

Cardiothoracic Ratio (CTR) of Normal Newly Enrolled Undergraduate Students Of University of Jos, North Central Nigeria Using Plain Chest Radiographs

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Abstract

Results of previous research studies have presented racial difference as a function of body size. Several literatures on racial variation of heart sizes also abound. This research was aimed at determining a more accurate relationship to calculate cardiothoracic ratio (CTR) and assessing its relation to the age, height, weight and Body Mass Index (BMI) of normal newly enrolled undergraduate students of University of Jos. A total of 80, standard postero-anterior chest radiographs of normal young Nigerian students (40 males and 40 females) of ages 16 – 24 years in University of Jos Health Centre were viewed. From the chest radiographs, the cardiac diameter (CD) was measured at the widest point of the cardiac silhouette. The thoracic diameter (TD) was taken at the costophrenic insertion of the diaphragm. Using these data, the cardiothoracic ratio (CTR) was computed. Body mass index was also calculated while CTR was determined by dividing the CD by the TD. Degree of correlation was assessed for all the study parameters and analysis was made for regression and correlation coefficients using IBM SPSS statistical package version 21. The mean age of the study group was found to be 19.2 ± 2.2 years. The average cardiothoracic ratio (CTR) for the studied group was 0.46 ± 0.03 , mean cardiac diameter (CD) was found to be 12.23 ± 1.06 cm and mean value of the Thoracic diameter (TD) was found to be 26.54 ± 2.04 cm. The mean Body Mass Index (BMI), mean height and mean weight of the studied group were found to be $22.65 \pm 3.87 \text{ kg m}^{-2}$, 166.82 ± 7.71 cm and 62.99 ± 11.43 kg respectively. The Cardio-Thoracic Ratio (CTR) was found to correlate significantly only with CD with correlation coefficient, $r = 0.488$ at ($P < 0.01$).

Keywords: Cardiothoracic ratio (CTR), Cardiac diameter (CD), Thoracic diameter (TD) and Body Mass Index (BMI)