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STUDY OF CEPHALIC INDEX OF MEDICAL STUDENTS IN A TEACHING INSTITUTE IN SOUTHERN INDIA

Forensic Medicine

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ABSTRACT

Introduction: Occipitofrontal diameter (OFD) and biparietal diameter, are the two biometric measurements, used to determine the cephalic index. The cephalic index is also called as cranial index or index of breadth. An index of less than 75 means that the skull is long and narrow when seen from the top; such skulls are called dolichocephalic and are typical of Australian aborigines and native southern Africans. An index of 75 to 80 means that the skull is nearly oval; such skulls are called mesaticephalic and are typical of Europeans and the Chinese. A skull having an index of over 80 is broad and short and is called brachycephalic; such skulls are common among Mongolians and the Andaman Islanders. Materials and **methods:** The main method of calculating the cephalic index of the respondents is by measuring their head length (glabella to inion) and head width (above the ears) and applying it to the formula. All of this is accomplished by using a calliper as the main measuring tool. The cephalic index was calculated by using Microsoft Excel and the data is presented in tabular forms shown in the tables. **Results:** The distribution of subjects according to the cephalic index is shown in table II. This shows that the maximum number of participants is brachycephalic (80-84.9) followed by mesaticephalic (75-79.9). The mean cephalic index is 80.76±4.5 irrespective of gender. The mean cephalic index of boys is 81.52 ± 4.3and that of girls is 80± 4.58. **Conclusion:** According to this study's findings, there are some minor differences in the values of CI between the sexes. The average cephalic index was determined to be 80±4.58 in females and 81.52±4.3 in boys. This demonstrates that the cephalic index does not significantly differ by gender. There are several anthropological uses for this data

KEYWORDS

Head Length, Head Width, Cephalic Index, Anthropology, Race.

INTRODUCTION

Occipitofrontal diameter (OFD) and biparietal diameter, are the two biometric measurements, used to determine the cephalic index[1]. The cephalic index is also called as cranial index or index of breadth. In anthropology, the cephalic index is a very helpful tool in identifying racial differences. Cephalic index measures can also be used to determine sexual differences and to compare parents, their children, and siblings to provide some insight into how their inherited traits are passed down genetically[2].

The cephalic index has its own assigned head shapes that can be grouped into three categories which include dolichocephalic, brachycephalic, and mesaticephalic. An index of less than 75 means that the skull is long and narrow when seen from the top; such skulls are called dolichocephalic and are typical of Australian aborigines and native southern Africans. An index of 75 to 80 means that the skull is nearly oval; such skulls are called mesaticephalic and are typical of Europeans and the Chinese. A skull having an index of over 80 is broad and short and is called brachycephalic; such skulls are common among Mongolians and the Andaman Islanders[3].

MATERIALS AND METHODS

The main method of calculating the cephalic index of the respondents is by measuring their head length (glabella to inion) and head width (above the ears) and applying it to the formula. All of this is accomplished by using a calliper as the main measuring tool. The cephalic index will be used as an important parameter in deciding the classification of certain specific populations in this study[4]. The method used is the Hardlika method[5].

The age of the subjects ranged from 18-24 years. Measurements were taken with the subject sitting in a relaxed state and the head in anatomical position. The study was carried out on 200 subjects of which 100 were male and 100 were female. The cephalic index was calculated by using Microsoft Excel and the data is presented in tabular forms shown in the tables.

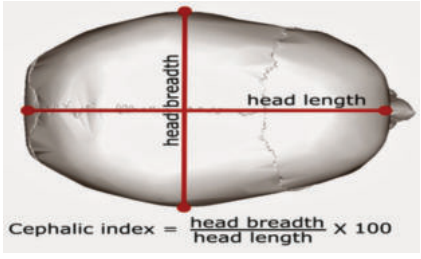

Figure 1 Measurements Taken and the Formula

Table I: Classification of skulls based on the cephalic index

Type of skull	Cephalic Index
Ultradolichocephalic	55.0-59.9
Hyperdolicocephalic	60.0-64.9
Dolichocephalic	65.0-74.9
Mesaticephalic	75.0-79.9
Brachycephalic	80.0-84.9
Hyperbrachycephalic	85.0-89.9
Ultrabrachycephalic	More than 90

RESULTS

The distribution of subjects according to the cephalic index is shown in table II. This shows that the maximum number of participants is brachycephalic (80-84.9) followed by mesaticephalic (75-79.9).

TableII: Distribution of the subjects according to cephalic index.

Type of skull	Cephalic Index	Number of subjects
Ultradolichocephalic	55.0-59.9	0
Hyperdolicocephalic	60.0-64.9	0
Dolichocephalic	65.0-74.9	17

Mesaticephalic	75.0-79.9	69
Brachycephalic	80.0-84.9	81
Hyperbrachycephalic	85.0-89.9	28
Ultrabrachycephalic	More than 90	5

Table III shows that the maximum number of boys (51%) and girls (30%) belong to brachycephalic followed by mesaticephalic boys (31%) and girls (38%).

TableIII: Distribution of the cephalic index according to sex

Type	Cephalic index	Boys		Girls	
		Number	%	Number	%
Ultradolichocephalic	55.0-59.9	0	0	0	0
Hyperdolicocephalic	60.0-64.9	0	0	0	0
Dolichocephalic	65.0-74.9	3	3	14	14
Mesaticephalic	75.0-79.9	31	31	38	38
Brachycephalic	80.0-84.9	51	51	30	30
Hyperbrachycephalic	85.0-89.9	12	12	16	16
Ultrabrachycephalic	More than 90	3	3	2	2
Total		100	100	100	100

Table IV shows that the mean cephalic index is 80.76±4.5 irrespective of gender. The mean cephalic index of boys is 81.52 ± 4.3and that of girls is 80± 4.58.

Table IV: Comparison of cephalic index in both sexes

Gender	Number of students	Cephalic index		
		Minimum	Maximum	Mean+/-SD
Boys	100	71.81	97.22	81.52 ± 4.3
Girls	100	71.2	91.18	80± 4.58
Total	200	71.2	97.22	80.76±4.5

DISCUSSION

The mean cephalic index in this study is 80.16 ±4.5. This population belongs to brachycephalic according to Stewart's classification[6]. This is similar to the result of the study by GV et al who found that the mean cephalic index is 80.91 among the Gujarati population. Bhargav and Kher[7] in 1961 reported a mean cephalic index of 76.9 in the Berelas population.

The mean cephalic index in the current study for boys is 81.52 ± 4.3. Anitha et al[8] found the mean CI for central Indian boys as 79±4.72. In the present study, the mean cephalic index for girls is 80± 4.58, while Anitha et al found it to be 80.74 ±3.97. So, we conclude that the CI for girls is correlating with Anitha et al.

CONCLUSION

According to this study's findings, there are some minor differences in the values of CI between the sexes. The average cephalic index was determined to be 80±4.58 in females and 81.52±4.3 in boys. This demonstrates that the cephalic index does not significantly differ by gender. There are several anthropological uses for this data.

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