

Study of Head Circumference Inter Orbital Index between the Ages of 19-29 Years of Igbo Tribes in Otolu, Okofia, Nnewi, Anambra State, Nigeria

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Abstract

Head circumference inter-orbital index is an important parameter in craniofacial anthropometry. The knowledge of its normal values for a particular region can be used in the treatment of certain craniofacial abnormalities. This study was conducted in Otolu, Okofia, Nnewi, Anambra State, Nigeria. A total of 349 (175 females and 174 males) adult Igbo's between the ages of 19-29 years selected for the study. The ages were grouped as follows: 19-22 years (167 subjects, 47.85%), 23-26 years (125 subjects, 35.81%) and 27-29 years (57 subjects, 16.33%). They were made up of Igbo origins. The inner canthal distance (ICD) and head circumferences (HC) of the subjects were measured using standard anthropometric methods and head circumference inter-orbital index calculated as $ICD/HC \times 100$. The result obtained showed that Igbo females had a head circumference inter-orbital index of 10.49 while the males had head circumference inter-orbital index of 10.62. Statistical observation showed that the males had a significantly higher ($P > 0.05$) head circumference inter-orbital index than the females. Thus head circumference inter-orbital index was sexually dimorphic.

Keywords: Head circumference, Inter-orbital index, craniofacial anthropometry, Inner canthal distance, Igbo tribes.

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Introduction

Head circumference inter-orbital index is the ratio of the head circumference to the inner canthal distance. It is an important parameter in craniofacial anthropometry. The knowledge of its normal values for a particular region can be used in the treatment of certain craniofacial abnormalities ^[1].

Head circumference inter-orbital index (circumference of the head and inner canthal distance) is an important measurement in the evaluation of several systemic syndromes and craniofacial abnormalities and in the surgical treatment of post traumatic telecanthus ^[2]. Ocular adnexal changes and somatometric traits of the face such as epicanthus, telecanthus, flat nasal bridge, widely spaced eyebrows, and blepharophimosis may create an illusory error in the identification of certain craniofacial syndromes and reliable methods are needed for the diagnosis of some craniofacial anomalies ^[3].

The human body dimensions are affected by ecological, geographical, racial, gender and age factors ^[4].

Physical differences between people can be recorded by measurement and based on these measurements different indices can be worked out and used in differentiation of racial and gender differences ^[5].

Most of the craniofacial parameters have been studied extensively in most populations of the world including Nigeria.

Head circumference inter-orbital index of African Americans has been studied. Reports showed that male and female of

this population have mean values of 5.89 and 5.98 respectively ^[6]. Reports on head circumference inter-orbital index are however few with no much record on Nigeria population.

The study has been carried out in Bayelsa and Enugu State where a total of 1279 adult Ijaws and Igbos were randomly selected. Four hundred and eight (408) of the Ijaws were males while 332 females. Three hundred and thirty one (331) of the Igbos were males while 208 were females. The result obtained showed that Ijaw females had circumference international index of 8.10, Ijaw males 7.80 while Igbo females had 6.50 and males 6.20. Significant differences were observed between the two ethnic groups ^[7].

To date, no such studies have been carried out in the south-east region of this country. There is therefore need to study the head circumference inter-orbital index in Otolu people of Nnewi, Anambra state of Nigeria. This will aid in evaluating if age, sex, head circumference and inner canthal distance will have any effect on head circumference inter-orbital index.

Materials and Method

Study Area and Population

The area of study was in Otolu, Okofia in Nnewi, Anambra state of Nigeria. Individuals from the population of Otolu, Okofia in Nnewi Anambra state within the age of 19- 29 years were measured using anthropometric technique. A total of 349 subjects (175 females and 174 males) were measured for this study.

Inclusion Criteria

This include individuals within the specificied age range (19 -29) years and individuals of Igbo origin.

Exclusim Criteria

Individual outside the age range (19 29 years) and individuals of missed origin.

Instruments Used In Collecting Of The data

Meter rule

Measuring tape

Parameters in Data Collection

The following parameters were determined and recorded. Head circumference (measured from the occipital prominence to the supra orbital ridge). Inner canthal distance measured from the left medial angle to right medial angle of the palpebral fissures.

-Age

- Sex.

Method of Data Collection

During this study, the head circumference and inner canthal distance were measured using anthropometric techniques. All the measurements were made by one observer at a time in order to avoid inter- observer bias. Each measurement was carried out twice to ensure accuracy.

Measurement of Head Circumference

The head circumference was determined by placing the tape rule from the occipital prominence to the supra orbital bridge. Each subject was seated comfortably in a chair with the subjects head at the same level as the examiners head. In the case of some fashionable hairstyles, the tape was drawn tightly and compressed against the hair as much a possible. In cases of braided female subjects, the tape was allowed to come in contact with the skin and not over the lump of the hair.

Measurement of Inner Canthal Distance.

The inner canthal distance was determined by having the subject look straight in an anatomical position at the examiner while the non- stretchable transparent centimeter rule is held tightly against the bridge of the nose from the left medial angle to the right medial angle of the palpebral fissures. The subject face was well illuminated.

Data Analysis:- The data obtained was recorded in Excel worksheet software and analyzed using bivariate technique in the statistical package for social science version 16. Level of significance was set at 95% confidence limit or 5% level of significance.

