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Diabetes and obesity determinants based on blood serum

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Background & Objective: The present report identifies the determinants of diabetes mellitus and obesity based on six blood serum measurements along with the age, sex, average blood pressure and body mass index on 442 diabetic patients. Determinants of Diabetes Mellitus (DM) and obesity are little-known based on blood serum.

Method: The current report considers secondary data on 442 diabetes patients along with 11 covariates, namely, Average Blood Pressure (ABP), age, sex, body mass index (BMI), six blood serum measurements such as Low Density Lipoproteins (LDL), High Density Lipoproteins (HDL), Total Cholesterol (TC), Triglyceride (TG), serum concentration of Lamotrigine (LTG), Glucose (GLU) and a Quantitative Measure of DM Disease Progression (QMDMDP) one year after the baseline. In the present study, the responses GLU and BMI are positive, heteroscedastic and with non-normal distributions. So, these are analyzed by the joint gamma and log-normal models.

Result: Mean glucose level increases at the older age (P=0.0042). It is higher for female sex (P=0.1292) than the male. It increases as the BMI (P=0.0011) or ABP (P=0.0011) increases. Total cholesterol is positively partially significant (P=0.1683) with the glucose. Mean glucose level increases as the triglyceride (TG) (P=0.0594) or serum concentration of Lamotrigine (LTG) (P=0.0003) increases, variance of glucose increases as the BMI (P=0.0267) decreases. Glucose variance increases as the quantitative measure of DM disease progression one year after the baseline increases (P=0.1019). On the hand, mean BMI is higher for male sex (P=0.1383) than female. Mean BMI increases as the average blood pressure (P=0.0047) or LDL (P=0.0004) increases. It also increases as the HDL (P<0.0001) or TG (P=0.0732) decreases. Moreover, mean BMI increases as the LTG (P=0.1007) or GLU (P=0.0203), or QMDMDP (P<0.0001) increases. Variance of BMI decreases as the age (P=0.0060) or HDL (P=0.0016) or LTG (P=0.1800) increases. BMI variance is higher for male sex (P=0.0001) than female. Also BMI variance increases as QMDMDP increases (P=0.1367).

Conclusion: Impacts of blood serum along with the age, sex and the average blood pressure on diabetes mellitus and obesity have been determined. In addition, it has been identified that the diabetes mellitus and obesity are closely associated with each other. Most of the findings, especially the variance determinants of DM and BMI are completely new in the literature.

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