

Correlation between Stature and Length of Clavicle in Female 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 Method: The present research was carried out in department of Anatomy JNMC Sawangi (M) Wardha; was conducted on total 50 Female 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 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.

Key: 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 important¹. Along with Age, stature also plays key role in ante mortem and post-mortem cases in identification of in various medicolegal cases².

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 cases³. 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 individual⁴. Various authors have confirmed correlation between stature and measurements of several parts of the body which are often represented using linear regression equation derived from them¹. 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 populations⁵. Many authors like Terry, Thieme and Oliver, tried to determine correlation between stature and different bony measurement including clavicle⁶⁻⁸. There are very few literature available in India, Singh et al, Jit et al envisages effort to determine correlation between stature and clavicle length⁹⁻¹⁰.

Materials and Method

The current study was carried out in the department of Anatomy JNMC Sawangi (M) Wardha; was conducted on total 50 Female individual of age 17–24.

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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.

Result

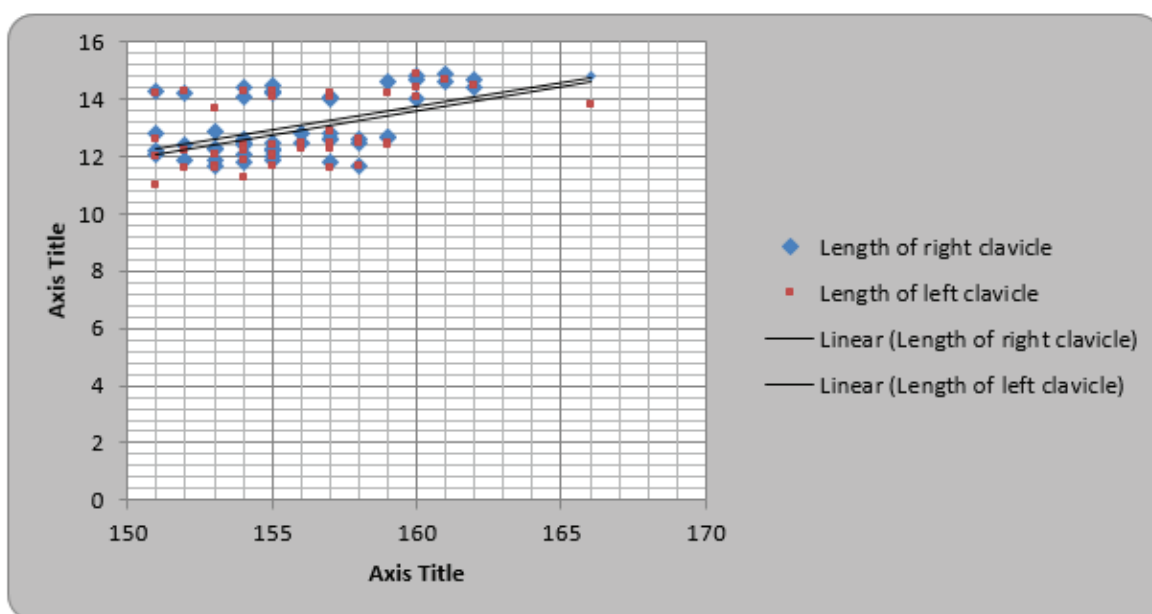
A sample of 50 Females were considered, and the

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 female was determined. The linear association between the living stature of individual and length of clavicle of each side was carried out. 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 156.12 and the length of the clavicle was found to be 13.132 and 12.926 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 Figure 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	156.12	3.58	50	-	-
Length of right clavicle	13.132	1.081	50	0.3088	p < 0.01
Length of left clavicle	12.926	1.11	50	0.2427	p < 0.01



Graph 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 dimensions¹¹.

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 analysis¹²⁻¹³.

Along with Clinical, dental examinations; bone examination also plays an important role to arrive at the opinion in medicolegal cases.^{14 15} Similarly skeletal maturity also based on life style, dietary climatic behavioural factors there for study are recommended in every region of India for academic and judicial interest.¹⁶⁻¹⁸

By using multiplication factor or regression formulae approximate stature of the individual can be determined from different long bones¹⁹. 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 cases²⁰.

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 parameters²¹.

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. If the dimension of clavicle is obtained, the stature can be determined, would be useful for forensic experts and anthropologists in various medicolegal cases.

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