RESEARCH

Is There Any Revelance Between Features Of Face Parts And Orthodontic Malocclusion?

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ABSTRACT

Is There Any Revelance Between Features Of Face Parts And Orthodontic Malocclusion?

Background: The purpose of this study was to evaluate frontal facial features of individuals and analyze their relevance to orthodontic malocclusions.

Methods: Frontal photographs of 250 patients (158 females, 92 males) between the ages of 7-38 were taken and cephalometric data of patient were collected. Patients were divided into skeletal Class I, II and III according to SNA, SNB and ANB angles and dental Class I, II and III according to molar occlusion. Photographs were used to evaluate facial dimensions, general symmetry, forehead, trichion anatomical landmark position, nostril visibility, nasal root breaking point, glabella position, cantus positions, eyeball symmetry, sclera visibility, nose symmetry and shape, nose widths, mouth width, lip vermillion areas and chin. Relevance between photographic data and malocclusion groups was statistically evaluated.

Results: Forehead shape, nostril visibility, mouth width and chin symmetry differences were statistically significant due to type of skeletal malocclusion. Conversely, there are significant relevance between forehead shape, nose symmetry, upper lip vermillion, and chin symmetry and dental malocclusions. Chin asymmetry is mostly seen with skeletal Class III malocclusion, while nasal asymmetry with dental Class III malocclusion. Asymmetry is mostly seen in lower third of the face. In dental Class III malocclusion patients, forehead was mostly "wide". In front view, skeletal Class I and II individuals have increased nostril visibility and Class III decreased nostril visibility.

Conclusion: Skeletal class III patients are prone to asymmetries especially in lower third of the face.

KEYWORDS

Facial features, orthodontic malocclusions, photographic data

ÖZ

Yüz Bölümlerinin Özellikleri İle Ortodontik Malokluzyonlar Arasinda Herhangi Bir İlişki Var Mi?

Amaç: Bu çalışmanın amacı, bireylerin frontal yüz özelliklerini değerlendirmek ve ortodontik malokluzyonlarla ilişkilerini analiz etmektir.

Gereç ve Yöntemler: 7-38 yaş aralığındaki 250 hastanın (158 kadın, 92 erkek) frontal yönden fotoğrafları çekildi ve sefalometrik verileri toplandı. Hastalar SNA, SNB ve ANB açılarına göre iskeletsel Sınıf I, II ve III ve molar kapanışa göre dişsel Sınıf I,II ve III olarak ayrıldı. Fotoğraflar; yüz boyutlarını, genel simetriyi, alnı, trichion anatomik noktasını, burun deliği görünürlüğünü, burun kökü kırılma noktasını, glabella pozisyonunu, kantus pozisyonlarını, göz küresi simetrisini, sklera görünürlüğünü, burun simetrisini ve şeklini, burun genişliğini, ağız genişliğini, dudak vermillion alanlarını ve çeneyi değerlendirmek için kullanıldı. Fotoğrafik veriler ile maloklüzyon grupları arasındaki ilişki istatistiksel olarak değerlendirildi.

Bulgular: Alın şekli, burun deliği görünürlüğü, ağız genişliği ve çene simetrisindeki farklar, iskeletsel maloklüzyonunun tipine bağlı olarak istatistiksel olarak anlamlıdır. Bunun aksine, alın şekli, burun simetrisi, üst dudak vermillionu ve çene simetrisi ile dental malokluzyonlar arasında anlamlı bir ilişki vardır. Çene asimetrisi en sık iskeletsel Sınıf III maloklüzyon ile görülürken, burun asimetrisi dişsel Sınıf III maloklüzyon ile görülür. Asimetri çoğunlukla yüzün alt üçte birinde görülür. Dişsel Sınıf III maloklüzyonlu hastalarda alın, çoğunlukla "geniş" idi. Frontal görünümde, iskeletsel Sınıf I ve II bireylerde artmış burun deliği görünürlüğünü, Sınıf III bireylerde azalmış burun deliği görünürlüğünü vardır.

Sonuç: İskeletsel sınıf III hastalar özellikle yüzün alt üçte birinde asimetrilere yatkındır.

