

Prediction Model of Body Mass Index of Young Adult Students of Public Health Faculty of University of Indonesia

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Abstract : Background/Objective: Body Mass Index (BMI) serves various purposes, including measuring the prevalence of obesity in a population, and also in formulating a patient's diet at a hospital, and can be calculated with the equation = body weight (kg)/body height (m)². However, the BMI of an individual with difficulties in carrying their weight or standing up straight can not necessarily be measured. The aim of this study was to form a prediction model for the BMI of young adult students of Public Health Faculty of University of Indonesia. Subject/Method: This study used a cross sectional design, with a total sample of 132 respondents, consisted of 58 males and 74 females aged 21- 30. The dependent variable of this study was BMI, and the independent variables consisted of sex and anthropometric measurements, which included ulna length, arm length, tibia length, knee height, mid-upper arm circumference, and calf circumference. Anthropometric information was measured and recorded in a single sitting. Simple and multiple linear regression analysis were used to create the prediction equation for BMI. Results: The male respondents had an average BMI of 24.63 kg/m² and the female respondents had an average of 22.52 kg/m². A total of 17 variables were analysed for its correlation with BMI. Bivariate analysis showed the variable with the strongest correlation with BMI was Mid-Upper Arm Circumference/ $\sqrt{\text{Ulna Length}}$ (MUAC/ $\sqrt{\text{UL}}$) ($r = 0.926$ for males and $r = 0.886$ for females). Furthermore, MUAC alone also has a very strong correlation with BMI ($r = 0.913$ for males and $r = 0.877$ for females). Prediction models formed from either MUAC/ $\sqrt{\text{UL}}$ or MUAC alone both produce highly accurate predictions of BMI. However, measuring MUAC/ $\sqrt{\text{UL}}$ is considered inconvenient, which may cause difficulties when applied on the field. Conclusion: The prediction model considered most ideal to estimate BMI is: Male BMI (kg/m²) = $1.109(\text{MUAC (cm)}) - 9.202$ and Female BMI (kg/m²) = $0.236 + 0.825(\text{MUAC (cm)})$, based on its high accuracy levels and the convenience of measuring MUAC on the field.

Keywords : body mass index, mid-upper arm circumference, prediction model, ulna length

Conference Title : ICPHMT 2018 : International Conference on Public Health and Medical Technology

Conference Location : Paris, France

Conference Dates : March 15-16, 2018