# Anthropometric Assessment of Nutritional Status of Primary School Boys (6-8 Years) From Punjab

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Better health, literacy and gainful employment are the targets for human development as envisaged by the United Nations Development Programme. The qualities a person imbibes as a child deepens as he grows and appears in several subtle ways in his conduct and character as an adult. Therefore what effects the interests of children affects the well being of the entire group, of which the child is one member. It is almost an article of faith with the civilized countries that children should have opportunities for fullest development and growth towards maturity through physical, socio-emotional and spiritual well being.

Health planning is the most important component of children's well being and forms an integral part of national socio-economic planning. Rural children require considerable attention since substantial number of them are raised in families which due to their socio-economic conditions are unable to provide the required standards of health care to children to help them realize physical and mental potentials to the fullest.

The optimum growth and development of children can be planned if baseline data is available on current status of growth and development of children vis a vis the status of children from the developed world. Progress in health planning could be assessed from time to time if such information/studies are available. In a country like India, it is possible only if region specific reference data reflecting socio-ethno-cultural diversity are available. There is paucity of region specific standards for growth and development of rural children. The reference anthropometric standard specifically for rural children are also essential for the use of physicians, nutritionists and early childhood educationists, extension and social workers, researchers and planners.

It has been accepted all over the world, that nutritional status of the child has a direct bearing on his health status, both physical and mental which are interrelated. Thus, the present study attempts to focus on the nutritional status of Rural Boys (6-8 years) from Punjab.
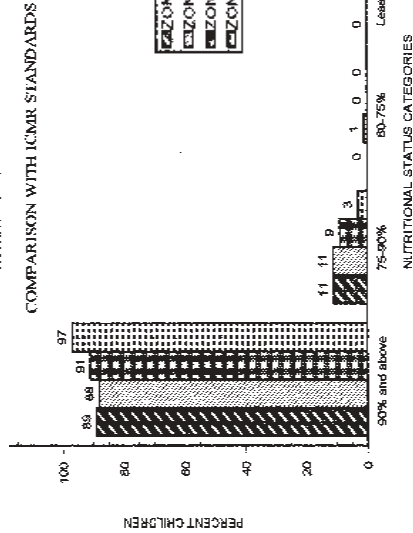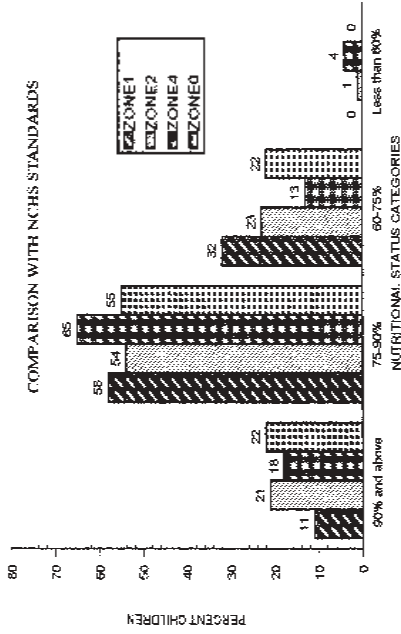
## MATERIALS AND METHODS

A sample of 342 male subjects in the age range of 6-8 years were randomly selected from villages located in four agroclimatic zones (Zone 1 – Sub Mountain region; Zone 2 – Undulating plain region; Zone 4 – Western and Western plain region; Zone 0 – Central plain region) of Punjab. The number of villages selected was proportionate to the number of villages located in each agroclimatic zone. The sample was distributed into yearly age groups. More than 100 subjects of each sex form the sample size at each age level and comprised of proportionate number of subjects from each agroclimatic zone. They were measured for height and weight to assess their growth profile and nutritional status. The height was measured in centimeters with an anthropometer to the nearest 0.1 cm. The weight was measured in kilograms to the nearest 0.05 kg. Interviewing their parents to assess their socio-economic status/level collected the family background information for each child. As per socio-economic assessment scores, the sample subjects belong either to middle or low socio-economic status/level.

For statistical analysis, the yearly data was grouped and was statistically processed for mean, standard deviation, variance of both physical variables for each sex and agroclimatic zone, separately. Application of t-test of significance assessed Significant Interzonal differences in anthropometric parameters of nutritional status. Chi-square test was applied to project significance of Interzonal differences in frequencies of various grades of nutritional status based on anthropometric assessments.

