

FERREIRA, Marina de Figueiredo. *Body composition and basal metabolic rate of women with diabetes mellitus type 2*. 2012. 108 p. Dissertation (Master's degree in Food, Nutrition and Health) – Nutrition Institute, University of the State of Rio de Janeiro, Rio de Janeiro, 2012. *Supervisor*: Eliane de Abreu Soares.

Abstract

Individuals with diabetes mellitus type 2 (DM2) are usually obese, and to reduce the body mass and maintain the glycemic control a diet plan is necessary, which is based on the calculation of the required calories. The basal metabolic rate (BMR) is the main contributor to the total energy expenditure, and the body composition is the main determinant of BMR. This research aimed to investigate the influence of the components of the body composition on the BMR of women with DM2. A total of 28 adult women with DM2, aged between 37 and 59 years, and attended by the Public Healthcare System in Rio de Janeiro, RJ, participated in the survey. The variables observed were: BMR measured by indirect calorimetry, BMR estimated by predictive equations as proposed in the literature, body mass and height with determination of body mass index, waist circumference, total body composition by dual-energy X-ray absorptiometry method (DXA), glycemy, glycated hemoglobin, total cholesterol, HDL, LDL and triglycerides. It was used the paired t-test to determine the statistical significance of the difference between the BMR measured and estimated, and the percentage deviations between the BMR measured and estimated, and Pearson's correlation were calculated. Correlations considered as statistically significant (p value < 0.05) were used to estimate BMR by simple and multiple linear regression models. There was a significant difference between the BMR measured and BMR estimated for the equations of FAO/WHO/UNU and Huang et al. The equation that most overestimated BMR was of Huang et al. (11.26%; 4 to 18), followed by the equation of FAO/WHO/ UNU (10.58%; 3 to 18). However, the equation that underestimated BMR was of Mifflin et al. (-2.58%; -8 to 3). The correlation matrix identified, as positive significant correlations with BMR, body mass (0.729), body mass index (0.640), waist circumference (0.705), fat mass (0.705) and lean body mass (0.642). The correlations that were used in the multiple linear regression model were lean body mass and fat mass. This model reached a value of 53%, equal to that of the univariate linear regression when BMR is estimated by body mass. The adopted procedures indicated that the equation of Owen et al. was the one that was closest to that measured by indirect calorimetry. The most appropriate linear regression model for women with DM2, except for the characteristics of the specific group, would either include only body mass or lean body mass added to fat mass. But it is worth noting that body mass is operationally simpler to measure in public and private health centers and already is the sum of the two body compartments considered above described.