

*Original Research Paper*

**AN ANTHROPOMETRIC STUDY OF STATURE ESTIMATION FROM LITTLE FINGER LENGTH  
IN THE HARYANVI POPULATION**

**Sharma R,\* Dhattarwal SK, \*\***

\*Assistant Professor, Deptt. of Forensic Medicine, Shaheed Hasan Khan Mewati, Government Medical College, Nalhar, Nuh, Haryana

\*\*Senior Professor and Head, Department of Forensic Medicine, PGIMS, Rohtak, Haryana, India.

**Article history**

Received Feb 10, 2023, Recd. in revised form Mar 31, 2023, Accepted on. Mar 31, 2023, Available online Jul 01, 2023

**Corresponding author**

**Dr Ruchir Sharma**, Phone: +91- 9888505203, Email: surwar10@gmail.com

**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 was 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 of Haryana region out 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.

**Keywords:** Total body height, little finger length, mean, Hand Anthropometry, Stature, Fifth Digit Length.

**Introduction**

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

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

**MATERIAL AND METHOD**

---

The Department of Forensic Medicine at PGIMS, Rohtak conducted a cross-sectional type descriptive study from January to March 2013 with a total of 145 medical students which were healthy and 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, 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 .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 digit abnormality.

**Statistical Analysis**

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



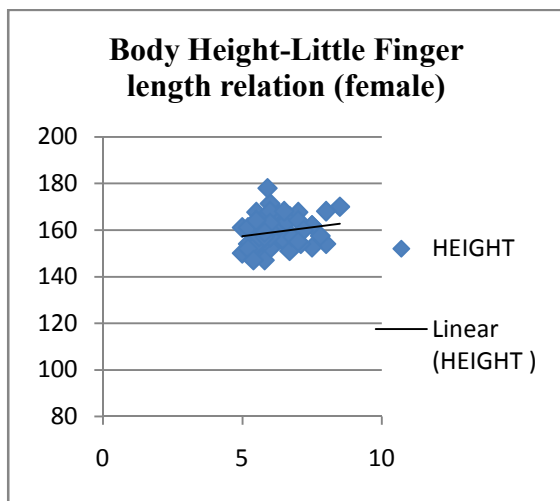
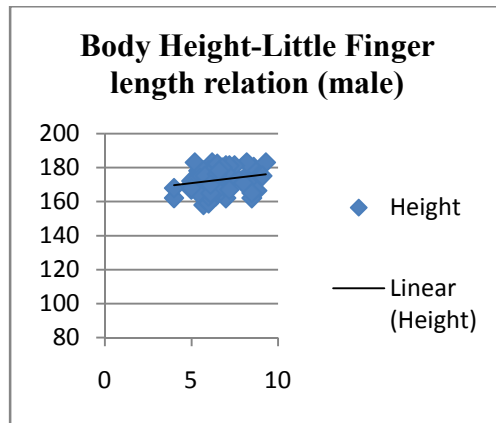
Fig. 1 showing the length of the little finger of the left hand measured with the aid of a vernier caliper from the tip of the digit to the ventral proximal crease.

**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) (Height and Little finger Length)	0.223572118	0.202200359



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**

<b>Equation of regression derived from the male little finger length</b>
Height = 1.195xLL + 164.9 R <sup>2</sup> = 0.05
* LL-Little finger length
<b>Equation of regression derived from the female little finger length</b>
Height = 1.55xLL + 149.5 R <sup>2</sup> = 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 left hand obtained from data collected in males were  $\text{Height} = 122.73 + 8.072$  (left Fifth digit length) and female was  $\text{Height} = 119.58 + 6.916$  (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, were  $\text{Stature} = 134.744 + 5.803$  little finger length in males and  $\text{Stature} = 116.396 + 7.457$  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) measurement 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 was used to create the regression equations. It has been noted that the little finger length 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 dead persons.

## **Limitation**

The following are the study's obvious limitations.

1. Because the current study only considers adults aged 18 to 25 and older people, it might not be very helpful in predicting body height..
2. Because when putrefaction sets in and soft tissues are destroyed, it cannot be used for extended periods of time after death.
3. The data may not apply to all people as only measurements from healthy people are used. Result cannot be used in person whose have little finger injuries or deformities due to congenital malformations.

## **Conflict of Interest**

None Declared.

## **Ethical Approval**

---

Taken from institutional ethics Committee.

## References

1. Dhattarwal SK, Chhikara P, Khanna K, Malik AK, Sharma R. Comparison of body height and foot length in students of PGIMS Rohtak in Haryana. *J Punjab Acad Forensic Med Toxicol.* 2013;13(1):14-6.
  2. Patel SM, Shah GV, Patel SV. Estimation of Height from Measurements of Foot Length in Gujarat Region. *J Anat Soc Ind.* 2007;56(1):25-7.
  3. Krishan K. Individualizing characteristics of footprints in Gujjars of North India – Forensic aspects. *Forensic Sci Int.* 2007 Jul 4;169(2-3):137-44. Epub 2006 Sep 11.
  4. Akhlaghi M, Hajibeygi M, Zaman N, Moradi B. Estimation of stature from upper limb anthropometry in Iranian population. *J Forensic Leg Med.* 2012 July; 19 (5):280-84.
  5. Suseelamma. D, Gayathri P, Deepthi S, Chandra mohan. M, Uday Kumar M, Amarnath. Study of Correlation between Stature and Length of Fingers. *Sch J App Med Sci.* 2014; 2(2D):773-84.
  6. Matheswaran G, Vallabhajosyula R. Digit length displays a fraction in stature estimation: A study from costal region of South India. *Int J Anat Res* 2014;2(2):336-39.
  7. Moorthy TN, Zulkifly NRB. Regression analysis for stature determination from hand anthropometry of Malaysian Malays for forensic investigation. *Srilanka J Forensic Med Sci Law.* 2014; 5(2):8-15.
  8. Iddalgave S, Kuppast N, Janagal N, Charmode S, Tawade PV, Sangram R, Babladi PI, Mehra S. Estimation of stature from little finger length and formulation of regression equation in both sexes. *Indian J Clin Anat Physiol.* 2021;8(2):140–44
  9. Mulla NG, Kulkarni P, Gangane SD. A study of estimation and correlations of stature from finger lengths. *Int Med J.* June 2014;1(6):272-76
-