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Original Research Article

The Study of Correlation between Bizygomatic Diameter and Stature in Haryanvi Adults

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Abstract

The study was conducted on Haryanvi 800 adults comprising of 400 males and 400 females. Measurements were taken using standard anthropometric instruments.i.e. varnier calliper and anthropometric rod. The purpose of study was to access the bizygomatic diameter and stature and to find out the correlation between them. The data were then analysed by statistical software. The mean bizygomatic diameter for male and female were 13.08 and 12.35 respectively. The mean stature was 168.71 in male and 155.18 in female. Both the measurements were more in males then females. The results showed a statistically significant correlation between bizygomatic diameter and stature in both sexes.
Keywords: Stature, bizygomatic diameter.

INTRODUCTION

Stature or standing height is most often used anthropometric dimension and it is a quantitative measure of physique and indicative of physical growth and development of an individual [1]. For stature estimation researches, different nutrition types and physical activities may cause variations in populations [2]. In forensic practice, skeletal remains may be the only resource available for stature estimation [3]. It is well documented that there exists some biometrical / proportional relationship between every human bone or body segment and the stature of that individual, which varies between two sexes as well as amongst different populations because of some long term genetic [4, 5], ethnic, secular [6], environmental, socio-economic or nutritional factors, etc [7] which, inturn, influence the developemental periods of individuals of a particular sex or a population [8]. It is well established that a single standard of facial esthetics is not appropriate for application to diverse racial and ethenic groups [9-11]. Therefore, researches on craniofacial study of different ethenic groups are on going with the intention to establish ethenic specific anthropometric data for populations with different ethenic background [12].

MATERIALS AND METHODS

A cross- sectional study was carried out on 800 Haryanvi adults. 400 males and 400 females, age ranged between 18 to 40 years. The subjects were healthy without any physical deformities. Anthropometric measurements were taken. The methodology for measurements was taken from Singh and Bhasin [13].

Somatometric Measurements

Bizygomatic diameter— It is the maximum distance between the most prominent points on the right and left zygomatic arches

Stature- it is the vertical distance between the highest point on head (vertex) and floor

RESULTS

Table-1: Descriptive statistics for bizygomatic diameter and stature (n=800(400M and 400 F)

Parameter	sex	Mean	SD	SEM	Range	
					Maxi	Mini
Bizygomatic diameter	M	13.08	0.076	0.036	17.7	11.1
	F	12.35	0.760	0.038	10.4	14.6
Stature	M	168.71	5.468	0.273	189	152
	F	155.18	4.620	0.231	182	141.5

Table-2: Pearson correlation coefficient between bizygomatic diameter and stature in Haryanavi population

Measurement	Pearson correlation coefficient(r)	P -value
Bizygomatic diameter	Male—0.171	0.0005*(<0.001)
	Female—0.135	0.0068**(<0.05)

*very significant, **significant

Table-3: Shows comparison of work done by various workers

S.no	Author	Populations	Correlation coefficient (r)	
			Male	Female
1	Krishan K & Kumar R [12]	252 North Indian Koli	0.461	----
2.	Akhter Z *et al.*, [14]	100 Garo females (Bangladesh)	----	0.143* (p=0.156)
3.	Rayan I & Bidmos MA [15]	99 (50M,49F)Indigenous South Africans	0.40	0.45
4	Pelin C *et al*., [16]	286Males(Turkish population)	0.168	---
5.	Kumar J & Chandra L [17]	199 males Kabuis of Imphal valley	0.185	---
6	Present study	800 Haryanvi adults (400 males & 400 females)	0.171	0.135

* insignificant

Table-2 shows that there is positive correlation between bizygomatic diameter and stature.

The mean values of all measurements used in the present study are significantly higher in males than those obtained in females. The mean bizygomatic diameter in male was 13.08 and in female was 12.35. The bizygomatic diameter are significantly correlated with stature both in males and females ($p<0.05$). The correlation coefficient were more in all above studies in males except Pelin *et al*., [16] study on Turkish population. South Africans females showed higher statistically significant correlation coefficient as compared to present study but the Garo females showed insignificant correlation. This difference was due to combination of many factors but mainly due to different ethnic and racial groups with different body stature, skeletal size, height and physique of an individual.

Conclusion

It was concluded that all the measured dimensions were more in males as compared to female. Correlation between bizygomatic diameter and stature was statistically significant ($p<0.05$). Hence it can be used as an aid in estimating stature when unknown remains pertaining to cephalo-facial region are brought for forensic examination.

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