

## **Prediction of Blood Glucose Level Based on Lipid Profile and Blood Pressure Using Multiple Linear Regression Model**

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### **ABSTRACT**

Diabetes mellitus refers to a metabolic disorder that occurs due to insulin resistance and/or inability to produce enough insulin from islet  $\beta$ -cells in pancreas leads to increasing levels of blood glucose. Due to perturbation towards current diabetes screening and diagnosis procedures that require fasting, oral glucose consumption and involve invasive and finger-pricks, numbers of undiagnosed diabetes mellitus kept increasing due to hesitation of these people to take screening tests as their routine check-up. Since diabetes mellitus is closely related to blood glucose level, a multiple linear regression model for predicting the blood glucose level gives the impression as one of the alternatives. Thus, this study proposed a multiple linear regression equation for predicting the fasting blood glucose level based on independent parameters of lipid profile and blood pressure as high blood cholesterol and high blood pressure are known as risk factors for diabetes. There are 302 data collected from UMP's retrospective data via data directory from University Health Centre in 2017 to 2018. This study shows that the adjusted R<sup>2</sup> of 46.8% for multiple linear regression model of fasting blood glucose level was obtained to predict the possibility of pre-screening diabetes without fasting procedures. This model equation was solely based on high density lipoprotein cholesterol, triglyceride and systolic blood pressure levels with the prediction made by the model are acceptable with moderate accuracy (MAPE = 9.46%). In order to increase the accuracy of the model, future research should consider a bigger and wider cohort from different comorbidities background which can be an alternative method in screening diabetes mellitus.

### **KEYWORDS**

Fasting blood glucose; Multiple linear regression; Screening diabetes mellitus

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