

Nasofacial Anthropometric Study among Adult Santals and Bangalees of Northern Area of Bangladesh

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Abstract

Introduction: Anthropology is the science of human body morphology. In forensic medicine, anthropometric measurements are usually used to identify an individual. Medical scientists, as well as anthropology experts, use facial measurements for several purposes such as identification of congenital and traumatic abnormalities. Facial measurements are interestingly varied between diverse races and ethnicities.

Objective: The objective of this study was to determine the facial and nasal anthropometric measurements of adult Santals and Bangalees residing in Northern area of Bangladesh and to determine their status in relation to other population studied elsewhere.

Design: It was a cross sectional comparative study.

Material and Method: This cross sectional study was conducted in the anatomy department of Rajshahi Medical College, during the period of January 2021 to December 2021. This study was performed on 300 individuals (150 Bangalee and 150 Santal) with normal craniofacial configuration, without history of trauma in the face and no history of nose and face cosmetic surgery such as Septoplasty or Septorhinoplasty. Purposive sampling technique was adopted in this study.

Results: Most common type of face in both the Santals (92%) and the Bangalee (99.30%) respondents in Northern area of Bangladesh was Hyperleptoprosopic type of face. Leptorrhine type was predominant (84%) nasal type among the Bangalee and 51.30% Mesorrhine and 48% Platyrrhine type were predominant nasal type among the adult Santals.

Conclusions: Findings of this study will provide to build database for nasofacial, maxillofacial, cosmetic surgeons & orthodontist which help them in making diagnosis of congenital and traumatic nasofacial anomalies & planning their reconstructive surgeries. The findings of the study may also help forensic experts in identifying the victims and assailants of criminal cases.

Keywords: nasofacial, anthropometry, santals, bangalees,

Introduction

Anthropology is the science of human body morphology, and anthropometric studies are scientific methods and techniques for displaying different measurements and observations on the human being as well as its skeleton.¹

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Anthropometric measurement for each specific population is, therefore, of much importance to determine the genetic and environmental influences on a particular phenotype of a human body, in terms of size, shape, and proportions of one part of the body with another.² In forensic medicine, anthropometric measurements are usually used to identify an individual.³

Medical scientists, as well as anthropology experts, use facial measurements for several purposes such as identification of congenital and traumatic abnormalities.⁴ There are five types of the face in different races according to the Facial Index (FI); Hypereuryprosopic (FI ≤ 78.9), Euryprosopic (FI = 79.0–83.9), Mesoprosopic (FI = 84.0–87.9), Leptoprosopic (FI = 88.0–92.9) and Hyperleptoprosopic (FI ≥ 93.0). The Euryprosopic group has a broad and short face, but the Leptoprosopic group has a tall and narrow face.⁵

The nose shape has great importance in facial beauty, and its dimensions are widely used in facial reconstruction and plastic surgery.⁶ Ethnic influences and environmental, climatic conditions are the two main factors that result in different sizes and shapes of the nose.¹ Furthermore, the nasal measurements (Nasal Height = NH, Nasal Width = NW

and Nasal Index=NI), as anthropometric parameters can be used for distinguishing between different races. There are five types of the nose in different races according to the NI: Hyperleptorrhine (NI \leq 54.9), Leptorrhine (NI=55-69.9), Mesorrhine (NI=70-84.9), Platyrrhine (NI=85-99.9) and Hyperplatyrrhine (NI \geq 100).⁵ The white race has a fine nose (Leptorrhine), the blacks have a broad nose (Platyrrhine) and the Orientals have a medium-sized nose (Mesorrhine).⁶

A plethora of studies about the face and nose have been done in various countries, and significant differences were reported in facial and nasal measurements of various ethnicities and races with different skeletal and dental patterns. All these differences have greatly contributed to our knowledge of diversity in facial and nasal size, shape, and proportions.^{7,8}

Also, there is no comparative study between Santals and Bangalees. It might be useful and essential tool to the researchers, clinicians and forensic experts in respect to their field of study. Therefore, the present study attempted to document facial and the nasal anthropometric measurement of the Santals population and to assess the type of face and nose and to assess their facial and nasal measurement in relation to the Bangalee and to determine their status in relation to other population studied elsewhere.

