

# Assessment of the Nutritional Status of Pre-school Bahraini Children

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## ABSTRACT

Assessment of the nutritional status of the Bahraini pre-school children was studied using multistage random sample to represent different geographic areas in Bahrain. Surveyed children showed that nearly one third suffered from Protein Caloric Malnutrition (PCM) according to Gomez classification, where moderate and severe cases were 4.6% and 0.2% respectively. Distribution of acute undernutrition by age groups indicated that children aged 6 — 24 months were mostly affected, with an overall percentage of 10%. Also the data illustrated that 12.2% of the children were overweight. Stunting was most prevalent during the third year of life (23.5%) and continued through to the fifth year. The data obtained documented that PCM represents a Public Health problem in Bahrain and needs detailed ecological study.

Nutrition is one of the most important environmental factors that affect the growth of children. The fact that the environment has such a profound influence on child growth makes the growth failure both a symptom and a malady of environmental stress as reported by Stinson<sup>1</sup>. Poor nutrition is the primary cause in a high proportion of the deaths of children under five years of age<sup>2</sup>. Mahler<sup>3</sup> referred to malnutrition as a "vicious spiral" in which malnourished children with decreased learning abilities become first, poorly nourished adults with decreased earning abilities and then parents of malnourished children. It has been recognised that PCM in young children is the most important and urgent nutritional problem that must be faced by the developing countries, where community surveys have indicated that 0.5-5% of the population under six years of age suffer from severe forms and 4-40% from the moderate forms of PCM<sup>4</sup>. Pre-school children are more vulnerable to malnutrition and to the common infectious diseases<sup>5</sup>. Assessment of the nutritional status may be useful in indentifying risk groups and in planning and monitoring a nutritional programme to improve the nutritional status of the studied population.

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The purpose of the present study was to detect the prevailing patterns of Protein Caloric Malnutrition and to study the extent and severity of malnutrition in Bahrain.

## METHODS

Anthropometric measurements were made on 392 Bahraini children; 204 boys and 188 girls between birth and five years. The sample had been chosen by multistage random to represent, Manama, Muharraq, Jidhafs and Riffa. The exact date of birth was obtained from records of birth certificates. Various anthropometric measurements namely, weight and height were obtained according to methods described by Nelson et al.<sup>6</sup>. Nutritional status was assessed by the deficit in weight for age, height for age and weight for height and expressed as a percentage of standard reference at the National Centre of Health Statistics<sup>7</sup> and graded into different levels of undernutrition as suggested by Gomez classification.

## RESULTS AND DISCUSSION

Table 1 illustrates percentage distribution of children under five years of age by weight for age expressed

**TABLE 1**  
**Percent Distribution of Children Under Five Years of Age By Weight For Age Expressed As Percentage of Reference Median (NCHS, 1977).**

| Age in Months | No. of Children | Degree of Malnutrition |               |               | Normal : 90.0 + % |
|---------------|-----------------|------------------------|---------------|---------------|-------------------|
|               |                 | 3rd: < 60.0%           | 2nd: 60-74.9% | 1st: 75-89.9% |                   |
| 0-            | 53              | 1.9                    | 3.8           | 5.6           | 88.7              |
| 6-            | 75              | 0                      | 5.3           | 32.0          | 62.7              |
| 12-           | 46              | 0                      | 4.4           | 30.4          | 65.2              |
| 18-           | 48              | 0                      | 8.3           | 18.8          | 72.9              |
| 24-           | 60              | 0                      | 3.3           | 23.3          | 73.4              |
| 36-           | 51              | 0                      | 5.9           | 35.3          | 58.8              |
| 48-59         | 59              | 0                      | 1.7           | 42.4          | 55.9              |
| <b>TOTAL</b>  | <b>392</b>      | <b>0.2</b>             | <b>4.6</b>    | <b>27.3</b>   | <b>67.9</b>       |



sed as percentage of reference median. The nutritional status of the study children conforms closely to the predication of Jelliffe<sup>8</sup> stating that application of the weight for age criteria will show between one third and two thirds of the children in the developing world to be malnourished. In our study, although the Gomez weight for age criteria indicated that nearly a third of the Bahraini pre-school children had PCM, only small percentages were found to be suffering from moderate or severe malnutrition (4.6% and 0.2%) respectively. Our findings were in agreement with the results of Filho et al.<sup>9</sup> in Sao Paulo district in Brazil where the percentages of moderate and severe cases were 3.2% and 0.4%. Also the data showed that 1.9% of the children under the age of six months were suffering from severe PCM, which may be due to the great decline in the percentage of Bahraini mothers breast-feeding their children<sup>10</sup> as well as to the health hazards of extensive use and introduction of bottle feeding at the age of less than one month by high and middle social classes in Bahrain. Also the data revealed a decreasing trend in the percentage of normal cases from birth up to the age of five years, especially starting at the age of six months and distributed with different percentages in all age groups.

