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Correlation Between Stature and Length of Clavicle in Male Population of Central India

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Abstract

Introduction: Anthropology plays an important role in various medicolegal aspects; apart from determination of Age, Sex and Race of individual, stature is also one of the important parameter of identification various civil and criminal cases. Therefore efforts have been made to determine association between stature and length of clavicle if any.

Materials and Methods: The present research was carried out in department of Anatomy JNMC Sawangi (M) Wardha; was conducted on total 50 Male individual of age 17–24. The length was calculated with the help of osteometric callipers for clavicles from anatomical landmarks and stature was calculated in centimetres.

Conclusion: From present research it was concluded that the length of clavicle and stature reveals positivecorrelation and the linear relationship between the living stature and length of clavicle of each side was carried out in the form of regression equation.

Keywords: Anthropology; Clavicle; Stature; Correlation.

Introduction

Anthropometry which deals with expressing human form in numbers has been widely used in forensic identification and Anatomy. Identification includes determining sex, age, race and stature of a person. Among these, the sex and stature are the most important[1].

Determination of stature is one of the important factors amongst age, sex and race in various cases, which can be useful for identification in various medicolegal cases.[2] Determination of stature plays significant role in various medicolegal cases. In the field of anatomical, forensic and anthropology measurement of individual body parts plays very a vital role and to assess the various parameters in determination includes height of an individual.[3] Various authors have confirmed correlation between stature and measurements of severalparts of the body which are often represented using linear regression equation derived from them.[1] At present many inherent population differences present among the different population, thus giving rise to the need for different formulae to be derived from different populations.[4] Many authors like Terry, Thieme and Oliver, tried to determine correlation between stature and different bony measurement including clavicle.[5–7] There are very few literature available in India, Singh et al., Jit et al. envisages effort to determine correlation between stature and clavicle length.[8–9]

Materials and Methods

- The current study was carried out in the department of Anatomy JNMC Sawangi (M) Wardha; was conducted on total 50 Male

individual of age 17–24. The length of the both clavicle was measured by means of a centimeter scale from anatomical landmarks with skin marking pencil and re checked by vernier calliper. Stature was measured in centimeter.

- Participant has been asked to stand barefoot on a plane surface on the ground in upright position and was measured from the vertex to the foot according to the anatomical position and Frankfurt plane. To avoid diurnal variation, Measurements were taken at a set time. Exclusion of participant with obvious deformity or defects.

Results

A sample of 50 Males were considered, and the measurements were taken randomly using standard tapes.

The data obtained were analyzed statistically using Microsoft Excel software, and the average living stature for an adult male was determined. The linear association between the living stature of individual and length of clavicle of each side was carried out in the form of regression equation. It was clear that the clavicle length showed a positive correlation with the stature.

The mean value of the stature of the individual was found to be 166.42 and the length of the clavicle (*y*) was found to be13.75 and 13.64 for right and left clavicle respectively. The correlation coefficient (*r*) was calculated, and it was found to be significant correlation. The data are shown in (Table 1 and Fig. 1).

Table 1. Correlation of height with length of right and left clavicle Pearson's Correlation Coefficient.

	Mean	Std. Deviation	*N*	Correlation *r'*	*p*-value
Height	166.42	3.78	50	–	–
Length of right clavicle	13.75	0.63	50	0.403	0.001, S
Length of left clavicle	13.64	0.66	50	0.389	0.0001, S

