



ANALYSIS OF GENDER USING FACIAL HEIGHT MEASUREMENT IN CHENNAI POPULATION - A SHORT STUDY

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Abstract:

Aim and Objective: To calculate the nasal height with the help of vernier calliper.

Background: One of the most understudied and fascinating areas of forensic science is forensic odontology, which focuses on identifying people by identifying distinctive characteristics in their dental structures. According to the Federation Dentaire Internationale, forensic odontology is "that discipline of dentistry, which deals with the proper evaluation and presentation of dental findings in the legal system." One of the crucial anthropometric measurements for determining the sex and ethnicity of a person of uncertain identity is the human nose. Since the nasal measurement is one of the anthropometric indicators accepted in nasal surgery as well as care, it has considerable relevance in anthropological investigations.

Materials and Methods: The present study was conducted in the department of Forensic Odontology. Measurements were taken in the department of Forensic Odontology using Vernier calliper. About 25 males and 25 females between the ages of 18- 70 made up the sample pool. For additional analysis, the data was moved to SPSS programme.

Results: The mean and standard deviation for the nasal height for Males and Females were 5.544 ± 0.229 mm and 5.49 ± 0.242 mm respectively. The p value was shown to be 0.515, indicating that there is no discernible difference between males and females in terms of nasal height.

Conclusion: From this study it is indicated that male have more nasal height compared to that of the female. The results of this study indicated that nasal bone has a good potential for sexual determination.

Keywords: Nasal height, Gender estimation and Vernier calliper.

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1. Introduction

One of the most understudied and fascinating areas of forensic science is forensic odontology, which focuses on identifying people by identifying distinctive characteristics in their dental structures. According to the Federation Dentaire Internationale, forensic odontology is "that discipline of dentistry, which deals with the proper evaluation and presentation of dental findings in the legal system"¹².

Positive identification procedures as well as presumptive or exclusionary methodologies are both used in the interdisciplinary team effort that is forensic identification. The cooperation and coordination of forensic pathologists, forensic odontologists, forensic anthro pathologists, serologists, criminalistics, law enforcement personnel, and other experts as judged essential are typically required for this effort³⁾⁴

Stature estimation is one of the four pillars of the anthropological protocol, along with age, sex, and race, and may be crucial for initial screening and reconstructive identification of skeletal remains. The relationship between stature and several human body parts, including the cranial and facial bones, long bones, trunk, and foot bones, is demonstrated to be clear-cut and proportional⁵⁶.

One of the crucial anthropometric measurements for determining the sex and ethnicity of a person of uncertain identity is the human nose. Since the nasal measurement is one of the anthropometric indicators accepted in nasal surgery as well as care, it has considerable relevance in anthropological investigations⁷. Our team has extensive knowledge and research experience that has translate into high quality publications⁸⁻¹⁷. The main purpose of this study Is to calculate the nasal height with the help of vernier calliper.

2. Materials and methods:

The present study was conducted in the department of Forensic Odontology, Saveetha Dental College

and Hospitals. The samples were collected from the Out Patient department of the college and the measurements were done. Then the patients were taken to the Department of Forensic Odontology for further analysis. A total of 50 samples, 25 males and 25 females in the 18 to 70 year-old age range, were collected. The vernier calliper's other end is placed at the bottom of the nose, while one end is positioned between the brows to measure nasal height. The ethical clearance was taken from the research board. the study. The inclusion criteria for the present study were as follows: patients willing for participating in the study, patients without any history of trauma to face, and patients without any previous history of cosmetic surgery. Patients with cleft lip and palate and other craniofacial syndrome, undergoing nose surgery during treatment and patients with severe facial asymmetry are excluded from this study.

Statistical analysis:

The data collected from the excel sheet was exported to spss software version 23. Statistical analysis and t- test were performed on the recorded value.

3. Results:

A total of 50 samples, 25 males and 25 females in the 18 to 70 year-old age range, were collected. Using the SPSS statistical analysis tool, an independent t-test was performed. The mean and standard deviation for the nasal height for Males and Females were 5.544 ± 0.229 mm and 5.49 ± 0.242 mm respectively. The p value was shown to be 0.515, indicating that there is no discernible difference between males and females in terms of nasal height ($p < 0.05$). The standard error mean for males was 0.45 and that for females was 0.48. Additionally, a paired t-test was performed, and the results revealed no significant differences in the nasal height of males and females at 0.0480.36mm and 0.516, respectively.

