INTERNATIONAL JOURNAL OF PLANT, ANIMAL AND ENVIRONMENTAL SCIENCES

Volume-1, Issue-3Sept-Nov :2011 *www.ijpaes.com* *ISSN 2231-4490*

ESTIMATION OF PERSONAL HEIGHT FROM THE LENGTH OF HEAD IN PUNJAB ZONE

Seema*, Mahajan A.**

*Associate Professor, Department of Anatomy, Sri Guru Ram Das Institute of Medical Sciences and Reserch, Vallah(Amritsar)

**Professor and Head, Department of Anatomy, Sri Guru Ram Das Institute of Medical Sciences and Reserch, Vallah(Amritsar)

ABSTRACT : This study has been done to find correlation between the personal height and head length in Punjabi people. The present study is done on 400 medical students (210males and 190 Females) of 18-23 year of age. All belong to the Punjab zone only. The length of the head is measured with the spreading caliper from glabella to inion. Height was measured with standard height measuring instrument in anatomical position. The results showed definite correlation between the head length and height of the individual. The study can help the experts in Anthropology and Forensic sciences.

Key Words-Spreading, Glabella, Inion, Anthropometry,Forensic.

INTRODUCTION

A variety of factors such as age , race, gender and nutritional status affect the human growth and development .So different standards are required for different populations.[1] In standard textbook of Forensic Medicine, the length of the skull is approximately one eighth of the stature of the person[2]. Scientists always face problems to correlate the metric traits of the skeletal remains with the stature. Although a number of long bones are used for this purpose[3]but cranial dimensions are more reliable and precise mean of predicting the stature in Indians. [4]Many formulae for stature estimation have been proposed. [5]There is the need of use of population specific formulae on other population also. [1]A little work is done regarding the estimation of stature from length of the head in Punjab zone. So an attempt is made to draw a correlation between these two dimensions in Punjabis also

MATERIAL AND METHODS

This study was done on 400 medical students who were belonging to the Punjab zone only but of different socioeconomic status. They were between the age groups of 18-23years. There was no student with any craniofacial deformity.

The linear dimensions of the skull were taken at the fixed time (10-12AM) to eliminate the diurnal variations. The mearurements were recorded by the same person .Maximum cranial length is taken from glabella to inion with the help of digital spreading caliper capable of measuring to the nearest 0.01mm.

The height of the person was measured in erect anatomical positopn and head in Frankfort plane with the help of standard height measuring instrumentIt was measured to the nearest of 0.1cm.

RESULTS

The mean ages of the students (male:20.23+0.83; female21.11+0.87) were not different from each others. The mean height of the boys and girls was significantly different ($p<0.001$). The mean cranial length was also found significantly larger in males as compared to the females ($p<0.001$).

Linear regression analysis was done to estimate the stature from the cranial length as an independent variables. Pearsons correlation coefficient was used to find the relation between the cranial length and the personal height. The correlation coefficient between the stature and the head length was found to be statistically significant and positive in both males and females.

Regression Equation for prediction of stature from cranial length

For Males: 136.88+1.89(Cranial Length)

For females: 127.05+1.81(Cranial Length)

For both Males and Females(Combined): 77.89+4.98Cranial Length)

DISCUSSION

For Punjab zone, this study can help to derive a correlation between the length of the head and the stature of the person which can further help the anthropologists and forensic experts in their work. Ce[phalometry is always considered important in investigation of craniofacial skeleton [5], in determining the racial differences[6]The mean cranial length was found higher than the Terkman and Turky populations but smaller than Korean and Caucasians.[7]It is attributed to the race, age and geographical factors[8]The correlation coefficients of the previous workers and the present study has been compared in the Table No

The Table1 showed the range of the ages of boys and girls taken for the study,total height range and head length. Table II showed the correlation coefficients between the age and height, between age and head length and between height and the head length.Significant correlation is found among these parameters in Punjab zone.

Table 1-Observations and Values.

Parameters	Age(Years)	Head length (cm)	Height (cm)
Range	17-23	11.66-21.01	140.6-190.6
Mean	18.68	17.81	166.93
Standard Deviation (SD)	0.85	0.96	8.94
Standard Error (SE)	0.02	0.03	0.41

Table II -Correlation coefficients

S No.	Parameters	Coefficient value
1	Sex and height	-0.69
2	Sex and head length	-0.51
3	Age and height	+0.06
4	Age and head length	+0.07
5	Height and head length	+0.52

TableIII and IV showed the comparison of work done by various workers .

