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Research Article

# Anthropometric characteristics of the nasal region in Vietnamese individuals aged 18-25

## Características antropométricas de la región nasal en individuos vietnamitas de 18 a 25 años

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**ABSTRACT**

**Introduction:** The anthropometric evaluation of craniofacial morphology and facial harmony has significant clinical implications in the fields of maxillofacial surgery, reconstructive rhinoplasty, and orthodontics, providing essential reference data for surgical planning and aesthetic optimization.

**Objectives:** To determine the anthropometric morphological characteristics of the nasal region in Vietnamese individuals aged 18-25.

**Methods:** A descriptive study was conducted on 405 students aged 18 to 25 years in Vietnam. Anthropometric morphological characteristics, including distances, angles, and ratios, were measured using an indirect measurement method.

**Results:** Anthropometric analysis of the Vietnamese population aged 18–25 years revealed that the average nasal root-to-tip length was 40.51 ± 4.16 mm, and the average nasal width was 41.15 ± 3.63 mm.



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The mean nasal height measured 13.69 ± 1.17 mm. The nasofrontal angle averaged 141.20° ± 7.50°, while the nasolabial angle averaged 100.36° ± 12.03°. For proportional indices, the Goode ratio averaged 0.56 ± 0.05 and the Baum ratio averaged 2.12 ± 0.23. A significant positive correlation was observed between nasal bridge length and facial length (p< 0.001).

**Conclusion:** The anthropometric characteristics of the nasal region in the Vietnamese population exhibit significant sexual dimorphism, particularly in terms of dimensions and proportional indices.

**Keywords:** anthropometric; nasal region; Vietnamese.

**RESUMEN**

**Introducción:** La evaluación antropométrica de la morfología craneofacial y la armonía facial, tiene implicaciones clínicas significativas en los campos de la cirugía maxilofacial, la rinoplastia reconstructiva y la ortodoncia; proporciona datos de referencia esenciales para la planificación quirúrgica y la optimización estética.

**Objetivos:** Determinar las características morfológicas antropométricas de la región nasal en vietnamitas de 18 a 25 años.

**Métodos:** Se realizó un estudio descriptivo en 405 estudiantes de 18 a 25 años, en Vietnam. Se midieron las características morfológicas antropométricas, incluyendo distancias, ángulos y proporciones, mediante un método de medición indirecta.

**Resultados:** El análisis antropométrico reveló que la longitud promedio de la raíz a la punta de la nariz fue de 40,51 ± 4,16 mm; la anchura promedio fue de 41,15 ± 3,63 mm. La altura nasal media fue de 13,69 ± 1,17 mm. El ángulo nasofrontal fue de 141,20° ± 7,50°, mientras que el ángulo nasolabial fue de 100,36° ± 12,03°. Para los índices proporcionales: el índice de Goode promedió 0,56 ± 0,05 y el índice de Baum, 2,12 ± 0,23. Se observó una correlación positiva significativa entre la longitud del puente nasal y la longitud facial (p< 0,001).

**Conclusión:** Las características antropométricas de la región nasal en la población vietnamita presentan un dimorfismo sexual significativo, especialmente en cuanto a dimensiones e índices proporcionales.

**Palabras clave:** antropometría; región nasal; vietnamita.



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# INTRODUCTION

The nose represents the smallest aesthetic unit centrally located in the midface, playing a pivotal role in both functional and aesthetic harmony. Rhinoplasty is currently one of the most frequently performed cosmetic surgical procedures worldwide.[1] Achieving optimal outcomes in rhinoplasty and aesthetic nasal surgery requires multiple contributing factors. Beyond surgical skill and hands-on experience, the surgeon must possess a comprehensive understanding of nasal morphology, anatomical structures, and the proportional relationships between different components of the nasal pyramid, as well as the harmony between the nasal pyramid and overall facial aesthetics.[2]

Accurate measurement methods based on standardized photographs have been widely applied worldwide for a long time. However, in Vietnam, research on this subject remains limited, and when conducted, it primarily relies on direct measurement techniques.[3] Soft tissue nasal indices can be applied in two-dimensional analysis and, when integrated with computer-based image processing software, offer high applicability.