However, none of these studies have yet performed the nasofacial profile of the Bangladeshi population. In view of this fact, the proposed study was conducted to describe the nasofacial anthropometric profile of Santal and Bangalee adults residing in the Northern area of Bangladesh.

Materials and Methods

It was a cross-sectional study. The study was carried out in the Department of Anatomy, Rajshahi Medical College, Rajshahi. over a period of one year from January 2021 to December 2021 Adult Santals and Bangalees aged 18 years and above residing in the northern area of Bangladesh, with normal craniofacial configuration were the study population. The individuals with craniofacial abnormalities, history of trauma, and the face cosmetic surgery, such as septoplasty or septo-rhinoplasty, and subject of mixed parentage were excluded. I have taken 300 populations (Santal 150 and Bangalee 150) due to Pandemic COVID Situation. Purposive sampling technique was adopted in this study. Data were collected using a structured questionnaire (Research instrument) containing the variables of interest. With the help of sliding vernier calipers, measuring tape and weight machine anthropometric measurement were taken.

Data were collected on variables of interest by using a structured questionnaire (Research instrument) by observation as well as measuring different anthropometric parameters of adult of both study groups with the help of Sliding Vernier Calipers, measuring tape and weight machine.

The study was done on 300 adult people including 150 from each study groups. Data were collected from Rajshahi, Naogaon, Pabna, Rangpur, Dinajpur and Gaibandha district. Data collection were commenced after obtaining ethical clearance obtained from the Ethical review committee (ERC) of Rajshahi Medical College, Rajshahi as well as voluntary informed consent was taken from the individual respondent after short briefing of the objectives, rights, benefit of the study and all relevant information's.

Depending upon following formula face should be classified into Hyperuryprosopic (very broad and short face), Eueyprosopic (broad, short face), Mesoprosopic (average face), Hyperleptoprosopic (very tall, narrow face) type. And nose should be classified into Hyperleptorrhine (excessively tall and narrow), Leptorrhine (tall and narrow), Mesorrhine (medium), Platyrrhine (broad and flat) Hyperleptorrhine (excessively broad and flat) type.

All measurements were taken in a neutral position and individual was asked to breathe calmly through their nose with relaxed facial expression without lifting the head. All the measurements were collected by using Vernier Slide Calipers.

- Facial length (FI): Measured from nasion to gnathion in cm.
- Facial width (FW): Measured by distance between to zygion in cm.
- Nasal height (NH): Measured from nasion to subnasale in cm.
- Nasal width (NW): Measured by distance between two ala of the nose in cm.
- Facial index (FI): (Facial length divided by Facial width)X100
- Nasal index (NI): (Nasal height divided by Nasal width)X100

After collecting data, I checked the completeness and internal consistency of questions. Then data were cleaned by editing, coding, recoding and categorizing. Data were rechecked to detect errors and to maintain validity. After entry into the computer result were analyzed according to variables of the study. The summarized data were presented in the form of table with necessary interpretation and inference, appropriated description inferential statistics and test of significance. Then data was finally entered into SPSS file for analysis. The data was analyzed via Statistical Package for the Social Sciences (SPSS, version 25.0, Chicago, IL) software. Quantitative variables were described by the mean & standard deviation (mean \pm SD), median with minimum and maximum value of all the parameters of interest were calculated. To compare all aspect of measured nasofacial anthropometric parameters using independent T-test was done. For qualities variables expressed in frequency, percentage and for comparison Chi-square test done. The level of significance was set at 5% and p-value < 0.05 or < .001 were considered as statically significant.

Prior to the commencement, it was approved by the institutional Review Board (IRB) of Rajshahi Medical College. The permission from the Ethical Review

Committee was obtained after informing was obtained after informing thoroughly regarding thesis procedures.

