Original Article

Evaluating Anatomical Dimensions Using in Cephalometric of 18-20 Year-Old Girls Southern Iran

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ABSTRACT

Background: Anthropometric is the science of measuring body weight which is employed in various fields including anatomy, forensic medicine, and researches relating to cancer, and surgical beauty and this information are used in order to improve the design of tools and equipment. Materials and methods: People aged 18-20 participated in this study and subjects were choose randomly. Sampling method is alternative one and kind of study is cross sectional one. 366 girls participated in this study. Parameters of head length and width, ears height, head circumference, facial height and width, and body height and weight are measured. measuring tools are: For measurements, calibre-cephalometer, goniometer, tape measure and balance. Findings: The results show that there is a meaningful difference between the cephalic parameters (head length and width, ears height, and head circumference) in both groups. Regarding facial parameters (facial length and width), the dominant type in Kermanian girls at the age of 18 to 20-year-old was mesoprosopic, a mesocephalic index. Conclusion: Using anthropometric data have designed in order to study diversity of human physical characteristics and distinguish human races that are important in order to examine appropriately the relation of humane and facilities with environment Anthropometric data play an important role in determining the race and reconstructing form and size of the person's head.

Keywords: Anatomical, dimensions, Cephalometric, girls

Introduction and Goals

Anthropometric is the science of measuring different dimensions of body and using the information in order to determine the shape and size of the place, work, and tools that people used in different military, industrial, educational, sports fields and so on. Characteristics such as the different part of the body height and width and length can be used in order to improve the design of tools, equipment, and etc. Craniofacial anthropometry refers to the accurate physical expression and systematic measurement of human skull bones in forensic medicine, plastic surgery, orthodontics, and archeology and also to determine human races the origin of the anthropometry is very ancient. on the purpose of evaluating appropriately the relations between humans and equipment to the environment, it is necessary to provide an anthropometric database. Anthropometric plays an important role in industrial management and ergonomic design. This information should be collected regularly in every community. Cephalometry is one of the important branches of anthropology that includes measurement of the head, brain growth-dependent dimensions, and shape of the face.

Head length and width are the important dimensions of the skull. Calculating and measuring of these two variables are the skull index. Skeletal system growth and development play an important role in determining the body shape. Bone growth is a complex process and plays a role in brain development, tooth and paranasal sinuses developments in cephalometry. Cephalometry is mainly used by paleoanthropologists and forensic anthropologists in order to estimate gender, race, and ancestry. On the basis of the skull morphology, the first classification is attributed to an anatomist, Professor Andres Retzius (1840). For example, dolichocephalic represents people who have a long skull, and brachycephalic phylum refers to those with a short skull.

In the field of anthropology, forensic and physics, skeletal elements play an important role in sex determination. Pelvis is often used for sex determination; however, cranium as the second is the best option. The analysis of the human skull is the

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preliminary method in forensic medicine and forensic anthropometry. Information of cephalometricab normalities play an important role in forensic dentistry for population.

Cephalometric standards for race and gender identification of the victims are carried out with only using a simple assay Cephalometric is an important tool for the forensic anthropologist that is used in order to identify the racial and sexual differences, compare the changes among parents, children and siblings regarding the genetic transmission of inherited characteristics and is largely used for facial and identity reconstruction.

Anthropometric characteristics have a direct relationship with the gender, shape and form of these individuals and these factors are related to each other and manifest the internal structure of tissue components which are affected by genetic and environmental factors. Anthropometric can be divided into somatometry, cephalometry, and osteometry subgroups.

Cephalometry and anthropometry that in most cases are used to determine the sex of skeletal remains such as determining the intercourse of a variety of human bones, including the skull, hip, long bones, scapula, clavicle, metatarsals, metacarpals, brace, patella, vertebrae, and ribs as well. Today, anthropometry plays an important role in the industry of design, ergonomics and architecture in which statistical information about the distribution of body dimensions is used for the optimization of products in a society

On the basis of international cephalic indicators, shape of the head is divided into four groups: Dolicocephalic, Brachicephalic, Mesocephalic, and Hyperbrachicephgroups. Therefore, Australia and South Africa aboriginals have Dolicocepha form, Europe and China have the Mesocephalictype of skull, and the Mongols and the Andaman Islands hsve Brachicephalic skull form.

