

Original Article

Greek Version of the Orofacial Esthetic Scale (OES-Gr): Dental-Patient Preliminary Psychometric Evaluation and Measurement of Invariance Across Sex, Age and Educational Level

Constantinos Togas, MSc, MSc, PhD

Social Worker-Psychologist, Post-doc researcher, Panteion University of Social and Political Sciences, Athens, Greece

George Alexias

Professor of Sociology of Health and Body, Department of Psychology, Panteion University of Social and Political Sciences, Athens, Greece

Vasileios Stamadianos, DDS, MSc in Health Unit Management

Hellenic Open University, Patras, Greece

Christina Makri, DDS, MSc in Health Care Management

Hellenic Open University, Patras, Greece

Constantina-Athanasia Tasioudi, DDS, Msc in Surgical Anatomy

National and Kapodistrian University of Athens, Greece

Correspondence: Togas Constantinos, Andrea Labrou 28, Megalopolis, Arkadia, Greece, Postal Code: 22200, e-mail: togascostas@yahoo.gr

Abstract

Background: Orofacial esthetics is one of the most important dental patient-reported outcomes.

Aims: To examine the psychometric properties of the Greek version of the Orofacial Esthetic Scale (OES-Gr) and to measure differences across sex, age and educational level.

Methodology: A cross-sectional study was conducted with a convenience sample of 680 dental patients (44.9% men - 55.1% women) in two settings in Athens, Greece: The first setting was a private dental clinic and the second was a public dental clinic in "Korgialeneio-Benakeio" Hellenic Red Cross Hospital. The participants' mean age was 40 years (SD=12.28). The questionnaire administered included sociodemographic information, OES-Gr and items 6 and 8 of Oral Health Impact Profile-14 (OHIP-14). The duration of the study was 11 months (April 2021-February 2022) and data analyses were conducted by SPSS v.26.

Results: The analysis supported a unidimensional structure for the OES-Gr. Cronbach's α for the 7 items of the OES-Gr was .94 and average inter-item correlation was .73. The correlation between the summary score of the seven OES-Gr items and the OES global assessment (item 8) was high ($r = .91, p < .01$). There was also a negative correlation between the seven-item summary score of the OES-Gr and items 6 and 8 of the OHIP-14 ($r = -.476, p < .01$ and $r = -.50, p < .01$ correspondingly). It is noteworthy that OES higher scores mean better satisfaction from the orofacial appearance, but OHIP-14 higher scores indicate lower satisfaction. Thus, the convergent validity of the scale was adequate. Concerning demographic differences, younger and highly educated participants were more satisfied with their orofacial appearance.

Conclusions: The OES-Gr is suitable for research and clinical purposes in dental patients in Greece, as a way of assessing the orofacial esthetics satisfaction and concerns. However, these results are preliminary and need further examination by future researches.

Key-words: Orofacial Esthetic Scale, Greek version, psychometric properties, dental patients

Introduction

“Body image” is a multidimensional concept reflecting how people see, think, feel and act towards their bodies (Cash & Pruzinsky, 2002). As a part of body image, face attractiveness constitutes a substantial key of individual’s own attractiveness including face symmetry, nose, eyes, and last but not of least importance dental appearance - which has been considered as the most effective feature of one’s attractiveness (Alhajj et al., 2020).

In the pursuit of the concept of body image and face attractiveness, orofacial esthetics is an essential parameter (Mursid, Maharani & Kusdhany, 2020). The term “orofacial” incorporates a particular region of the body consisting of the face, mouth, teeth, including lips, while gingiva is a more suitable term to evaluate comprehensive esthetics in prosthodontics (Larsson, 2010). The esthetic concept refers to the definition of esthetics in dentistry, which is the theory and philosophy closely related to beauty and the beautiful, as achieved through its form and/or color (Dannemand & Ozhayat, 2014).

Orofacial esthetics is influenced by the position, shape, size, and shade of the teeth; the architecture, texture, color, and lines of the gingiva and lips; as well as of the shape of the jaws (Persic et al., 2011). Hence, untreated carious lesions, unaesthetic restorations, and the missing of any of the anterior teeth can more often than not worsen the perception of dental appearance (Alhajj et al., 2020). Orofacial esthetics is one of the most important dental patient-reported outcomes (Simancas-Pallares, 2018), occupying an important component within the general (Health-Related) Quality of Life and the specific Oral Health-Related Quality of Life (OHRQoL) concepts (Isiekwe et al., 2016). Thus, dentofacial attractiveness seems to be strongly associated with the psychosocial well-being of any individual (Davis, Ashworth, & Spriggs, 1998) and its evaluation is important in order to define the demand for esthetic dental treatment and for clinical decision-making (Reissmann et al., 2019).

