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Original Article

Facial Profile Aesthetics of Class I Patients with Sagittal and Vertical Variations: A Cross-Sectional Study Comparing Laypersons, Orthodontists, and Oral and Maxillofacial Surgeons

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Abstract

Introduction: Facial profile esthetics is an important component of facial attractiveness, and esthetic preferences vary across cultures. Limited evidence is available regarding how Iranian laypersons and dental professionals perceive variations in sagittal and vertical facial profiles. Thus, this study aimed to evaluate the esthetic perceptions of digitally altered sagittal and vertical facial profile variations in Class I subjects among Iranian laypersons, orthodontists, and oral and maxillofacial surgeons (OMFS).

Methods: This cross-sectional study was conducted at Hamadan Dental School, Iran, in 2024. Lateral facial profile photographs of one male and one female Class I model were digitally modified to create nine sagittal–vertical variations for each model. Overall,260 laypersons, 20 orthodontists, and 20 OMFS rated 18 images using a nine-point visual analog scale. Laypersons and professionals were selected using convenience and purposive sampling methods, respectively. Data were analyzed using independent t-tests and one-way ANOVA with Tukey's post-hoc tests. Assumptions of normality and homogeneity of variance were also assessed, and adjustment for multiple comparisons was applied where appropriate.

Results: Laypersons generally preferred moderate sagittal–vertical profiles, whereas dental professionals tended to assign higher scores to more protrusive profiles. However, this pattern was more consistently observed in the male profile (Scenario I) than in the female model. Gender differences were minimal, and age showed limited influence on ratings. Similarly, educational level had limited and scenario-specific effects, with some findings not remaining significant after correction for multiple comparisons. Orthodontists and OMFS demonstrated a high degree of agreement in their evaluations.

Conclusion: Esthetic preferences differed between laypersons and professionals, with laypersons favoring more moderate profiles and professionals representing a tendency toward protrusive profiles, particularly in male facial patterns. These findings may assist clinicians in understanding potential differences in esthetic perception, although further studies using larger and more diverse samples and three-dimensional imaging are necessary.

Keywords: Facial Profile, Dental Esthetics, Orthodontics, Oral and Maxillofacial Surgery, Visual Analog Scale

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Introduction

Facial beauty and physical attractiveness have been emphasized across cultures from ancient civilizations to modern societies. Although aesthetics is inherently subjective, early attempts were made to define the objective standards of beauty, including the concept of the "divine proportion" or the golden ratio, which has been described as a characteristic feature of visually appealing structures

(1). Some philosophers and mathematicians, such as Pythagoras and Euclid, sought to explain beauty through geometric principles, highlighting the long-standing scientific interest in facial harmony (2).

In modern dentistry, orthodontic treatment plays a crucial role not only in achieving functional occlusion but also in enhancing facial esthetics by improving skeletal relationships, dental alignment, and soft-tissue balance (3). According to evidence, individuals with harmonious facial proportions are often perceived as more attractive, socially competent, and successful (4). It is noteworthy that orthodontic interventions, particularly those affecting the position of anterior teeth and lip posture, can significantly influence the overall facial profile (5). However, due to the subjective nature of esthetic perception, discrepancies frequently arise between clinicians' evaluations and patients' expectations. As noted by Angle (1899), orthodontic treatment, depending on its execution, has the potential to either enhance or compromise facial attractiveness (6).

Likewise, there is no universally accepted standard for facial profile attractiveness, as esthetic preferences are influenced by multiple factors, including ethnicity, culture, age, gender, level of education, and professional background (7). Modern orthodontics emphasizes not only achieving occlusal stability but also creating a balanced and visually pleasing facial appearance. Nonetheless, differences between laypersons and dental professionals in esthetic perception remain a major clinical challenge, potentially affecting treatment planning and patient satisfaction (8). Understanding these perceptual differences is, therefore, essential for adopting a patient-centered approach in orthodontic and orthognathic practice (9).

