

Multiple linear regression model analysis in predicting fasting blood glucose level in healthy subjects

A. F. Q. A. Aishah^a; J. Ummu K.^a; M. R. Zainuriah^b and A. K. Norhilda^b

^aHuman Engineering Group (HEG), Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

^b Universiti Malaysia Pahang, Health Centre, 26600 Pekan, Pahang, Malaysia

*Corresponding author: ummu85@ump.edu.my

ABSTRACT

Diabetes mellitus referred to inability to produce or respond to hormone insulin resulted in elevated blood glucose level in human body. The purpose of this study was to investigate the relationship between fasting blood glucose, cholesterol and blood pressure levels in healthy subjects. 211 subjects having age between 23-66 years old were randomly selected among UMP's residents from April 2017 to May 2018. Mann-Whitney Ranksum test determine the significant differences between overall and diabetics subjects. Pearson Correlation compute the associations between fasting blood glucose, lipid profile substances and blood pressure. Linear regression analysis verified the relationship between fasting blood glucose and other parameters, with 95%CI. Fasting blood glucose are significantly difference ($p < 0.05$) with blood pressure and others lipid profile substances except for total cholesterol. All lipid profile substances are significantly difference ($p < 0.05$) with blood pressure level. There is 59% (R^2 -value) chances in getting correct prediction of diabetes using high density lipo-protein cholesterol, low density lipo-protein cholesterol, triglyceride, systolic blood pressure and triglyceride based on fasting blood glucose value. However, a larger and well-spread cohort with different backgrounds and demographics however is required to validate the finding of this study.

KEYWORDS:

Blood pressure; Cholesterol; Correlation methods; Linear regression; Proteins