However, little information is available regarding dental patients’ perceptions of a pleasing esthetic appearance (Persic et al., 2011). Still, assessment is

challenging because several factors, such as culture, environment, social norms, age, sex, and education level affect a patient’s esthetic perceptions (Persic et al., 2011).

The existing literature indicates that the orofacial appearance impairment is different between genders, with women exhibiting greater psychosocial impact and dissatisfaction (Reissman et al., 2019; Zaugg et al., 2022).

Regarding age, older individuals appear to be less satisfied with orofacial appearance (Carlsson et al., 2014). Other researchers, in contrast, reported that the parameter of age did not have any significant effects on dental esthetics (Enabulele & Omo, 2017; Alhajj et al., 2020). Good oral health and/or high education level are also significant determinants of one’s more positive perception of orofacial appearance (Alhajj et al., 2020).

Esthetic perception is subjective and differs considerably between patients and dentists (Alhajj et al., 2020). Therefore, formulating a concrete treatment goal and good communication between dentists and patients is essential. Thus, valid and reliable instruments are required to systematize and accelerate this process (Mursid, Maharani & Kusdhany, 2020).

People’s own self-perception of orofacial appearance can be evaluated by measuring the satisfaction of orofacial esthetics and the impact of its impairment (Mursid, Maharani & Kusdhany, 2020). Various instruments (e.g. Geriatric Oral Health Assessment Index, Oral Impacts on Daily Performances and Oral Health Impact Profile) have been proposed to evaluate general Oral Health-Related Quality of Life. However, there are only a few items whose content is related to esthetic aspects and therefore they cannot be considered to be sufficient to specifically evaluate the perception of one’s orofacial appearance (Larsson et al., 2010; Mehl et al., 2009).

To overcome this dearth, Larsson et al. (2010) introduced the Orofacial Esthetic Scale (OES), an 8-item instrument for measuring self-reported orofacial esthetics. The questionnaire was designed to be used as a standalone instrument to measure direct esthetic impacts. However, it can also be used in parallel with broader instruments (eg. the

OHIP) that cover indirect esthetic impacts comprehensively. OES, in its original validation, exhibited good convergent validity, internal consistency and test-retest reliability (Larsson et al., 2010).

In line with the authors' knowledge there are no other questionnaires that evaluate orofacial esthetics in the Greek language. Therefore, the aim of this study was besides examining the factor structure of the Greek version of the Orofacial Esthetic Scale in a sample of dental patients to equally test its psychometric properties. The preliminary measurement of invariance in OES across sex, age and educational level was also taken into consideration.

Method

Translation of the questionnaire: The translation strategy adopted was based primarily on minimal translation criteria developed by the Scientific Advisory Committee of the Medical Outcomes Trust (2002) and secondly on a set of guidelines as set by the International Test Commission (Van de Vijver & Hambleton, 1996). The translation was performed using a multiple forward and backward translation protocol. Two independent bilingual professionals translated the questionnaire into Greek (forward translation). Their mother tongue was the Greek language and their level of English was advanced. Then followed the reconciliation report, which is the alignment process of the two translations from a bilingual professional whose mother tongue is the Greek language. Upon that, the reconciled Greek version of the questionnaire was retranslated into English by two native English speakers, who were blinded to the original version (backward translation).

The last step of the procedure was the pretesting of the translated instrument. Fifteen people were randomly assigned to participate in the cognitive debriefing process. Upon completing the questionnaire, they were asked for their own interpretation of the questions, their general impression in relation to the clarity of the items; upon doing so, they were asked to provide translation alternatives. Moreover, they were posed questions regarding the comprehensiveness of the instructions and their ability to complete it on their own. Their comments and suggestions were used

to prepare the instructions and to ensure that the participants would not have any kind of difficulty while reading the items. The average time for completing the questionnaire was one minute. There was an attempt to maintain all the key features of the questionnaire in the Greek language, but all the necessary changes in order to adjust it to the Greek culture were conducted as well.