ANAHTAR KELİMELER

Fotoğrafik veri, ortodontik malokluzyonlar, yüz karakteristiği

Improving the patient's facial appearance is one of the main objective of clinicians in various fields, including orthodontists. An improvement requires planning, rules, and universally accepted facial ratios.[1] The basis for obtaining an aesthetic facial appearance generally begins with measuring various facial components of people who are considered to be attractive by the evaluators and determining whether these facial features have common features.[2] It is an undeniable fact that all evaluations and efforts put into esthetic are mainly aimed at increasing the phenomenon that is defined as attractiveness. While analysis of facial appeal depends on the perception of what is visually pleasing, some elements of attractiveness are mostly universal and should be considered as a basis for aesthetic analysis.[3] According to a comprehensive review of the literature, youth, sexual dimorphism, the existence of distinctive qualities and symmetry are the four basic elements of attractiveness.[4] Some old roadmaps have been proposed for analyzing the face and determining esthetics and

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proportionality according to the rules of classical Greek proportions established by Renaissance artist and anatomists such as Dürer, Da Vinci, and Pacioli.[5] Although these neoclassical laws are a general study guideline for facial ratios they are not a valid system for analyzing the human face.[6]

After the widespread use of cephalometric radiography, it was clearly shown that most Class II and Class III malocclusions were caused not only by misaligned teeth but also by faulty jaw associations. For this reason, obtaining accurate or at least improved jaw relationships has become the target of orthodontic treatment. With soft tissue paradigm used in diagnosis; the focus is on clinical examination and photo evaluation, rather than diagnostic models and radiographs, and a different approach is taken to obtain important diagnostic information.[7]

The soft tissue paradigm implies that when setting the goals and limitations of modern orthodontic and orthognathic treatment, soft tissues are taken into account, not only teeth and bones. With orthodontics gradually straying away from the Angle paradigm, the primary goal of treatment became achieving ideal soft tissue correlation, not Angle's ideal occlusion. This goal is not contrary to Angle's ideal occlusion, but it acknowledges that the ideal occlusion for the patient's maximum benefit will not always be the main focus of the treatment plan.

The first evaluation of the face is determining its height. The proportional correlation between face height and width determines the type and basic ratios of the face. Another important aspect of facial evaluation is symmetry. In the evaluation of facial soft tissues, it is advised to examine facial soft tissues along with the forehead, eyes, nose, teeth, lips, and chin in detail so that specific facial regions and their harmony with the face can be understood.[1] The objectives of the study presented are to evaluate the frontal appearance of facial features in individuals with orthodontic malocclusion and analyze its relevance to the patient's orthodontic problems.

MATERIALS AND METHODS

The material of this study constitutes of visual records taken from 250 patients who have applied to the Orthodontics Department for treatment. The participants had a mean age of 15.04 and consisted of 158 female and 92 male individuals aged 7 to 38. The criterion for inclusion in the study is that patients apply to the clinic for routine orthodontic treatment. Exclusion criteria are the presence of a defect on the face due to a specific syndrome or trauma, and/or previous orthodontic treatment. Visual records of the patients were taken and data from cephalometric radiographs taken for orthodontic treatment were collected to determine skeletal malocclusion. Patients were divided into skeletal Class I, II and III according to SNA, SNB and ANB angles and dental Class I, II and III according to molar occlusion.

Before conducting the study, an ethics committee compliance report dated 18/11/2015 and numbered 2015-116-18 / 11 was obtained from the Ethics Committee of Clinical Investigations of ….. University. Participants were explained that this was a study evaluating facial features, and verbal and written consent was obtained.

The photographs were taken using a digital camera (Canon EOS 700D Digital SLR Camera f 1/1.8 II Lens, CMOS Sensor, 3-inch LCD) and a telescopic lens (Canon Lens EF 50 mm). The camera was placed on a tripod and positioned so that the distance between the head and the lens of the camera was 100 cm. This distance was the same for all records.

The frontal analysis began with the assessment of vertical and horizontal facial dimensions and general symmetry (**Figure I**)

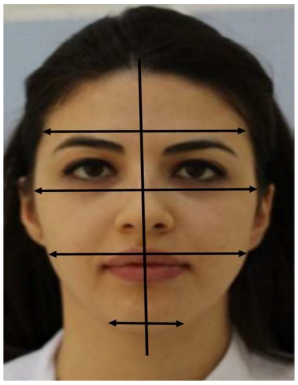

Figure I

Frontal analysis of general facial dimensions and symmetry.

