



ORIGINAL ARTICLE

## Morphometric analysis of nasal shapes and angles in young adults<sup>☆</sup>



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### KEYWORDS

Female;  
Male;  
Anthropometry;  
Nose

### Abstract

*Introduction:* The size, angle, shape and type of nose are a signature indicating race, age and sex.

*Objective:* Describe and compare nasal angles, nose types, nostril models, and nasal profiles in young Turkish males and females.

*Methods:* The study group consisted of university students, 56 males and 59 females. Nasal measurements were obtained from all subjects, using anthropometric methods.

*Results:* The nose types of females and males were 78% and 70% narrow nose, respectively. The means of females' nasofrontal, nasal tip, nasolabial, and alar slope angles were  $133.16^\circ \pm 8.88^\circ$ ;  $77.91^\circ \pm 9.80^\circ$ ;  $98.91^\circ \pm 10.01^\circ$ , and  $80.89^\circ \pm 8.33^\circ$ , respectively. The means of males' nasofrontal, nasal tip, nasolabial, and alar slope angles were  $123.85^\circ \pm 13.23^\circ$ ;  $82.16^\circ \pm 9.98^\circ$ ;  $97.91^\circ \pm 8.78^\circ$  and  $85.98^\circ \pm 8.72^\circ$ , respectively.

*Conclusion:* The average values of the nose in this population may be used as a guide to plan corrective esthetic–cosmetic surgery and for burn scars of the nose.

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### PALAVRAS-CHAVE

Feminino;  
Masculino;  
Antropometria;  
Nariz

### Morfométrica análise de nasais formas e ângulos em adultos jovens

#### Resumo

*Introdução:* O tamanho, os ângulos, a forma e o tipo do nariz humano são uma assinatura que indica raça, idade e sexo.

*Objetivo:* Descrever e comparar os ângulos nasais, tipos de nariz, modelos de narina e perfis nasais em homens e mulheres jovens turcos.

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**Métodos:** Grupo de estudo consistiu de 56 jovens do sexo masculino e 59 do sexo feminino, que eram estudantes na Universidade. Medidas nasais foram obtidas de todas as disciplinas, através de métodos antropométricos.

**Resultados:** Tipos de nariz de fêmeas e machos foram encontrados na maior parte 78% e 70% nariz estreito, respectivamente. Os meios de nasofrontal das fêmeas, ponta nasal, nasolabial e ângulos de inclinação alar foram  $133,16 \pm 8,88$ ;  $77,91 \pm 9,80$ ;  $98,91 \pm 10,01$  e  $80,89 \pm 8,33^\circ$ , respectivamente. Os meios de nasofrontal dos machos, a ponta nasal, nasolabial e ângulos de inclinação alar foram  $123,85 \pm 13,23$ ;  $82,16 \pm 9,98$ ;  $97,91 \pm 8,78$  e  $85,98 \pm 8,72^\circ$ , respectivamente.

**Conclusão:** Os valores médios do nariz nesta população podem ser usados como um marco de orientação para planejar a cirurgia corretiva nos *aestheticcosmetics*, cicatrizes de queimadura do nariz.

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## Introduction

The nose has a number of vital functions. It filters, heats, and moistens inhaled air; it is the first line of defense against inhaled allergens; it acts as a sensory olfactory organ and affects resonance in speech production. Conditions such as deviated septum and turbinate hypertrophy affect nasal geometry and may impair nasal patency and the physiology of the nose, due to reductions in the inner dimensions of the nasal cavity and increases in the resistance to airflow.<sup>1</sup> For centuries, anthropologists and clinicians have attempted to objectively comprehend the concept of facial beauty.<sup>2</sup> Renaissance artists emphasized that facial beauty is rooted in symmetric and balanced proportions. Their quantitative descriptions persisted as neoclassical canons, which are currently used in reconstructive facial operations.<sup>3</sup> The shape of the nose is a signature indicating the ethnicity, race, age, and sex.<sup>4</sup> Anthropometric parameters vary with age, sex, and ethnic background, and several authors have attempted to document normative values which may serve as references.<sup>5</sup> The size, shape and proportions of the nose provide beauty or handsomeness, because it is at the center of the face.<sup>6</sup> Knowledge of the unique shape, anatomy, and dimensions of the human nose is essential for surgeons undertaking esthetic repair and reconstruction of noses.<sup>7</sup>

Determining nose types, nostril models, nasal profiles, and angles of the nose provides norms for the study of abnormalities or the effects of aging and disease; or changes due to body growth, and ethnic and racial differences.<sup>8</sup> Racial and ethnic morphometric differences have been the focus of investigations.<sup>9,10</sup>

This study aimed to describe the differences in nasal angles, nose types, nostril models and nose profiles in young Turkish males and females and compare them with the studies found in the literature.

## Materials and methods

The present study recorded nasal types, nostril models, and angles of university students of physical education and

sports, who were 18–30 (mean 21.22) years of age, selected by a random sampling method, totaling 115 healthy students (59 females and 56 males). These individuals had no noticeable nasal or facial disfigurement, nor previous nasal or facial surgery.<sup>5</sup> This study was approved by the Ethics Committee of University Clinical Research (Ethics Committee Number: 569). All objects were previously described; which from the point of nasal measurements by using anthropometric instruments and were signed informed consent form. Body weight was measured using a Seca scale (Seca, Mod 220, with precision of 0.1 kg – Hamburg, Germany), without shoes, barefoot, and with as few clothes as possible. Body height was measured in anatomic position using a portable stadiometer (Seca, Mod 220, Hamburg Germany), with precision of 0.5 cm.<sup>5</sup> Mean body weight and height of the male subjects were 77.34 kg (53.40–112.20 kg) and 177.02 cm (163.00–194.00 cm), respectively. Mean body weight and height of the female subjects were 59.32 kg (38.40–86.00 kg) and 164.83 cm (150–182 cm), respectively.

Anthropometric measurements were obtained from all included subjects, using standard anthropometric methods and instruments described in literature.<sup>5</sup> The measurements of angles were calculated in degrees ( $^\circ$ ), and were performed by the same researcher under normal anatomic position and in the Frankfurt horizontal plane (FH).<sup>5</sup> Assessment of the position of the nose, by judging the relationship of the upper and the lower edges of the ear to the eye brow level and the ala level, respectively, requires maintaining the subject's head in the FH, which is defined by a line connecting the orbital (the lowest point of the infraorbital margin) and the porion (point at the upper edge of the auditory meatus) or tragon (landmark on the upper edge of the tragus), maintained horizontal with the help of a commercial angle meter.<sup>6</sup> The data were analyzed using the SPSS, version 18.0 for Windows. Differences between male and female values were tested by Student's *t*-test for normally distributed variables, and by the Mann–Whitney *U* test for variables that were not normally distributed. Fisher's exact test was used to assess the relationship between types of nose, according to sex. The significance level was defined as  $p = 0.05$ . Values were expressed as mean  $\pm$  standard deviation (SD).<sup>11</sup> Nasion

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