



## Estimation of Stature using Hand Length in South Indian Region

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### ABSTRACT

The aim of the study is to estimate the natural height of a person using hand length in South Indian region. A stature is the natural height of a person in erect position. An attempt is done to check the correlation between stature and hand length in Indian population between 18-23 years of age. In different ethnic groups various researchers differ in estimation of stature from hand length. The same is done in this study to derive the regression equations for correct estimation of stature from hand length. When identifying deceased from few body parts is difficult estimation of stature is of great importance. Therefore estimation of stature is very helpful. Many studies have been done on estimation of stature using long bones. Therefore this study is done using the hand length measurement.

**Keywords:** natural health, hand length, estimation of stature, long bones.

### INTRODUCTION

Immense importance to forensic expert and a crucial problem is the identification of human remains. An inherent characteristic among the other parameters is the individual's parameter. In the form of proportion to the total stature a certain relationship is represented by the length of few long bones and appendages of the body.

Measuring the whole limb bone and correlating living stature and limb bone length are the limited orthodox methods of estimating stature.

To indicate the relationship between the height and hand length in healthy individuals of both male and female an attempt has been made to derive the regression formula.

This study will be of interest in areas such as forensics, human biologist and physical anthropologist.

Also helpful for determination of stature from remains of upper limb for forensic scientists.

Estimation of stature using the length of different long bones have been studied previously<sup>1,2</sup>.

And others have tried using the length of hand, foot and arm span<sup>3,4</sup>. An effort is made in the current study to find the correlation between stature and hand length in humans of age 18-23.

### MATERIALS AND METHODS

For the current study, total 100 (60 females and 40 males) healthy, adolescent dental students belonging to south Indian region were selected.

Their age ranged 18-23 years. A direct distance from the tip of distal point of the styloid process to the tip of the middle finger was taken to measure the hand length.

The subject was asked to place their hand on a table with

thumb abducted and fingers together. By standing height measuring instrument the stature of the subject was measured and by making them stand in erect anatomical position.

### RESULTS

In the current study:-

Table 1 indicates:

- Mean height of males to be 163 with a standard deviation of +/- 5.1 cm.
- Mean hand length of males of the right side to be 18.9 with a standard deviation of +/- 3.1 cm whereas the mean hand length of the left side to be 18.5 with a standard deviation of +/- 3.0cm.

**Table 1:** Measurement of Height and Hand Length in Males

Measurements	Mean Value	Standard Deviation
Height	163	5.1
Hand length (right)	18.9	3.1
Hand length (left)	18.5	3.0

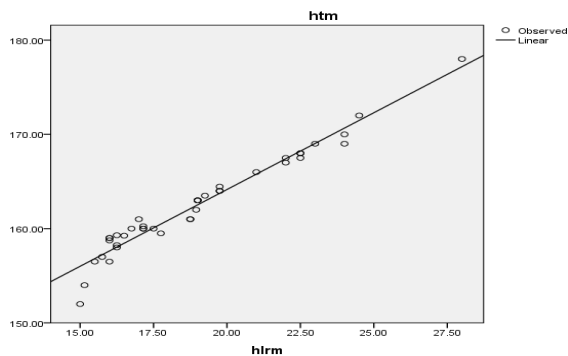
**Table 2:** Measurement of Height and Hand Length in Females

Measurements	Mean Value	Standard Deviation
Height	160	5.8
Hand length (right)	16.5	2.8
Hand length (left)	16.1	2.7

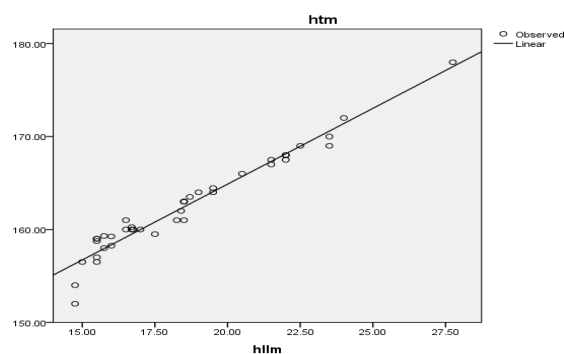
Table 2 indicates:



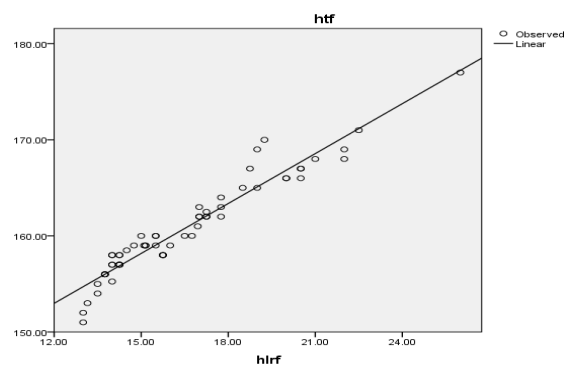
- Mean height of females to be 160 with a standard deviation of  $\pm 5.8$  cm.
- Mean hand length of females of the right side to be 16.5 with a standard deviation of  $\pm 2.8$  cm whereas the mean hand length of the left side to be 16.1 with a standard deviation of  $\pm 2.7$  cm.



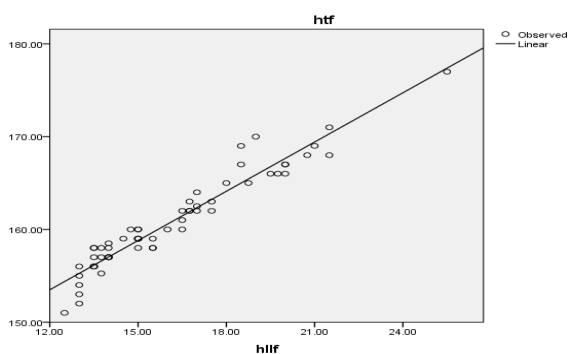
**Figure 1:** Regression of height on right hand length for males



**Figure 2:** Regression of height on left hand length for males



**Figure 3:** Regression of height on right hand in females



**Figure 4:** Regression of height on left hand in females

## DISCUSSION

Study on estimation of stature from various long bones have been attempted with a variable degree of success by many researchers<sup>5,6</sup>.

The height were estimated in 100 dental students from their hand length between 18-23 years by deriving a regression formula. It had an error of 3-6cm<sup>7</sup>. An correlation was found between the regression equation and stature in punjabi population<sup>8</sup>.

A Nigerian study attempted to derive regression formula from the hand length and showed a significant correlation between stature and hand length<sup>9</sup>. Another study was conducted on 166 subjects showing a close similarity between stature and hand measurements and also derived regression equation<sup>10</sup>.

Various anatomical positions of one population do not go with the other of the regression equations was found in previous studies<sup>11,12</sup>. Same goes with the current study. The regression equation of one sex cannot be used to the other sex even of the same ethnic group<sup>13,14</sup>. To estimate the stature of various long bones many studies have been done the past. In western countries most of this is done.

Therefore this study is done to find a correlation between the length of stature and hand length and derive a regression equation in male and female of south Indian population.

## CONCLUSION

Paramount importance to forensic experts and anthropologists is the estimation of stature.

A strong relationship is to be found in this study between the stature and hand length. These findings can be helpful in cases where there is lack of availability of whole length of hand and foot.

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