Comparing among the cephalic forms and index by race, age and gender are important in order to monitor therapy and provision of orthodontic treatment and are valuable in plastic surgery knowledge and reconstructive of the head and facial abnormalities.

Materials and Methods

The Present research is done on 366 participants aged 18 to 20 year's old girls. Sampling has done randomly from pre-university high- and boarding-schools in Kerman Province. The measurements include Body height and weight by using goniometer and balance, respectively, Cranial circumference, the largest horizontal environment of the head from the forehead and inion, by a calipercephalometry. The head width, the maximum distance between the parietal bone by using caliper cephalometry, and head height, a direct distance between tragus to vertex by using a goniometer, the direct distance between the zygomatic arches as cheek width by using goniometer. Additionally, a caliper has utilized for measuring facial height, as gnathion-nasion direct distance.

Table1: various forms of the subject's head based on international indices in Kerman

	Dolichocephalic variable	Hyper-brachiocephalic	Brachycephalic	Mesocephalic
Number	18	23	136	159
Percent	5.3	6.8	40.4	47.3

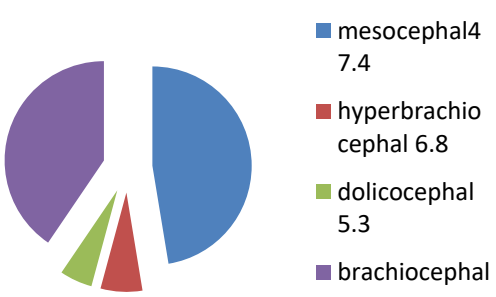

Figure 1: various forms of the subject's head based on international indices in Kerman

Table 2: The prevalence of different forms of the face in subjects based on international indices in Kerman

Facial Type	Hyper Leptoprosopic	Leptoprosopic	Mesoprosopic	Euryprosopic	Hyper Euryprosopic
Number	12	45	149	115	15
Percentage	3.57	13.39	44.34	34.22	4.46

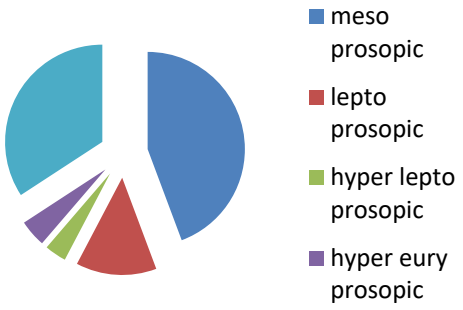

Figure 2: The prevalence of different forms of the face in subjects based on international indices in Kerman

Results and Discussions

using standard terminology in medicine for both clinical practice and scientific research is essential. In spite of facilitating communication between professionals, this increases the reliability of comparisons in the studies studies of different areas to a higher level of scientific evidence.

when methods are used in order to determine the quality of changes in the structure of head and facial and extensive kinds of phenotype and special features of people and racial groups in different areas are approved, standard anthropometric data regarding a detailed assessment of the degree of deviation from the samples in plastic surgery, forensics, and medical genetics for diagnosis of dimorphisms or craniofacial abnormalities, attempting to build a data base , covering different populations through international scientific society are necessary.

In a study on 93 fixed corpses comprised of 64 males and 29 females in India at 2016, there was a correlation between skull mass and index in both groups, which was significant in female

corpses. Mesocephalic was the most common shape of the head.

A study on 80 Indian corpses containing 45 males and 35 females in 2013 has shown that most of north Indian individuals are dilichocephalicor, Mesocephalic. In this study scull index of female corpses was more than that of male, indicating women have relatively shorter scull in comparison with skull width than men. Dilichocephalic was dominant in men scull while in females it was Mesocephalic.

a study on two ethnic groups Idoma and Igede on Nigerian 425 people in 2015 show that the dominant shape of skull ethnic group, Idoma and Igede was Mesocephalic and also the dominant index for face was hypereuriprosopic.

A study conducting in 2009 on 800 people Ogonis in Nigeria included 400 women and 400 men aged of 25-45 years has showed that indicative skull of this group is brachycephalic.

an anthropometric study which was done in 2016 in north central Nigeria between two ethnic groups, Tiv and Idoma, research sample included 828 volunteers aged 18-32 years and showed that the most common cephalic index in both groups were brachycephalic with a frequency of 47.7% and 41.7% and dolichocephalic with a minimum rate of 2.9% and 0.7%, respectively.