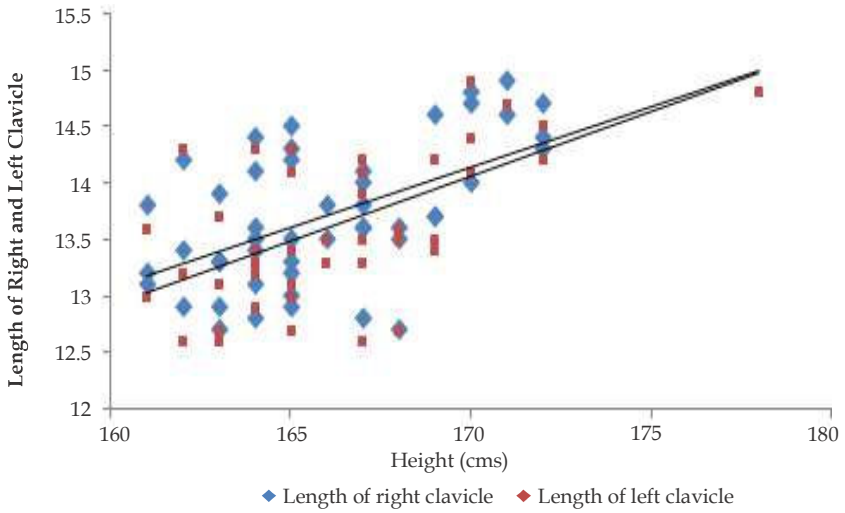

Fig. 1: Showing correlation between length of clavicle and height of individual.

Discussion

Determination of stature from decomposed skeletonised residue is crucial in establishing the individuality of unknown person. Study conducted by Jakhar et al. suggests that there is positive association between the stature and anthropometric dimensions.[10] Study have been conducted by Krishan et al. to estimate height from the human skeleton, they suggested that different methods can be used to estimate the stature from the bone. The simplest and trustworthy method is by regression analysis.[11-12]

By using multiplication factor or regression formulae approximate stature of the individual can be determined from different long bones.[13] Nagrale

N, Patond S, found that identification in case of unknown body by using various anthropometric measurements and regression formula was helpful for forensic experts in various medicolegal cases.[14] Similarly Patond S et al. found that determination of the stature from decomposed or skeletonised body and from remains is very crucial in establishing the identity of unknown individuals in various medicolegal cases if one parameter is known, then with the help of regression formula we can find out the remaining parameters.[15]

Conclusion

From present research it was concluded that the length of clavicle and stature reveals positive correlation and the linear relationship between the living stature and length of clavicle of each side was carried out in the form of regression equation.If the dimension of clavicle is obtained, the stature can be determined, would be useful for forensic experts and anthropologists in various medicolegal cases. The regression formula derived in the study can be used accurately and is reliable for the estimation of stature in a miscellaneous population group.

Reference

1. Zeybek G, Ergur I. Stature and gender estimation using foot, measurements Forensic Sci Int 2008:181(1–3):54–55.
2. Trotter M, Gleser GC. A re-evaluation of stature based on measurements of stature taken during life and of long bones after death. Am J Phys Anthrop 1958;40:762–67.
3. Chiba M, Terazawa K. Estimation of stature from somatometry of skull. Forensic Sci Int 1998;20:87–92.
4. Lundy J. The mathematical versus anatomical methods of stature estimate from long bones. Am J Forensic Med Pathol 1985;6:73–76.
5. Oliver G. Anthropologic de le clavicle III: La claviculaedu francais. Bull Soc Anthropol 1951;2:121–57.
6. Thieme FP. Sex in Negro skeletons. J Forensic Med 1957;4:72–81.
7. Singh B, Sohal HS. Estimation of stature from the length of clavicle in Punjabis, a preliminary report. Indian J Med Res 1952;40:67–71.
8. Jit I, Singh S. Estimation of stature from clavicles. Indian J Med Res 1956;44:137–55.
9. Saxena SK. A study of correlations and estimation of stature from hand length, hand breadth and sole length. AnthropolAnz 1984;42:271–6.
10. Jakhar JK, Pal V, Paliwal P. Estimation of height from measurements of foot length in Haryana region. J Indian Acad Forensic Med 2010;32:237–41.
11. Krishan K. Anthropometry in Forensic Medicine and Forensic Science- 'Forensic Anthropometry'. Internet J Forensic Sci 2007;2:6.
12. Krishan K, Sharma A. Estimation of stature from dimensions of hands and feet in a North Indian population. J Forensic Legal Med 2007;14:327–32.
13. Rani Y, Naik S. Correlation of stature of adult with the length of clavicle. In J of Ind Acad of Forensic Medicine 2011:33(3):194–196.
14. Nagrale N, Patond S. Estimation of Cephalic Index of Chhattisgarhi Population: An Anthropometric Study from Central India. J of Forensic Med &Toxico 2019:36(1):9–12.
15. Patond S, Nagrale N. Correlation between Stature and Skull Dimensions inthe Population of Central India: A Cross Sectional Study. J of Forensic Med &Toxico 2019:36(1):59–61.