TABLE 1: Descriptive statistic

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|----|---------|---------|--------|----------------|
| Male | 25 | 4.90 | 5.90 | 5.5440 | .22927 |
| Female | 25 | 5.20 | 6.00 | 5.4960 | .24235 |
| Valid N (listwise) | 25 | | | | |

From table 1, The mean and standard deviation for the nasal height for Males and Females were 5.544 ± 0.229 mm and 5.49 ± 0.242 mm respectively.

Table 2: Paired sample statistics : T test

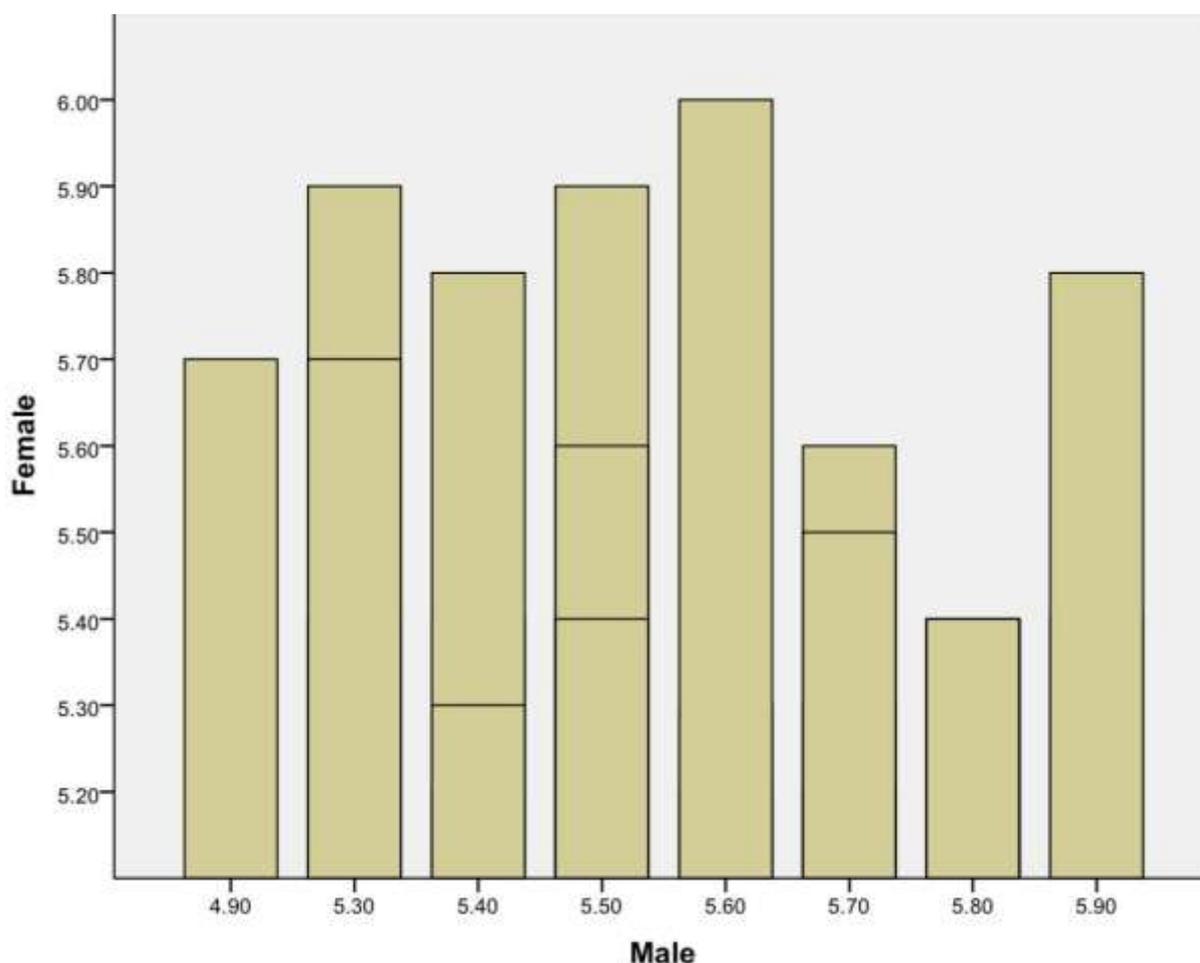
| | | Mean | N | Std. Deviation | Std. Error Mean |
|--------|--------|--------|----|----------------|-----------------|
| Pair 1 | Male | 5.5440 | 25 | .22927 | .04585 |
| | Female | 5.4960 | 25 | .24235 | .04847 |

