Time to Shun Diversity in Growth Charts: A Case for Using Only IAP 2015 Growth Charts for Identification of Growth Abnormalities in 5–18-Year-Old Indian Children

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Cross-sectional, population-based studies provide useful snapshots on the prevalence of various growth abnormalities in that population. These are useful at local as well as country level for planning and resource allocation for various nutritional problems. In this issue of the Journal, a study among rural adolescents from Erode and Vellore districts of Tamil Nadu by Chalil VK et al., with the objective of assessing the utility of IAP 2015 growth references in identifying growth abnormalities in this population in comparison to other charts, has been published [1].

One of the key aspects highlighted in this paper is that the use of appropriate growth charts that are population-specific and contemporary, is of utmost importance in the correct identification of growth abnormalities. For example, the use of World Health Organization (WHO) or Center for Disease Control (CDC) charts in place of the IAP 2015 charts can lead to an erroneous diagnosis of short stature and unnecessary investigations in 7 to 28% more adolescents (prevalence of short stature 11.3, 32.5, and 4.2% by WHO, CDC and IAP 2015 charts, respectively) [1]. At the same time, the percentage of children classified as short by the 2015 charts is slightly higher than that classified using the older IAP charts (based on the 1992 paper by Agarwal et al., and also recommended in the IAP 2007 guidelines) [2, 3], reflecting the slight secular trend in height.

The use of 23rd and 27th adult equivalent BMI for diagnosis of overweight and obesity, respectively, and omission of the data of children with weight for height more than +2 standard deviations (SD) has been a noteworthy highlight of IAP 2015 charts [4, 5]. This approach has taken into account the increase in average weight and BMI of the pediatric population that has taken place over time, and inadvertent inclusion

of children with unhealthy weights during construction of cross-sectional growth charts [5]. While contemporizing growth charts is important to capture the secular trend in height, ‘normalization’ of overweight can occur as part of this exercise unless these statistical methods are used. In the IAP 2015 charts, 23rd adult equivalent centile corresponds to approximately 0.55 SD (71st centile) for males and 0.67 SD (75th centile) for females; while the 27th adult equivalent centile corresponds to 1.33 SD (90th centile) and 1.63 SD (95th centile), respectively, in males and females. This revised approach has helped in early identification of children with overweight/ obesity, as noted in previous studies [6, 7], and corroborated by the present study as well [1].

Regarding wasting, or rather thinness, which is a more appropriate term for children above 5 y of age, the 2015 charts define it as BMI below the 3rd centile, while the older IAP charts defined it as BMI below the 5th centile. In the study by Chalil et al., a major discrepancy has been observed in the prevalence of thinness by the 2015 vs. older IAP charts (11% vs. 1.5%) [1]. This is somewhat disconcerting, as it conveys the impression that in the newer charts there may have been an upward shift in the weight and BMI centiles, leading to erroneous labeling of some children with normal BMI as thin. However, a quick comparison of the 3rd centiles of the 2015 BMI charts [4] and 5th centiles of the older charts [3] suffices to dispel this notion, as the 3rd centiles of the 2015 charts are nearly uniformly lower than the 5th centiles of the 2007 charts. Indeed, in two previous studies from Delhi and Rajkot, the proportion of school children with thinness was higher by the older IAP charts (4.4% and 5.9%, respectively) compared to the 2015 charts (2.4% and 3.4%, respectively) [6, 7]. The reason for the discrepant observation in the present study is that Chalil et al. have used –2 SD to define wasting using the older as well as the 2015 charts. In my opinion, this should not have been done.

The other key aspect that the paper by Chalil et al. highlights is the high prevalence of over-nutrition in adolescents

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from rural areas. This is in alignment with other recent studies. For example, in a study from a single district of Tamil Nadu, the prevalence of overweight/obesity in rural and urban school children in the age group of 5–18 y was 16.2% and 24%, respectively [8]. This highlights the impact of increasing urbanization of diet and lifestyle in rural areas as well, that needs to be taken cognizance of by all stakeholders, so that appropriate multipronged strategies can be instituted before the situation goes out of hand.

Declarations

Conflict of Interest None.

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