Most existing studies have separately evaluated sagittal and vertical facial dimensions, and relatively few have investigated their combined effect on facial profile attractiveness under controlled conditions. Furthermore, many studies have primarily focused on professional evaluations, while the perspectives of the general population, who ultimately represent patients, have been underrepresented (10). In addition, limited research has directly compared orthodontists and oral maxillofacial surgeons (OMFS), despite their complementary roles in dentofacial treatment planning. Thus, understanding whether these professional groups share similar esthetic standards is important for interdisciplinary collaboration.

It is also crucial to acknowledge that methodological factors impact esthetic evaluation. Two-dimensional (2D) photographic manipulations, although useful for standardization, cannot perfectly replicate the complex soft-tissue changes associated with clinical orthodontic or surgical interventions. Hence, findings from such studies should be interpreted with caution in clinical contexts.

Despite growing interest in facial esthetics, data regarding esthetic preferences in the Iranian population remain limited. Cultural, regional, and social characteristics may significantly influence the perceptions of facial attractiveness, and findings from other populations may not be directly applicable. Moreover, previous studies in this field have frequently been limited by lack of standardized methodology, insufficient representation of laypersons, or absence of combined sagittal–vertical analysis.

Accordingly, the present study has been designed as an exploratory, cross-sectional investigation aimed at evaluating the esthetic perceptions of sagittal and vertical facial profile variations using a standardized set of digitally modified images. Rather than defining the normative standards of attractiveness, this study seeks to identify perception patterns and differences between laypersons and dental professionals within a controlled experimental framework.

The specific objectives of this study were (1) to assess the effect of sagittal and vertical variations on perceived facial attractiveness, (2) to compare esthetic preferences among laypersons, orthodontists, and OMFS, and (3) to evaluate the influence of demographic factors, such as age, gender, and educational level, on esthetic perception.

Materials and Methods

Study Design

This cross-sectional, exploratory study was conducted at the Faculty of Dentistry, Hamadan University of Medical Sciences, Iran, in 2024. The study protocol was approved by the Institutional Review Board of Hamadan University of Medical Sciences, and all procedures were performed in accordance with the principles of the World Medical Association Declaration of Helsinki (Fortaleza, Brazil, 2013). Additionally, written informed consent was obtained from all participants, including both evaluators and photographic models.

Model Selection

Two individuals (one male and one female) with skeletal Class I relationships, no history of orthodontic treatment or facial cosmetic procedures, and no facial deformities were selected as models. It should be noted that models were purposively selected to represent balanced baseline facial proportions in order to minimize confounding from extreme anatomical features.

We acknowledge that the use of only two models limits generalizability, as esthetic perception may be influenced by individual facial characteristics such as nasal morphology, lip thickness, and chin projection. This limitation is addressed in the Discussion section.

Image Acquisition and Digital Modification

Standardized lateral facial profile photographs were obtained under controlled conditions, including consistent lighting, fixed camera distance, and natural head position. In addition, digital modifications were performed in two dimensions using calibrated software:

- Vertical Dimension: Adjusted by modifying the lower anterior facial height to total anterior facial height ratio at 47%, 55%, and 63%
- Sagittal Dimension: Modified by shifting skeletal reference points A and B by 0 mm, 3 mm, and 6 mm

These values were selected based on established

cephalometric norms described in the literature. Overall, nine distinct profile variations were generated for each model, resulting in 18 images.

Considering that 2D digital manipulation cannot replicate complex soft-tissue responses following orthodontic or surgical treatment, the images were intended to isolate directional esthetic perception rather than simulate clinical outcomes.

Participants (Evaluators)

A total of 300 Iranian participants were enrolled in this study, including 260 laypersons, 20 orthodontists, and 20 OMFS.

Laypersons were recruited using convenience sampling from the general population. The inclusion criteria were age ≥ 18 years, Iranian nationality, and absence of professional training in dentistry or facial esthetics.