Results

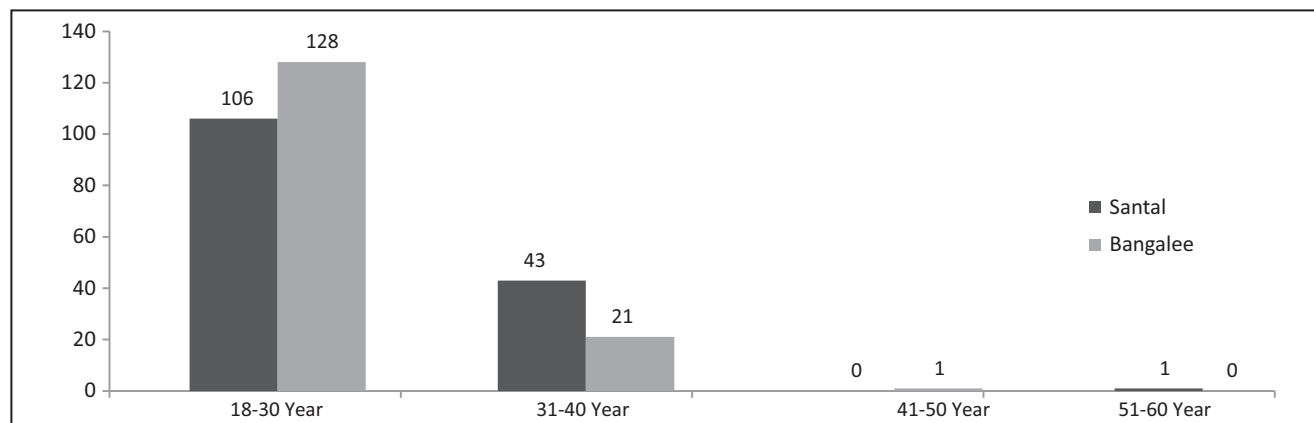


Figure 1: Distribution of the Santal (n=150) and Bangalee (n=150) respondents according to their age category

Figure 1 shows the distribution of the Santal respondents according to their age category. It revealed that Mean (\pm SD) age of the Santal and Bangalee respondents was 28.42 ± 5.16 years and 25.30 ± 4.80 years respectively.

Table 1: Nasofacial anthropometric measurement of Santal respondents (n = 150)

Ethnic group Santals (n=150)	Statistical measurement			
	Mean \pm SD	Median	Minimum	Maximum
FL (Distance between nasion and gnathion in cm)	11.57 \pm 0.84	11.50	9.00	14.10
FW (Distance between two zygions in cm)	11.21 \pm 0.79	11.10	9.00	13.10
Facial index (FL/FWX100)	103.41 \pm 7.91	103.50	86.44	127.00
NH (Distance between the nasion and the subnasale in cm)	5.02 \pm 0.36	5.00	4.00	5.90
NW (Distance between the two alae of the nose in cm)	4.17 \pm 0.47	4.20	3.10	4.90
Nasal index (NW/NLX100)	83.06 \pm 8.20	84.33	63.64	96.08

Table 1 shows the nasofacial anthropometric measurement of Santal respondents (n = 150). It reveals that, mean (\pm SD), median, minimum and maximum distance between nasion and gnathion or FL were 11.57(\pm 0.84) cm, 11.50 cm, 9.0 cm and 14.10 cm respectively. Again mean (\pm SD), median, minimum and maximum distance between two zygions or FW were 11.21(\pm 0.79) cm, 11.10 cm, 9.0 cm and 13.10 cm respectively. Regarding facial index mean (\pm SD), median, minimum and maximum measurement were 103.41 (\pm 7.91), 103.50, 86.44 and 127.00 respectively. Regarding nasal anthropometric measurement, mean (\pm SD), median, minimum and maximum distance between the nasion and the subnasale or NH in cm were 5.02 (\pm 0.36) cm, 5.00 cm, 4.00 cm and 5.90 cm respectively. Again mean (\pm SD), median, minimum and maximum distance between two alae of the nose or NW were 4.17(\pm 0.47) cm, 4.20 cm, 3.10 cm and 4.90 cm respectively. Regarding nasal index mean (\pm SD), median, minimum and maximum measurement were 83.06 (\pm 8.20), 84.33, 63.64 and 96.08 respectively.