One of the key criteria in determining a patient's treatment plan is the assessment of facial soft tissue harmony through standardized photographs. This evaluation holds significant relevance not only in maxillofacial and plastic surgery, as well as orthodontics, but also in forensic identification.[3,4] To date, most morphological data on facial structure and nasal pyramid configuration have been derived from studies on Caucasian and Middle Eastern populations.[5,6,7] In Vietnam, the determination of anthropometric indices using standardized digital imaging has not been widely conducted, particularly regarding nasal anthropometric measurements. Therefore, this study had as objective to determine the anthropometric morphological characteristics of the nasal region in Vietnamese individuals aged 18-25.


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# METHODS

## Study design and participants

A cross-sectional descriptive study was conducted on a group of students aged 18 to 25 years enrolled at the Vietnam Academy of Traditional Medicine and Pharmacy, Hanoi, Vietnam, from October 2020 to May 2021.

The inclusion criteria for the study participants were:

- Students whose parents and grandparents (both paternal and maternal) are of Vietnamese (Kinh) ethnicity.
- Absence of congenital craniofacial anomalies, history of maxillofacial trauma, prior or ongoing orthodontic treatment, asthma, or respiratory disorders.
- All participants were fully informed about the study procedure and provided their consent for participation.

The sample size was determined using the formula for estimating a proportion in a population.

$$n = \frac{[Z_{(1-\alpha/2)}]^2 . p.(1-p)}{(\varepsilon)^2}$$

Where:

n: minimum required sample size;

Z: confidence level, at a 95% probability level, $Z(_1-\alpha/2)= 1.96$;

p: proportion of a specific nasal morphological feature.

According to *Tran TAT*,[8] the proportion of Vietnamese adults with a straight nose is 53.5%, so p= 53.5% was set. The margin of error (ε) was set at 5%. The sample size calculated using the above formula was 382 individuals. In practice, the study was conducted on 405 Vietnamese adults who met the inclusion criteria.


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A total of 405 students were analyzed, including 198 males (48.9%) and 207 females (51.1%).

## Research process

Step 1: Prior to conducting the study, rigorous training in clinical examination and photography was performed to ensure high stability and consistency in data collection.

Step 2: Establish a list of eligible study participants.

Step 3: Conduct screening examinations to assess participant eligibility.

Step 4: Among the subjects meeting the inclusion criteria, individuals were randomly selected using a computer-generated random number table for standardized photographic imaging.

Step 5: Capture standardized facial photographs (detailed imaging protocol is provided in the supplementary file).

Step 6: Identify and mark anatomical landmarks relevant to the morphological analysis on the images.

Step 7: Standardize the images and perform precise measurements of angular parameters and landmark distances using Image-Pro Plus 5.0 software (Media Cybernetics).

Step 8: Analyze the collected data using SPSS 26.0 software.

## Variables

Measured distances: Nasal root to subnasale length (Na-Sn), Nasal root to pronasale length (Na-Pn), Nasal width (Al-Al), Nasal height (Pn⊥(Na-Sn)), Nasal base width, Nasal tip width, Nasal base height, Nasal tip height, Lateral side of the nasal base triangle.

Measured angles: Nasion–nasal angle, Nasolabial angle, Nasofacial angle, Nasomental angle.

Analyzed ratios: Goode's index, Baum's index, nasal width-to-intercanthal distance ratio, nasal root-to-subnasale length-to-facial height ratio, nasal tip width-to-base width ratio, and nasal tip height-to-base height ratio.

The detailed measurement methods for all analyzed distances, angles, and ratios, including Goode's index and Baum's index, are provided in the Supplementary file.

Grouping variable: Sex (Male, Female). Comparisons were made between male and female groups for all measured distances, angles, and analyzed ratios.

Additional analysis: Linear regression analysis was conducted to evaluate the relationship between nasal bridge length and facial length, selecting regression models with p-values less than 0.05.


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### Statistical analysis

All results are presented as mean (SD) or, if biased, as median (interquartile range) for continuous variables and as percentages for categorical variables. Differences between groups, categorized by sex, were tested by Student's t-test. Linear regression analysis was performed to evaluate the relationships between nasal bridge length (Na–Pn) and facial length (Tr–Me), using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). Only p-values < 0.05 were considered statistically significant.

