



# An Anthropometric Study Of Stature Estimation From Little Finger Length In The Haryanvi Population

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## ARTICLE INFO

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## ABSTRACT

Identifying a person is one of the most important aspects of a medicolegal inquiry. Research has been done to assess stature using various body components. The current study set out to determine whether little finger lengths are a reliable indicator of stature and to compute regression models using the data that were collected. The current study attempted to check the usefulness and calculate the regression models in the estimation of stature from little finger lengths. However, regression equations and multiplication factors are specific to Haryana and nearby regions only. Other parts of India can have some differences in value in comparison to our study. The study was carried out on a cross-sectional sample of 145 adult students from the Haryana region, of which 80 were males and 65 were females. A significant correlation was observed between little finger length and stature, i.e., 0.22 in males and 0.20 in females. The current study's findings show that little finger lengths are capable of estimating an individual's stature.

## Introduction

The primary purpose of a forensic inquest is to identify an unidentified person and determine the cause of death. The evaluation of a person's stature is thought to be crucial for identifying disfigured, mixed-up, or dismembered body parts. The current study is based on the idea that every body part can be used to measure stature. Numerous studies have been carried out to assess various body measurements in order to estimate stature (1, 2, 3).

The little finger is the fifth digit of the human hand, consisting of the distal phalanx (the bone at the end of the

finger), the middle phalanx (the middle bone of the finger), and the proximal phalanx (the bone closest to the palm). The purpose of the current study was to determine the relationship and regression equation between stature and little finger length for the Haryanvi community. However, because the relationship between little finger length and stature varies by region, it cannot be used in all populations due to hereditary, nutritional, and environmental factors. To date, there are no regression equations for estimating stature from little finger length for the Haryanvi population.

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## Materials And Methods

The Department of Forensic Medicine at PGIMS, Rohtak conducted a cross-sectional descriptive study from January to March 2013 with a total of 145 healthy medical students who gave consent, 80 of whom were men and 65 of whom were women. They were between the ages of 18 and 25. To avoid diurnal variation and personal error in methodology, the measurements were made in centimeters (cm) at a set time between 2 and 4.30 p.m by the same person.

**Stature (S):** The subject was in the standard standing position, and an anthropometer instrument was used to measure the projective distance between the standing surface and the vertex.

**Little finger length:** Little finger length was measured on the ventral surface of the hand from the most proximal crease of the digit to the tip of the fifth digit or little finger in the left hand using a Vernier caliper, measuring up to 0.1mm.

### Inclusion Criteria:

1. Students from the Haryana Region aged 18 to 25 years old.
2. Students who agreed to participate.

### Exclusion Criteria:

1. Subjects with any abnormality in their digits.

### Statistical Analysis:

The collected data was used to develop a linear regression equation that may be used to estimate height using percuteaneous little finger length, utilizing statistical calculations and the SPSS software.



Figure 1 shows the length of the little finger of the left hand measured with the aid of a Vernier caliper from the tip of the digit to the ventral proximal crease.

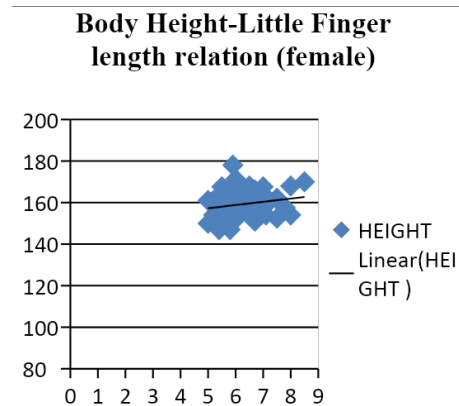
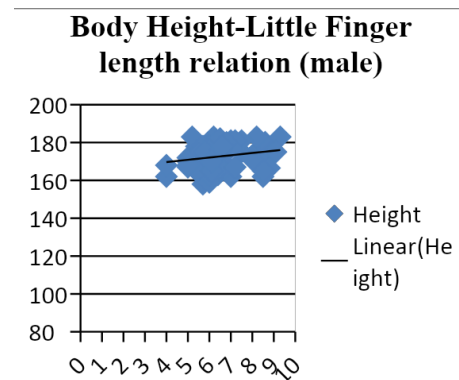
## Result

Data from 145 medical students was analyzed in the current study. Table 1 shows both gender's Mean Height,

Mean little finger length, correlation coefficient®, and regression coefficient in 80 Males and 65 Females. (table 1).