Table 2: Nasofacial anthropometric measurement of Bangalee respondents (n = 150)

Ethnic group Bangalees (n=150)	Statistical measurement			
	Mean \pm SD	Median	Minimum	Maximum
FL (Distance between nasion and gnathion in cm)	11.91 \pm 1.06	11.80	10.00	14.70
FW (Distance between two zygions in cm)	10.41 \pm 1.12	10.50	7.40	13.10
Facial index (FL/FWX100)	115.09 \pm 10.29	114.72	91.30	160.81
NH (Distance between the nasion and the subnasale in cm)	5.60 \pm 0.54	5.50	4.40	7.20
NW (Distance between the two alae of the nose in cm)	3.55 \pm .34	3.50	2.80	4.50
Nasal index (NW/NLX100)	63.58 \pm 5.01	63.33	50.85	78.00

Table-2 shows the nasofacial anthropometric measurement of Bangalee respondents (n = 150). It reveals that regarding facial anthropometric measurement among the Bangalee respondents, mean (\pm SD), median, minimum and maximum distance between nasion and gnathion or FL (Facial Length) were 11.91 (\pm 1.06) cm, 11.80 cm, 10.0 cm and 14.70 cm respectively. Again mean (\pm SD), median, minimum and maximum FW (distance between two zygions) were 10.41(\pm 1.12) cm, 10.50 cm, 7.40 cm and 13.10 cm respectively. Regarding facial index mean (\pm SD), median, minimum and maximum measurement were 115.09 (\pm 10.29), 114.72, 91.30 and 160.81 respectively. Regarding nasal anthropometric measurement, mean (\pm SD), median, minimum and maximum NH (distance between the nasion and the subnasale in cm) were 5.60 (\pm 0.54) cm, 5.50 cm, 4.40 cm and 7.20 cm respectively. Again mean (\pm SD), median, minimum and maximum NW (distance between two alae of the nose were) 3.55(\pm 0.34) cm, 3.50 cm, 2.80 cm and 4.50 cm respectively. Regarding nasal index mean (\pm SD), median, minimum and maximum measurement were 63.58 (\pm 5.01) , 63.33 , 50.85 and 78.00 respectively.

Table 3: Distribution of face type according to Facial Index among the Santal (n=150) and Bangalee respondents (n= 150)

Face type according to facial index among the Santal & Bangalee respondents	Frequency of Santal	Frequency of Bangalee
Mesoprosopic (normoprosopic: average face)	3 (2.0%)	0 (0.00%)
Leptoprosopic (tall, Narrow face)	9 (6.00%)	1 (0.70 %)
Hyperleptoprosopic (very tall and narrow face)	138 (92.00 %)	149 (99.30%)
Total	150 (100.00%)	150 (100%)

Table 3 shows the distribution of face type according to Facial Index among the Santal and Bangalee respondents. It revealed that among the Santal respondents maximum (92%) were Hyperleptoprosopic type of face and some (6.0%) of them were Leptoprosopic type of face and few (2.0%) had Mesoprosopic type of face. Among the Bangalee respondents almost all (99.30%) were Hyperleptoprosopic face and only one respondent (0.70%) was Leptoprosopic face and none of them (0.0%) was Mesoprosopic type of face.

Table 4: Distribution of nasal type according to Nasal Index among the Santal (n=150) and Bangalee(n=150) respondents (n=150)

Nasal type according to Nasal Index among the Santal respondents	Frequency of Santal	Frequency of Bangalee
Leptorrhine (tall and narrow)	1(0.70%)	126 (84.00%)
Mesorrhine (medium)	77 (51.30%)	18 (12.00%)
Platyrrhine (broad and flat)	72 (48.00%)	0 (0.00%)
Hyperleptorrhine (excessively tall and narrow)	0 (0.00%)	6 (4.00%)
Hyperplatyrrhine (excessively broad and flat)	0 (0.00%)	0 (0.00%)
Total	150 (100%)	150 (100%)

Table- 4 shows the distribution of nasal type according to Nasal Index among the Santal and Bangalee respondents. It revealed that above the half (51.30%) of Santal respondents were Mesorrhine nasal type and near half (48.00%) were Platyrrhine nasal type. Only one Santal respondent had Leptorrhine nasal type and none (0.0%) of them was Hyperleptorrhine and Hyperplatyrrhine nasal type and (84.00%) of Bangalee respondents was Leptorrhine nasal type and (12.00%) were Mesorrhine nasal type. Only (4.00%) Bangalee respondents were Hyperleptorrhine and none (0.0%) of them was Platyrrhine and Hyperplatyrrhine nasal type.

Table 5: Relation of nasal type among the Santal and Bangalee ethnic groups according to sex.

