

Comparative Evaluation of Obesity Dependent Diabetes Mellitus in Individuals - A clinical study

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ABSTRACT

Current study is a comparative evaluation of obese and normal weight diabetic individuals. Glucose levels, body weight and BMI are considered as Biomarkers of all the individuals. It was seen that individuals of Group B have a significant <0.005 change in standard mean deviation levels of male and female Body weight, BMI and Glucose (136 ± 18 , 32 ± 10 , 300 ± 11), (132 ± 36 , 31 ± 0.8 , 295 ± 12) as compared to the control (80 ± 16 , 18 ± 10 , 120 ± 11), (75 ± 12 , 17 ± 0.8 , 130 ± 12). Similarly significant <0.005 change is observed in the individuals of Group A and Group B.

Keywords: Obesity, diabetes mellitus, body weight

INTRODUCTION

Diabetes mellitus is a metabolic disorder and its chronic conditions cause's number of systematic complications in the body. Mainly diabetes has three types, diabetes type 1, diabetes type 2 and gestational diabetes (1). All types of diabetes mellitus have something in common. For regular catabolism of carbohydrates into glucose and use it for energy insulin which is a hormone is required (3). In case of diabetes mellitus, either human body cannot make enough insulin or in some cases insulin does not match to the receptors (2).

Glucose levels in the body showed variations throughout the day. In different studies it has seen that glucose levels rise after a meal and decrease within about 2 hours after eating (4). It is concluded by different researchers that variation in blood glucose levels in fasting 60-80mg/dl and in random 140-180mg/dl has seen in the blood of healthy people. But when people will eat a large quantity of carbohydrates then their glucose levels may increase more⁵.

Diabetes Type 2 is very complicated and it causes life threatening problems in other words it is a heterogeneous disease⁶. Many researchers claimed that type 2 diabetes is obesity dependent. Obesity is an abnormal metabolic syndrome in which excess amount of body fat has deposited at different regions of the body and causes negative effect on health⁸. People are generally considered obese when their body mass index (BMI) showed variations than the normal. Main cause of obesity is over eating and less moving. When the consumption of energy will be higher than the utilization body will present obesity. Burning off the excess amount of energy through exercise and physical activity save body from obesity¹⁰.

MATERIALS AND METHODS:

This is a comparative clinical study conducted in diabetic center of Jinnah Hospital Lahore. Total 150 male and female individuals were selected and divided them into three different groups. In Group A, 50 male and female

normal individuals were selected. While 50 male and female over weight diabetic individuals were placed in Group B and 50 male and female normal weight diabetic individuals were situated in Group C. Body weight, BMI and glucose levels are measured, and raw data operated with Biostatistical model (SPSS).

RESULTS

In this study glucose levels, body weight and BMI are considered of all the individuals as Biomarkers. It has seen in Group B in which total 50 individuals were included 25 male and 25 female all the biomarkers have significant <0.005 changes as compared to the control Group A. Similarly a significant <0.005 changes was observed in the individuals of Group B as compared to the control.

Group A, Control

Biomarkers	Units	Male Mean \pm SD	Female Mean \pm SD
Body weight	kg	80 \pm 16	75 \pm 12
BMI	Kg/m	18 \pm 10	17 \pm 0.8
Glucose levels (Random)	mg/dl	120 \pm 11	130 \pm 12

Group B, Diabetic obese individuals

Biomarkers	Units	Male Mean \pm SD	Female Mean \pm SD
Body weight	kg	136 \pm 18	132 \pm 36
BMI	Kg/m	32 \pm 10	31 \pm 0.8
Glucose levels (Random)	mg/dl	300 \pm 11	295 \pm 12

Group C, Diabetic normal weight individuals

Biomarkers	Units	Male Mean \pm SD	Female Mean \pm SD
Body weight	kg	90 \pm 31	90 \pm 26
BMI	Kg/m	19 \pm 22	18 \pm 21
Glucose levels (Random)	mg/dl	200 \pm 0.6	210 \pm 1.2

DISCUSSION

Diabetes Type 2 has a different pathophysiology than diabetes Type 1⁷. The major causes of diabetes Type 2 in both male and female of all age groups are obesity, physical inactivity and poor diet. Diabetes Type 2 is a biological disorder because of low amounts of insulin production from pancreatic β -cells and peripheral insulin

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resistance⁹. While Insulin sensitivity is another critical factor in the body. According to different researchers Insulin resistance is directly correlated with BMI, and body weight⁶.

In the current study glucose levels, body weight and BMI are considered as Biomarkers of all the individuals. It was seen that individuals of Group B have a significant <0.005 change in standard mean deviation levels of male and female Body weight, BMI and Glucose (136±18, 32±10, 300±11), (132±36, 31±0.8, 295±12) as compared to the control (80±16, 18±10, 120±11), (75±12, 17±0.8, 130±12). Similarly significant <0.005 change is observed in the individuals of Group A and Group B. Insulin resistance is directly correlated with BMI, and body weight (11). It has been seen that insulin sensitivity varies in those individuals who are lighter than high weight³.

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