The relevance between the lower and upper lips and chin height are evaluated in the analysis of frontal appearance (**Figure II**)

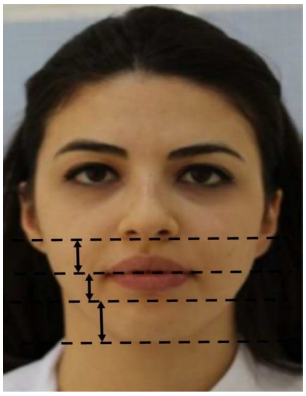

Figure II

Analysis of lips' and chin heights.

It was evaluated forehead (Wide, Narrow, Short, Long, Normal), trichion anatomical landmark position (Normal, Too high, Too low), nasal root breaking point position (Normal, Too high, Too low), glabella positions (Normal, Too high, Too low), nostril visibility (Ideal, Increased, Decreased), medial and lateral cantus positions (Ideal, Altered), symmetry of eyeballs (Symmetric, Asymmetric), sclera visibility (Ideal, Too high, Too low), general dimensions of nose (Ideal, Large, Narrow, Short, Long), symmetry of different nose parts (Whole nasal width, Radix width at the level of the base, Radix width at the level of the profile, Dorsal width at the level of the base, Dorsal width at the level of the profile), mouth width (Ideal, Too large, Too small), lip vermillion areas (Ideal, Excessive, Deficient), vertical lower lip to chin ratio (Balanced, Long lip short chin, Long chin short lip), external chin symmetry (Symmetric, Asymmetric), chin shape (Wide, Narrow, Short, Long), chin form (Pointed, Large, Square, Protic, Cleft) on frontal photographs (**Figure III, IV, V, VI, VII**)

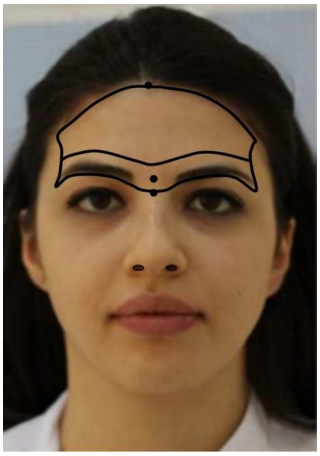

Figure III
Analysis of forehead, trichion, nasal root breaking, glabella and nostril visibility.

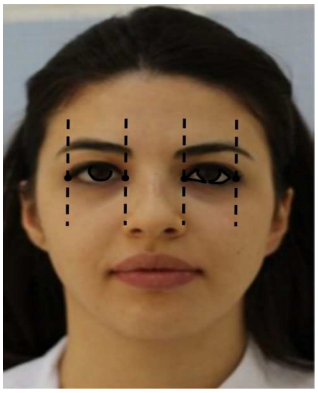

Figure VI
Analysis of lip vermillion areas and lower lip to chin ratio.

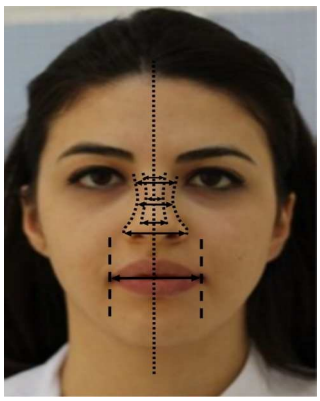

Figure V
Analysis of general dimensions of nose, symmetry of nose parts and mouth width.

Figure VI
Analysis of cantus positions, symmetry of eyeballs and sclera visibility.

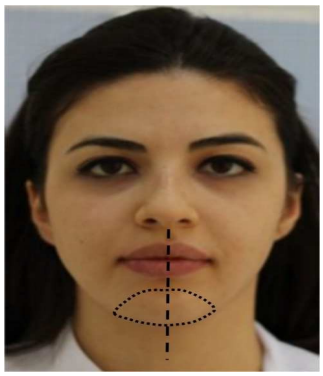

Figure VII
Analysis of chin symmetry, chin shape and chin form.