### Ethical considerations

The research has been approved for implementation by the Military Medical Academy and the Vietnam Academy of Traditional Medicine (Approval No. 57/2020/QĐ-HVYDCT). The study was conducted following the voluntary informed consent of all participating subjects and patients. The study was in line with the Declaration of Helsinki. Written informed consent has been signed by all participants after full explanation.

## RESULTS

### The anthropometric measurements studied

The results in table 1 indicate that the average nasal root-to-tip length was 40.51 ± 4.16 mm. The average nasal width was 41.15 ± 3.63 mm, while the average nasal height was 13.69 ± 1.17 mm. Notably, all nasal morphological measurements were higher in males than in females, with a statistically significant difference ($p < 0.05$).


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**Table 1 -** Morphological measurements studied (n= 405)

| Parameter (mm) | Mean ± SD | | | p |
|---|---|---|---|---|
| | Male (n= 198) | Female (n= 207) | Total (n= 405) | |
| Nasal root-to-subnasale length (Na–Sn) | 48.46 ± 3.38 | 45.39 ± 3.59 | 46.89 ± 3.76 | 0.001 |
| Nasal root-to-tip length (Na–Pn) | 42.15 ± 3.98 | 38.93 ± 3.70 | 40.51 ± 4.16 | 0.001 |
| Nasal width (Al–Al) | 42.63 ± 2.62 | 39.73 ± 3.90 | 41.15 ± 3.63 | 0.001 |
| Nasal height (Pn⊥(Na-Sn)) | 15.16 ± 1.60 | 13.69 ± 1.17 | 14.25 ± 1.52 | 0.001 |
| Nasal base width | 42.77 ± 3.25 | 40.42 ± 3.57 | 41.55 ± 3.70 | 0.002 |
| Nasal tip width | 17.86 ± 2.22 | 17.37 ± 2.15 | 17.61 ± 2.20 | 0.021 |
| Nasal base height | 26.05 ± 2.33 | 24.77 ± 2.34 | 25.44 ± 2.44 | 0.002 |
| Nasal tip height | 10.83 ± 1.71 | 11.09 ± 1.56 | 10.97 ± 1.64 | 0.154 |
| Triangular base side length | 32.68 ± 2.54 | 29.95 ± 2.38 | 30.99 ± 2.94 | 0.001 |

## Studied Angles

The results presented in table 2 indicate that the nasofrontal angle averages 141.20° ± 7.50°, with females exhibiting a larger nasofrontal angle than males. This difference is statistically significant ($p< 0.05$). The nasolabial angle averages 100.36° ± 12.03°, with an average of 100.25° ± 12.40° in females and 100.48° ± 11.66° in males. This difference was not statistically significant ($p> 0.05$). Both the nasofacial angle and nasomental angle were larger in males than in females, with statistically significant differences ($p< 0.05$).

**Table 2 -** Morphological Angles Studied (n= 405)

| Parameter | Mean ± SD | | | p |
|---|---|---|---|---|
| | Male (n= 198) | Female (n= 207) | Total (n= 405) | |
| Nasofrontal angle (°) | 139.00 ± 7.97 | 143.30 ± 6.35 | 141.20 ± 7.50 | 0.001 |
| Nasolabial angle (°) | 100.48 ± 11.66 | 100.25 ± 12.40 | 100.36 ± 12.03 | 0.849 |
| Nasofacial angle (°) | 29.10 ± 3.24 | 27.37 ± 3.48 | 28.21 ± 3.47 | 0.001 |
| Nasomental angle (°) | 130.52 ± 5.00 | 133.53 ± 4.59 | 132.36 ± 4.75 | 0.030 |


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## Studied Ratios

Table 3 showed the results of the studied ratios, indicating that the nasal width-to-intercanthal distance ratio in adult Vietnamese individuals was 0.99 ± 0.19, with males at 1.01 ± 0.17 and females at 0.98 ± 0.21. The difference between males and females in this ratio was not statistically significant (p> 0.05). Both Goode's index and Baum's index were lower in females, with a statistically significant difference (p< 0.01). Differences in the nasal root-to-subnasale height-to-facial height ratio, nasal tip width-to-nasal base width ratio, and nasal tip height-to-nasal base height ratio between males and females were not statistically significant (p> 0.05).

