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Body fat assessment using Bioelectrical Impedance Analysis and Deuterium Dilution among South African children: BC-IT study

Introduction: Percentage body fat is strongly correlated with several non-communicable disease (NCDs) of life style, but its accurate measurement is difficult. The purpose of this study was to compare percentage body assessed by bioelectrical impendence analysis (BIA) against deuterium dilution (D2O) techniques among South African children.
Methods: A preliminary data on a total of 90 (38 boys and 52 girls; mean age 8.1±0.88) school-going South African children aged 6 to 8 years are participants in the Body Composition by Isotope Technique study (BC-IT Study). Total body water (TBW) and fat free mass (FFM) using D2O technique. Bodystat at 50 Khz was used to calculate TBW and FFM. Descriptive statistics, t-test for differences and correlation coefficients were employed to analyse the data.
Results: The mean total body hydration for total group was 76.92±0.24, with no significant (p=0.50) gender differences (76.90±0.26 for boys and 76.94±0.23 for girls). Mean values were 125.41±6.26cm height, weight 26.32±6.32kg; TBW 14.44±2.56kg; 18.79±3.38kg FFM and 7.52±3.75kg FM using D2O. With the use of BIA the mean values were 26.55±8.81kg FFM and 7.43±3.81 FM. No significant gender differences in age, body mass, height, TBW, FFM and FM. Significant positive relationship was found between body fat components determined by D2O and BIA with high significant positive correlations observed in girls.
Conclusion: It can be concluded that Bodystat underestimate fat mass and overestimate FFM and TBW compared to the deuterium dilution D20 technique in this sample of South African children.

Keywords: Body composition, bioelectrical impedance analysis

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