The relevance between the data obtained from the evaluations on the photographs and the skeletal and dental malocclusion groups was statistically evaluated. Statistical analysis of the data was performed using IBM SPSS Version 16.0 (IBM Co., Armonk, NY, USA). Primarily, descriptive statistics were calculated for each parameter. Nominal data obtained from the analysis of the photographs were tested with Chi-square analysis. Statistical significance level was determined as $p<0,05$.

RESULTS

According to the findings of skeletal sagittal direction classification obtained from measurements of the participants, 132 were skeletal Class I, 86 were skeletal Class II and 32 were skeletal Class III. 91 of the participants had dental Angle Class I malocclusion, 133 had Angle Class II malocclusion, and 26 had dental Angle Class III malocclusion.

Relevance of Study Parameters and Skeletal Malocclusion

Whether participants had a wide, narrow, long, short, or normal forehead shape, and skeletal sagittal direction classifications were evaluated separately, and a significant difference was found between the two factors ($p<0.05$) (**Table I**)

Table I.

The relevance between forehead shape and skeletal malocclusion.

Skelatal Classification	Shape of Forehead					
Class I	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	18	8	3	26	77	132
% (Among Class I individuals)	13.6	6.1	2.3	19.7	58.3	100
% (Among all individuals)	7.2	3.2	1.2	10.4	30.8	52.8
Class II	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	21	2	10	17	36	86
% (Among Class I individuals)	24.4	2.3	11.6	19.8	41.9	100
% (Among all individuals)	8.4	0.8	4.0	6.8	14.4	34.4
Class III	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	9	2	1	5	15	32
% (Among Class III individuals)	28.1	6.2	3.1	15.6	46.9	100
% (Among all individuals)	3.6	0.8	0.4	2.0	6.0	12.8

p=0.02

When viewed from the frontal plane, the visibility of the nostrils and the skeletal malocclusion of participants were evaluated, and a statistically significant difference was found between the two factors ($p<0.05$) (**Table II**)

Table II.

The relevance between nostril visibility and skeletal malocclusion.

Class I	Ideal	Increased	Decreased	Total
N	70	33	29	132
% (Among Class I individuals)	53.0	25.0	22.0	100
% (Among all individuals)	28.0	13.2	11.6	52.8
Class II	**Ideal**	**Increased**	**Decreased**	**Total**
N	41	33	12	86
% (Among Class II individuals)	47.7	38.4	14.0	100
% (Among all individuals)	16.4	13.2	4.8	34.4
Class III	**Ideal**	**Increased**	**Decreased**	**Total**
N	15	6	11	32
% (Among Class III individuals)	46.9	18.8	34.4	100
% (Among all individuals)	6.0	2.4	4.4	12.8
Total	**Ideal**	**Increased**	**Decreased**	**Total**
N	126	72	52	250
% (Among all individuals)	50.4	28.8	20.8	100

p=0.02

A statistically significant difference was found when the relevance between whether the mouth is of proper width, wide, or narrow, and the skeletal malocclusion of participants was evaluated ($p<0.05$) (Table III).

Table III.

The descriptive statistical findings of the relevance between mouth width and skeletal malocclusion classification.

Skelatal Classification	Mouth Width			
Class I	**Ideal**	**Wide**	**Narrow**	**Total**
N	71	24	37	132
% (Among Class I individuals)	53.8	18.2	28.0	100
% (Among all individuals)	28.4	9.6	14.8	52.8
Class II	**Ideal**	**Wide**	**Narrow**	**Total**
N	46	15	25	86
% (Among Class II individuals)	53.5	17.4	29.1	100
% (Among all individuals)	18.4	6.0	10.0	34.4
Class III	**Ideal**	**Wide**	**Narrow**	**Total**
N	13	14	5	32
% (Among Class III individuals)	40.6	43.8	15.6	100
% (Among all individuals)	5.2	5.6	2.0	12.8
Total	**Ideal**	**Wide**	**Narrow**	**Total**
N	130	53	67	250
% (Among all individuals)	52.0	21.2	26.8	100

p=0.02

Whether the external chin appearance of participants is symmetrical or not and the status of skeletal malocclusion was assessed separately. Chi-square test showed a difference ($p<0.05$) (**Table IV**).

Table IV.

