

Estimation of stature from ulna

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The successful identification of the deceased is vital to the progress of any forensic investigation. Determination of stature from skeletal fragments and mutilated bodies is of prime importance in forensic identification. Stature estimation usually is based on measurement of long bones. Most commonly used is the tibia. Few studies have been published on estimation of stature from Ulna in the western communities. The problem is the ratios and formulae are population specific and the reliability of estimating stature for another population is regarded with concern. The present study tries to establish a relationship between ulna length and height of the individual to establish stature in fragmented skeletal remains and mutilated bodies and derive values from an Indian population. The main aim of the study is to determine the stature of a person from the per-cutaneous length of ulna among medical school students. The cross sectional study was conducted in the Department of Forensic Medicine and Toxicology, Kasturba Medical College, Mangalore of 150 male and 150 female students. The sample size was calculated with 95% confidence level & 90% power [$n = \frac{2(Z_a + Z_b)^2 * SD^2}{(Mean dif)^2}$]. The length of the right and left ulna was measured with a standard vernier calliper from the apex of the olecranon to the styloid process with the elbow in full flexion and the height of the individual was measured with a calibrated standing meter rule. The measurements were tabulated in the proforma and the data was analyzed using SPSS statistical package and linear regression formulae were derived to determine the stature separately for males and females. The descriptive analysis of the data showed variation of length of right and left ulna in males to range from 25.60 cm to 32.80 cm and 25.20 cm to 32.50 cm respectively. Similarly the variations of length of right and left ulna in females ranged from 22.40 cm to 29.8p cm and 22.70 cm to 35.30 cm respectively. The height of the male students ranged from 159 to 192 cm whereas in females it ranged from 147 cm to 177 cm.

A Multiple regression equation was deduced for males and females as follows:

Males: Height = 80.068 + 1.681xR + 1.618xL

Females: Height = 71.454 + 3.192xR + 0.295xL

Where R denotes right ulnar length and L denotes left ulnar length. The accuracy of prediction of stature of a person was also calculated for the regression equation deduced. The percentage of accuracy for males was 69% where as for females it was 80 %.

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