



ORIGINAL ARTICLE

Anthropometric Study of Facial Height among Tribal (Garo) and Non-Tribal Bangladeshi Female of Greater Mymensingh District in Bangladesh

Israt Jahan Tania¹, Fahmida Zaman², Umma Morium³, Mahbuba Akter⁴, Sadia Rashid⁵

¹Assistant Professor, Department of Anatomy, Ashiyan Medical College, Dhaka, Bangladesh; ²Associate Professor, Department of Anatomy, MH Samorita Medical College, Dhaka, Bangladesh; ³Associate Professor, Department of Anatomy, Ashiyan Medical College, Dhaka, Bangladesh; ⁴Associate Professor, Department of Anatomy, ZH Sikder Women's Medical College, Dhaka, Bangladesh; ⁵Assistant Professor, Department of Anatomy, Medical College for Women, Dhaka, Bangladesh

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Abstract

Background: Craniofacial anthropometry is an important stem of anthropometry, in which the dimensions of the head and face are measured. It provides quantitative data, identifying people having different physical characteristics, diagnosing people having craniofacial abnormality related to congenital or genetic cause and differentiating between males and females. **Objective:** The purpose of the present study was to establish the ethnic anthropometric data for adult tribal (Garo) and non-tribal Bangladeshi female. **Methodology:** This cross sectional analytical type of study was conducted in Department of Anatomy, Sir Salimullah Medical College, Dhaka, from January 2015 to December 2015. The study materials consist of two hundred (200) adult Bangladeshi female of greater Mymensingh district age ranging from 25 to 45 years. **Results:** Among 200 female, 100 was tribal (Garo) female and 100 non-tribal female, the mean (\pm SD) facial height from 'nasion to gnathion' was higher in non-tribal female than tribal female ($p < 0.001$). **Conclusion:** Facial height from 'nasion to gnathion' is higher in non-tribal female compared to tribal female among Bangladeshi female living in Mymensingh district. [*Journal of Current and Advance Medical Research, January 2020;7(1):36-39*]

Keywords: Anthropometry; facial height; tribal (Garo) female; non-tribal females

Correspondence: Dr. Israt Jahan Tania, Assistant Professor, Department of Anatomy, Ashiyan Medical College, Dhaka, Bangladesh; **Email:** dr.israttania@gmail.com; **Cell no.:** +8801711163880

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Introduction

The word anthropometry comes from Greek anthropos, 'man' and metron, 'measure'. Elsholtz was the first person who used the term anthropometry in its modern sense and also invented an instrument "anthropometron"¹. Variation is one of the most important phenomenon 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. Studying intra and inter population variations in different morphological characters have long been an interest of anthropologists. The evaluation and measurement of human body dimensions are achieved by physical anthropometry. The dimensions of human body are affected by ecological, biological, geographical, racial, personality, body habitus, age factors and gender².

Growth and development of craniofacial structures are important as many clinical disciplines depend on it for understanding their processes for diagnosis, timing and planning of treatment³. The knowledge of facial measurement is important to clinicians such as pediatric dentists, orthodontics, craniofacial surgeons enabling them in detection of normal or abnormal changes, assistance in diagnosis and treatment planning and prediction of post treatment outcomes. Anthropometric measurements provide important values that are needed in orofacial surgery. The normal values of facial parameters are vital measurements in the evaluation and diagnosis of craniofacial deformities⁴.

Bangladesh harbours many cultures and people of different races because of colonial rules of past regimens. There are as many as 30 tribal communities living in different parts of Bangladesh. The Garos are one of them⁵. They mostly live in Mymensingh, Sherpur, Tangail, Sylhet and Sunamgonj districts of our country. Of them two lacs Garos are found in Mymensingh district of Bangladesh. The Garos are an ethnic group of 'Tibbati Borman', belonging to the Mongolian human race⁶.

In Bangladesh, studies on craniofacial measurements are limited to mostly on caste and community and rarely on tribal population. Therefore, the present study will be conducted with the intention to establish ethnic anthropometric data for adult tribal (Garo) and non-tribal Bangladeshi female.

Methodology

The study was performed on 200 adult Bangladeshi female population. Of them one hundred were adult Garo Bangladeshi female and one hundred were non-tribal Bangladeshi female age ranging from 25 to 45 years of greater Mymensingh district. Date of birth of each subject was recorded from their national identity cards. Bangladeshi female who were mixed in origin- a history of marriage between tribal and non-tribal people or with any other tribes within the last three generations-prior history of ocuofacial trauma, congenital craniofacial anomaly like cleft lip, cleft palate, post traumatic deformities that might affect craniofacial measurements were excluded from the study. The landmarks in the study were defined nasion (n) as the point at which frontonasal and internasal sutures meet and Gnathion(gn) as in the midline, the lowest point on the lowest border of the chin. 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 measurement facial height was taken to the nearest 1 mm with the help of vernier caliper. One end of the caliper was vertically placed on nasion and the other end was placed on gnathion. Then facial height from 'nasion to gnathion' was recorded in cm. After collecting the data, all data were checked and edited.

The data were statistically analyzed by a software package, SPSS for Windows (version 7.0), keeping the objectives of the study in view. Statistical tests such as unpaired Student's 't' test were done. Data was expressed as mean \pm standard deviation (\pm SD) as description statistics in both groups. Statistical significance was accepted at p-value equal to or less than 0.05 ($p < 0.05$). This study was done after the protocol of the research work was approved by the Institutional Ethics Committee of Sir Salimullah Medical College, Dhaka, Bangladesh.