## RESULTS AND DISCUSSIONS

The anthropometic assessment of nutritional status of rural boys (Fig. 1) as per Waterlow's classification (Height for age) from different
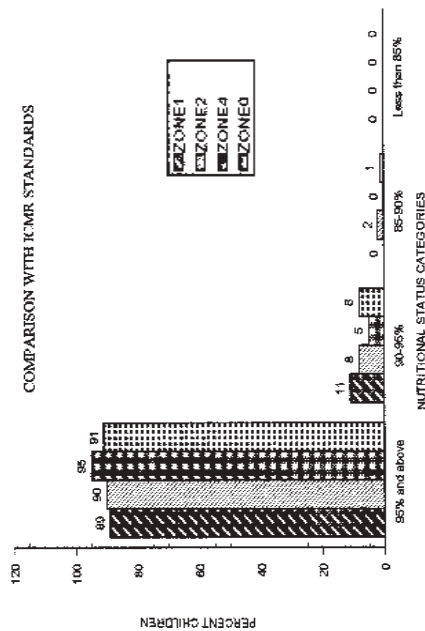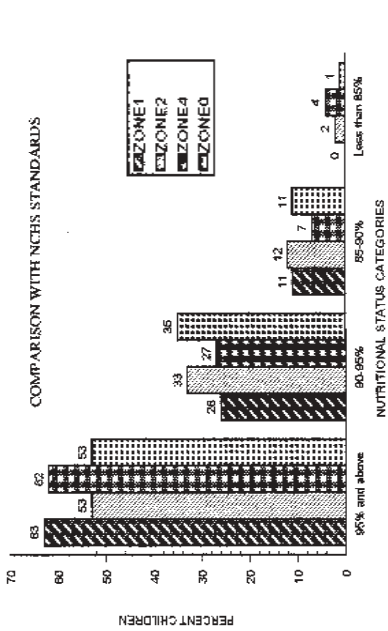
Fig. 1. Anthropometric assessment of nutritional status of rural boys from different agro climatic zones of Punjab.



Fig. 2. Anthropometric assessment of nutritional status of rural boys (6-8 years) from different agro climatic zones of Punjab.

**WEIGHT FOR HEIGHT**

**COMPARISON WITH NCHS STANDARDS**

**COMPARISON WITH ICMR STANDARDS**

ZONE 1: Sub Mountain undulating region (Pathankot, Gurdaspur, Hoshiarpur, Balachaur, Patiala & Ropar)
ZONE 2: Undulating plain region (Nawanshahar, Gurdaspur, Rajpura, Tanda, Machhiwara block of Ludhiana)
ZONE 3: Western & Western plain region (Amritsar, Faridkot, Bathinda, Sangrur, Ferozepur & Moga)
ZONE 4: Central plain region (Ludhiana, Nabha, Malerkotla, Kapurthala, Sirhind, Batala, Beas & Jalandhar)
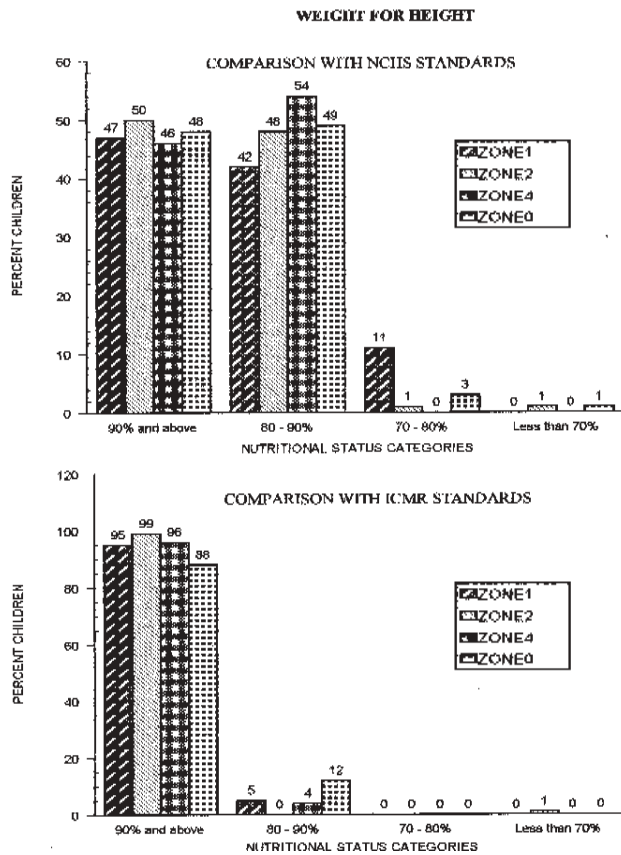
**Fig. 3. Anthropometric assessment of nutritional status of rural boys (6-8 years) from different agro climatic zones of Punjab.**

