

The Variation of Head Shapes in 17-20 Years Old Native Fars Male in Gorgan-North of Iran

Variaciones en las Formas de la Cabeza en Hombres Nativos Fars entre 17-20 Años en Gorgan-Norte de Irán

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SUMMARY: Cephalic index and head shape are affected by geographical, gender, age and racial factors. This study carried out to determine cephalic index and head shape in 17-20 years old native Fars male in Gorgan, North of Iran. This descriptive study was done on 200 of 17-20 years old male native Fars by classic cephalometry in Gorgan, North of Iran.

Mean and SD of cephalic index was $84.8 + 6.9$. The head shape of 52% of individuals was hyperbrachycephalic, 25% brachycephalic, 21.5% mesocephalic and 1.5% dolichocephalic. Native Fars individuals showed typical hyperbrachycephalic. In comparing to other studies in world, we can conclude that the role of racial/ethnic factor in cephalic diameters.

KEY WORDS: Craniofacial forms; Cephalometry; Cephalic index; Prosopic index; Male.

INTRODUCTION

The evaluation and measurement of human body dimensions are achieved by physical anthropometry (Chamela 1997, Williams *et al.*, 1995). Cephalometry is one of the important parts of anthropometry in which dimensions of head and face are measured. Cephalometric results are used in pediatrics, forensic medicine, plastic surgery, oral surgery dentistry, and diagnostic comprehension between patient and normal populations (Williams *et al.*).

The human body dimensions are affected by ecological, biological, geographical, racial, gender and age factors (Ghalipour *et al.*, 2003, Okupe *et al.*, 1984, Tuli *et al.*, 1995, Rajlakshmi *et al.*, 2001).

On the basis of above factors, anthropometric studies are conducted on the age, sex and racial groups in certain geographical zones (Williams *et al.* and del Sol, 2005).

The most important of cephalometric dimension are height and weight of head that with using of them we can determine cephalic index.

On basis of cephalic index head shapes classified four

international categories, that including dolicocephal, brackiocephal, mesocephall and hyperbrakicephal (Williams *et al.* and del Sol).

A few investigations determined the types of head shape in various ages in Iran and other countries (Avicenna 1984; Jorjani, 1975; del Sol; Shah & Jadhav, 2004; Jorjaan 1976 and Ghalipour *et al.*).

By noticing, the effect of racial, ethnic and geographical factors on head dimensions and lack of documented research in this area, for the first time, this study was done to determine the cephalic index and types of head shapes in 17 -20 years old native Fars male in Gorgan- north of Iran.

MATERIAL AND METHOD

This research descriptive and cross- sectional was done on 200, 17-20 years old normal native Fars males in Gorgan- North of Iran.

Native Fars group is main and original in habitants of this region and populations of native Fars have been selected last three generations who lived in this zone.

All the measurements were taken with the subject sitting in chair, in relaxed condition and head in anatomical position.

Head measurements, which were determined by Martin spreading caliper, were included:

Head length = Summit of glabella to furthest occipital point.
 Head width = greatest breadth, at right angles to median plane.

$$\frac{\text{Head width}}{\text{Head length}} \times 100 = \text{Cephalic index}$$

Above index was determined on the basis of international anatomical descriptive (Williams *et al.*).

Depending upon this index the types of head and face shapes were followed as (Williams *et al.*):

| Head shape | Cephalic index (CI) range (%) |
|---------------------|-------------------------------|
| Dolichocephalic | CI < 74.9 |
| Mesocephalic | 75 < CI < 79.9 |
| Brachycephalic | 80 < CI < 84.9 |
| Hyperbrachycephalic | 85 < CI < 89.9 and CI < 89.9 |

The data for each person was recorded in a special form and then analyzed by EPI6.

RESULTS

Mean and SD of cephalic index in native Fars group was 84.8 ± 6.9. Head was classified by cephalic index, so that hyperbrachycephalic type with 52% was dominated. Also the 25% of the individuals were brachycephalic, 21.5% mesocephalic and 1.5% dolichocephalic (Table I).