**Table 3 -** Morphological Ratios Studied (n= 405)

| Parameter | Mean ± SD | | | p |
|---|---|---|---|---|
| | Male (n = 198) | Female (n = 207) | Total (n = 405) | |
| Goode's index | 0.56 ± 0.05 | 0.52 ± 0.06 | 0.54 ± 0.06 | 0.001 |
| Baum's index | 3.44 ± 0.34 | 3.60 ± 0.40 | 3.52 ± 0.38 | 0.001 |
| Nasal width-to-intercanthal distance ratio | 1.01 ± 0.17 | 0.98 ± 0.21 | 0.99 ± 0.19 | 0.213 |
| Nasal root-to-subnasale length-to-facial height ratio | 0.429 ± 0.080 | 0.428 ± 0.062 | 0.428 ± 0.072 | 0.818 |
| Nasal tip height-to-nasal base height ratio | 0.369 ± 0.045 | 0.364 ± 0.039 | 0.367 ± 0.042 | 0.240 |

## Regression equations representing relationships with studied indices

Within the scope of this study, regression equations with p< 0.05 were identified and selected. The results indicate a regression correlation between nasal bridge length and facial length, measured from the nasal root to the chin. Regression equation for nasal length (Na-Pn) based on facial length (Tr-Me) (Fig. 1):

$$Na\text{-}Pn = 0.086 \times (Tr\text{-}Me) + 24.076 \quad (p < 0.001)$$


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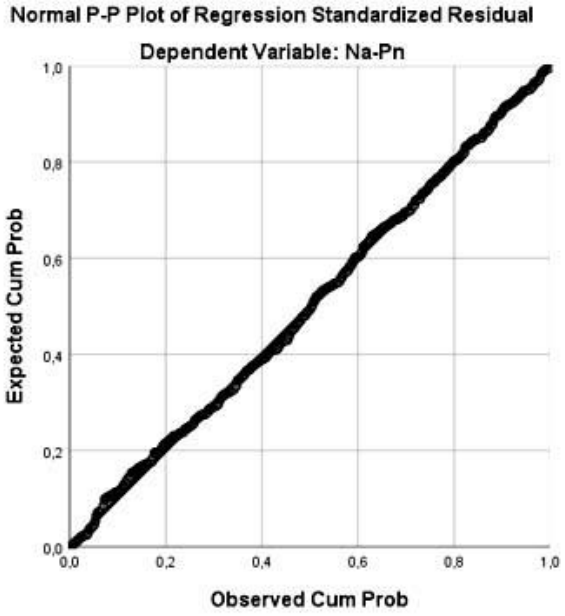


**Fig. 1** - Regression correlation between nasal bridge length and facial length.

# DISCUSSION

## Anthropometric Morphological Measurements of the Nose

### Nasal Length and Width:

Comparisons with previous domestic studies consistently indicate that males have a longer and wider nose than females.[9]

Nasal length and width vary among different studied population groups. According to *Lim YC* et al.,[10] the nasal width of Malaysians (41.8 ± 0.1 mm) is more comparable to that of Vietnamese individuals (41.15 ± 3.63 mm) but is lower than the nasal width of Caucasians (43.81 ± 5.15 mm), as reported by *Jankowska A* et al.[11] In addition, comparisons with other studies on nasal length, current results indicate that Vietnamese individuals have a shorter nasal length than Caucasians, as reported by *Jankowska A* et al.[11] (58.57 mm in males and 58.4 mm in females). Compared to the average nasal length of Asians reported by *Prasetyo AT* et al.,[12] (40.7 ± 3.4 mm), current results are closely comparable to this study.


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When compared with domestic studies, there are some differences in nasal length and width among study groups conducted in Southern and Northern Vietnam, though these differences are not substantial.[3]

The discrepancy in nasal length between current study on Vietnamese individuals and the nasal length of Caucasians, as reported by European researchers, may be attributed to racial factors, leading to variations in anthropometric outcomes.