Male respondents of both ethnic group			Nasal type according to nasal index				Total
			Hyperleptorrhine	Leptorrhine	Mesorrhine	Platyrrhine	
Male	Ethnic group	Santal (n=74)	0 (0.0%)	0 (0.0%)	30 (40.5%)	44 (59.5%)	74 (100.0%)
		Bngalee (n = 75)	4 (5.3%)	62 (82.7%)	9 (12.0%)	0 (0.0%)	75 (100.0%)
Female	Ethnic group	Santal (n =76)	0 (0.0%)	1 (1.3%)	47 (61.8%)	28 (36.8%)	76 (100.0%)
		Bngalee (n= 75)	2 (2.7%)	64 (85.3%)	9 (12.0%)	0 (0.0%)	75 (100.0%)

$\chi^2 = 121.306$ df (3) $p = .000$, $\chi^2 = 116.846$ df (3) $p = 0.000$

Table 5 shows the relation of nasal type according to Nasal Index among the male respondents of both Santal (n=74) and Bangalee (n=75) ethnic group. It revealed that among the Santal male, Platyrrhine nasal type was higher proportionate than

Bangalee male respondents (SantalvsBangalee= 59.5% vs 0.0%). Among the Bangalee male respondents Leptorrhine nasal type were present in higher proportion than Santal male respondents (BangaleevsSantal = 82.7% vs 0.0%). Mesorrhine nasal type were also present in higher proportion in Bangalee than Santal respondents (SantalvsBangalee = 40.5 % vs 12.0%). Again, Hyperleptorrhine only present among the Bangalee respondents (SantalvsBangalee = 0.0 % vs 5.3%). A chi-square test for independence with $\alpha = .05$ was used to assess whether the nasal type according to Nasal Index among the male respondents were related to their ethnic group. The relation between variables were statistically significant ($\chi^2 = 121.31$, $df = 3$, $p < .001$).

Table 6: Distribution of face type among Santal and Bangalee ethnic group respondents according to sex.

Male respondents of both ethnic group		Face type according to facial index		
		Mesorrhine	Leptorrhine	Hyperleptorrhine
Male	Santal (n=74)	0 (0.0%)	0 (0.0%)	74 (100.0%)
	Bngalee (n = 75)	0 (0.0%)	0 (0.0%)	75 (100.0%)
Female	Santal (n =76)	3 (3.9%)	9 (11.8%)	64 (84.2%)
	Bngalee (n= 75)	0 (0.0%)	1 (1.3%)	74 (98.7%)

$\chi^2 = 10.118$ $df (2) p = 0.006$

Table 6 shows that the relation of face type among the female respondents of both Santal and Bangalee ethnic group. It revealed that among the maximum Santal (84.2%) and Bangalee (98.7%) female had Hyperleptorrhine face type and. Leptorrhine face type were higher proportionately present among Santal female than Bangalee female respondents (11.8% vs 1.3%) respectively. Mesorrhine face type only present among the Santal female respondents (SantalvsBangalee=3.9% vs 0.0%). A chi-square test for independence with $\alpha = .05$ was used to assess whether the face type according to Facial Index among the female respondents were related to their ethnic group. The relation between variables were statistically significant ($\chi^2 = 10.12$, $df = 2$, $p < 0.05$).

Table 7: Comparison of the mean value of Facial Index (FI) between the Santal (n=150) and Bangalee (n=150) ethnic groups.

Variable	Ethnic group	n	Mean	SD	t	p
Facial index (FI)	Santal	150	103.54	7.97	7.231	<.001
	Bngalee	150	115.03	10.40		

Independent t test: $t (300) = -10.74$ $p < .000$ two-tailed

Table 7 shows an independent samples t-test which was used to compare the difference of mean (\pm SD) difference of Facial Index (FI) between Santal and Bangalee respondents. Shapiro-Wilk statistic was non-significant; indicating that the assumption of normality was not violated and Levene's test were significant; thus, an equal variance cannot be assumed for both groups. The t-test was statistically highly significant, with mean FI, among the Santal ($M = 103.54$, $SD = 7.97$) was lower [Difference of mean was - 11.49 with 95% Confidence Interval of the Difference (-13.60, -9.39)] than Bangalee respondents ($M = 115.03$, $SD = 10.40$), $t (300) = -10.74$ $p < .001$, two-tailed.