Procedure: A cross-sectional study was conducted with a convenience sample of 680 dental patients ($n = 680$) in two settings in Athens, Greece: The first setting was a private dental clinic in Athens (530 patients-77.9%) and the second setting was a public dental clinic in "Korgialeneio-Benakeio" Hellenic Red Cross Hospital (150 patients-22.1%).

The duration of the study was 11 months (01 April 2021-28 February 2022) and the questionnaires were given out in relation to the daily schedule of the clinics. The participants were selected in line with the following eligibility criteria:

- 1) adult dental patients, mentally capable to perceive the questions of the psychometric tools
- 2) one's ability to speak and understand the Greek language
- 3) one's willingness to participate voluntarily in the study.

Patients requiring prosthodontic treatment and the ones who did not wish to participate voluntarily or had severe psychiatric symptoms and/or were unable to respond to the questions were excluded from the study.

A composite self-administered questionnaire was used: the first part included sociodemographic information and the second included the translated Orofacial Esthetic Scale and items 6 and 8 of Oral Health Impact Profile-14 (OHIP-14). OHIP-14 has been translated and culturally adapted to the Greek population and these two items were used to examine the convergent validity of the OES.

Participants: The sample was comprised of 680 dental patients and their mean age was 40 years ($M=40.00$, $SD=12.28$, $Min=18$, $Max=68$, $Range=50$). The rest demographic characteristics of the sample are presented in Table 1.

Measures

Demographics: Patients reported their gender, age, marital status, as well as their educational level and occupation.

Orofacial Esthetic Scale (OES) (Larsson et al., 2010): It assesses orofacial esthetics and contains eight items. It was originally developed in prosthodontic patients in Swedish and was accompanied by translation into English. Later its use was extended to the general population (John et al., 2012). Individuals are asked how they feel about the appearance of their face, mouth, teeth, and tooth prosthetics. They respond on a 11-point scale (0 - “very dissatisfied”, 10 - “very satisfied”) or mark the option “not applicable” if they do not wish to respond. OES items refer to seven esthetic components (face, facial profile, mouth, rows of teeth, tooth shape/form, tooth color, gum). These seven items are combined into a summary score ranging from 0 to 70 and higher scores indicate higher satisfaction. An eighth OES item requests an overall impression of orofacial appearance and characterizes the patient’s global assessment of orofacial esthetics. The OES is the most widely used instrument for self-evaluation in orofacial esthetics research (Mursid, Maharani & Kusdhany, 2020) and has been translated in several languages (eg. Portuguese, French, German, Dutch, Croatian, Chinese, Albanian, Spanish etc) (Campos et al., 2020; N' Guyen-Van, Moreau & Braud, 2019; Reissmann et al., 2015; Wetselaar et al., 2015; Persic et al., 2011; Zhao & He, 2013; Bimbashi et al., 2015; Simancas-Pallares et al., 2018; Alhadj et al., 2020). It has also been validated in adult prosthodontic patients, in dental patients in general (Reissmann et al., 2019) or in the adult general population (eg. John et al., 2012). In addition, some studies have examined its psychometric properties, attesting to its validity and reliability (John et al., 2012; Reissmann et al., 2019).

Items 6 and 8 of Oral Health Impact Profile-14 (OHIP-14) (Slade, 1997): The OHIP-14 is a shortened version of the OHIP-49. It is a very popular instrument for Measuring Oral Health–Related Quality of Life (Mehl et al., 2009) and is reliable and valid (Gera, Cattaneo & Cornelis, 2020). However, it fails to evaluate dental appearance sufficiently by itself (Mehl et al.,

2009). In this study, we used only the following two items of the Greek version of OHIP-14 (Papagiannopoulou et al., 2012) that serve as core indicators of orofacial appearance:

-Item 6, “Have you felt uncomfortable about the appearance of teeth, mouth or dentures?”

-Item 8, “Have you avoided smiling because of problems with your teeth, mouth or dentures?”

Responses are scored in a 5-point Likert scale (0=never - 4=very often) and higher scores indicate more problems. In this study, Cronbach’s alpha of the total score of both items 6 and 8 was .83.

Data analysis: Data analysis was conducted by using SPSS v.26 and the statistical significance was set to 5%. Results were obtained by means of descriptive statistics, T-test, ANOVA and Pearson’s correlation. Moreover, an Exploratory Factor Analysis (EFA) was carried out to examine the factor structure of the Orofacial Esthetic Scale.

