



## Correlation of Stature with Head Circumference – An Observational Study

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### Abstract

**Aims and Objectives:** Estimation of stature – body height of an individual is an essential parameter in anthropometry. The aim of the present study is to observe the correlation between stature and head circumference in adolescent population of Telangana region.

**Materials and Methods:** This studied was performed on 200 asymptomatic, healthy adolescent college students with age between 18 to 25 years belonging to various regions of Telangana. Head circumference was measured by non stretchable measuring tape; Height was measured by using standard anthropometer.

**Results:** Correlation coefficient between the stature and head circumference were found to be statistically significant.

**Conclusion:** There is a correlation between stature and head circumference. If one of the parameter is known the other can be known by applying the regression equations.

**Keywords:** stature, head circumference, height, anthropometry.

### Introduction

Anthropometry is the scientific study of the measurements and proportions of the human body. Height, one of the important anthropometric factors is essential in the identity of an individual. Height of an individual depends on the proportions of head, face, and trunk, upper and lower limbs. Estimation of height from different parts of the body is essential in identification of deceased individuals.

Studies were conducted in estimating height from measurements of head, face <sup>(1)</sup>, long bones <sup>(2)</sup>, spine <sup>(3)</sup>, hand <sup>(4)</sup> and foot <sup>(5)</sup>. Height of an individual is influenced by both genetic and environmental factors. As it varies with race and ethnicity, regional studies for estimating height from different parts of body are essential. With this background this study was initiated to estimate the relation between height and head circumference in Telangana region.

### Materials and Methods

A total of 200 subjects with an age span of 18 to 25 years were included in the study belonging to the different colleges in and around Hyderabad in Telangana region. Selected students were healthy, without any craniofacial deformities or any stature and skeletal deformities. Informed consent was obtained from the subjects and ethical permission was taken from the concern authorities.

### Method

Maximal fronto-occipital circumference was measured by placing a nonstretchable plastic tape (calibrated in millimeters) just on the occipital prominence and the supraorbital ridges, while viewing the subject laterally also to ensure proper placement of the tape. In cases of some hairstyles in males, we drew the tape tightly and compressed the hair as much as possible. In cases of females, we asked the subjects to lift their hair in occipital area and the tape was placed against the skin and not over the lumps of hair. This method was in accordance with the one used by Everklioglu et al<sup>(6)</sup>.

Height was measured as vertical distance from the vertex to the floor using a standard anthropometer. Measurement was taken by making the subject stand erect on a horizontal resisting plane barefooted. Anthropometer was placed in straight vertical position behind the subject with head oriented in Frankfurt plane and shoulder blocks and buttocks touching the vertical limb of the instrument. The movable rod of the anthropometer was brought in contact with vertex in the midsagittal plane<sup>(7)</sup>.

### Results

Correlation coefficient (r) was determined using Karl Pearson's formula between stature and head circumference = 0.34

### Discussion

Height estimation by measurements of various long bones, head measurements, hand, and foot length has been attempted by several workers with

variable degree of success. In previous studies by Saxena et al<sup>(8)</sup> on Agra population, Jadav HR, Shah GV<sup>(9)</sup> on Gujarat population, Sudhir PE et al<sup>(10)</sup> on Maharashtra population, Seema and Mahajan A<sup>(11)</sup> on Punjab population, Santosh et al<sup>(12)</sup> on Rajasthan population, Richards, Elizabeth<sup>(13)</sup> on an American White population, Ryan I, Bidmos MA<sup>(14)</sup> on South African population have shown correlation coefficients between stature and head length as +0.2048, 0.53, 0.62, 0.52, 0.94 (males), 0.85 (females), ranging from 0.343 to 0.447 for females and 0.285 to 0.357 for males & ranged between 0.40 and 0.54. respectively. In the present study, correlation coefficient between, Stature and Head length is 0.34.

Thus significant positive correlation coefficient is evident.

### Conclusion

This study was carried out to find the correlation between stature and head circumference to calculate the one from another through regression formulas.

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### Conflicts of Interests: None

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