Descriptive statistical information on chin symmetry and skeletal sagittal direction classification.

Skelatal Classification		External Chin Symmetry	
Class I	**Symmetrical**	**Not Symmetrical**	**Total**
N	113	19	132
% (Among Class I individuals)	85.6	14.4	100
% (Among all individuals)	45.2	7.6	52.8
Class II	**Symmetrical**	**Not Symmetrical**	**Total**
N	76	10	86
% (Among Class II individuals)	88.4	11.6	100
% (Among all individuals)	30.4	4.0	34.4
Class III	**Symmetrical**	**Not Symmetrical**	**Total**
N	18	14	32
% (Among Class III individuals)	56.2	43.8	100
% (Among all individuals)	7.2	5.6	12.8
Class III	**Symmetrical**	**Not Symmetrical**	**Total**
N	207	43	250
% (Among all individuals)	82.8	17.2	100

When the participants were viewed from the front; the position of Trichion anatomical landmark, glabella position, symmetry of eyeballs, sclera visibility, medial and lateral cantus positions, widths of nasal parts, nose symmetry, upper and lower lip vermillion areas, dimensional relationship between lips and chin, and skeletal malocclusion types were evaluated separately but no statistically significant result was found ($p>0.05$).

Relevance Between Study Parameters And Dental Malocclusion

Shape of forehead and dental sagittal direction classification were evaluated separately, and a significant difference was found ($p<0.05$) (Table V)

Table V.

Descriptive statistical information on the classification of shape of forehead and dental malocclusion.

Dental Classification			Shape of Forehead		
Class I	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	9	7	3	17	55	91
% (Among Class I individuals)	9.9	7.7	3.3	18.7	60.4	100
% (Among all individuals)	3.6	2.8	1.2	6.8	22	36.4
Class II	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	31	3	11	26	62	133
% (Among Class II individuals)	23.3	2.3	8.3	19.5	46.6	100
% (Among all individuals)	12.4	1.2	4.4	10.4	24.8	53.2
Class III	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	8	2	0	5	11	26
% (Among Class III individuals)	30.8	7.7	0	19.2	42.3	100
% (Among all individuals)	3.2	0.8	0	2.0	4.4	10.4
Total	**Wide**	**Narrow**	**Long**	**Short**	**Normal**	**Total**
N	48	12	14	48	128	250
% (Among all individuals)	19.2	4.8	5.6	19.2	51.2	100

p=0.02

When viewed from the front, the relevance between dental malocclusion and whether the nasal area is symmetrical or not were analyzed and the Chi-square test showed a significant difference ($p<0.05$) (**Table VI**).

Table VI.

Descriptive statistical information on nasal symmetry and dental malocclusion classification.

Dental Classification		Shape of Forehead	
Class I	**Symmetrical**	**Not Symmetrical**	**Total**
N	79	12	91
% (Among Class I individuals)	86.8	13.2	100
% (Among all individuals)	31.6	4.8	36.4
Class II	**Symmetrical**	**Not Symmetrical**	**Total**
N	118	15	133
% (Among Class II individuals)	88.7	11.3	100
% (Among all individuals)	47.2	6.0	53.2
Class III	**Symmetrical**	**Not Symmetrical**	**Total**
N	17	9	26
% (Among Class III individuals)	65.4	34.6	100
% (Among all individuals)	6.8	3.6	10.4
Total	**Symmetrical**	**Not Symmetrical**	**Total**
N	214	36	250
% (Among all individuals)	85.6	14.4	100

p=0.008

The relevance between the vertical vermillion distance of the upper lip and dental malocclusion classification was evaluated. A statistically significant difference was found ($p<0.05$) (**Table VII**)

Table VII.

Descriptive statistical information on vertical vermillion distance of the upper lip and dental malocclusion classification.

