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Anthropometric Study of Head Length among Garo Tribal and Non-Tribal Adult Bangladeshi Females of Greater Mymensingh Region

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Abstract

A cross-sectional, analytical type of study was conducted in the Department of Anatomy, Sir Salimullah Medical College, Dhaka, Bangladesh, from January to December of 2015, to observe the differences in head length between Garo tribal and non-tribal adult Bangladeshi females of Greater Mymensingh Region. The study subjects consist of two hundred (200) adult Bangladeshi female of greater Mymensingh districts among them, 100 were tribal (Garo) female and 100 were non-tribal female. Head length was taken the two ends of the spreading caliper were placed as one end on the glabella and the other end was fixed on the inion. Inion was identified by palpation. Conversion technique kept the caliper along a sagittal plane. Then the reading was taken from the calibrations on the caliper and was recorded in cm. The mean head length was higher in Garo tribal females than that of non-tribal females and the difference was statistically significant ($p<0.0001$). Our data suggests that the head length was higher in tribal female (Garo) than non-tribal female in Greater Mymensingh Region in Bangladesh.

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Introduction

Variation is one of the most important phenomena occurring in human population on the globe. Anthropometry is the hallmark technique that deals with the study of body proportion and absolute dimensions and vary with age and sex within and between racial groups. A significant occurrence in the human population is the difference in their physical morphology. The dimensions of human body are affected by ecological, biological, geographical, racial, body habitus, age factors and gender.[1]

Craniofacial anthropometric measurements of different body parts are used in differentiating between ethnic groups, in identifying missing persons and suspects, in treating craniofacial deformities.[2] Anthropometric studies are conducted in anthropology in medicine and provide useful information for medical diagnosis and treatment.[3] Growth and development of craniofacial structures are important as many clinical disciplines depend on it for understanding

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their developmental processes for diagnosis, timing and planning of treatment.[4]

To treat congenital, post traumatic facial disfigurements in members of these groups, surgeons require access to craniofacial databases based on accurate anthropometric measurements.[5] It is also important tool in forensic science.

Populations vary genetically and geographically in their craniofacial features. Therefore, single standard of anthropometric variable is not appropriate for being applied to diverse racial and ethnic groups. Though Bangladesh is a relatively small country, people of different religions and ethnic groups live here, and these different groups have differences in their physical characteristics.[6] There are as many as 30 tribal communities living in different parts of Bangladesh. The Garos are one of them. They are an ethnic group of 'Tibbets Borman', belonging to the Mongolian human race. In Bangladesh Garos are usually recognized as an ethnic community, they have a separate identity. They mostly live in Mymensingh, Netrokona, Tangail, Sylhet and Sunamgonj districts of our country. They are different from any other tribal community and not consistent with the tradition of mainstream Bangladeshi common people.[7]

In Bangladesh, studies on craniofacial measurements are limited to mostly on tribal population. There are very few comparative studies between tribal and non-tribal Bangladeshi female. This type of study will be useful for researchers, plastic surgeons, and the forensic experts, which means it may be useful for cosmetic correction purpose and also for identification.

Methods

The cross-sectional, analytical study was performed on one hundred were adult Garo tribal female and one hundred non-tribal Bangladeshi female age ranging from 25 to 45 years hailing from Greater Mymensingh Region, between January and December of 2015. Before going to the measurement procedure each of the subject was greeted politely. Then her national identity card was checked to confirm her age. After a short briefing on the objective of the present study, the subject was asked to give a voluntary consent on the consent form.

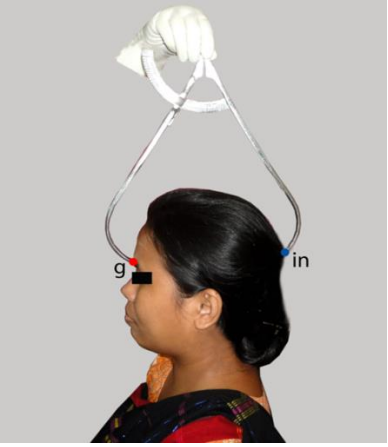
Each subject was made seated comfortably on a chair with her head in anatomical position and all the craniofacial measurements were taken to the nearest 1 mm with the help of spreading caliper.[8-10]

