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## ANTHROPOMETRIC STUDY OF THE NASAL INDEX OF THE BHEEL – MEENA TRIBE OF SOUTHERN RAJASTHAN

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### ABSTRACT

The study was conducted to identify reference standards and possible aesthetic features of the nasal size and form of the adult tribal population of Southern Rajasthan.

The sample comprised of 500 males and 500 females of the Bheel- Meena descent, residing in the Southern parts of Rajasthan with their ages ranging between 18-50 years. Nasal height and nasal width were obtained with the aid of a sliding vernier calliper and the nasal indices were calculated as the ratio of nasal breadth and nasal height multiplied by 100. The data was subjected to statistical analysis using descriptive statistics and 't' test. The observed mean values for the males for the nasal breadth, nasal length and nasal index were found to be 3.81cm, 4.59cm and 83.00, while the same values for the females were 3.50cm, 4.39cm and 79.73 respectively. The calculated means for the males population was significantly higher than that of females (  $p < 0.001$  ). With the mean nasal index of 81.36 for the Bheel –Meena tribe, it falls within the mesorrhine type of nasal form.

Key words: nasal index, mesorrhine, nasal height, tribal.

### INTRODUCTION

Nose is a distinctive feature of human physiognomy. Its shape, form, and contour have stimulated anatomists and anthropologists<sup>1</sup>. Physical anthropology relies mainly on external measurements and descriptions of the human body and particularly of the skeleton. Nasal index is an ethnic sensitive anthropometric index, an important parameter used to classify race and sex of an unknown individual.

Calculation of nasal index is one of the measurements used by anthropologists to differentiate various living races in different cultures and also the subspecies of man<sup>2</sup>. This evaluation of the nose, stems from the neoclassical canons of facial proportion developed by artists of 17<sup>th</sup> and 18<sup>th</sup> centuries. Analysed by dividing the greatest width of nasal aperture by height of nasal

skeleton multiplied by 100, the nasal indices are best classified into three types<sup>3,4</sup>

- (1) Leptorrhine or (fine nose) with N.I.  $\leq 69.9$
- (2) Mesorrhine or ( medium nose ) with N.I. ranging between 70 - 84.9
- (3) Platyrrhine or ( broad nose ) with N.I.  $\geq 85.0$

The shape of the nose is determined through the environmental factors, and climatic conditions<sup>5</sup>. Narrow noses are favoured by nature in cold and dry climates, whereas broad and wider noses are seen in warm and moist areas<sup>6</sup>. Several past studies have been reported for the Caucasians, Africans, but very few studies have been conducted on Indian population and far less on Rajasthani population and none till date on the Bheel – Meena tribe of Mewar region.

Risely<sup>2</sup> reported the nasal indices of Indo-Aryan and Sudroids (Indian negroids). The Indo - Aryans were said to have nasal indices ranging between

66.9-79.6, whereas Sudroids had the nasal indices of 73.1-95.1. Daniel<sup>7</sup> also reported nasal indices of various races: Lebanese 63.3, Aalawite 62.74, Damascus 63.26, Armenians 63.8, Greeks 68.49 and Arabs 74.48. Moolchand<sup>8</sup> reported the nasal index of Rajput race to be 71.6. Oladipo<sup>9</sup>, analysed the nasal index of various tribes of southern Nigeria, which showed the mean nasal index > 85.0.

The present study was carried out to establish and compare the nasal index of male and female population belonging to the Bheel- Meena tribes of southern Rajasthan area, so as to provide a baseline data of nasal indices, which could be of vital importance in forensic medicine, anthropological studies, various clinical approaches especially in surgeries related to nose.

## MATERIALS AND METHOD

The present study was carried out in the local communities of the Udaipur district in Rajasthan. The study was carried out on 1000 adult volunteers, who were selected at random from the local communities, comprising of 500 female and 500 males with their age ranging from 18-50 years. Subjects with deviated nasal septum, trauma or congenital abnormalities of the nose and face were excluded.

Measurements were taken with aid of sliding vernier callipers (with least count of 0.001), scientific calculator and data sheet. Subjects were told to sit upright in a relaxed mood with head in the anatomical position while taking measurements. A single reading by the same investigator was taken to avoid bias.

1. Nasal Height: was the distance measured from the nasion to the pronasion.
2. Nasal breadth: was measured as the maximum breadth of the nose at right angles to the nasal height, from ala to ala.
3. Nasal Index: was determined by dividing the nasal breadth by nasal height multiplied by 100.