**Nasal Height**

According to current results, the average nasal height of Vietnamese individuals is 14.25 ± 1.52 mm. This findings indicate a lower nasal height compared to *Jankowska A* et al.,[11] where Caucasians exhibit a nasal height 2.57–5.57 mm greater in males and 1.92–4.92 mm greater in females than Vietnamese individuals. Direct measurement of nasal root height is not feasible, as placing a measuring tool against the subject's cornea is impractical. However, using digital image analysis, as applied in current study, enables accurate, efficient, and precise measurement of nasal height, particularly at the nasal root. The fact that Vietnamese individuals have a lower nasal height than Caucasians is well established. This study further reinforces this difference by providing specific and quantifiable results.[11]

**Nasal Base Dimensions**

Compared to the corresponding nasal base dimensions of Indonesians, as reported by *Prasetyo AT* et al.,[12] (40.7 ± 3.4 mm), the nasal base width in Vietnamese individuals from this study is comparable. Additionally, the angle formed by the two anterior nostril axes in Vietnamese individuals is larger than the corresponding angle in Caucasians, as reported by *Teck-Sim RS* et al. [13] This difference can be attributed to the more flared alae and the lower nasal tip height in Vietnamese individuals. Nasal base dimensions are often understudied, partly due to the challenges of direct measurement. However, digital image-based measurement, as utilized in this study, facilitates more accurate and efficient assessment of nasal base components.

Nostril dimensions and columellar width (midsection) was also measured to establish the average values of all nasal base components in Vietnamese individuals. To explore the correlations among these components, this study proposed and calculated the proportions of each nasal base component (alae, nostrils, and columella) relative to total nasal width, specifically at the widest flare of the alae. Although absolute nasal base dimensions are larger in males than in females, the proportions among nasal base


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components do not differ significantly between sexes. These proportions can serve as reference values in alar base reduction surgery, helping maintain the harmonious aesthetics of the Vietnamese nasal base.

## Nasal Angles

While linear measurements represent the nasal morphology from both frontal and lateral views, nasal angles can only be determined from lateral profile images. These angles play a crucial role in assessing facial harmony and evaluating aesthetic improvements in patients following rhinoplasty.[14]

### Nasofrontal Angle

Compared to the measurements of Vietnamese individuals obtained using the same image-based measurement method by *Tran TA* et al.[14], the nasofrontal angle measured in this study is closely comparable to their findings. In contrast, when compared to Caucasians, as reported by *Teck-Sim RS* et al., [13] the nasofrontal angle in Vietnamese individuals is larger. This difference may be attributed to anatomical characteristics specific to Vietnamese individuals, including a lower frontal eminence combined with a flatter nasal bridge and tip, resulting in an increased nasofrontal angle.

### Nasolabial Angle

According to this study, the nasolabial angle in Vietnamese individuals is comparable to the measurements obtained from digital images by *Tran TA* et al.[14]. The results align with Type 2 (25%), characterized by a wide nasal base, flared alae, a lower nasal bridge, and a nasolabial angle of 90°. The nasolabial angle is the most commonly used parameter for assessing nasal tip rotation and upturn based on Simon's method, as described by *Sun S* et al.,[15] It has been observed that the nasolabial angle in Asians and Chinese populations is sharper than in Caucasians, as the upper lip projects more anteriorly. Consequently, this angle is considered less reliable for evaluating Asian populations, as upper lip protrusion may result from maxillary prognathism or prominent central incisors.

Therefore, researchers have proposed an alternative measurement: the angle between the line passing through the nasal aperture axis and the perpendicular line through subnasale (Sn) to the FH plane, as described by Goode's method, which is considered the most accurate approach.[16]

## Nasal Proportions

Nasal distances and angles are individual parameters. Based on these measurements, researchers from various studies have developed proportional indices to assess the harmonious relationships among


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different facial components.[11] Baum's ratio was examined, which is determined by drawing a vertical line from the nasal root (Na) perpendicular to a horizontal line extending from the pronasale (Pn), with the intersection point at the alar groove. The ideal proportion between the vertical and horizontal lines is 2:1.