Orthodontists and OMFS were recruited through purposive sampling from academic institutions and private clinics. It should be noted that participants were board-certified specialists or senior residents in advanced training programs.

We acknowledge the imbalance in sample size between laypersons and professionals; therefore, comparisons between these groups are interpreted with caution.

Rating Procedure

The 18 modified images were presented to each evaluator in a randomized sequence. Participants evaluated each image using a 9-point visual analog scale (VAS) ranging from 1 (least attractive) to 9 (most attractive).

Further, demographic data, including age, gender, and educational level, were recorded, and to assess test–retest reliability, a subset of participants (n = 30) repeated the evaluation after a two-week interval. Then, reliability was determined using intraclass correlation coefficients (ICC), which demonstrated good to excellent agreement (ICC = 0.82–0.91).

Although the VAS was treated as a continuous scale for statistical analysis, we acknowledge that equal spacing between scale points may not be perceived identically across all participants.

Statistical Analysis

Data were analyzed using SPSS software, version 21 (IBM Corporation, Armonk, NY, USA). Descriptive statistics (means ± standard deviations) were employed to summarize ratings.

Furthermore, group comparisons were performed using independent t-tests for comparisons between two groups, one-way analysis of variance for comparisons across multiple groups, and Tukey's post-hoc test for pairwise comparisons.

Moreover, normality of data distribution and homogeneity of variances were assessed using the Kolmogorov–Smirnov and Levene's tests, respectively. When assumptions for parametric tests were violated, appropriate non-parametric tests were applied.

To control for the risk of type I error due to multiple comparisons, Bonferroni's correction was employed where appropriate, particularly in analyses involving educational level comparisons.

A P-value < 0.05 was considered statistically significant, and adjusted significance levels were reported where multiple testing corrections were applied.

It should be noted that no formal power calculation was performed because the sample size was not determined a priori but was based on feasibility; this limitation has been acknowledged.

Results

Sample Characteristics

In general, 300 evaluators participated in this study, including 260 laypersons, 20 orthodontists, and 20 OMFS. In terms of gender, the sample consisted of 138 males (46.0%) and 162 females (54.0%), with a mean age of 33.8 ± 12.1 years (range: 18–74 years).

The unequal distribution between laypersons and professional groups is acknowledged and should be considered when interpreting inter-group comparisons.

Gender-Based Ratings

Table 1 presents aesthetic ratings stratified by evaluator's gender. For the female profile, no significant differences were observed between male and female laypersons across most scenarios. However, a statistically significant difference was noted among professionals in Scenario A ($P = 0.014$), with female professionals assigning higher scores.

For the male profile, there were no statistically significant differences between male and female evaluators in either laypersons or professionals across all scenarios.

Overall, our findings indicated that gender-related differences in esthetic perception were minimal and largely scenario-specific.

Evaluator Type Comparisons

Table 2 provides comparisons between laypersons and professional evaluators. For the female profile (Table 2), remarkable differences between laypersons and professionals were found in Scenarios A ($P < 0.001$), C ($P = 0.023$), D ($P = 0.001$), and F ($P = 0.004$), with professionals generally assigning higher scores to more balanced or protrusive profiles.

For the male profile (Table 2), the results revealed meaningful differences between the two groups in most scenarios, except A and B. More precisely, professionals assigned the highest scores to Scenario I (6–63), whereas laypersons assigned relatively higher scores to Scenario B (3–55).

These findings demonstrated a divergence in esthetic preferences between laypersons and professionals, particularly for male facial profiles, with professionals tending to favor more protrusive configurations.

