



Choice of Growth Charts for Indian Children?

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Introduction

Indian Academy Pediatrics 2015, Growth Charts, Indian Pediatrics pp 47-55; present data for revised growth curves for Indian children 5-18 yr of age. These data are collected from 13 studies conducted by different authors in their cities on middle and upper socioeconomic groups (apparently healthy children). Those with weight for height scores > 2 SD were removed from the study. Finally, growth charts were prepared on 18170 boys and 14978 girls.

Studying these curves in comparison to earlier Agarwal et al growth data the following comments are relevant [1-6]:

One can appreciate from seeing these curves, that for a minimum change in heights on 3rd to 50th centile (growth retardation being worked up in conjunction with lower centiles not upper centiles), we are sacrificing the ability to pick up overweight tendencies early (as there is a jump of 4 to 6 kg in pre-pubertal to pubertal ages in 50th centile, leave alone the big jump in higher weight centiles). After all, the main benefit of the growth charts for obesity prevention is to educate parents by showing them their child's plot on the charts, explaining how the weight centile is so high especially compared to height centile. Now if the chart itself is skewed upwards; we lose the ability to convince parents that their child is plotting too high as he will seem to plot normal.

This is further borne out by the fact that 23 kg/m² is on the 71 percentiles for boys. That means 29 % of "normal" children of this reference base were overweight. And 10% were obese (> 27 kg/m²). For girls, this figure is 25% for overweight. This has an implication for government figures of "malnutrition" prevalence in India; by using WHO charts we are over classifying undernutrition. Now the same will happen with the 2015 Indian growth charts, as "normal" weight for height will be higher.

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WHO Multicenter Growth Reference Study

The WHO growth data [7], in India were collected from south Delhi area and pooled in the international data. The WHO Multicenter Growth Reference Study (MGRS) was undertaken between 1997 and 2003 to generate new growth curves for assessing the growth of infants and young children around the world. The MGRS collected primary growth data and related information from approximately 8500 children from widely different ethnic backgrounds and cultural settings (Brazil, Ghana, India, Norway, Oman and the USA). The new growth curves are expected to provide a single international standard that represents the best description of physiological growth for all children from birth to 5 years of age and to establish the breastfed infant as the normative model for growth and development. These growth charts depart from the growth reference model in several ways. Children from six countries provided the data measurements, which were not representative of their country of residence, and were selected based on socio-demographic criteria and child's nutrition as per WHO guidelines. Natale and Rajgopalan [8] compared mean heights, weights, and head circumferences from a variety of studies with the WHO's data. They compared WHO (Multicenter Growth Reference study- MGRS) with data from 55 countries or ethnic groups. These study countries included India data from Agarwal & Agarwal 1994 [1], Norway and the USA as these countries had participated in the MGRS study. For height Indian children were below - 0.5 SD at more than 3 age points (Birth to 5 years of age) as compared to the MGRS data. In a large German study 2011 by Rosario et al [9], found that means for girls and boys were taller being at 62nd and 60th MGRS centile respectively, this made them to use the national data as standards instead of MGRS. Weight and head circumference varied more than the height. Similarly, MGRS head



circumference means may put many children at risk of misdiagnosis of micro/macro cephal. It is concluded that Height and weight may not be the optimal fits in all cases and recommend that country standards developed on Elite Children may be more ideal for assessing growth.

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