Bartlett’s test of sphericity and the Kaiser-Meyer-Olkin index were used to examine if the OES items had adequate variance for factor analysis. In EFA, the number of factors was determined according to those with eigenvalues>1, as well as by examining the scree plot. Factor loadings >0.40 were defined as significant.

Internal consistency reliability was assessed by means of Cronbach’s alpha coefficient and inter-item correlation. Alpha values were interpreted as following: acceptable (0.60–0.70); good (0.70–0.90); excellent (>0.90) (Kline, 1999). In addition, for each item, the “inter-item correlations”, “corrected-item total correlations”, the “squared multiple correlations” and “Cronbach’s alpha if item deleted” values were computed.

Convergent validity was assessed by computing the Pearson’s correlation between: 1) the OES summary score Items 1-7) and the global assessment of Orofacial Appearance (item 8) and 2) the summary score of items 6 and 8 of the OHIP-14 and the OES summary score as well as the global assessment of Orofacial Appearance.

Ethics: An approval was sought from the Korgialeneio-Benakeio hospital’s Research and Ethics Committee, which was granted. Signed informed consent was obtained from all

participants. They took part on a voluntary basis and were not remunerated for their participation. They were offered assurance of anonymity and confidentiality of the information provided and they were informed that they could cease completing the questionnaire at any time if they wished to do so. The participants were also assured that the collected data would be used only for the purpose of the study and that their decision to withdraw would in no way compromise the standards of the care provided.

Results

According to the eligibility criteria, 680 dental patients were selected to participate in the study, all of them accepted (response rate: 100%).

The structure of the Orofacial Esthetic Scale (OES): An Exploratory Factor Analysis (using the Principal Components Analysis with Varimax rotation) was carried out to determine the factor structure of the OES. Bartlett's test of sphericity ($\chi^2 = 4945.71, p < .001$) and the Kaiser Meyer-Olkin index (.881) confirmed that the OES items had an adequate variance for factor analysis. The analysis revealed one-factor structure (eigenvalue > 1 - Kaiser criterion) of the OES-Gr explaining 74.29% of the variance. The scree plot supported the presence of one dominant latent factor, too (figure 1). In addition, all items loaded on one factor and presented high communalities (>0.63) and loadings, ranging from .790 to .928 (table 2). The Inter-item correlations of the 7 items of the OES are shown in Table 3. Descriptive statistics for the scales are presented in table 4.

Internal consistency reliability of the OES: The internal consistency reliability of the 7 items of the OES was analyzed by means of Cronbach's α coefficient and its value was .94. Cronbach's α did not change substantially when a particular item was deleted from the scale (table 5). OES items correlated well with each other, indicated by an average inter-item correlation of .73. The weakest correlation was found between OES 2 - OES 7 items ("appearance of your facial profile-your gum's appearance") and the strongest correlation was found between OES 3 - OES 4 items ["Your mouth's appearance (smile, lips, and visible teeth) - appearance of your rows of teeth"]. Individual items also correlated well with the OES summary

score (table 3). The above indicate that the scale's overall internal consistency reliability was excellent.

Validity: The correlation between the summary score of the seven OES items and the global assessment (OES' eighth item) as a measure of score validity was determined. This correlation was high ($r = .91, p < .01$). For OES, higher scores mean better satisfaction from the Orofacial Appearance, but for OHIP-14, higher scores indicate lower satisfaction. Thus, negative correlations between OES and items 6 and 8 of the OHIP-14 were expected. In fact, there was a high negative significant correlation between the seven-item summary score of the OES and items 6 and 8 of the OHIP-14 ($r = -.476, p < .01$ and $r = -.50, p < .01$ correspondingly). Similarly, the summary score of the two questions of the OHIP-14 (items 6 and 8) significantly correlated (negative correlation) to the OES summary score ($r = -.528, p < .01$) as well as to the OES' global assessment (item 8) ($r = -.504, p < .01$). The above results indicate an adequate convergent validity of the Greek version of the Orofacial Esthetic Scale (OES-Gr).