Table 1. Mean VAS Scores by Evaluator Gender for Female and Male Profiles

Profile	Scenario	Male Laypersons(Mean ± SD)	Female Laypersons(Mean ± SD)	*P*-Value	Male Professionals (Mean ± SD)	Female Professionals (Mean ± SD)	*P*-Value
	A (0–55)	7.11 ± 1.80	7.09 ± 1.78	0.602	7.96 ± 0.87	8.58 ± 0.61	0.014
	B (3–55)	3.88 ± 2.06	3.91 ± 1.98	0.172	4.57 ± 1.55	3.70 ± 1.26	0.061
	C (6–55)	3.41 ± 1.98	3.68 ± 2.15	0.949	3.03 ± 1.50	2.47 ± 1.23	0.203
	D (0–47)	6.50 ± 2.36	6.67 ± 2.33	0.745	7.96 ± 1.14	7.52 ± 0.94	0.204
Female	E (3–47)	4.15 ± 2.46	3.81 ± 2.06	0.664	4.00 ± 1.62	3.82 ± 2.15	0.761
	F (6–47)	3.11 ± 2.51	2.73 ± 2.06	0.786	1.80 ± 1.09	2.00 ± 1.11	0.580
	G (0–63)	6.51 ± 1.99	6.62 ± 2.20	0.960	6.23 ± 2.28	6.64 ± 2.26	0.561
	H (3–63)	6.05 ± 2.31	6.32 ± 2.06	0.097	6.07 ± 1.41	6.41 ± 1.12	0.416
	I (6–63)	4.22 ± 1.71	4.20 ± 1.98	0.188	3.26 ± 2.08	4.29 ± 1.72	0.100
	A (0–55)	3.41 ± 1.54	3.82 ± 1.93	0.071	3.40 ± 1.11	3.22 ± 1.21	0.931
	B (3–55)	6.50 ± 1.99	6.60 ± 1.98	0.670	6.73 ± 1.99	7.52 ± 1.58	0.917
	C (6–55)	5.12 ± 2.54	4.99 ± 2.18	0.656	3.07 ± 2.05	3.11 ± 1.93	0.316
	D (0–47)	3.96 ± 2.46	4.19 ± 2.81	0.496	5.07 ± 1.78	5.23 ± 1.09	0.552
Male	E (3–47)	3.73 ± 2.34	4.02 ± 2.71	0.360	2.80 ± 1.54	2.58 ± 1.69	0.232
	F (6–47)	4.09 ± 2.56	3.86 ± 2.43	0.465	2.23 ± 1.50	2.11 ± 0.99	0.188
	G (0–63)	5.38 ± 2.45	5.04 ± 2.40	0.273	6.26 ± 1.63	6.29 ± 1.53	0.699
	H (3–63)	6.14 ± 2.64	6.15 ± 2.15	0.958	7.57 ± 1.27	6.82 ± 1.62	0.324
	I (6–63)	6.55 ± 2.13	6.26 ± 2.53	0.330	7.65 ± 1.46	8.17 ± 0.80	0.945

Note. VAS: Visual analog scale; SD: Standard deviation

Table 2. Comparison of Mean VAS Scores Between Laypersons and Professionals for Female and Male Profiles

Profile	Scenario	Laypersons (Mean ± SD)	Professionals (Mean ± SD)	*P*-Value
	A	7.10 ± 1.78	8.20 ± 0.83	<0.001
	B	3.89 ± 2.01	4.23 ± 1.40	0.300
	C	3.56 ± 2.08	2.81 ± 1.41	0.023
	D	6.59 ± 2.34	7.79 ± 1.08	0.001
Female	E	3.96 ± 2.24	3.93 ± 1.83	0.932
	F	2.90 ± 2.27	1.88 ± 1.09	0.004
	G	6.57 ± 2.10	6.39 ± 2.25	0.607
	H	6.20 ± 2.17	6.20 ± 1.30	0.993
	I	4.21 ± 1.87	3.67 ± 1.99	0.084
	A (0–55)	3.64 ± 1.78	3.33 ± 1.14	0.255
	B (3–55)	6.56 ± 1.98	7.04 ± 1.86	0.135
	C (6–55)	5.05 ± 2.34	3.09 ± 1.98	<0.001
	D (0–47)	4.09 ± 2.66	5.13 ± 1.53	0.013
Male	E (3–47)	3.89 ± 2.55	2.72 ± 1.59	0.004
	F (6–47)	3.96 ± 2.48	2.18 ± 1.31	<0.001
	G (0–63)	5.19 ± 2.43	6.27 ± 1.57	0.005
	H (3–63)	6.15 ± 2.37	7.27 ± 1.45	0.003
	I (6–63)	6.38 ± 2.37	7.86 ± 1.26	<0.001

