also showed WHO classification classified 90% of children under nourished whereas IAP classification classified 80% of children under nourished. According to the WHO criteria, 32% and in IAP criteria only 10% children were severely undernourished. When compared, this was statistically significant (p=0.000) difference in malnutrition by these classifications. In a study by Amongst girls, the highest prevalence of undernutrition was seen in the 3-5-year age group, whereas in boys, the maximum prevalence was seen in the 1-2-year age group.

CONCLUSION
The current study demonstrates the anthropometric parameters in association with nutritional deficiencies with rising level of malnutrition across the various study groups.

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All the anthropometric measurements were lower in malnourished children in comparison to their normal counterparts, boys had marginally better anthropometric measurements than girls.

REFERENCES