Differences across sex, age and educational level: No significant differences were determined between men and women on the OES summary score. In contrast, the effect of age was significant, albeit very small according to the effect size index [$F(4,673) = 3.54, p = .007, \eta_p^2 = .021$]. According to LSD post hoc tests, younger participants (18-27 years old) exhibited significantly higher score on OES summary (55.45) than the rest age categories (28-37 years old=51.91, 38-47 years old= 51.40, 48-57 years old=52.31, 58-67 years old=50.79). In addition, the effect of educational level was also significant, albeit very small according to the effect size index [$F(6,673) = 2.84, p = .01, \eta_p^2 = .025$]. According to LSD post hoc tests, Lyceum graduates had significantly lower score on OES summary (50.19) than higher education students (54.61), higher education graduates (52.79), MA/M.sc. holders (53.85) and Ph.D. holders (56.15). That is, younger people and those who are highly educated are more satisfied with their orofacial appearance. The above result in relation to one's age was further confirmed by the correlation between age and OES summary score ($r = -.113, p = .003$).

Table 1. Demographic Characteristics of the Sample- Information about the oral health

	Frequency	Percentage (%)
Gender		
Men	305	44.9
Women	375	55.1
Age group		
18-27 years	130	19.2
28-37 years	162	23.9
38-47 years	187	27.6
48-57 years	141	20.8
58-67 years	58	8.6
Marital status		
Single	245	36.0
Married	319	46.9
Partnered	80	11.8
Separated	12	1.8
Divorced	17	2.5
Widow/widower	7	1.0
Level of education		
Primary school	5	0.7
Secondary school	27	4.0
Lyceum	182	26.8
Higher education (students)	57	8.4
Higher education (graduates)	269	39.6
Ma/M.Sc. holder	120	17.6
Ph.D holder	20	2.9
Occupation		

Student	47	6.9
Unemployed	31	4.6
Civil Servant	193	28.4
Private employee	251	36.9
Housewife	26	3.8
Freelancer	98	14.4
Pensioner	31	4.6
Farmer	1	0.1
Unskilled Worker	2	0.3

Figure1. Scree Plot

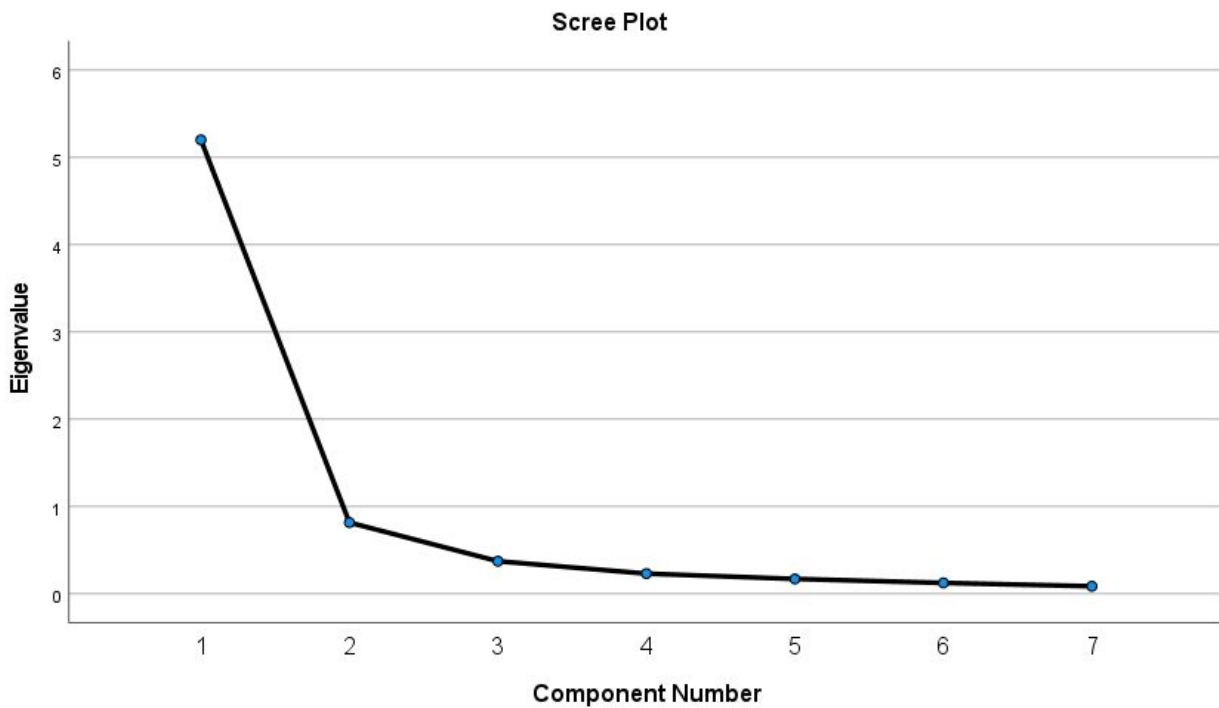


Table 2. Items and factor loadings of the Orofacial Esthetic Scale (OES)

