

Original Article

CRANIAL INDEX IN NORTH INDIAN CRANIA (PREDOMINANTLY HARYANAVI)

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ABSTRACT

Shape of crania is seen by measuring cranial index in 150 (115 male and 35 female) crania. Crania were obtained from the department of Anatomy, Pt. B.D. Sharma PGIMS Rohtak. In males, 91.07 % crania were found dolichocephalic while in females 97.14% crania were dolichocephalic. Few crania were found mesocephalic (6.25% in males and 2.85% in females) in both sexes. None of female crania was seen as brachycephalic. Percentage obtained in present study is quite different from any other population studied as most of the crania were dolichocephalic. So it can be used as a tool to identify crania of this region.

KEYWORDS: Cranial Index, Dolichocephalic, Howells, Cephalic Index.

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INTRODUCTION

Much attention has been paid to the variations of the shape and size of the human skull and efforts have been made to associate these variations to characterize different races [1]. It is a matter of common experience that in dealing with crania of different racial types, an impression of racial affinity and differences is seen. Skeletal metric and non-metric variables are widely used for such studies [2,3]. Measurements play an important role in skeletal morphology. Cranial measurements have been used to describe individuals and to correlate various ethnic and racial groups. These measurements have also shown the shape and size variations in different racial groups. Craniometric methods have been extensively used in forensic anatomy by reconstructing the

most probable human faces and physiques from dry skeletal remains.

MATERIALS AND METHODS

150 complete crania (115 males, 35 females) were used for the study of cranial index,. These crania were retrieved & available in the department of Anatomy, Pt. B.D. Sharma PGIMS Rohtak. Skulls showing obvious pathological deformities were excluded from study. The age to which these skulls belonged was also noted from records, whenever possible.

Study was conducted according to the systems proposed by Howells[4]. The system involves identification of certain landmarks on skull and then measurements were done.

Following landmarks were selected for cranial measurements.

1. **Glabella** : The most forwardly projecting point in the mid-sagittal plane at the lower margin of the frontal bone, which lies above the nasal root and between the superciliary arches.
2. **Euryon** : The most laterally positioned point on the side of the braincase. Euryon always falls either on the parietal bone or on the upper portion of the temporal bone.
3. **Opisthocranium** : The most posteriorly protruding point on the back of the braincase, located in the mid-sagittal plane. Opisthocranium usually fall on the superior squama of the occipital bone, and only occasionally on the external occipital protuberance.

Two measurements were taken

Glabella- occipital length : Greatest length, from the glabella region, in the median sagittal plane.

Maximum frontal breadth : The maximum breadth at the coronal suture, perpendicular to the medial plane.

Cranial index was calculated with the help of above measurement by formula i.e. length divided by breadth multiplied by hundred.

OBSERVATIONS

Table 1: Showing different shapes of crania in two sexes in North Indian' population.

Shape of Head	Males (115)	Females (35)
Dolichocephalic	91.07%	97.14%
Mesocephalic	6.25%	2.85%
Brachycephalic	2.68%	0.00%

Table 1 shows that present crania in both sexes are mainly dolichocephalic (91.07% male and 97.11% females). Mesocephalic crania are seen only in few cases (6.25% males and 2.85% females). Very few male crania were brachycephalic(2.68%). In females brachycephalic crania were not found.

DISCUSSION

Cranial measurements offer the simplest and accurate way of judging the similarities and dissimilarities when comparing skulls of different populations. These measurements are used in medico legal cases in forensic anatomy. Cranial index is also useful in reconstruction of skull from skeletal remains. Brain is becoming taller and broader. It shows broadening in front and shrinking from rear side because of micro-evolution. Brachycephalic skull has more frontal cortex. Long narrow crania loss more heat and good for hot climate on the other hand in round crania, heat loss is slowly and is of advantage in cold climate. Current opinion is that there is no strong correlation between cephalic index and intelligence. Crania of different populations show different cranial index. Nigerian crania are considered as dolichocephalic while European crania as mesocephalic. Heidari[5] in his study on female population of South East of Iran reported 21.3% crania as dolichocephalic, 41.3% crania as mesocephalic and 31.5% crania as brachycephalic. Golalipour[6] in his study on male population of Gorgan-north of Iran reported most of the crania as hyper-brachycephalic (52%), only few crania were dolichocephalic (1.5%). Same Author in another study done on male population of Turkman (Iran)



Fig. 1: Showing different shapes of crania in North Indian' population.

reported most of the crania either monocephalic (40.9%) or brachycephalic 42.4% [7]. Garba studied cranial index of Maiduguri Nigeria in both sexes. He reported cranial female crania were either dolichocephalic (43.3%) or mesocephalic (40.0%), male crania were mostly dolichocephalic (66.7%) with 33.3% crania as mesocephalic [8]. Raji in a study done on male crania of North eastern Nigeria population reported most of the crania as dolichocephalic 66.5%, only 24.5% crania were mesocephalic [9]. In the above study most of the crania are dolichocephalic or mesocephalic. In one of the study done in India on crania of Mumbai region, similar type of findings are reported [10]. Their male skulls were mostly dolichocephalic. However, difference was seen in female skull they were mostly mesocephalic in contrast to North Indian females (Haryanvi), which were found mainly dolichocephalic in 97.14% cases. Jay Singh et al in their study on 300 human skulls of Uttar Pradesh (India) reported 57.31% skulls as dolichocephalic [11]. In the present study most of the crania in both sexes were dolichocephalic (91.07% male and 97.14% female). Our crania seem to be little closure to Nigerian crania as those crania are considered as dolichocephalic. Indians are considered as Caucasoid with few features of Nigerian. Crania of this place shows similarities with Nigerian crania in cranial index. Dolichocephalic crania seem to be feature of population of Haryana and can be used as a tool to identify crania of this region in medico legal cases.

CONCLUSION

In the present study most of the crania in both sexes were dolichocephalic. Also crania seem to be little closure to Nigerian crania as those crania are considered as dolichocephalic. Indians are considered as Caucasoid with few features of Nigerian. Crania of this place shows similarities with Nigerian crania in cranial Index. Dolichocephalic crania seem to be feature of population of Haryana and can be used as a tool to identify crania of this region in medico legal cases.

Conflicts of Interests: None

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