Dental Classification	Upper Lip Vermillion			
Class I	Ideal	Increased	Decreased	Total
N	74	2	15	91
% (Among Class I individuals)	81.3	2.2	16.5	100
% (Among all individuals)	29.6	0.8	6.0	36.4
Class II	Wide	Increased	Decreased	Total
N	110	6	17	133
% (Among Class II individuals)	82.7	4.5	12.8	100
% (Among all individuals)	44.0	2.4	6.8	53.2
Class III	Wide	Increased	Decreased	Total
N	16	0	10	26
% (Among Class III individuals)	61.5	0.0	38.5	100
% (Among all individuals)	6.4	0.0	4.0	10.4
Total	Wide	Increased	Decreased	Total
N	200	8	42	250
% (Among all individuals)	80.0	3.2	16.8	100

p=0.02

When viewed from the front, the relevance between the presence of symmetrical chin appearance of the participants and the classification of dental malocclusion was evaluated. A significant difference was found ($p<0.05$) (**Table VIII**)

Table VIII.

Descriptive statistical information on the classification of chin symmetry and dental malocclusion.

Dental Classification	**External Chin Symmetry**		
Class I	**Symmetrical**	**Not Symmetrical**	**Total**
N	66	25	91
% (Among Class I individuals)	72.5	27.5	100
% (Among all individuals)	26.4	10	36.4
Class II	**Symmetrical**	**Not Symmetrical**	**Total**
N	123	10	133
% (Among Class II individuals)	92.5	7.5	100
% (Among all individuals)	49.2	4.0	53.2
Class III	**Symmetrical**	**Not Symmetrical**	**Total**
N	18	8	26
% (Among Class III individuals)	69.2	30.8	100
% (Among all individuals)	7.2	3.2	10.4
Total	**Symmetrical**	**Not Symmetrical**	**Total**
N	207	43	250
% (Among all individuals)	82.8	17.2	100

p=0.01

When the participants were viewed from the front; the position of the Trichion anatomical landmark, glabella position, symmetry of the eyeballs, sclera visibility, medial and lateral cantus positions, nasal root breaking point position, widths of nasal parts, nostrils visibility, nose shape, mouth width, lower lip vermillion distance, dimensional relationship between lips and chin, and dental malocclusion types relevance was evaluated separately but no statistically significant result was found ($p>0.05$).

DISCUSSION

The age and gender distributions of the study samples in which the relevance between the parameters related to orthodontic malocclusion and facial aesthetics were analyzed at literature. In the Farkas study[8], the individuals were grouped and 39 females and 50 males between the ages of 18-25 were included in one group while another 50 females and 50 males were included in a second group. Sanborn's study analyzed a total of 42 individuals: the control group had 26 males and 9 females aged 16-38, mean age was 24.65, while the study group had 22 males and 16 females aged between 16-36, mean age was 21.83. [3] In their study, Farkas et al., took longitudinal measurements of the same individuals at ages 6, 12 and 18.[5] Jones et al.[9] included 10 females aged between ages 20 and 28, 10 males aged 21-26, and 30 females and 30 males aged 20-30 in their study. Haraguchi et al.[10] included a total of 220 patients (69 male and 151 female) with a mean age of 21 years 11 months, while Sassouni studied 100 individuals aged between seven and 15, consisting of 51 female and 49 male individuals. When the other studies in the literature are examined, one can see that they have a wide range of sample sizes such as 12, 25, 42, 84, 123, 130, 302. [3,11-16] Age ranges were found to be between 7-16 [16] and 15-36. [3,11,12,14,15] In our study presented, the photographs taken from a total of 250 people (158 female and 92 male; the youngest being seven and the oldest being 38 years old with an mean age of 15.04) were analyzed. Although the age and gender distributions are similar to the studies of the past, in our study we analyzed a much wider range of age and number of individuals. In this respect, it can be considered as a contribution to orthodontics literature.

There is also a connection thought to exist between health and asymmetry. The more resistant one is to illness, it is less likely that person has developmental disorders that increase asymmetry. Based on the assumption that the relevance between attractiveness and health should be higher in individuals who have more symmetrical features, researchers working in the framework of evolution analyzed the relevance between attractiveness and facial symmetry. Jones et al. found that more symmetrical male and female faces were preferred to relatively asymmetric forms.