Table I. Distribution of head shapes in native Fars male 17- 20 years old.

| Head shape | Number (percent) |
|---------------------|------------------|
| Dolichocephalic | 3 (1.5) |
| Mesocephalic | 43 (21.5) |
| Brachycephalic | 50 (25.0) |
| Hyperbrachycephalic | 104 (52.0) |

DISCUSSION

In this study cephalic index was 84. The cephalic index was higher than others study such as, in Tehran- center of Iran with 75 (Abolhasanzadeh & Farahani, 2003), India with 80.42 (Shah & Jadhav), and in Chile with 80.42 (del Sol).

Cephalic index was determined in Chile with average of 81.51 ± 0.46, Also, cephalic index reported 81.19 ± 0.05 in European people in Mediterranean area, and 79.72 ± 0.97 in north of Europe (*apud* García & Lips 1986a,b).

In our study, dominant type of head shape was hyperbrachycephalic (52%). This finding is not similar to another study in Iran (Abolhasanzadeh & Farahani), that the dominant type was brachycephalic (36.6 %). Also, dominant type of head from this study is not similar to other study, in India (Bhatia *et al.*, 1955) with dolichocephal (58.5%), and del sol study in Chile and (Marquer & Chamela, 1961) that mesocephal type was dominant type.

Bathia *et al.*, on 806 samples in India, reported that 58.5 % of the individuals were dolichocephalic, 19.2 % hyperdolichocephalic, 21% mesocephalic and less than 1% of them were brachycephalic.

Also, del Sol on 50 adult's male in the IX Region of Chile, reported that 66% of the individuals were mesocephalic, 28% brachycephalic, 4% hyperbrachycephalic and 2% dolichocephalic.

Abolhasanzadeh & Farahani on 953 adult male (22-24 years old) in Tehran- Iran reported that 36.6 % of the individuals were brachycephalic, 29.9 % hyperbrachycephalic, 24.5 % mesocephalic and 9% dolichocephalic.

Shah & Jadhav on 302 male students reported that 41%of students were mesocephal and 37% brachycephal. The some centuries ago, the some studies were done by two famous scientists in Iran, are very interesting (Avicenna and Jorjani).

More than eleven centuries ago, Avicenna & Jorjani reported that the dominant type of head shape in Iranian people were mesocephal (Avicenna & Jorjani), But recent studies in Iran, showed that the dominant type were hyperbrachycephalic or brachycephalic.

Therefore, we concluded that there is a trend change in head shapes of Iranian people and the dominate type of head shape changed from mesocephalic to brachycephalic and hyperbrachycephalic.

Other study has shown changes of head shape (brachycephalization) during 30 years on population (Nakashima, 1986).

In respect to the variation of head shape in various races, ethnic and geographical zones, we believe that inherited factor primarily affects on the shape of head, however environment has secondary effect on it.

It must be remembered that the reaction to a given environment represents the interaction of the genotype of the population being studied with the environment (Jordaan).

With noticing to present study and other studies in Iran we can conclude that trend of brachycephalization and hyperbrachycephalization was happened during some centuries on consequents generations of people.

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GOLALIPOUR, M. J. Variaciones en las formas de la cabeza en hombres nativos Fars entre 17-20 años en Gorgan, Norte de Irán. *Int. J. Morphol.*, 24(2):187-190, 2006.

RESUMEN: El índice cefálico y la forma de la cabeza son afectados por factores geográficos, género, edad y raza. El objetivo de este estudio fue determinar el índice cefálico y la forma de la cabeza en 200 hombres nativos de Gorgan-Norte de Irán, cuyas edades fluctuaban entre 17 y 20 años de edad. El estudio descriptivo fue realizado a través de cefalometría clásica.

La media y DS del índice cefálico fue 84.8 + 6.9. El 52% de los individuos era hiperbraquicéfalo, 25% braquicéfalo, 21.5% mesocéfalo y 1.5% doliocéfalo. Los individuos nativos Fars eran típicamente hiperbraquicéfalos. En comparación con otros estudios efectuados en el mundo, podemos determinar el rol del factor racial/étnico en los diámetros cefálicos.

PALABRAS CLAVE: Formas craneofaciales; Cefalometría; Índice cefálico; Hombre.

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