Results

The present study was carried out on 200 (two hundred) adult female. Out of them 100 (one hundred) were tribal (Garo) female and 100 (one hundred) were non-tribal female of 25 to 45 years of age. Results of this study are described below with suitable table and graph.



Figure I: Procedure for measuring facial height from ‘nasion to gnathion’ (n-gn) using vernier caliper, n-(red dot) indicates nasion, gn-(blue dot) indicates gnathion

Table 1: Facial Height from 'Nasion to Gnathion' of the Study Subjects (cm)

Groups (Female)	Mean±SD	Range	P value
Tribal	10.5±0.59	9.3 to 11.9	0.0001
Non-tribal	12.1±1.02	10.2 to 13.5	

Comparison between groups done by unpaired Student's 't' test

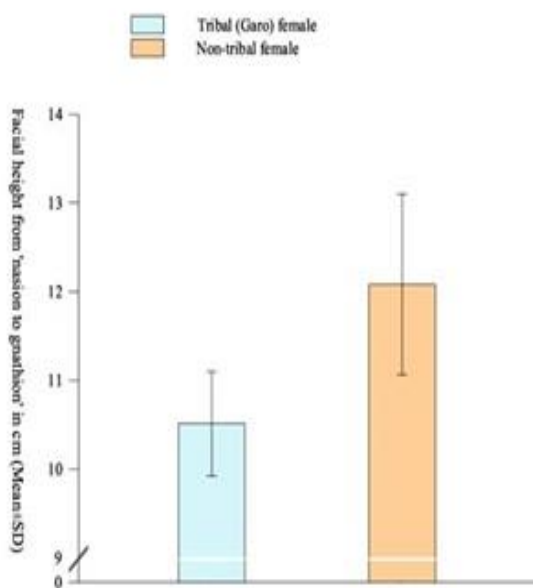


Figure I: Facial Height from ‘Nasion to Gnathion’ of the Study Population

Discussion

It has widely been recognized that craniofacial anthropometry is affected by geographical, racial, ethnical, gender and age factors. So each population should have specific standards to optimize the accuracy of identification.

The selection of study area was on the basis of density of tribal population and was considered on the basis of same socioeconomic and nutritional status. It is understandable that the economic status is likely to influence the nutritional status of an individual and thereby may affect the facial dimensions. To minimize the possible effect of economic condition on the anthropometric data, female of broadly the same economic status were chosen for the present study.

The findings of the present study were compared with the findings of the studies carried out by other researchers, where female of Greece, Italy, Turkey, America, China, India (West Bengal, Rajasthan, Andaman) were included. Similarity and dissimilarity have been found with the findings of other researchers. The Greek, Turkish, American, Italian and Latvian are different from the study subjects in race. The Greek, Turkish, Italian and Latvian are Caucasoid, the Nigerian are Negroid, the Iranian are Aryan, the American are Hispanic and the Chinese are Mongoloid by race. However, the study subjects tribal (Garo) belonged to Mongoloid and non-tribal female are Indo-Aryan and Dravidian group. The Caucasian, Aryan and the Hispanics have greater body dimensions than the Austro-Indo-Aryan-Mongoloid-Dravidian groups.

In the present study significant difference present in facial height from ‘nasion to gnathion’ was observed between tribal (Garo) and non-tribal Bangladeshi female. Farkas et al¹ conducted a study on different countries of the world. The values of facial height from ‘nasion to gnathion’ of Iranian female was significantly higher (p<0.001) than the present study and the study on German, Italian and Portuguese female were higher (p<0.05) than that of the present study. The German and Italian are Caucasoids and Portuguese are Hispanics by race⁷.

Racial variation might be the cause for dissimilarity. Mostafa⁶ worked on adult Bangladeshi Buddhist Chakma female. The mean value of facial height from ‘nasion to gnathion’ was similar to that of present study and this similarities might be due to Bangladeshi origin.

Conclusion

The study revealed that the Significant positive ($p < 0.001$) difference were found between tribal female (Garo) and non-tribal female in facial height from 'nasion to gnathion'. In this study some amount of comparisons were made with other populations. This type of study might help to understand the relative status of Garo population in the context of the anthropometric variations around the world, especially among the Mongoloid population.

References

1. Farkas GL, Katic JM, Forrest RC. International Anthropometric Study of Facial Morphology in Various Ethnic Groups/Races. *The Journal of Craniofacial Surgery*, 2005;16(4):615-645
2. Shrestha O, Bhattacharya S, Jha N, Dhungel S, Jha CB, Shrestha S, et al. Cranio facial anthropometric measurements among Rai and Limbu community of Sunsari District, Nepal. *Nepal Med Coll J*. 2009;11(3):183-5
3. Raji JM, Garba SH, Numan AI, Waziri MA, Maina MB. Morphological evaluation of head and face shapes in a North-Eastern Nigerian population. *Aust J Basic Appl Sci*. 2010;4(8):3338-41
4. Akhter Z, Banu ML, Alam MM, Hossain S, Nazneen M. Photo-anthropometric study on face among Garo adult females of Bangladesh. *Bangladesh Medical Research Council Bulletin*. 2013;39(2):61-4.
5. Kolar JC, Salter EM. *Craniofacial anthropometry Practical measurements of the head and face for clinical, surgical and research use*, Charles C Thomas publisher Ltd, Springfield, Illionis. USA, 1996;66-187
6. Mostafa A, Banu LA, Rahman F, Paul S. Craniofacial anthropometric profile of adult Bangladeshi Buddhist Chakma females. *Journal of Anthropology*. 2013;2013