In this study, the Baum's ratio for Vietnamese females was 3.60, while for males, it was 3.44. These values are lower than those reported by *Tran TA* et al.[14] with 3,48. The Goode's ratio in Vietnamese individuals, as determined in this study, is higher than the values reported by *Ho NAT* et al.,[17] who used an indirect measurement method on Vietnamese subjects. Moreover, the results are comparable to those observed in Caucasians.[11] The nasofacial angle, Baum's ratio, and Goode's ratio are essential parameters for evaluating nasal tip projection. However, these indices are challenging to measure accurately using direct anthropometric methods. Digital image-based analysis offers significant advantages, as it allows for the precise construction of reference lines and measurements with ease.

Furthermore, within the scope of this study, a regression correlation between nasal bridge length and facial length was identified ($p < 0.05$). In nasal aesthetic surgery, this regression equation could be applied to estimate an optimal nasal length in relation to facial length to achieve harmonious proportions. However, the regression coefficient (0.086) suggests that facial length has only a modest impact on nasal bridge length, indicating that other factors, such as genetics, environmental influences, or ethnic variations, may contribute to the development of nasal structure.

Despite the relatively large sample size collected in this study, one limitation is the need for an even larger sample to enhance population representativeness. Additionally, as the study was conducted at a single location, its applicability to nasal anthropometric indices of Vietnamese individuals aged 18-25 years remains limited in terms of generalizability.

The findings demonstrate significant sexual dimorphism in the nasal anthropometric characteristics of Vietnamese individuals, particularly in size and proportional indices. These insights hold critical value in the fields of aesthetic surgery, orthodontics, and population anthropometry, providing essential reference data for both clinical practice and anthropological research.


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# BIBLIOGRAPHIC REFERENCES

1. Knoedler S, Knoedler L, Wu M, Haug V, Broer PN, Kauke-Navarro M, et al. Incidence and risk factors of postoperative complications after rhinoplasty: a multi-institutional ACS-NSQIP analysis [Internet]. Journal of Craniofacial Surgery. 2023; 34(6):1722-26. DOI: 10.1097/SCS.0000000000009553

2. Obeid FM, Al Qurashi AA, Mortada H, Abualnaja AA, Alqahtani RF, Alqam RA, et al. Self-Esteem Post-Rhinoplasty: A Detailed Analysis of Influencing Factors [Internet]. Saudi Journal of Otorhinolaryngology Head Neck Surgery. 2023; 25(4):175-82. DOI: 10.4103/sjoh.sjoh_46_23

3. Nguyen TV, Le GV. Study on characteristics of nasal base structure in vietnamese adults, application into plastic and cosmetic surgery [Internet]. Vietnam Medical Journal. 2024; 542(2):95-9. DOI: 10.51298/vmj.v542i2.11072

4. Haijun L, Xuechun Y, Minjie W, Xiaoyu Y. An overview of human nasal morphology [Internet]. Acta Anthropologica Sinica. 2024; 43(04):687. DOI: 10.16359/j.1000-3193/AAS.2024.0041

5. Saadeh M, Shamseddine L, Fayyad-Kazan H, Ayoub F. Nasal Morphology in a Young Adult Middle-Eastern Population: A Stereophotogrammetric Analysis [Internet]. The Journal of Contemporary Dental Practice. 2024; 25(3):199-206. DOI: 10.5005/jp-journals-10024-3649

6. Likus W, Gromek K, Giller M, Kowal T, Wilk R, Markowski J. Anthropometric analysis of the external nose in young adults [Internet]. Folia Morphologica. 2025:1-23. DOI: 10.5603/fm.103714

7. Jasuja VR, Yadav N, Srivastava N, Srivastava M, Jain A. Morphometric Study of Nasal Parameters in Undergraduates at a Medical University in Central Uttar Pradesh [Internet]. National Journal of Clinical Anatomy. 2023; 12(3):152-6. DOI: 10.4103/NJCA.NJCA_89_23

8. Tran TAT. Morphology and structure of the adult human nasal tower [Internet]. [Ph.D thesis in Medicine]. Vietnam, Ho Chi Minh City: University of Medicine and Pharmacy; 2003. [access: 28/12/2024]. Available from: https://www.bacsitu.com/luanan-ts-1