Note. VAS: Visual analog scale; SD: Standard deviation

Age-Based Differences

Table 3 summarizes comparisons across age groups. Among laypersons (Table 3), a statistically significant difference was observed only in Scenario A for the female profile ($P = 0.002$), where participants aged > 30 years assigned higher scores. Nevertheless, there were no significant differences in other scenarios.

For the male profile among laypersons, no consistent or statistically robust differences across age groups were identified (data not shown), suggesting the limited influence of age in this subgroup.

Among professional evaluators (Table 3), no statistically significant differences were found between age groups across any scenarios for the male profile.

Similarly, the findings revealed no statistically significant age-related differences among professionals for female profiles (data not shown).

In general, age had a limited and inconsistent influence

Table 3. Comparison of Mean VAS Scores by Age Group in Female Laypersons and Male Professionals

Profile	Evaluator Group	Scenario	<30 Years (Mean±SD)	>30 Years (Mean±SD)	*P*-Value
Female	Laypersons	A	6.76±2.02	7.46±1.41	0.002
		B	3.82±2.02	3.97±2.01	0.552
		C	3.56±2.04	3.56±2.13	0.999
		D	6.72±2.20	6.46±2.48	0.369
		E	4.09±2.23	3.81±2.26	0.315
		F	2.84±2.20	2.96±2.36	0.696
		G	6.77±2.14	6.36±2.06	0.124
		H	6.13±2.20	6.28±2.15	0.598
		I	4.25±1.98	4.16±1.74	0.702
Male	Professionals	A	3.45±1.18	3.21±1.12	0.495
		B	7.10±1.61	7.00±2.08	0.863
		C	3.20±2.28	3.00±1.73	0.746
		D	4.80±1.32	5.43±1.67	0.180
		E	2.25±1.37	3.13±1.68	0.070
		F	2.30±1.03	2.08±1.53	0.602
		G	6.50±1.70	6.08±1.47	0.399
		H	7.00±1.12	7.52±1.67	0.245
		I	8.25±0.85	7.52±1.47	0.059

Note. VAS: Visual analog scale; SD: Standard deviation

on esthetic perception across both laypersons and professionals.

Educational Level Differences

Table 4 presents comparisons based on educational level among laypersons. For male (Table 4) and female (Table 4) profiles, statistically significant differences were detected in Scenarios I ($P=0.002$) and H ($P=0.031$), respectively.

However, after adjustment for multiple comparisons using Bonferroni's correction, these differences did not remain statistically significant. Therefore, educational level showed limited and inconsistent effects on esthetic perception.

Comparison Between Orthodontists and Orthodontists and Oral Maxillofacial Surgeons

Table 5 provides comparisons between orthodontists and OMFS for the female profile.

No statistically significant differences were observed between these professional groups across any scenarios (all $P>0.05$).

Although direct tabular comparison for male profiles is not presented, both groups demonstrated similar rating patterns, with Scenario I receiving the highest scores among professionals (Table 2).

A borderline difference was found in male Scenario I ($P=0.050$), but this did not meet the threshold for statistical significance.

The findings indicated a high degree of agreement between orthodontists and OMFS in the perception of facial profile esthetics, implying similar esthetic standards across these specialties.

Discussion

The present exploratory cross-sectional study evaluated differences in the esthetic perception of sagittal and vertical facial profile variations among Iranian laypersons, orthodontists, and OMFS. Given the controlled design using only two models and 2D image manipulation, the findings should be interpreted as descriptive perception patterns rather than definitive or generalizable standards of facial attractiveness.

