

Simple linear regression approach for evaluating models to estimate stature based on upper limb dimensions of adult Bangladeshi males

ABSTRACT

Background: The stature of a living human reflects the nutritional, genetic, and disease patterns of individual experiences. This study adopted a simple linear regression method and R² values to identify the preferred model for stature estimation based on the lengths of the arm, radius, ulna, and hand; breadth of the hand; and circumference of the wrist of the adult Bangladeshi male population. This cross-sectional study was performed in the Anatomy Department of Sir Salimullah Medical College, Dhaka, from January 2009 to June 2011. One hundred right-handed adult Muslim Bangladeshi males aged 25 to 45 years participated in the study. Results: The regression model using right and left ulnar length explained 63% of the measured stature with the least standard error of the estimate (0.435 and 0.436), the model using left and right arm length explained 60%, the model using left and right radius length explained 51%, and the model using left- and right-hand length explained 44% of the measured stature. However, the models using left and right handbreadth and wrist circumference explained only 11 to 13% of the measured stature with a higher standard error of the estimate (6.66 to 6.73). For 25- to 45-year-old Bangladeshi Muslim males, the ulnar length of both sides was the best predictor of stature. Conclusions: Linear regression equations in estimating stature effectively may encourage its application in future studies addressing different age groups, sexes, nutritional statuses, religions, and ethnicities of Bangladesh.