agroclimatic zones of Punjab depicted that majority (63% from Sub mountain region, 62% from Western plain region 53% from Undulating plain region and 53% from Central plain region) of subjects when compared with NCHS standards were found to be nutritionally normal; 26 percent to 35 percent of sample was found in the category of mild malnutrition whereas, 7 percent to 12 percent were moderately malnourished. Very low percent (4% from Western plain region, 2% from Undulating plain region and 1% from Central plain region) were found to be severely malnourished. When the same sample was compared with ICMR standards, majority (95% from Western plain

region, 90% from Undulating plain region, 91% from Central plain region and 89% from Sub mountain region) of them were found to be nutri-tionally normal. 2 percent to 11 percent of them were found either mildly or moderately malnourished. It was interesting to note that none of the boys was found to be severely malnouri-shed. On the whole, the results depicted that majority of boys were nutritionally normal irres-pective of the standards used for comparison. The percentage of boys in the category of mild or moderate malnutrition was more when compared with NCHS standards. No significant differences were found across different agroclimatic zones.

Anthropometric assessment for nutritional status as per Gomez's classification (Weight for Age) was assessed (Fig. 2). When rural boys were compared with NCHS standards, majority (65% from Western plain region, 58% from Sub moun-tain region, 55% from Central plain region and 54% from Undulating plain region) of sample was found to be mildly malnourished. 11 percent to 22 percent of boys were found nutritionally normal while 13 percent to 32 percent of them were found moderately malnourished. Quite a low sample (4% from Western plain region and 1% from Undula-ting plain region) was severely malnourished. In comparison with ICMR standards majority (97% from Central plain region, 91% from Western plain region, 89% from Sub mountain region, and 88% from Undulating plain region) of subjects were found to be nutritionally normal whereas none of them was found in the category of either moderate or severe malnutrition except 1 percent (Undula-ting plain region) were found moderately mal-nourished. On the whole, it was found that majority of boys were nutritionally normal when compared with Indian standards whereas the sample was distributed in the categories of normal, mild and moderate malnutrition when compared with Inter-national standards. Interzonal differences were found to be non-significant for both NCHS as well as ICMR

standards.

The anthropometic assessment of nutritional status of rural boys as per Waterlow's classification (Weight for Height) from different agro-climatic zones of Punjab depicted that only 47 percent to 50 percent of boys at the age of 6-8 years were found to be nutritionally normal, when compared with NCHS standards (Fig. 3). In this regard, maximum percentage (50%) was found in males from Undulating plain region and minimum percentages (46%) was found in case of Sub mountain region. It was found that majority (54%) of boys from Western plain region were found mildly malnourished whereas, Sub mountain region males had shown lowest percentage i.e. 42 percent. Majority of sample was found in the category of normal and mild malnutrition whereas only 1 percent was found in the category of severe malnutrition. When nutritional status of rural males was compared with Indian standards i.e. ICMR standards, 88 percent to 99 percent of rural males were found to be nutritionally normal. Only 5 percent to 12 percent were found in the category of mild malnutrition, whereas, none of the males was found either moderately or severely malnourished. On the whole, it can be stated that when compared with ICMR standards, majority of boys were found to be nutritionally normal, whereas, on comparing with NCHS standards, they were found to be either normal or mildly malnourished. Interzonal differences were found non-significant for both NCHS as well as ICMR standards.

## CONCLUSIONS

- Plan of action for rural children should include educating mothers and young girls on importance of nutrition to ensure proper mental and physical growth of children.
- When compared with International standards, it is obvious that majority of rural boys in Punjab was suffering from concurrent malnutrition whereas, 50% of the sample was suffering from long term malnutrition.

**ABSTRACT** Anthropometric assessment of nutritional status of primary school boys (6-8 years) was conducted for the state of Punjab. For the above purpose 342 boys were selected randomly from randomly selected villages located in four agroclimatic zones of Punjab. They were measured for height and weight to assess their growth profile and nutritional status. Interviewing their parents to assess their socio-economic status collected the family background information for each child. The results revealed that as per Waterlow's classification (Height for age), majority of respondents were found to be nutritionally normal when compared with both NCHS (International) as well as ICMR (Indian) standards and no significant Interzonal differences were found. As per Gomez's classification (Weight for age), majority of sample was found to be severely malnourished when compared with NCHS standards whereas according to ICMR standards they were found to be nutritionally normal. Interzonal differences were found to be non-significant for both the standards. As per Waterlow's classification (Weight for Height), 47 percent-50 percent of the subjects were found to be nutritionally normal when compared with both NCHS standards. As per ICMR standards, 88 percent-95 percent of the subjects were found to be nutritionally normal. Interzonal differences were found to be non-significant.

## REFERENCES

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