Overall, laypersons tended to prefer moderate sagittal relationships with balanced vertical proportions, whereas professionals assigned higher attractiveness scores to more protrusive configurations, particularly in the evaluation of male profiles (Scenario I). Importantly, this tendency was not consistently noted across both models, as professional preference for protrusion was mainly evident in the male profile, indicating that caution is warranted when interpreting the conclusions and generalizing the findings.

Differences between laypersons and professionals are consistent with the findings of previous studies, suggesting that professional training influences esthetic judgment by emphasizing cephalometric norms, whereas laypersons rely more on overall visual impression (7, 10). However, these differences were not uniform across all scenarios, and the presence of multiple statistical comparisons requires cautious interpretation, especially in light of adjusted significance thresholds.

Based on the findings, gender-based differences were limited and largely scenario-specific. While a statistically significant difference was observed among professionals in one scenario (female profile, Scenario A), most comparisons did not demonstrate meaningful differences, representing a relatively minor role of evaluator gender

Table 4. Comparison of Mean VAS Scores by Educational Level in Male and Female Laypersons

Profile	Scenario	Associate (Mean ± SD)	BA (Mean ± SD)	MA (Mean ± SD)	PhD (Mean ± SD)	*P*-Value
Male	A	3.71 ± 1.92	3.59 ± 1.65	3.77 ± 1.41	2.28 ± 1.49	0.210
	B	6.61 ± 1.87	6.49 ± 2.19	6.22 ± 1.95	7.75 ± 1.75	0.260
	C	5.16 ± 2.28	4.89 ± 2.35	4.94 ± 2.51	5.12 ± 2.85	0.870
	D	4.36 ± 2.72	3.83 ± 2.79	3.85 ± 2.13	3.00 ± 2.26	0.286
	E	3.89 ± 2.60	3.85 ± 2.42	3.60 ± 2.42	5.62 ± 2.92	0.247
	F	4.19 ± 2.63	3.92 ± 2.31	3.20 ± 2.29	3.87 ± 1.95	0.209
	G	5.25 ± 2.35	5.14 ± 2.63	5.25 ± 2.36	4.37 ± 2.13	0.790
	H	5.83 ± 2.47	6.53 ± 2.04	6.60 ± 2.62	6.00 ± 1.85	0.124
	I	5.94 ± 2.59	6.63 ± 2.15	7.54 ± 1.48	6.62 ± 1.65	0.002
Female	A	6.89 ± 1.97	7.16 ± 1.71	7.57 ± 1.06	8.00 ± 0.92	0.097
	B	3.83 ± 2.02	3.87 ± 1.98	4.22 ± 2.15	3.87 ± 1.88	0.779
	C	3.63 ± 2.09	3.68 ± 2.27	3.28 ± 1.67	2.50 ± 1.30	0.372
	D	6.47 ± 2.49	6.50 ± 2.27	7.08 ± 2.00	7.50 ± 1.06	0.363
	E	4.27 ± 2.26	3.74 ± 2.17	3.20 ± 2.22	4.12 ± 2.03	0.059
	F	3.08 ± 2.48	2.77 ± 2.12	2.54 ± 1.85	2.50 ± 1.69	0.524

Note. VAS: Visual analog scale; SD: Standard deviation; BA: Bachelor of Arts; MA: Master of Arts; PhD: Doctor of Philosophy

Table 5. Female Profile: Comparison Between Orthodontists and Oral and Maxillofacial Surgeon