		Factor I
How do you feel about:		
1	Your facial appearance	.811
2	Appearance of your facial profile	.790
3	Your mouth's appearance (smile, lips, and visible teeth)	.911
4	Appearance of your rows of teeth	.928
5	Shape/form of your teeth	.906
6	Color of your teeth	.868
7	Your gum's appearance	.807

Table 3. Inter-item correlation matrix of OES-Gr.

	OES summary score	OES 1	OES 2	OES 3	OES 4	OES 5	OES 6	OES 7	OES 8
OES 1	.802**	1							
OES 2	.781**	.871**	1						
OES 3	.908**	.682**	.677**	1					
OES 4	.929**	.640**	.628**	.893**	1				
OES 5	.909**	.622**	.601**	.815**	.878**	1			
OES 6	.872**	.581**	.558**	.738**	.802**	.786**	1		
OES 7	.819**	.538**	.475**	.659**	.719**	.729**	.748**	1	
OES 8	.910**	.790**	.767**	.833**	.820**	.799**	.761**	.726**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Descriptive statistics for the Greek Version of the Orofacial Esthetic Scale (OES-Gr) and OHIP-14 (items 6 & 8).

Item	Mean	SD	Min	Max	Range
OES-item 1	7.826	1.520	2	10	8
OES-item 2	7.628	1.568	1	10	9
OES-item 3	7.525	1.768	0	10	10
OES-item 4	7.397	1.882	0	10	10
OES-item 5	7.428	1.873	0	10	10
OES-item 6	7.038	1.809	0	10	10
OES-item 7	7.566	1.935	0	10	10

Summary score (items 1-7)	52.409	10.661	8	70	62
OES-item 8	7.604	1.564	0	10	10
OHIP-14 (item 6)	2.065	1.060	1	5	4
OHIP-14 (item 8)	1.949	1.018	1	5	4
Summary score of the items 6 & 8 of OHIP-14	4.013	1.920	2	10	8

Table 5. Further reliability analysis of the OES-Gr

OES-Gr items	Corrected Item - Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Item 1	.742	.782	.938
Item 2	.712	.775	.940
Item 3	.871	.824	.926
Item 4	.897	.876	.924
Item 5	.869	.802	.926
Item 6	.821	.717	.931
Item 7	.743	.624	.939

Discussion

This study was conducted in order to evaluate the psychometric properties of the Greek version of the Orofacial Esthetic Scale (OES-Gr) in dental patients in general. These psychometric properties were evaluated upon the translation and cultural adaptation of the OES into the Greek language, taking into account that this constitutes the first such study in Greece. The main finding of the study is the fact that the OES-Gr consists of one factor and its reliability and validity are adequate. Exploratory factor analysis supported the unidimensionality of OES found in the original validation (Larsson et al., 2010). This result is consistent to that found in all the studies that examined the structure of the OAS in adult prosthodontic patients as well as in dental patients in general (Reissmann et al., 2019) or in the adult general population (eg. John et al., 2012). It is also similar to that found in the various studies that culturally adapted the OES in other languages (eg. Portuguese, French, German, Dutch, Croatian, Chinese, Albanian, Spanish etc). The analysis indicated that the overall internal consistency

reliability of the scale was excellent. In addition, the analysis of the convergent validity showed that the correlation between the summary score (items 1-7) and the global assessment (item 8) of the OES was high and the OES was positively associated with items 6 and 8 of OHIP-14 (which serve as core indicators of orofacial appearance). The above findings indicate an adequate convergent validity of the scale. Similar results concerning the reliability and validity of the OES have been established in other cultures/countries as well (Bimbashi et al., 2015; John et al., 2012; Larsson et al., 2010; Reissmann et al., 2015, 2019; Zhao & He, 2013; Persic et al., 2011; Simancas-Pallares et al., 2018) indicating this is a robust instrument. The adequate validity and reliability of OES-Gr observed in this study strengthens the use of this scale to obtain more accurate evidence related to orofacial esthetics in dental patients. No significant differences were found between men and women on OES summary score. This result is similar to that established by Campos et al. (2020). However, other studies have suggested that women have greater psychosocial impact and dissatisfaction