9. Vathanak T, Anh HT, Nhat PK. Results of surgery doing open structural rhinoplasty by artificial materials and autologous cartilage [Internet]. Vietnam Medical Journal. 2022; 519(2):246-50. DOI: 10.51298/vmj.v519i2.3660



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10. Lim YC, Abdul Shakor ASa, Mohamad N, Pahrol MA, Ismail R, Chong ZL, et al. Head and face anthropometric study for respirators in the multi-ethnic Asian population of Malaysia [Internet]. Frontiers in Public Health. 2022; 10:972249. DOI: 10.3389/fpubh.2022.972249

11. Jankowska A, Janiszewska-Olszowska J, Grocholewicz K. Nasal morphology and its correlation to craniofacial morphology in lateral cephalometric analysis [Internet]. International Journal of Environmental Research Public Health. 2021; 18(6):3064. DOI: 10.3390/ijerph18063064

12. Prasetyo AT, Hasibuan LY, Suryadinata KL. Anthropometric analysis of the external nose of the Indonesian females: A basic data to achieve good nasal reconstruction [Internet]. Journal of Plastic, Reconstructive Aesthetic Surgery. 2024; 88:67-70. DOI: 10.1016/j.bjps.2023.10.116

13. Teck Sim RS, Smith JD, Chan AS. Comparison of the aesthetic facial proportions of southern Chinese and white women [Internet]. Archives of facial plastic surgery. 2000; 2(2):113-20. DOI: 10.1001/archfaci.2.2.1

14. Tran TA. Study of some morphological characteristics and craniofacial indicators on a vietnamese group aged 18-25 with normal occlusion and facial harmony [Internet]. [Ph.D thesis in Medicine]. Vietnam: Hanoi Medical University; 2017. [access: 28/12/2024]. Available from: https://sdh.hmu.edu.vn/images/ngcuusinh/TranTuanAnh-tt.pdf

15. Sun S, Liang X, Wang C, Li J, Ma J, Wang K. The ideal nasal tip projection and rotation angles in Chinese: a preference analysis of the general population [Internet]. Journal of Craniofacial Surgery. 2022; 33(1):7-10. DOI: 10.1097/SCS.0000000000007795

16. Quinzi V, Paskay LC, D'Andrea N, Albani A, Monaco A, Saccomanno S. Evaluation of the nasolabial angle in orthodontic diagnosis: a systematic review [Internet]. Applied Sciences. 2021; 11(6):2531. DOI: 10.3390/app11062531

17. Ho NAT, Tran DK, Phan TTP, Pham TT, Nguyen TV. The relationship between nasal indices andmorphological characteristics of the nasal-facial region in vietnamese people over 18 years old [Internet]. Vietnam Medical Journal. 2024; 540(3):387-92. DOI: 10.51298/vmj.v540i3.10537



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## Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Authorship contribution

Conceptualization: *Nguyen Thanh Van, Duong Thai Thanh, Le Minh Phong.*

Data curation: *Nguyen Thanh Van, Duong Thai Thanh.*

Formal analysis: *Duong Thai Thanh, Le Minh Phong.*

Research: *Nguyen Thanh Van, Duong Thai Thanh, Le Minh Phong.*

Methodology: *Nguyen Thanh Van, Duong Thai Thanh, Le Minh Phong.*

Project administration: *Nguyen Thanh Van.*

Supervision: *Nguyen Thanh Van, Le Minh Phong.*

Validation: *Nguyen Thanh Van, Duong Thai Thanh, Le Minh Phong.*

Drafting - Revision and editing: *Nguyen Thanh Van, Duong Thai Thanh, Le Minh Phong.*

### Data Availability

This research data is confidential according to the applicable confidentiality agreements and regulations and, therefore, cannot be publicly displayed or shared. Access to these data requires proper authorization. For any questions or further information, please contact Le Minh Phong at drphonglm175@gmail.com.

Supplementary file: Photography Method (PDF format). Available at: https://revmedmilitar.sld.cu/index.php/mil/libraryFiles/downloadPublic/48



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