Scenario	Orthodontists (Mean ± SD)	Surgeons (Mean ± SD)	*P*-Value
A	8.36 ± 0.65	8.04 ± 0.97	0.217
B	3.86 ± 1.55	4.61 ± 1.35	0.098
C	2.72 ± 1.31	2.90 ± 1.54	0.687
D	7.59 ± 1.05	8.00 ± 1.09	0.219
E	3.81 ± 1.94	4.04 ± 1.74	0.686
F	1.90 ± 1.06	1.85 ± 1.15	0.879
G	6.81 ± 2.10	5.95 ± 2.37	0.213
H	6.13 ± 0.94	6.28 ± 1.61	0.712
I	3.72 ± 1.75	3.61 ± 2.26	0.861

Note. SD: Standard deviation; ANOVA: Analysis of variance. All values are expressed as means ± SD. In addition, independent t-test was used for comparisons between the two groups. Further, one-way ANOVA followed by Tukey's post-hoc test was employed for multiple comparisons. Furthermore, normality and homogeneity of variance were evaluated using the Kolmogorov–Smirnov and Levene's tests, respectively. Bonferroni correction was also applied where appropriate to control for multiple comparisons. A P-value < 0.05 was considered statistically significant unless otherwise specified

in esthetic perception. Similarly, age showed only limited influence, with some differences found among laypersons but not among professionals.

Educational level had a slight impact on esthetic perception. Although some statistically significant findings were identified before adjustment, these did not remain significant after the application of Bonferroni's correction, indicating that such findings may represent type I error rather than true effects.

Orthodontists and OMFS demonstrated a high degree of agreement in their evaluations. The absence of statistically significant differences between these professional groups confirms comparable esthetic standards, likely due to similar training backgrounds. A borderline difference observed in one scenario ($P = 0.050$) was not considered statistically significant.

Several important limitations should be taken into consideration. First, the study utilized only one male and one female model, limiting external validity, as individual facial characteristics (e.g., nasal morphology, lip prominence, and chin shape) can influence esthetic perception. Moreover, the use of 2D digital images could not replicate complex soft-tissue dynamics associated with orthodontic or surgical interventions. Likewise, the imbalance in sample size between laypersons and professionals may have influenced statistical comparisons. Furthermore, the study was conducted in a single geographic region (Hamadan), which may have limited generalizability to the broader Iranian population.

Additionally, the use of a 9-point VAS assumes equal interval perception, which may not hold true across different individuals and professional groups. Finally, the absence of an a priori sample size calculation represents a methodological limitation.

Despite these limitations, this study provided valuable insight into differences in esthetic perception between laypersons and dental professionals within a culturally specific context, emphasizing the importance of considering patient expectations during treatment planning.

Conclusion

The findings of this exploratory study revealed that Iranian

laypersons tend to prefer moderate sagittal and balanced vertical facial profiles, whereas dental professionals show a tendency toward more protrusive configurations, especially in the evaluation of male profiles.

However, given the methodological limitations, including the use of only two models, 2D image manipulation, and the exploratory design, these findings should not be interpreted as the generalizable standards of facial attractiveness or as guidance for clinical decision-making.

The results also highlighted potential differences in perception between clinicians and patients, which may be beneficial for improving communication during orthodontic and orthognathic treatment planning. Nonetheless, further studies using larger, more diverse samples, multiple models, and 3D imaging techniques are required in this regard.

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Authors' Contribution

Conceptualization: Vm
Data Curation: Vm,
Formal Analysis: Mf
Funding Acquisition: Hf
Investigation:
Methodology:
Project Administration:
Resources:
Software:
Supervision: Sb
Validation: Mf
Visualization:
Writing–Original Draft: Vm
Writing–Review & Editing: Hf And Mf
All Authors Have Read And Approved The Final Manuscript.

Competing Interests

The authors declare that they have no financial or non-financial conflict of interests related to this study.

Ethical Approval

The study protocol was approved by the Institutional Review Board of Hamadan University of Medical Sciences (approval code: insert if available). Moreover, the study was conducted in accordance with the principles of the World Medical Association Declaration of Helsinki (Fortaleza, Brazil, 2013). Written informed consent was also obtained from all participants, including both evaluators and photographic models.

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