

Some Vertical Proportions of the Face in Turkish Adults

Yetişkin Türklerde Yüz ile İlgili Bazı Vertikal Oranlar

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Objectives: In this study, we aimed to find the average arithmetical values of some of the vertical proportions of the face in Turkish adult men and women.

Patients and Methods: A total of 250 students (125 females, 125 males) participated in this study. The subjects did not have any physical defects. The average age in females and males were 19.4±1.0 years and 20.1±1.4 years respectively. Measurements were made by the same researcher using the same millimetric calipers at the same place and at the same time of day.

Results: The height of head, the height of face, the height of superior face and the height of inferior face were measured as 20.0/21.32 cm, 11.15/11.84 cm, 5.09/5.24 cm and 6.21/6.82 cm for females/males respectively. The proportions between these parameters were 55.75%/55.53% for the height of face to the height of head, 25.45%/24.57% for the height of upper face to the height of head, 31.05%/31.98% for the height of lower face to the height of head, 45.65%/44.25% for the height of upper face to the height of face and 55.69%/57.60% for the height of lower face to the height of face, in females/males respectively.

Conclusion: We compared the results which are peculiar to Turkish people with the literature. We believe that the results of our study would be useful for other studies on the native Turkish people.

Key words: Anthropometry; vertical proportion; face.

Amaç: Çalışmamızla yetişkin Türk kadın ve erkeklerinde baş ve yüze ait bazı antropometrik ölçüm ve indeks değerlerini belirlemeyi amaçladık.

Hastalar ve Yöntemler: Üniversitemizde eğitim gören 250 öğrenci (125 erkek, 125 kadın) çalışmamıza katıldı. Fiziksel kusuru olan deneklerimiz çalışma kapsamının dışında bırakıldı. Yaş ortalaması kadınlarda 19.4±1.0, erkeklerde ise 20.1±1.4 idi. Ölçümler aynı araştırmacı tarafından günün aynı saatinde aynı yerde milimetrik kaliper yardımıyla yapıldı.

Bulgular: Çalışmamızda baş yüksekliği, yüz yüksekliği, üst yüz yüksekliği ve alt yüz yüksekliği ölçüldü. Sonuçlarımız kadın ve erkeklerde sırasıyla 20.0/21.32 cm, 11.15/11.84 cm, 5.09/5.24 cm and 6.21/6.82 cm idi. Değerlerimiz arasındaki oranlar kadın ve erkek deneklerimiz için sırasıyla; yüz yüksekliğinin baş yüksekliğine oranı %55.75/%55.53, üst yüz yüksekliğinin baş yüksekliğine oranı %25.45/%24.57, alt yüz yüksekliğinin baş yüksekliğine oranı %31.05/%31.98, üst yüz yüksekliğinin yüz yüksekliğine oranı %45.65/%44.25 ve alt yüz yüksekliğinin yüz yüksekliğine oranı ise %55.69/%57.60'tır.

Sonuç: Türk insanlarına özgü sonuçlarımızı literatürlerdeki veriler ile karşılaştırdık. Çalışmamızın sonuçlarının Türk insanları üzerinde yapılacak çalışmalar için yararlı olacağı kanaatindeyiz.

Anahtar sözcükler: Antropometri; vertikal proporsiyon; yüz.

The measures of the human body start to change from the birth. This feature has attracted the attention in each era and many scientific and artistic studies have come out as a consequence. In these studies continuing since the time of Hippocrates, the aim was to know the human body.^[1] However, this aim changed in time, and putting forth the ethnical structures of the societies and presenting many works of art were aimed.

When looking at the history, each society gave importance to its anthropological features being examined and they tried to set social standards. On the basis of the standards resulting from the studies of the scientists anthropologists evaluated the people in terms of their races and the environment they live in, and researched the results on the societies in a detailed way. However, the artists dealt with the aesthetic side of the event. The artists and sculptors who used the the standards set by the scientists created many works of art.^[2]

The terminology called anthropometry arose after the studies of the scientists. Anthropometry, which examines the whole human body, or the measures or proportions of its parts was used by Quetlet from Belgium for the first time in 1870. However, anthropometry was first described by Alphonse Bertillon (1879). Somatometry is the term used for the anthropometric studies on the living body. The branch of somatometry that deals with the measures of the head is called cephalometry. The measures of the skull are called as craniometry.^[3,4,5]

The head is the part of the human body, which shows the least change. As it has a higher bony tissue content, its growth is much slower from the birth. Also, due to its structure, it contains lots of fixed points. These points are called as surface landmarks or anthropological points. Most of the anthropological points in the human body were defined on the head. Because of this feature, the studies in this area are done in an easier and more reliable way.^[6,7]

The anthropometric measures of the face have an important place in facial reconstructive surgery and also in the definition of ideal face

proportions. There are vertical and horizontal proportions in ideal face measurements. For this reason, we aimed to research the value of some vertical proportions in face in Turkish adult people and planned to compare them with other ethnical groups.

PATIENTS AND METHODS

A total of 250 subjects (125 females and 125 males) who were students at our University Faculty of Medicine participated in our study. The average ages were 19.4 ± 1.0 years and 20.1 ± 1.4 years for the females and the males respectively. The subjects didn't have any physical defects and growth disorders. The measurements were made in the Department of Anatomy at Trakya University, Faculty of Medicine. The same researcher performed the measurements at the same hours of the day (14:00-16:00). The measurement of each parameter was made three times and its average was taken. In our study, millimetric sectional calipers, pelvimeter and measuring tape were used.