with orofacial appearance (Kang & Kang, 2014; Reissman et al., 2019; Zaugg et al., 2022). Age was perceived to be a significant determinant of orofacial esthetics in this study and younger people were more satisfied with their orofacial appearance. Very similar results are reported by Carlsson et al. (2014). Other researchers, in contrast, have reported that age has no significant effects on orofacial esthetics (Enabulele & Omo, 2017; (Alhajj et al., 2020). Significant differences were also found across the educational level in this study and those who were highly educated were more satisfied with their orofacial appearance. This result is consistent with that found by Alhajj et al. (2020). The strengths of this research included its originality for the Greek general population and its great response rate. As for the limitations, the sampling method used in this study (convenience sample) potentially introduces biases with regards to the representativeness of the general population. However, this sampling strategy is commonly used in validation studies (John et al., 2012). Moreover, the test-retest reliability of the scale was not examined in this study and highly educated dental patients were overrepresented in the sample. Additional psychometric evaluation of the OES

will be very useful. Future research can potentially investigate the test-retest reliability of the OES (which was not examined in this study) and examine the sociodemographic variables affecting the orofacial esthetics. It is worth noting that our findings demonstrate preliminary evidence and require further examination. This scale could also be validated in the Greek general population or in special samples (eg. university students, prosthodontic patients etc).

Conclusion: The present study showed a unidimensional factor structure of the OES in a Greek sample of dental patients, while its reliability and validity were equally confirmed. The Greek version of the OES is both reliable and valid and has adequate psychometric properties. Moreover, it is highly acceptable by the participants because it is brief, comprehensible and easy to complete. Consequently, it can be used to measure self-perceived orofacial esthetics in Greek-speaking dental patients and it is suitable for clinical use in daily practices as well as for research purposes. However, the above results are preliminary and need further examination by future researches.

Appendix

The English and Greek (showed in italics) versions of the Orofacial Esthetic Scale.

Orofacial Esthetic Scale	Κλίμακα Στοματοπροσωπικής αισθητικής
How do you feel about the appearance of your face, your mouth, your teeth and your tooth replacements (prostheses, crowns, bridges and implants)?	<i>Πώς αισθάνεστε σχετικά με την εμφάνιση του προσώπου σας, του στόματος, των δοντιών σας και των εργασιών αποκατάστασης που έχουν γίνει στα δόντια σας (προσθετικά, στεφάνες, γέφυρες και εμφυτεύματα);</i>
0: Very dissatisfied-10: Very satisfied	<i>0=Πολύ δυσαρεστημένος-10=πολύ ικανοποιημένος</i>
1 Your facial appearance	<i>1 Την εμφάνιση του προσώπου σας</i>
2 Appearance of your facial profile	<i>2 Την εμφάνιση του προφίλ σας</i>
3 Your mouth's appearance (smile, lips, and visible teeth)	<i>3 Την εμφάνιση του στόματός σας (χαμόγελο, χείλη και ορατά δόντια)</i>
4 Appearance of your rows of teeth	<i>4 Την εμφάνιση της οδοντοστοιχίας σας</i>
5 Shape/form of your teeth	<i>5 Το σχήμα/μορφή των δοντιών σας</i>
6 Color of your teeth	<i>6 Το χρώμα των δοντιών σας</i>
7 Your gum's appearance	<i>7 Την εμφάνιση των ούλων σας</i>
8 Overall, how do you feel about the appearance of your face, your mouth and your teeth?	<i>8 Συνολικά, πώς αισθάνεστε σχετικά με την εμφάνιση του προσώπου, του στόματος και των δοντιών σας;</i>