Table 3 -Showing correlation of length of different bones to height.

S.NO	Worker	Year	Measurement of bones	Correlation Coefficient
1	Singh and Sohal	1951	Height &Length of clavicle	-
2	Charnlio	1961	Height and foot length	0.46
3	Athawale	1963	Height and forearm bones	-
4	Qamra et al	1979	Height and foot length	0.420 0.470
5	Joshi et al	1964	Height & Tibia	-
6	Shroff and Vare	1979	Height and Superior Extermity	-

Table 4-Estimation of stature from Head Length

S.No	Worker	Year	Correlation Coefficient
1	Saxena et al	1981	+0.2048
2	Yadav and Shah	2004	+0.53
3	Krishan	2008	0.78
4	Ilaypperuna	2010	0.72
5	Present study	2011	+0.52

Conclusion

The prediction of the stature from incomplete and decomposed cranial remains is essential in establishing the identity of unknown individuals. Therefore the formulae based on cranial dimensions can help the stature prediction under such circumstances. If one of the parameter is known the other can be known by applying the regression equations and this is of paramount importance to the forensic and anthropology sciences.

REFERENCES

1. Williams PL, Bannister LH, Berry mm,Collins P, Dyson M, DussekJE. Gray's Anatomy;The anatomical basis of Medicine and Surgery. 38th Edn.New York,Churchill Livingstone. 2000.
2. Glaister J. I n medical Jurisprudence and Toxicology. 10th Edn E and S Livingstone Ltd Edinburg and London. London .1957;79.
3. Jadav HR and Shah GV. Determination of the personal height from the length of the head in Gujarat Region. J Anat Soc Ind. 2004;5(1):20-21.
4. Patil KR and Modi RN. Determination of sex by discriminant functional analysis and stature by regression analysis: A lateral cephalometric study. Foren Sci Int 2005;147:175-80
5. Vojdani Z, Bahmanpour S, Momeni S, Vasaghi A, Yazdizadeh A, Karamifar A, Najafifar A, Setoodehmaram S AND Mokhtar A. Cephalometry in 14-18 years old girls and boys of Shiraz-Iran high school.Int J Morphol 2009;27:101-4.

6. Krishan K. Anthropometery in Forensic Medicine and Forensic Science-Forensic Anthropometry. Int J Foren Sci 2007;2:1.
7. Golalipour MJ, Jahanshaei M, Haidari K. Estimation of cranial capacity in 17-20 years old in South East of Caspian Sea Border (North of Iran). Int J Morphol. 2005; 23:301-4.
8. Ricklan DE and Tobias PV. Unusually low sexual dimorphism of endocranial capacity in a Zulu cranial series. Am J Phys Anthropol. 1986;71:285-93.
9. Singh B and Sohal HS. Estimation of stature from clavicle in Punjabis;A preliminary report. Ind J of Med Research. 1951;40:67-71.
10. Charnalia VM. Anthropological study of the foot and its relationship to stature in different castes and tribes of Pondicherry state. JASI;1961;10:26-30.
11. Athwale MC. Anthropological study of height from length of forearm bones. A study of one hundred Maharasthrian male adults of ages between twenty five and thirty years. Am J Phy Anthropol. 1932;21:105-112.
12. Qamara S,Inderjit and Deodhar SD.A model for reconstruction of height from foot measurements in an adult population of northwest India. Indian Journal of Medical Research. 1980;71:77-83
13. Joshi NB, Patel MP, Dongre AV. Regression equation of Height from ulnar length . Ind J Med Research. 1964;52:1088-1091
14. Shroff AG and Vare AM. Determination of height from length of superior extremity and its segments. J Anat Soc Ind. 1979. 28:53.
15. Saxena SK, Jeyasingh P, Gupta AK, Gupta CD. The estimation of stature from the head length. JASI 1981;30:78-79.
16. Ilaypperuna I. On the prediction of Personal Stature from cranial Dimensions. Int. J. Morphol. 2010;28(4):1135-1140.