Furthermore, when the attractiveness effect is statistically analyzed, it has been found that symmetrical faces are considered to be healthier than asymmetric faces.[9] In our study, we compared chin and nasal symmetry with skeletal and dental malocclusions and found that there are relevance between chin symmetry and both skeletal and dental malocclusions, and between nasal symmetry and dental malocclusions. In a study analyzing the facial features of patients with chin deviations, % 68 of patients with chin deviation were reported to have Angle Class III malocclusion. [11] In our study, % 17.2 of overall participants had chin deviation, and the highest rate of chin deviation among participants was in the Angle Class III group, which was % 30.8. In this sense, our study's results were similar to those of the previous one. When the relevance between skeletal malocclusions and chin asymmetry was examined, chin asymmetry was found in % 43.8 of skeletal Class III group.

In another study evaluating facial asymmetry, it was stated that the highest asymmetry rate was seen in the lower third of the face.[10] In our study, % 14.4 of the patients had asymmetry in the nasal area and % 17.2 in the chin area. Our study's results were similar to those of the previous one in this sense as well.

In our study, the relevance between skeletal and dental malocclusions and having a large, narrow, long or short forehead were analyzed and a significant difference was found in individuals shape of forehead and both dental and skeletal malocclusion. % 30.8 of the patients with dental Class III malocclusion were found to have a wide forehead and this ratio was found to be % 28.1 in patients with skeletal Class III malocclusion and % 24.4 in patients with skeletal Class II malocclusion.

The distance between the nasofrontal angle and the nose is defined as the length of the nose and aesthetically a short nose is a developmental deformity characterized by increased nostril visibility with increased nasolabial angle. The ratio between nose length and nasal tip projection should ideally be 1:0.6. [13] In our study, we analyzed the relevance between the malocclusion status of skeletal and dental malocclusion individuals and the amount of nostril visibility and a statistically significant difference was found between skeletal malocclusion groups. According to this, % 25.0 of skeletal Class I individuals and % 38.4 of Class II individuals had increased nostril visibility while % 34.4 of Class III individuals had decreased nostril visibility.

Since soft tissues are the determinant of the position of the teeth on the dental arches, orthodontists are increasingly interested in the soft tissues surrounding the dental arches. However, their effect on tooth structures is not clearly explained.[16]

In our study, the relationship between vertical lip vermillion distance and skeletal and dental malocclusions were analyzed and a relevance was found. According to this, it was found that % 38.5 of the individuals with dental Angle Class III malocclusion also had insufficient upper lip vermillion area vertically and % 42.3 has insufficient fullness in the upper lip. In patients with class III sagittal direction classification, this rate is % 53.1.

In a study analyzing the relevance between mouth width assessed in photographs and skeletal and dental malocclusions, the mouth was considered "wide" in individuals with skeletal malocclusion. 17 There was a statistically significant relevance found between mouth width and skeletal malocclusions in our study presented ($p<0.05$). According to this, most individuals with skeletal Class III malocclusion (% 43.8) was found to have a wider than normal mouth. No statistically significant difference was found between mouth width and dental Class I,II,III malocclusions ($p>0.05$). However, in individuals with dental Class III malocclusion, the mouth width was found to be broader than normal (% 50.0).

The subject needs to be examined even more deeply; there is a need for new studies in which the effects of different factors are explored, conducted with individuals with different ethnicities and involving larger numbers of patients. In our study presented, the subject was evaluated in a general sense and statistical differences were found in many parameters. However, there was also no significant difference in many parameters. In the parameters for which a certain condensation cannot be determined; effect of factors such as that the number of samples being limited and individuals with relatively similar genetic being included into the study since it was conducted in a single location should be taken into consideration. Since the literature is often focused on cephalometric analyzes, studies have limited information available on soft tissue status. Although researchers including Sassouni made soft tissue descriptions decades ago, Orthodontists chose to identify both the diagnostic findings and the post-treatment findings with cephalometric data due to the dominant influence of Angle and other researchers, and this led to a cephalometry bubble in the literature.

Today, due to the intense effect of technological development, the presentation of diagnosis and end of treatment findings slightly shifted from the two-dimensional and unnatural framework to a three-dimensional and more perception-friendly environment.

CONCLUSION

Asymmetry is most notably in the lower third of the face; most commonly, chin asymmetry is seen in skeletal class III individuals and nasal asymmetry is seen in dental class III individuals. Also in dental Class III individuals, the forehead shape was found to be mostly "wide". When viewed from the front, it was found that the nostril visibility increased in skeletal Class I and II individuals, while it decreased in Class III individuals.

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