Table 2 show distribution of children under five years of age by weight for height expressed as percentage of reference median. Weight for height is a good index of wasting body mass, children who are below 80% of median can be considered as acutely undernourished.

**TABLE II**

**Percent Distribution of Children Under Five Years of Age By Weight For Height Expressed As Percentage of Reference Median (NCHS, 1977)**

| Age in Months | No. of Children | Wasting     |             | Normal      |             | Overweight |
|---------------|-----------------|-------------|-------------|-------------|-------------|------------|
|               |                 | <80.0%      | 80-89.9%    | 90-109.9%   | >110%       |            |
| 0-            | 53              | 5.7         | 13.2        | 50.9        | 30.2        |            |
| 6-            | 75              | 16.0        | 28.0        | 42.7        | 13.3        |            |
| 12-           | 46              | 13.0        | 34.8        | 45.7        | 6.5         |            |
| 18-           | 48              | 10.4        | 18.8        | 64.6        | 6.2         |            |
| 24-           | 60              | 10.0        | 15.0        | 68.3        | 6.7         |            |
| 36-           | 51              | 7.8         | 27.5        | 51.0        | 13.7        |            |
| 48-59         | 59              | 5.1         | 18.6        | 67.8        | 8.5         |            |
| <b>TOTAL</b>  | <b>392</b>      | <b>10.0</b> | <b>22.2</b> | <b>55.6</b> | <b>12.2</b> |            |

Distribution of acute undernutrition by age groups indicated that children aged 6 — 24 months were mostly affected. The highest percentage was 10.0%. It was clear that the highest prevalence of acute undernutrition occurs during the weaning period (6 — 24 months of age), reflecting traditional inadequate food intake patterns during the transition period from breast-feeding to the family diet<sup>12</sup>. This trend is consistent with those reported from other countries by various authors<sup>13 14</sup>. Additionally, these children are more susceptible to acute infection and to the acute dehydration associated with these infections<sup>5</sup>. Also the results showed that 22.2% only of the surveyed children were classed as moderately undernourished, indicating a better nutritional status of Bahraini children compared to Haitian children (28.8%)<sup>13</sup>. The data also illustrated that 12.2% of the children were heavier than 110% of reference median weight. The highest percentage 30.2%, occurred in the first six months of life which is an indication of the occurrence of obesity as a problem and ecological studies are needed to define the casual factors of this nutritional problem..

Table 3 shows percentage distribution of children under five years of age by height for age expressed as percentage of reference median. It was evident that no stunting is seen during the first year of life but a dramatic increase in the percentage of stunting begins to occur during the second year of life and continues through to the fifth year. The highest percentage of nutritional stunting (23.5%) occurred in the third

**TABLE III**

**Percent Distribution of Children Under Five Years of Age By Height For Age Expressed As Percentage of Reference Median (NCHS, 1977)**

| Age in Months | No. of Children | Stunting   |            | Normal      |
|---------------|-----------------|------------|------------|-------------|
|               |                 | 85.0%      | 85-89.9%   | 90.0 + %    |
| 0-            | 53              | 0          | 0          | 100.0       |
| 6-            | 75              | 0          | 0          | 100.0       |
| 12-           | 46              | 0          | 0          | 100.0       |
| 18-           | 48              | 6.3        | 2.1        | 91.6        |
| 24-           | 60              | 0          | 1.7        | 98.3        |
| 36-           | 51              | 2.0        | 23.5       | 74.5        |
| 48-59         | 59              | 3.4        | 11.9       | 84.7        |
| <b>TOTAL</b>  | <b>392</b>      | <b>1.5</b> | <b>5.4</b> | <b>93.1</b> |

year of life. This is only to be expected because it is known that height is usually affected by malnutrition after a longer period than weight and therefore, height deficit indicates past malnutrition<sup>15</sup>. The results were in agreement with the findings of Djazayery et al.<sup>16</sup> who reported that the highest proportion of nutritional dwarfs (22%) occurred in the third year. While in other similar studies carried by Graitcer et al.<sup>13</sup> and Stetler et al.<sup>14</sup> chronic under nutrition began in the first year of life.

## CONCLUSION

**The data from this study revealed that Protein Caloric Malnutrition represents a Public Health problem in Bahrain and needs detailed study.**

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