

## **Comparison of Somatotypes, Body Mass Index, Fasting Blood Glucose, Insulin Resistance and Lipid Profile Parameters Between Diabetic Female and Diabetic Male Subjects and Evaluating the Importance of Somatotyping in Metabolic Risk Assessment**

**R. G. L. Rathnayake<sup>1</sup>, U. P. K. Hettiaratchi<sup>1\*</sup>, P. P. R. Perera<sup>1</sup>**

*<sup>1</sup>Department of Biochemistry, Faculty of Medical Sciences,  
University of Sri Jayewardenepura, Sri Lanka*

*\*usha@sjp.ac.lk*

The body composition between male and female subjects are different. Body mass index (BMI), which is a commonly used parameter does not describe this difference. However somatotyping techniques can assess individuals' body composition as Endomorphy (relative fatness), Mesomorphy (relative musculo-skeletal robustness), Ectomorphy (relative linearity based on height:  $\sqrt[3]{\text{weight}}$ ) which may have a value in metabolic risk assessment. Objectives of this descriptive cross-sectional study was to compare somatotypes, BMI, fasting blood glucose (FBS), insulin resistance (IR) and lipid profiles of diabetic male and female subjects and to identify the association of biochemical parameters with somatotypes. Hundred type 11 diabetic subjects were selected (55 females). Lipid profile and FBS level (enzymatic colorimetric method, Low density lipoprotein (LDL)-Friedwald equation), insulin level (Enzyme linked immune-sorbent assay), Somatotype (Heath and carter technique), BMI (world health organization), IR (Homeostatic model assessment equation) were assessed. Among body composition parameters the mean endomorphy and ectomorphy were significantly different ( $p < 0.05$ ) between male and female subjects (Endomorphy-  $6.5 \pm 1.2$ ,  $5.4 \pm 1.3$ , Mesomorphy-  $4.7 \pm 1.4$ ,  $4.8 \pm 1.5$  Ectomorphy  $-0.9 \pm 0.8$ ,  $1.4 \pm 1.0$ , BMI-  $25.3 \pm 3.8$ ,  $24.8 \pm 3.3$   $\text{Kg m}^{-2}$  respectively among females and males). From the biochemical parameters, only triglyceride and HDL levels (high density lipoprotein) were significantly different between the two groups (FBS mg/dl-  $127.8 \pm 50.6$ ,  $143.5 \pm 50.6$ , IR-  $4.7 \pm 3.1$ ,  $4.9 \pm 2.8$ , TC mg/dl-  $182.6 \pm 36.1$ ,  $194.7 \pm 38.7$ , LDL mg/dl-  $117.5 \pm 36.6$ ,  $128.4 \pm 36.2$ , Triglyceride mg/dl-  $102.5 \pm 62.5$ ,  $144.4 \pm 85.1$ , HDL mg/dl-  $44.5 \pm 8.6$ ,  $38.5 \pm 9.5$ , respectively among females and males). The mean lipid profile parameters of the two groups did not exceed the cutoff values, except HDL in male population, and no significant correlation ( $p > 0.05$ ) was observed with somatotyping parameters. In both groups mean FBS and IR levels exceeded the cutoff values and weak significant correlations ( $p < 0.05$ ) were seen with somatotyping parameters. It can be concluded that somatotyping parameters differ between the genders with significant correlations with IR and FBS. Findings demonstrate the importance of somatotyping in risk assessment of IR.

**Key words:** Somatotypes, BMI, Fasting blood glucose, Insulin resistance, Diabetes