All participants declared to have to have at least three generations of Mewar ancestry

## RESULTS AND DISCUSSION

The external nose is a feature of utmost importance to define overall facial appearance. Face is widely regarded as symbolically reflecting the person's inner self to the outside world, any change of the appearance of the nose is expected to have significant consequences on subjects psychological as well as social functioning<sup>10</sup>.

Aesthetic features are different from one race to another, thus where some surgeons take Caucasian nose still to be the gold standard of beauty, might not justify virtues of the patients social background<sup>11</sup>. Thus to achieve high level of patient satisfaction after surgery, surgeons must have an idea of the appropriate aesthetic norm<sup>12</sup>.

Thus the present study was undertaken to set nasal aesthetic standards for the tribal population of Southern Rajasthan. In the present study, the mean of the nasal length for the males and females were 4.59 cm and 4.39 cm respectively. The maximum and minimum values observed for the same in male were 5.73 cm and 3.51cm respectively, where the same for the females were 5.27cm and 3.36 cm respectively.

The mean of the nasal breadth for the male population with their maximum and minimum readings were 3.81cm, 4.96 cm and 3.01cm respectively, the similar readings for the female tribes were 3.50 cm, 4.47 cm and 2.80 cm respectively. In all the calculated readings, there was significant difference observed (  $p < 0.001$  ), with males having higher values than females as shown in Table 1.

The nasal index calculated for our tribal population, in males was found to be 83.00, whereas in the females it was calculated to be 79.73 thus the tribes of Bheel - Meena group fall under mesorrhine type of nose.

Most Caucasians have leptorrhine nose with nasal index 69.9 or less. The African tribes fall in the platyrrhine type of nose, with nasal index of 85.00

or above, whereas the Caucasoids of the early Indo-Aryan ancestry fall within the mesorrhine type of nose as shown in Table 2.

Thus our study seconds the studies conducted earlier by some authors, in classifying the nose type of our tribal population as mesorrhine.

### CONCLUSION

The Bheel - Meena tribe fall within the mesorrhine type of nose. This index differs from various studies conducted on Caucasian, Africans, Egyptians. Thus a parameter value for each ethnic group, is needed for the purpose of clinical practise. This data should therefore be of importance in the above listed areas where these tribes are residing.

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**Table1. Min, Max, Mean, Standard Deviation, Standard Error, Variance Of Nasal Length And Nasal Breadth Of The Bheel –Meena Tribe**

Parameters	Males	Females
<i>Nasal length</i>		
Min		
Max	3.51	3.35
Mean	5.73	5.27
Std dev	* 4.59	*4.39
Std error	0.37	0.35
Variance	0.01	0.01
	0.14	0.12
<i>Nasal breadth</i>		
Min	3.01	2.80
Max	4.96	4.47
Mean	*3.81	*3.50
Std dev	0.35	0.34
Std error	0.01	0.01
Variance	0.12	0.11

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P value:<0.001\*

**Table 2: Comparative Data On Nasal Indices Of Various Ethnic Groups**

Ethnic groups	Authors	Year	Nasal Index
Indo Aryans	Risely	1915	73.25
Indian Negroids	Risely	1915	84.10
Africans	Risely	1915	90-100
Sudroids	Franciscus	1991	89.80
Aryans	Franciscus	1991	83.00
African Americans	Porter etal	2001	79.70
Igbos	Akpa etal	2003	116.70
Lebanon	Daniel	2004	63.30
Alawite	Daniel	2004	62.74
Damascus	Daniel	2004	63.26
Greeks	Daniel	2004	68.49
Arabic	Daniel	2004	74.48
West Europeans	Nichani	2004	69.90
German	Nichani	2004	71.00
Indian Rajput	Mulchand	2004	71.60
Nigerian Yorubas	Oladipo etal	2006	89.20
Nigerian Ijwas	Oladipo etal	2006	96.37
Nigerian Ogonis	Oladipo et al	2007	98.50
Nigerian Ekpeyes	Oladipo et al	2009	91.36
Nigerian Ikweres	Oladipo etal	2009	88.99
Nigerian Ukwuani	Eboh & John	2011	97.75
<b>Indian - Bheel-Meena</b>	<b>Present study</b>	<b>2012</b>	<b>81.36</b>