5.00 mm error between jaws of spreading caliper was considered as standard. Therefore, to get actual measurement 0.5 cm was discarded from measured value.[9,10] At first the landmarks of the variables were located on her face and head by careful inspection or palpation and was marked on the surface by chalk. After measurements chalked marked areas were erased gently. Head length was taken the two ends of the spreading caliper were placed as one end on the glabella and the other end was fixed on the inion. Inion was identified by palpation. Conversion technique kept the caliper along a sagittal plane.[9,10] Then the reading was taken from the calibrations on the caliper and was recorded in cm. After collecting the data, the data was checked and edited. Later the data was statistically analyzed by a software package, SPSS for Windows

(version 13.0). Statistical tests such as unpaired Student 'test was done. Statistical significance was accepted at p-value <0.05.

The study was approved by the Ethical Review Committee of Sir Salimullah Medical College, Dhaka, Bangladesh.

Fig. 1: Procedure for measuring head length (g-in) using spreading calipers; here, g (red dot) indicates glabella, and in (blue dot) indicates inion.



Results

The mean head length of Garo tribal female was found 16.42±0.73 cm and in non-tribal female was 15.43±1.06 cm. The difference between two groups was statistically significant (p<0.0001). (Table-I & Fig. 2)

Table-I: Head length of the study subjects (n=200)

Group	Mean±SD (in cm)	Range (in cm)	p-value
Garo tribal female	16.42±0.73	(15.10 -18.30)	0.0001***
Non-tribal female	15.43±1.06	(10.60-17.14)	0.0001***

Comparison between groups done by unpaired Student's 't' test, *** = significant at p<0.001.

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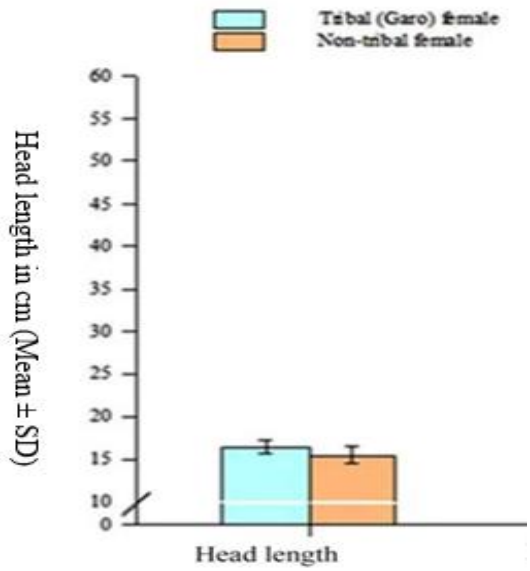
Fig. 2: Comparison of the head length between Garo tribal and non-tribal females



Discussion

It has widely been recognized that craniofacial anthropometry is affected by geographical, racial, ethnical, gender and age factors. The selection of study area was on the basis of density of tribal population and was considered on the basis of same socio-economic and nutritional status. Economic status is likely to influence the nutritional status of an individual and thereby may affect the craniofacial dimensions. To minimize the possible effect of economic condition on the anthropometric data, female of same economic status was chosen for the present study. In the present study, significant difference of head length was observed between Garo tribal and non-tribal Bangladeshi female. Lobo, Chandrashekhar & Kumar[8] worked on female of Gurung community of Nepal and Hossain *et al.*[11] carried out a study on Japanese adult female. The findings were similar to that of the present study, though Garos and Japanese females are

Mongoloid and Nepalese are mixed by race. However, the dissimilarities found might be due to different geographical orientation. Pandey[12] worked on female of Andaman Islands of India and Mostafa *et al.*[13] carried out a study on female of adult Bangladeshi Buddhist Chakma female. However, they found no significant difference ($p>0.05$) in their studies.

Conclusion

The study revealed that a statistically significant difference in head length was observed between Garo tribal female and non-tribal female in the Greater Mymensingh Region of Bangladesh. The anthropometric data presented in this study would be useful for anatomists for further anthropological studies and serve as references values for surgical intervention.

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