Ethical Approval and Informed Consent.

The study was carried out after obtaining an ethical approval letter from the ethical committee of faculty of Basic Medical Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria.

Informed consent was sought from the residents (subjects) of Otolo Okofia, Nnewi, Anambra State before

commencement of the data collection was taken.

Result

Table 1: Showing results of head circumference inter-orbital and its parameters.

	Frequency	Mean ± std	T – Value	Prob. of Sig
Sex	349	1.50 ± 0.50		
Age	349	23.03 ± 3.04	0.05	P>0.5
Head circumference	349	34.89 ± 2.43	0.4	P>0.05
Inner canthal distance	349	3.67 ± 0.19	0.18	P>0.5
Head circumference inter-orbital index	349	10.56 ± 0.89	0.07	P>0.05

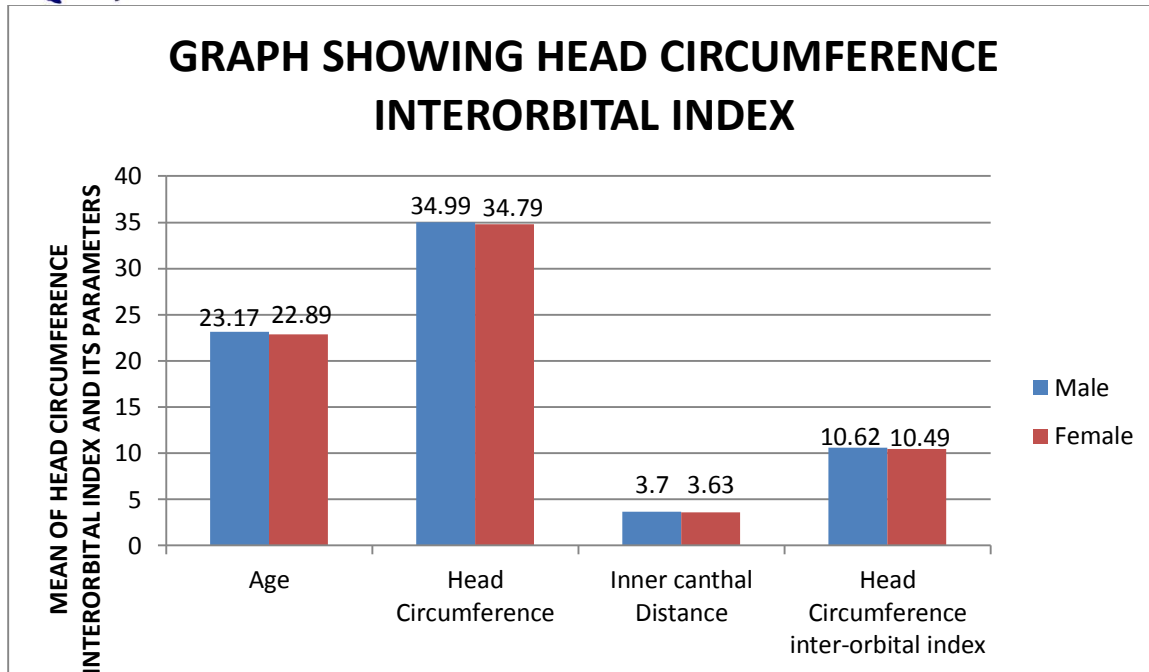
From the result, the mean head circumference was significantly higher (P>0.05) in males than females. Mean value for inner canthal distance was significantly higher (P>0.05) in males than females. Also the mean values for head circumference inter-orbital index was significantly higher (P>0.05) in males than in female.

Table2: Showing head circumference inter-orbital index and its parameters with respect to sex.

PARAMETERS	SEX	MEAN ± STD	T – VALUE	PROB. OF SIG
Age	Male Female	23.17 ± 0.22 22.89 ± 0.24	- 0.85	P>0.05
Head circumference	Male Female	34.99 ± 0.15 34.79 ± 0.21	Head circumference	Male Female
Inner canthal distance	Male Female	3.70 ± 0.13 3.63 ± 0.16	- 3.51	P>0.05
Head circumference inter-orbital index	Male Female	10.62 ± 0.61 10.49 ± 0.74	- 1.24	P>0.5

The mean ± Sd head circumference was significantly higher (P>0.05) in males than females. The mean ± Sd inner canthal distance was significantly higher (P>0.05) in males than females. The mean ± Sd for head circumference inter-orbital index was significantly higher (P>0.05) in males than females.

Figure1: A graph showing head circumference interorbital index.



Discussion

There was a total of 349 subjects (175 females and 174 males) used in this study. They were grouped according to their ages as follows: 9-22 years (167 subjects), 23-26 years (125 subjects) and 27-29 (57 subjects).

The mean head circumference from this study was found to be 34.89 ± 2.43 which

showed slight variations from the previous studies.

These variations is in line with study of 1000 subjects (500 males and 500 females) from Baptist Nursery and Primary School in Biogbolo, Bayelsa State College of Arts and Science Secondary School Agudama Yenagoa, University of Port-Harcourt St Peters area and Biogbolo town in Yenagoa, Bayelsa State, Nigeria where the mean head circumference was 54.46 ± 2.19 cm for ages 3-21 years, means inner

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