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Anthropometric analysis between Naso-aural Inclination and Their Correlation in Bangladeshi Buddhist Rakhain Ethnic Males

Mohammed Iqbal[1], Nazmun Nahar[2], Towhida Naheen[3], SK. Amin Mohi Uddin[4], Farzana Begum[5], Mizanur Rahman[6], Kazi Md. Shahidur Rahman[7], Utpal Kumar Biawas[8]

[1]Associate Professor, Department of Anatomy, Monno Medical College, Manikganj, Bangladesh; [2]Associate Professor, Department of Pathology, Medical College for Women, Dhaka, Bangladesh; [3]Associate Professor, Department of Anatomy, Chattogram International Medical College & Hospital, Chittagong, Bangladesh; [4]Assistant Professor, Department of Anatomy, Monno Medical College, Manikganj, Bangladesh; [5]Professor & Head, Department of Anatomy, Army Medical College Bogura, Bogura Cantonment. Bangladesh; [6]Associate Professor, Department of Urology, Chattogram Medical College Hospital, Chattogram, Bangladesh; [7]Assistant Professor, Department of Pathology Monno Medical College, Manikganj, Bangladesh; [8]Assistant Professor, Department of Forensic & Toxicology, Monowara Sikder Medical College, Shariatpur, Bangladesh

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Abstract

Background: Naso-aural Inclination most prominent structure of the face, influencing facial appearance and profile. **Objective:** The aim of the study was to describe anthropometric analysis between naso-aural inclination and their correlation in Bangladeshi Buddhist Rakhain Ethnic males. **Methodology:** This cross-sectional observational study was carried out in the Department of Anatomy, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2011 to December 2011 for a period of one (01) year. Adult healthy Bangladeshi Buddhist Rakhain males with the age group of 18 to 30 years were included as study population. Standard of normative facial anthropometric values related to nose inclination and ear inclination. **Result:** A total number of 100 adult healthy Bangladeshi Buddhist Rakhain males were recruited for this study. The mean nose inclination was 32±4.38 degree and ear inclination left was 15.64±3.85 degree. **Conclusion:** In conclusion the standard of normative facial anthropometric values related to nose inclination is significantly greater than ear inclination among the Bangladeshi Buddhist Rakhain males. *[Journal of National Institute of Neurosciences Bangladesh, January 2022;8(1): 62-64]*

Keywords: Anthropometric analysis; Naso-aural Inclination; Bangladeshi; Buddhist; Rakhain Ethnic Males

Correspondence: Dr. Mohammed Iqbal, Associate Professor, Department of Anatomy, Monno Medical College, Manikganj, Bangladesh. Email: iqbal085nahar082@gmail.com; ORCID ID: 0000-0002-2346-361X

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Introduction

Anthropometry is the science that deals with the measurement of size, weight and proportion of the human body. This was adopted by medical scientists to estimate body size for over a hundred year's back[1]. Anthropometric analysis aims to provide the most reliable comparison of body forms by using specific landmarks determined in respect of anatomical prominences. It is now easier to discuss the differences between ethnic and racial groups, and to compare individual variations in both sexes[2].

Anthropometric measurements of the nose is one of the most visible organs on the face and its appearance contributes enormously to facial aesthetics[3-4]. Clinicians, scientists and artists have always studied the human face and nose: the anatomical bases of communication and

environment interaction; the phenotype for personal identification; and the key characteristics that depict the health state of an individual, have all been considered from both qualitative and quantitative points of view[5]. Additionally, nasal dimensions are used to provide guidelines for treatment planning. The proportions of the so-called ideal nasal shape and the operations designed to achieve these have been the subject of numerous papers. The right size, shape, and proportions of a nose help to make a person beautiful or handsome, because it is at the center of the face6. Knowledge of the unique shape, anatomy and dimensions of the nose would be very useful for surgeons undertaking repair and reconstruction of the nose7.

Anthropometric methods and surgical practice have now merged to treat congenital or posttraumatic facial disfigurements in various racial or ethnic groups successfully2. The nose is a person's most defining feature as it is in the center of the face. Nasoplasty surgeons require access to facial data based on accurate anthropometric measurements to perform optimum correction2. The anthropometric information is also important for nutritionist and beauticians for estimation of caloric requirements from frame size and somatotype of males. Therefore, an attempt had been taken in the present study to make anthropometric analysis between naso-aural inclination and their correlation in Bangladeshi Buddhist Rakhain Ethnic Males.

Methodology

This cross-sectional observational study was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2011 to December 2011 for a period of one (01) year. Participants of the study were adult healthy Bangladeshi Buddhist Rakhain ethnic males who were in the age group of 18 to 30 years. Data analysis was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. The following exclusion criteria were used to screen out the ineligible participants through history taking and physical examinations like mixed ethnic origin, congenital craniofacial anomaly, major craniofacial trauma, orthodontic treatment or craniofacial reconstructive surgery, malocclusion, common genetic, endocrine or neurological disorders & beard or mustache, cranio-facial diseases and abnormalities, growth related disorders and history of facial trauma/reconstruction surgery were excluded from the study. During landmark marking, the participant was asked to sit relaxed on a chair and the head was kept in the normal head position. This position was suitable for correct identification of facial features[8]. All the measurements were taken twice to avoid measurement error. With the help of a sliding calliper, the measurements were taken in millimetres. The landmarks used for taking different physical measurements have been described by Kolar and Salter[9]. For measuring the inclinations, the participant's head was adjusted using an angle finder in such a way that the Frankfort plane lay horizontal.