From table 2, In the paired sample statistics standard deviation for the male is ± 0.045 whereas for female is ± 0.048 .

Table 3: One sample test- T test

| | | Paired Differences | | | | t | df | Sig. (2-tailed) | |
|--------|---------------|--------------------|----------------|-----------------|---|--------|------|-----------------|-------|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | | | | Upper |
| Pair 1 | Male - Female | .04800 | .36300 | .07260 | -.10184 | .19784 | .661 | 24 | .515 |

Table representing Paired sample t-test showing p value 0.515 which denote value not significant ($p < 0.05$).



A comparison graph of nasal height between male and female.

4. Discussion

One of the most attractive features of the human face is its nose. It aids in identifying a population's

age, gender, and race as well as its ethnicity. In forensic anthropology, science research, and plastic and reconstructive surgery, this anthropometric measurement is useful¹⁸. Bones and cartilage make

up the nose. In order to recognise sexual dimorphism and plurality among various tribes and races, nasal anthropometry is a crucial technique. The best clue to determine the tribe is nasal architecture. One parameter that is influenced by environment is the nasal index; typically, a hot, humid climate is linked to a broad nose, and a cool, dry climate is linked to a narrow nose. A low, broad nose helps to dissipate heat in hot, humid conditions, according to a small number of researchers, and this alters the form of the nose. A child of African descent has been known to be born in an extremely cold climate, whereas a child of Caucasian origin has been known to be born in a very hot and humid climate. In both situations, they maintain their nose's size and form regardless of environmental factors. It denotes a lesser influence of environmental factors on an individual's nasal index. Prior to rhinoplasty, a surgeon finds nasal analysis to be very helpful, thus it is crucial to analyse the ethnic group and its members' face traits to achieve superior cosmetic outcomes. The results of this study indicated that The nasal length ranged from 4.9 to 6 mm. Males' average nasal length was 5.544 (standard deviation: 0.22927), while females' average nasal length was 5.4960 (standard deviation: 0.24235). This demonstrates that the male had nasal bones that were 0.048mm longer than those of the female although the value was insignificant ($p= 0.515$). The findings of this study suggested that the nasal bone has a promising potential for sexual determination.

According to the result of a previous study among the Bekwara ethnic group in Cross River state of Nigeria, the nasal index also demonstrated prominent sexual variation with the males having higher values (94.65) than the females (90.33) and there is reported prevalence of the platyrrhine (broad and short) nose type¹⁹.

Also, the craniofacial parameters (which include nasal height, width) obtained among Omoku indigenes of Nigeria similarly revealed significantly higher values of all parameters among males than in females²⁰. Also male students in both nations had higher mean nasal indices than female students in the prior study. All students' morphologies were most frequently of the mesorrhine type. Male medical students had much higher nasal indexes than female students. In this study, mesorrhine noses were the most prevalent²¹.

5. Conclusion

The nasal length varied from 4.9-6 mm. The mean nasal length for male was 5.544 (standard deviation = 0.22927) whereas the mean nasal length for female was 5.4960 (standard deviation = 0.24235). This shows that the nasal height of male were 0.048mm longer than those of the female. The

results of this study indicated that nasal bone has a good potential for sexual determination. Thus further studies with larger sample sizes are recommended.

Future Scope Of Studies: Further studies needed to be conducted in a larger population to get a better idea of varying nasal height that can be useful in gender identification, age estimation and other facial abnormalities which can be diagnosed and treated.

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Conflict of interest:

The authors declare no potential conflict of interest in the present study.

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Author contribution :

Dhivya manuscript preparation - Study design, data collection, analysis interpretation and manuscript preparation.

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