Table 8: Comparison of mean value of the Nasal index (NI) between the Santal (n=150) and Bangalee (n=150) ethnic group.

Variable	Ethnic group	n	Mean	SD	t	p
Nasal index (FI)	Santal	150	83.02	8.22	24.82	<.001
	Bngalee	150	63.62	4.90		

Independent t test: $t (300) = 24.82$
 $p < .000$ two-tailed

Table-8 shows an independent samples t-test was used to compare the mean (\pm SD) difference of Nasal Index (NI) between Santal and Bangalee respondents. Shapiro- Wilk statistic was non-significant; indicating that the assumption of normality was not violated and Levene's test were significant; thus, an equal variance cannot be assumed for both groups. The t-test was statistically highly significant, with mean NI, among the Santal ($M = 83.02$, $SD = 8.22$) was higher [Difference of mean was 19.40 with 95% Confidence Interval of the Difference (17.86, 20.93)] than Bangalee respondents ($M = 63.62$, $SD = 4.90$), $t (300) = 24.82$ $p < .001$, two-tailed.

Discussion

In a study conducted in Rangpur, Bangladesh by Shah et al., (2015) only with Santal male respondents, where the mean (\pm SD) Nasal Height was significantly higher in Bangalees 5.0 (± 0.4) cm than the Santals 4.8 (± 0.4) cm ($p < 0.001$). The mean (\pm SD) nasal width (NW) was significantly higher in the Santals 3.8 (± 0.2) cm than the Bangalees 3.53 (± 0.2) cm ($p < 0.001$). Regarding mean (\pm SD) Nasal Index (NI) of the Santals 80.0 (± 7.2) was higher than the Bangalees 65.9 (± 6.3), which was statistically significant ($p < 0.001$). The findings of this study were like the present study.⁹

Another study conducted by Rahimi et al., (2019) on student of Shiraz University of Medical Sciences, Iran revealed that mean FL of both males and females were 12.7cm and 10.2 cm. FW of male and female were 13.2 cm and 11.2 cm respectively.¹⁰ Dodanghehet., al, (2018), reported that FH of male and female Irani student were

11.91 cm and 10.392 cm. And FW of male and female were 11.79 cm and 11.56 cm. These findings confirm the existence of sexual dimorphism in Iranian population.⁷ Shruti et al., (2019) reported mean FL of Haryanvi male and female were 121.43 mm and 115.68 mm. Mean FW of male and female Haryanvi people were 139.65 mm and 134.94 mm. According to above findings regarding facial parameters male had higher value than female, which is like this study.¹¹ Wai et al., 2014 conducted a study on Indian, Malay and Chinese student of University of Malaysia. The study revealed that gender difference of Malay, Chinese and Indian students are significant with higher value of male than female in all facial parameters.⁵

Rahimi et al., (2019) reported that mean NH of Iranian male and female were 3.2 cm and 3.2 cm. Mean NW of Iranian male, and female were 2.1 cm and 2.2 cm respectively. Mean NI of male and female Iranian students were 88.2 cm and 93.1 cm.¹⁰ Wai et al., (2014) conducted a study on Indian, Malay and Chinese student of University of Malaysia. The study revealed that gender difference of Malay, Chinese and Indian students are significant with higher value of male than female in all nasal parameters.⁵

The findings about Facial Length (FL), Facial Width (FW) and Facial Index (FI) of Santal of West Bengal described by Ghosh and Malik, et al., (2007) was quite dissimilar. In their study they found Mean (\pm SD) Facial Length (FL) of Santal male and female was 11.30 cm and 10.39 cm. Mean Facial Width (FW) of Santal male and female was 13.73 cm and 13.25 cm respectively. So, regarding facial parameter of Santal of West Bengal is higher than Santal and Bangalee of Northern area of Bangladesh.¹²

Regarding this study face type of most of the Bangalee and Santal respondents (male and female) were Hyperleptoprosopic (very tall, narrow face) face type. Only few of the Santal respondents were Leptoprosopic (tall, narrow) face type. Ghosh, and Malik, et al., (2007) reported that most of the Santal male of West Bengal were Euryprosopic (broad, short face) face type and most of the Santal female of West Bengal were Euryprosopic (very broad, short face) face type.¹²