Procedure of Measuring Nasal Bridge Inclination (Figure IA): Keeping the participant's head at the fixed position described above, the short edge of the angle finder was placed on the nasal bridge and reading was taken from the dial in degrees. If the needle was in front of the 0 mark, the inclination was taken as negative; if it was behind the 0 mark, the value was taken as positive. Usually this inclination is always positive.

Procedure of measuring ear Inclination (Figure IB): Keeping the participant's head at the fixed position, the long edge of the angle finder was placed against the long axis of the ear, beginning with the lower edge of the ear and rotating the angle finder until the upper end was at the upper tip of the ear. The reading on the dial was subtracted from 90 degrees to determine the inclination. If the needle was posterior to the 90 degree mark, the inclination was taken as negative; if anterior, it was taken as positive[10].

Statistical Analysis: The data were statistically analyzed by Statistical Package for Social Science (SPSS version 17.0) to determine the range, the mean and standard deviation and any significant correlation between upper and lower facial heights.

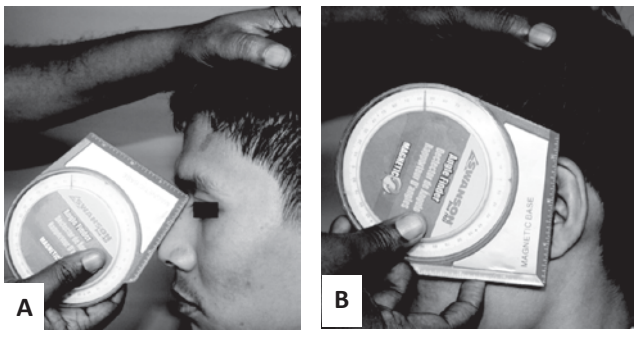

Figure I: Procedures of measuring the nose inclination (A) and ear inclination (B) in a participant using an angle finder

Results

A total number of 100 male respondents were recruited for this study. The nose inclination was 32.0±4.38 and ear inclination-left was 15.6±3.85. The difference was statistically significant (p=0.000) (Table 1).

Table 1: Values of the Variables related to Naso-Aural Inclination in the Adult Healthy Bangladeshi Buddhist Rakhain Males

Variable	Value (Degree)		P value
	Range	Mean (±SD)	
Nose inclination	20.00–43.50	32.00 (±4.38)	0.000
Ear inclination-left	09.00–25.50	15.64 (±3.85)	

n (no. of participants)= 100 males; From paired t test;
$p \leq 0.05$ was considered as significant; S=Significant

Discussion

Characterize the different races and ethnic groups the nasal profile and nasal morphology play very important role. The function of Nasal index is to classify the various types of nose. It is very useful in anthropology as it is one of the clinical anthropometric parameter recognized in nasal surgery and medical management[11]. The nasal index has been found to modify between childhood, adolescence and young adulthood and after young adulthood into the sixth decade of life[12]. Nasal index also can differ due to regional and climatic differences[13].

This study shows nose inclination was 32±4.38 degree and ear inclination left was 15.64±3.85 degree. It observed that nose inclination higher than ear inclination which was statistically significant ($P<0.05$). It is evident that the Rakhain males showed the mean values of all variables similar to the African American males. The mean Rakhain intercanthal distance and mean left eye fissure length was also similar (S) to those of the majority of the populations mentioned. The other variables showed varied findings, though different trends were somewhat visible. The Mongoloid (Thai and Japanese) values were mostly similar (S) lower (L) as were the Negroid Zulu means.

The mean values of nose inclination in Rakhain males were similar (S) to those most of the other populations mentioned. Both the Mongoloid populations (Thai and Japanese) had similar means while two of the three Negroid population had lower (L) means. Porter, along with Farkas, evaluated the differences between continental Asian, Asian American, and North American Caucasian faces in 2002. The most significant differences between these two groups were that the Asian group had significantly smaller mouth width, greater Intercanthal distance, shorter eye fissures length, and much wider noses. Farkas et al[12] have presented and discussed the findings of 14 anthropometric measurements in peoples of Europe (all Caucasoid), Middle East, Asia and of African origin (some of which have been discussed above) and tested their differences statistically with North American White people.

Conclusion

In conclusion the standard of naso-aural inclination anthropometric values related to nose inclination higher is significantly greater than ear inclination among the Bangladeshi Buddhist Rakhain males. The findings of this study may help to establish the naso-aural inclination in Bangladeshi Buddhist Rakhain males which will be helpful for treatment planning. Furthermore study need standardizing a Bangladeshi Buddhist male Rakhain database of nasal variables. Discussions comparing these data with corresponding data from other populations may also be useful as well as proper use in surgery.

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