Cranio-facial anthropometric survey in 2014 among school children as part of Envigado, Colombia was done with a mean age of 8-15 years, 313 people, including 172 women and 141 men. The facial index obtained here was euryprosopic (≤80.9%), mesoprosopic (≥93.1%), and leptoprosopic (% 81-93%), respectively. The most common type of skull was mesocephalic.

The human gender and racial differences are not a single and permanent phenomenon. This means that the same differences between different races and ethnic diversity can be seen in it. According to the findings in Tables 1 and 2 and comparing with studies on different ethnic groups in India and Colombia and Nigeria, it can be concluded most of the skull and facial index are mesoprosopic and mesocephalic, respectively.

References

1. Raveendranath V, Manjunath K. An anthropometric study of correlation between cephalic index, cranial volume and cranial measurements in Indian cadavers. Indian Science Abstracts. 2010;15.
2. Shah S, Khanal L, Koirala S, Bhattacharya SC. The study of Prosopic index of 17-26-year-old normal population in Eastern Nepal: Ethnic and gender variation. Russian Open Medical Journal. 2015;4(2).
3. Vaghefi SHE, Elyasi L, Amirian SR, Vaghefi SE. Anthropometric survey of worker population in Bandar-Abbas. Thrita. 2014;3(1).
4. Voshtani H, Nasiri E, Khajeh-Jahromi S, Esmaeili Gourabi H, Ebrahimi H, Akbari M, et al. Cephalometric Measurements in Infants with Congenital Heart Disease Compared to Healthy Infants. Iranian journal of Anatomy.2013:10(2):93-8.
5. Toneva D, Nikolova S, Georgiev I. Reliability and accuracy of angular measurements on laser scanning created 3D models of dry skulls. Journal of Anthropology. 2016;2016.6
6. Divakar DD, John J, Al Kheraif AA, Mavinapalla S, Ramakrishnaiah R, Vellappally S, et al. Sex determination using discriminant function analysis in Indigenous (Kurubas) children and adolescents of Coorg, Karnataka, India: A lateral cephalometric study. Saudi Journal of Biological Sciences. 2016;23(6):782-788
7. Mathur RU, Mahajan AM, Dandekar RC, Patil RB, Mathur R. Determination of Sex using Discriminant Function Analysis in Young Adults of Nashik: A Lateral Cephalometric Study. J Adv Med Dent Sci. 2014;2(1):21-5.
8. Obaje S, Hamman W, Ibegbu A, Waitieh-Kabehl A. Anthropometric study of cephalometric indices among Idoma and Igede ethnic groups of Benue State, Nigeria. International Journal of Medicine and Biomedical Research. 2015;4(1):21-34.
9. Obaje S, Hamman W, Ibegbu A, Waitieh-Kabehl A. Study of Cephalic Indices among Benue Ethnic Groups, Nigeria. Asian Journal of Cell Biology. 2015; 10:1-12.
10. Kumar A, Nagar M. Morphometric estimation of cephalic index in north Indian population: craniometrics study. International Journal of Science & Research. 2015;438(4):1976-82.
11. Franco FCM, Araujo TMd, Vogel CJ, Quintão CCA. Brachycephalic, dolichocephalic and mesocephalic: Is it appropriate to describe the face using skull patterns? Dental press journal of orthodontics. 2013;18(3):159-63.
12. Oladipo G, Olotu J, Suleiman Y. Anthropometric studies of cephalic indices of the Ogonis in Nigeria. Asian journal of medical sciences. 2009;1(2):15-7.
13. Torres-Restrepo AM, Quintero-Monsalve AM, Giraldo-Mira JF, Rueda ZV, Vélez-Trujillo N, Botero-Mariaca P. Agreement between cranial and facial classification through clinical observation and anthropometric measurement among envigado school children. BMC oral health. 2014;14(1):1.
14. Haidari K, Jahanshahi M, Golalipour MJ, HAIDARI K, JAHANSHAHI M, GOLALIPOUR M. Ethnic Difference in Brain Weight of 17-20 Year-Old Males in Northern Iran. Int J Morphol. 2016;34(3):986-9.