Face types among the male respondents of both Santal (n=74) and Bangalee (n=75) ethnic group (n=150) reveals that all (100%) the Santal male respondents had Hyperleptoprosopic (very tall, narrow) face type. All 100% the Bangalee male respondents had Hyperleptoprosopic (very tall, narrow) face type. No Chi-Square statistics were computed because facial type of the male respondents was constant (similar without any variation) in both ethnic groups. Face types among the female respondents of both Santal (n=74) and Bangalee (n=75) ethnic group (n=150) reveals that among the Santal female maximum 84.2% had Hyperleptoprosopic (very tall, narrow) face type and among the Bangalee respondents all most all 98.7% had same Hyperleptoprosopic (very tall, narrow) face type also present. Leptoprosopic (tall, narrow) face type were higher proportionately present among Santal female than Bangalee female respondents (11.8% vs 1.3%

respectively). Mesoprosopic (average) face type only present among the Santal female respondents (Santal vs Bangalee = 3.9% vs 0.0%). The relation between variables were statistically significant ($p < 0.05$).

In a study face type of Santal respondents of West Bengal according to their sex (27.3%) male and (40.3%) female respondents had Hypereuryprosopic (very broad, short) face type, about (36.0%) male and (31.5%) female had Euryprosopic (broad, short) type of face. (10.5%) Male and (8.2%) female had Leptoprosopic (tall, narrow) face type and very least proportion male (2.7%) & female (2.4%) had Hyperleptoprosopic (very tall, narrow) face.¹² This study findings were quite dissimilar with the present study regarding the types of faces among the Santal respondents.

Dodangheh et al., (2018), reported that most frequent face type among Iranian student were Hyperleptoprosopic (very tall, narrow) face type.¹³ Rahimi, et al., (2019) also found that most frequent Iranian face type were Hyperleptoprosopic (very tall, narrow) 72% type.¹⁰ A similar study by Heidari et al., 2009 revealed that most frequent Iranian (Sistani and Baluch groups) face type was Leptoprosopic (tall, narrow) type of face. Shruti Gupta¹¹ et al., 2019, found Mesoprosopic (average) type of face was predominant face type in both male and female Haryanvi population.⁹ Wai et al., 2014 found Indian and Malay students of University of Malaysia had Leptoprosopic (tall, narrow) type of face whereas Chinese student had Mesoprosopic (average) type of face.⁵

A study done by Ghosh, and Malik, (2007) was observed that on the basis of Nasal Index, 57.0% Santal respondents of West Bengal were Mesorrhine (medium), 28.1% were Platyrhine (broad and flat), 2.3% were Hyperplatyrhine (excessively broad and flat) and 0.9% Hyperleptorrhine (excessively tall and narrow) types of noses. Regarding predominant nasal type among the Santal respondents in both the studies were almost similar findings that Mesorrhine or medium shaped nose was present in Santal.¹²

In another study, most of the Santals belonged to the Mesorrhine (medium) 72% followed by Platyrhine or broad nose (19%), whereas the Bangalee had Leptorrhine or tall and narrow nose (72%) followed by Mesorrhine or medium nose (24%). Similar Mesorrhine nose was found in Santal of Rangpur Area. Regarding predominant Mesorrhine (medium) nasal type among the male Santal respondents all the studies showed almost similar findings.^{14,15}

Conclusion

On the basis of the results of this study, most common type of face in both ethnic group respondents of Northern area of Bangladesh was Hyperleptoprosopic. Leptorrhine type was predominant nasal type among the Bangalee respondents and Mesorrhine and Platyrhine type were predominant nasal type present among the Santal. Comparison of difference of the mean of all nasofacial

anthropometric parameters between Santal and Bangalee respondents were statistically significant. Value difference like mean in respect of Ethnic dimorphism, as well as sexual dimorphism nasofacial anthropometry between Santal and Bangalee respondents were statistically significant. Findings of this study will help to build database for nasofacial, maxillofacial, cosmetic surgeons & orthodontist which help them in making diagnosis of congenital and traumatic nasofacial anomalies & planning their reconstructive surgeries. The findings of the study may also help forensic experts in identifying the victims and assailants of criminal cases.

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