



COMPARISON OF BODY FAT PERCENTAGE ASSESSED USING SKINFOLD AND BIO IMPEDANCE ANALYSIS METHODS AMONG A SELECTED POPULATION OF NON-DIABETIC AND TYPE 2 DIABETIC FEMALES IN ELEHERA DIVISIONAL SECRETARIAT AREA AND CORRELATION OF BODY FAT LEVELS WITH INSULIN RESISTANCE: A FEASIBILITY STUDY

Rathnayake R.G.L., Hettiaratchi U.P.K. * and Perera P.P.R.

Department of Biochemistry, Faculty of Medical Sciences, University of Sri

Jayewardenepura, Sri Lanka

usha@sjp.ac.lk

ABSTRACT

Skinfold measurements and bio impedance analysis (BIA) are used as measures of obesity in other countries. Thus, this study focuses on body fat assessments in a rural Sri Lankan population as there are very limited data on these populations. Objective of this study was to compare body fat percentages (%BF) assessed using Skinfold method and BIA method among non-diabetic (n=25) and type 2 diabetic (n=25) females in Elehera divisional secretariat area (age range:-30-50 years, BMI_{non-diabetic}=23.7 Kgm⁻², BMI_{diabetic}=25.3 Kgm⁻², duration of diabetes:- 3 to 5 years) and identify the association of %BF measured by both methods with IR. Ten hour fasting blood samples were collected to assess the fasting blood glucose level and insulin level. Height, weight and skinfold measurement were taken. Body density was calculated using Jackson and Pollock 7-site skinfold equation for females. %BF_{skin-fold} was calculated using Siri equation (% BF = (495 / Body Density) – 450). %BF_{BIA} was assessed using Bio impedance analyzer. IR was calculated using HOMA-IR (homeostasis model assessment) equation. In both groups %BF_{skin-fold} values were significantly lower compared to %BF_{BIA} values (%BF_{skin fold}= 27.66, 26.82 and %BF_{BIA}= 34.54, 33.12 respectively among diabetics and non-diabetics, p<0.05). However, both measures strongly correlated with each other within the same groups [r_{diabetic} = 0.734 (p=0.000), r_{non-diabetic} = 0.644 (p=0.001)]. Only HOMA-IR showed a significant difference between the two groups. Insulin resistance of only non-diabetic group showed statistically significant correlation with %BF_{skinfold} and %BF_{BIA}, with %BF_{skinfold} showing the strongest correlation. As %BF values by the two methods were significantly different, it is necessary to validate and derive the cut-offs of both methods to determine the most suitable method for Sri Lankan population. However, as %BF_{skinfold} showed the strongest correlation with IR it can be used as a more practical method in risk assessment in non-diabetic population.

Keywords: Body Fat Percentage, Insulin Resistance, Diabetes

Acknowledgement: Financial assistance by University research grant (ASP/06/MED/2014/14)