VAL 65 - A Hattori chart analysis of body mass index in infants and children

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OBJECTIVE: To consider the effects of variation in fat-free mass (FFM) and fat mass (FM) on BMI in infants, children and Fomon's reference child.
DESIGN: Body mass index (BMI) is widely used as an index of fatness in paediatrics, but previous analysis of the BMI ± fatness relationship has been insufficient.
SUBJECTS / METHODS: 42 infants aged 12 weeks; 64 children aged 8 ± 12 y; Fomon's reference child. FFM was measured by deuterium dilution. FFM index (FFMI) and FM index (FMI) were calculated. The effects of variation in FFM and FM on BMI were explored using Hattori's body composition chart.
RESULTS: In both infancy and childhood, a given BMI can embrace a wide range of percentage body fat. At both time points, the s.d. of FFMI was >60% of the s.d. of FMI. Graphic analysis differentiated the effects of lean tissue and fat deposition on BMI with age in the reference child.
CONCLUSION: Although valuable for assessing short-term changes in nutritional status in individuals, and for comparing mean relative weight between populations, BMI is of limited use as a measure of body fatness in individuals in both infancy and childhood. The development of BMI with age may be disproportionately due to either FFM and FM at different time points.

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