While the measurements of the face were being done, the test subject sat on a chair positioned in a way that her/his face would look forward (Frankfurt horizontal plane).

The parameters that we used in our study were:

- 1- Height of head: It is the distance between gnathion and vertex.
- 2- Height of face: It is the distance between gnathion and nasion.
- 3- Height of superior face: It is the distance between nasion and subnasale.
- 4- Height of inferior face: It is the distance between subnasale and gnathion.

The anthropological points that we used in our study were:^[7]

- a) Gnathion: It is the central point of mandible's inferior margin.
- b) Vertex: It is the highest point of head in anatomic position.
- c) Nasion: The deepest part of the root of the nose on the living subject.

d) Subnasale: The point where the philtrum and the nasal septum meet on the living subject.

The proportions that we have tried to standardize in our study:

1. Height of face / Height of head
2. Height of superior face / Height of head
3. Height of inferior face / Height of head
4. Height of superior face / Height of inferior face.

RESULTS

The data we obtained in our study can be seen in Table 1. The proportions that we got from these data are shown in Table 2.

DISCUSSION

We found the head height as 20.0 cm in women and 21.32 cm in men. Kutoğlu et al.^[8] found this value as 21.38 cm in women and 22.36 cm in men. Also, Yorulmaz et al.^[9] found this height as 19.85 cm in a study conducted on a male population. Gürün and Kuran^[10] found this value as 21.91 cm in men and 20.49 cm in women. Soyloğlu^[11] found this height as 23.13 cm in men and 21.75 cm in women in his study. Our results are similar to Gürün and Kuran's but differ somewhat with the other studies. We think that this difference originates from the determination of measuring points.

Young^[12] found the head height as 18.78 cm in women and 19.95 cm in men, in his study conducted in United States. If we compare these results with ours, it can be seen that the head heights of Turkish people are higher than the Americans'. We can explain this as racial difference.

Table 1: The parameters in our study

Measures (cm)	Female (SD)	Male (SD)
Height of head	20.00 (± 1.0)	21.32 (± 0.9)
Height of face	11.15 (± 0.6)	11.84 (± 0.6)
Height of superior face	5.09 (± 0.3)	5.24 (± 0.4)
Height of inferior face	6.21 (± 0.5)	6.82 (± 0.5)

We found the face height as 11.15 cm in women. This height was also found as 11.18 cm by İnan,^[13] 11.14 cm by Müftüoğlu,^[14] and 11.08 cm by Gürün and Kuran.^[10] Significant similarity is observed between these results. The result we found as 11.84 cm in men was found as 12.24 cm by İnan, 11.95 cm by Müftüoğlu, 12.11 cm by Yorulmaz and 11.87 cm by Gürün and Kuran. If these results are compared, it is seen that our results are similar to Gürün and Kuran's and Müftüoğlu's but a little different from İnan's and Yorulmaz's. We think that these differences are due to the measurement methods and the different numbers of subjects who participated in the studies.

Hertzberg et al.^[15] found the face height as 12.18 cm in Turks, 11.86 cm in Greeks and 11.91 cm in Italians in his study. Also, Young measured this height as 12.09 cm while Popov^[16] found the value 12.64 cm in Bulgarians, 12.57 cm in Macedonians, 12.80 cm in Pomaks in their studies. If we examine these results, we see that the face height values obtained for the citizens of the Balkan countries are higher than the other countries. While Young found the face height as 11.09 cm in women, Popov found it as 11.85 cm in Bulgarians, 11.79 cm in Macedonians and 11.88 cm in Pomaks which are similar to ours.

Table 2: The proportions that we found in our study

Proportions	Female (%)	Male (%)
Height of face / Height of head	55.75	55.53
Height of superior face / Height of head	25.45	24.57
Height of inferior face / Height of head	31.05	31.98
Height of superior face / Height of face	45.65	44.25
Height of inferior face / Height of face	55.69	57.60

We found the superior face height as 5.09 cm in women. Müftüoğlu found this value as 4.94 cm. Young found the superior face height as 5.01 cm in Americans. We believe that the difference is based on the measurement method. We found the superior face height as 5.24 cm in men. It was found as 5.3 cm by Müftüoğlu, 5.40 cm by Young and 5.41 cm in Turks, 5.17 cm in Greeks, 5.22 cm in Italians by Hertzberg et al. Our results are similar to Müftüoğlu's but differ from the others. Again, we think that the difference is based on the method.

The inferior face height that we found as 6.21 cm in women, was found as 6.22 cm by Gürün and Kuran and 6.17 cm by Borman. There is a similarity between all these results. As the result we found in men is 6.82 cm, it was found as 6.52 cm by Gürün and Kuran, 6.19 cm by Borman et al.^[17] and 7.04 cm in Turks, 6.83 cm in Greeks, 6.74 cm in Italians by Popov. While our results are higher than Gürün and Kuran's and Borman's, they are similar to the results in Popov's study. In our study, we found the proportion of face height to head height as 55.75% in women and as 55.53% in men. It is seen that these two distances are similar to each other. Also we found the proportion of superior face height to head height as 25.45% in women and 24.57% in men. The proportion of inferior face height to head height is 31.05% in women and 31.98% in men. These ratios are also concordant with each other. We found the proportion of superior face height to face height as 45.65% in women and 44.25% in men and the proportion of inferior face height to face height was 55.69% in women and 57.60% in men. The difference in these ratios is due to the higher values of inferior face heights in Turkish men.

As a conclusion, it is seen that the superior face height is 1/3 of the head height and the inferior face height is 1/4 of the head height in Turkish women and men.

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