Anthropometric Assessment of the Nutrition in Female Children of Thar Desert

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Abstract: A study was conducted in 18 villages in three ecological regions i.e., Marusthali, Shekhawati and Luni Basin in Thar Desert. Data on six anthropometric measurements, along with demography and socio-economic aspects were collected for 1132 female children which revealed that 94.6% mothers and 48.8% fathers of female children were illiterate. Main occupation of 58.4% parents was agriculture. Body weight ranged from 14.4 kg (5 years) to 45.2 kg (17 year) and height ranged from 102.5 cm (5 year) to 156 cm (17 year) in girls. Height and weight of female children in Thar Desert are very low in comparison to National Center for Health Statistics (NCHS) (P <0.01). These results will help in planning and programming nutritional intervention programs for female children in this area.

Key words: Anthropometry, nutrition, female children, desert, Rajasthan.

Malnutrition, especially in female children, is a burning problem in developing countries. Malnourished people are more susceptible to infections and severity of illness and the mortality rates are higher. Moreover, infections can result in borderline nutritional status becoming frank malnutrition particularly in young children (WHO, 1995 and 1999). Although provision of food is the first relief priority in nutritional emergencies, it is also crucial to organize programs for prevention and treatment of major diseases. Disease prevention through proper nutrition and to various aspects of environment health should be a priority research (WHO, 2000). Rajasthan has 12 desert districts with typical desert climate, such as scarcity of water, low rainfall, high temperature and frequent droughts that directly or indirectly affect human health. Important vulnerable segment of population is female children. In desert areas of Rajasthan, very less work has been done (Singh et al., 1996; Haldiya et al., 1993; Sharma and Yadav, 1988) in this direction. Therefore, in the present study, an attempt has been made to study the anthropometric assessment of the nutritional status of female children of Thar Desert of Rajasthan.

Materials and Methods

A total of 1496 house holds were covered from 18 villages of the Thar Desert. The Thar Desert is divided into three ecological zones, i.e., Zone I: Marusthali region comprising: Jaisalmer, western Barmer, western Nagaur, western Jodhpur, Bikaner and western Churu; Zone II: Shekhawati region comprising: eastern Churu, Jhunjhunun, Sikar and central Nagaur; Zone III: Luni Basin region comprising: eastern Jodhpur, Sirohi, Jalore, Pali and eastern Barmer.

The Sample size was determined on the basis of prevalence of malnutrition, a standard procedure for determining sample...
size (Moser and Kalton, 1964). The average family size was considered as 6.5 per family, with at least two school-age children in the family. Based on these assumptions we covered 1496 households by considering 80% power of the test, 20% of non-response and error with 95% confidence interval (CI). On the basis of Systematic Random Sampling every first and fourth region/district of the Zone was selected for the study. A total of six regions and from each region 3 villages were selected by Simple Random Sampling (SRS) technique by using random number table. From each village 80 to 85 households were selected for survey by simple random sampling with due weightage to dhanis. From each village, all households selected, (80-85) were surveyed for school age children. In these 1496 households, 1132 female children were available for anthropometry examination at the time of survey.

At each household level, information on demography and socio-economic aspects were collected by interview technique in pre-tested schedules. Female children found in these households were examined for their anthropometry in order to assess their nutritional status.

Results and Discussion

A total of 1496 household schedules covering 1132 female children (5-18 years) were analyzed. Altogether 93.9% of households have nuclear families. Regarding the educational status of parents, 48.8% fathers and 94.6% mothers of school age children were illiterate as shown in (Table I). Main occupation of parents was agriculture (58.4%), followed by Govt. services (20.3%).

Six anthropometric measurements, i.e., weight, height, head circumference, arm circumference, chest circumference and skin-fold at triceps were taken on the female children following techniques of ICMR (1977). Standardization was also done as per training so as to minimize the inter-personnel errors.

The average weight in girls ranged from 14.4 kg (5 years) to 45.2 kg (17 years) (Table 2). The weights of these children were significantly low in comparison to NCHS (P <0.01). Mean height ranged from 102.5 cm (5 years) to 156 cm (17 years) in girls and these were very low in comparison to NCHS (Figs. I and 2). Similar observations were recorded by Singh et al. (1996, 2001, 2002) and Sharma and Yadav (1998). The chest circumference showed increased trend with age in girls and ranged from 49.3 to 73.0 cm and were significantly lower than ICMR reference values in most of age groups (P <0.01). Head circumference ranged from 47.9 cm (6 year) to 53.4 cm (17 year). Mean of arm circumference ranged from 13.4 cm (5 year) to 20.7 cm (17 year). Mean fat-fold at triceps showed almost static trend with age and ranged from 6.0 to 10.1 mm.

Table 1. Educational status of parents of school age children

<table>
<thead>
<tr>
<th>Educational status</th>
<th>Father (%)</th>
<th>Mother (%)</th>
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<tbody>
<tr>
<td>Illiterate</td>
<td>48.8</td>
<td>94.6</td>
</tr>
<tr>
<td>Literate</td>
<td>51.2</td>
<td>5.4</td>
</tr>
<tr>
<td>Preschool education</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Primary</td>
<td>15.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Middle</td>
<td>13.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Secondary</td>
<td>15.8</td>
<td>0.3</td>
</tr>
</tbody>
</table>
The results of the present study have shown that female children of the desert area showed slow growth retardation anthropometrically in comparison to ICMR and NCHS standards (Figs. 1 and 2). The growth retardation is higher during the...
adolescent period. This may be due to high percentage of illiteracy and low income of parents leading to discrimination of girl child over boys in the society, which affects the nutritional status of the female child. In an earlier study a higher percentage of girls of the salt workers were reported to suffer from acute malnutrition than boys as salt-workers were not providing proper care and medical aids to the girl child in Rajasthan (Singh et al., 1996). Based on the findings of the study, there is a need to have a nutrition intervention program for desert areas so as to improve the nutritional status of the female child in the society.

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