**Table 1:** shows the Gender-wise distribution of different values in 80 Males and 65 Females.

Parameters	Male	Female
Total Number	80	65
Mean height (cm)	172.75	159.10
S.D. of height	6.111	6.048
Mean Little finger length (cm)	6.53	6.189230769
S.D. of Little finger length	1.155219306	0.789011066
Correlation Coefficient (r)	0.223572118	0.202200359
(Height and Little finger Length)		



The linear regression equations which were derived for the estimation of statures from Little finger length (LL) in both males and females are given in Table 2.

**Table 2:** Regression formula from little finger length for both sexes

### Equation of regression derived from the male little finger length

$$\text{Height} = 1.195 \times \text{LL} + 164.9 \quad R^2 = 0.05$$

\* LL-Little finger length

### Equation of regression derived from the female little finger length

$$\text{Height} = 1.55 \times \text{LL} + 149.5 \quad R^2 = 0.040$$

\* LL-Little finger length

## Discussion

The correlation coefficient between height and little finger length is 0.22 in males and +0.20 in females, both of which are statistically significant at 0.001 in males and 0.001 in females. It shows that there is a strong association between height and little finger length, and that either measurement (little finger length or total height) is available. Other studies have produced similar results.<sup>4, 5</sup>

A research of 200 (100 males and 100 females) students and personnel from Kamineni Institute of Medical Sciences Narketpally was undertaken to estimate stature based on little finger length. A significant positive correlation was found in the case of middle finger length with stature. The regression equation obtained from data for estimation of stature from little finger length for males was  $\text{Height} = 100.716 + 8.1164 \times \text{Little finger length}$  and for females was  $\text{Height} = 138.99 + 2.479 \times \text{Little finger length}$ .<sup>5</sup>

Matheswaran and Vallabhajosyula studied 200 people (96 men and 104 women) between the ages of 18 and 25 in Andhra Pradesh's coastal regions. They measured people's heights and little finger length. The regression equations for stature and little finger length of the left hand obtained from data collected in males were  $\text{Height} = 122.73 + 8.072 \times \text{left Fifth digit length}$  and for females was  $\text{Height} = 119.58 + 6.916 \times \text{left Fifth digit length}$ .<sup>6</sup>

In 200 Malaysian Malays, 100 of whom were male and 100 of whom were female, ages 18 to 60, Moorthy and Zulkifly calculated the linear regression equations between stature and hand, which were  $\text{Stature} = 134.744 + 5.803 \times \text{little finger length in males}$  and  $\text{Stature} = 116.396 + 7.457 \times \text{Little finger length in females}$ .<sup>7</sup>

Iddalgave et al. carried out the study at Kalburagi's ESIC Medical College's Department of Forensic Medicine and Toxicology. A total of 140 random students (70 males and 70 girls) measurements were taken, which revealed a statistically significant association between little finger length and height. Females had a stronger relationship with little finger length and stature than males.<sup>8</sup>

Mulla et al. found that the average little finger length of men's right and left hands was  $7.13 \pm 0.50\text{cm}$  and  $7.11 \pm 0.51\text{ cm}$ , respectively, in their study. The average length of the right and left little fingers in females was  $7.15 \pm 0.49\text{cm}$  and  $7.13 \pm 0.48\text{cm}$ , respectively. The connection between stature and little finger length was shown to be positive in both males and females. In males, the correlation coefficients were  $r = 0.657$  and  $r = 0.645$  for the right and left hands, respectively. Females, on the other hand, had correlation coefficients of  $r = 0.631$  and  $r = 0.598$  for the right

and left hands, respectively. The correlation was statistically significant ( $p < 0.05$ ) in both hands and both sexes.<sup>9</sup>

## Conclusion

The data gathered from the residents of the Haryana region were used to create the regression equations. It has been noted that the length of the little finger can be used to measure stature. Forensic experts can use linear regression equations obtained from data as predictive values for medicolegal purposes in living and deceased individuals.

### Limitation

Because the current study only considers adults aged 18 to 25 and older people, it might not be very helpful in predicting body height.

Additionally, when putrefaction sets in and soft tissues are destroyed, it cannot be used for extended periods of time after death.

Moreover, the data may not apply to all people as only measurements from healthy individuals are used. Results cannot be applied to individuals who have little finger injuries or deformities due to congenital malformations.

## Conflict of Interest

None Declared.

## Ethical Approval

Taken from institutional ethics Committee.

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