References

- Alhajj MN, Ariffin Z, Celebić A, Alkheraif AA, Amran AG & Ismail IA (2020) Perception of orofacial appearance among laypersons with diverse social and demographic status. *PLoS One*, 15(9):e0239232. <https://doi.org/10.1371/journal.pone.0239232>.
- Bimbashi V, Celebić A, Staka G, Hoxha F, Peršić S & Petričević N. (2015) Psychometric properties of the Albanian version of the Orofacial Esthetic Scale: OES-ALB. *BMC Oral Health*, 15, 97. <https://doi.org/10.1186/s12903-015-0083-x>
- Campos LA, Marôco J, John MT, Santos-Pinto A & Campos JADB (2020) Development and psychometric properties of the Portuguese version of the Orofacial Esthetic Scale: OES-Pt. *Peer J*, 17(8): e8814. <https://doi.org/10.7717/peerj.8814>
- Carlsson V, Hakeberg M, Blomkvist K & Wide Boman U (2014) Orofacial esthetics and dental anxiety: associations with oral and psychological health. *Acta Odontologica Scandinavica*, 72 (8): 707-713. <https://doi.org/10.3109/00016357.2014.898786>.
- Cash TF. & Pruzinsky T. (2002) Future challenges for body image theory, research and clinical practice. In T. F. Cash & T. Pruzinsky (Eds.). *Body image: A handbook of theory, research, and clinical practice* (2nd ed.), Guilford, New York, USA.
- Dannemand K. & Ozhayat E.B. (2014) Recognition of patient-reported impairment in oral aesthetics. *Journal of oral rehabilitation*, 41 (9): 692-699.
- Davis L.G., Ashworth, P.D. & Spriggs L.S. (1998) Psychological effects of aesthetic dental treatment. *Journal of dentistry*, 26 (7): 547-554.
- Enabulele J.E. & Omo J.O. (2017) Self-perceived satisfaction with dental appearance and desired treatment to improve aesthetics. *African Journal of Oral Health*, 7(1): 1-7. <https://doi.org/10.4314/ajoh.v7i1.162230>
- Gera A., Cattaneo P.M. & Cornelis M. (2020) A Danish version of the oral health impact profile-14 (OHIP-14): translation and cross-cultural adaptation. *BMC Oral Health*, 20(1): 254. <https://doi.org/10.1186/s12903-020-01242-z>.
- Isiekwe G.I., Sofola O.O., Onigbogi O.O., Utomi I.L., Sanu O.O. & daCosta O.O. (2016) Dental esthetics and oral health-related quality of life in young adults. *American Journal of Orthodontics and Dentofacial Orthopedics*, 150: 627-636.
- John M.T., Larsson P., Nilner K., Bandyopadhyay D. & List T. (2012). Validation of the Orofacial Esthetic Scale in the general population. *Health and Quality of Life Outcomes*, 10(135):1-7.
- John M.T., Reissmann D.R., Feuerstahler L., Waller N., Baba K., Larsson, P., Celebić A, Szabo G, Renner Sitar K (2014) Factor analyses of the Oral Health Impact Profile - overview and studied population. *Journal of Prosthodontic Research*, 58: 26-34.
- Kang J.M. & Kang K.H. (2014) Effect of malocclusion or orthodontic treatment on oral health-related quality of life in adults. *The Korean Journal of Orthodontics*, 44: 304-311.
- Kline P. (1999) *Handbook of Psychological Testing*. Routledge, London.
- Larsson P., John M.T., Nilner K., Bondemark L. & List T. (2010) Development of an Orofacial Esthetic Scale in prosthodontic patients. *The International Journal of Prosthodontics*, 23: 249-256.
- Mehl C., Kern M., Freitag-Wolf S., Wolfart M., Brunzel S. & Wolfart S. (2009) Does the Oral Health Impact Profile questionnaire measure dental appearance? *The International Journal of Prosthodontics*, 22(1): 87-93.
- Mursid S., Maharani D.A. & Kusdhany L.S. (2020) Measuring Patient's Orofacial Esthetics in Prosthodontics: A Scoping Review of a Current Instrument. *The Open Dentistry Journal*, 14: 161-170.
- N' Guyen-Van T.L., Moreau N. & Braud A. (2019) Development and Validation of the French Version of the Orofacial Esthetic Scale. *The International Journal of Prosthodontics*, 32(2):137-142. <https://doi.org/10.11607/ijp.6002>.
- Papagiannopoulou V, Oulis CJ, Papaioannou W, Antonogeorgos G & Yfantopoulos J. (2012) Validation of a Greek version of the oral health impact profile (OHIP-14) for use among adults. *Health and Quality of Life Outcomes*, 10(7): 1-10. <https://doi.org/10.1186/1477-7525-10-7>.
- Persic S., Milardovic S., Mehulic K. & Celebic A. (2011) Psychometric properties of the Croatian version of the Orofacial Esthetic Scale and suggestions for modification. *The International Journal of Prosthodontics*, 24(6):523-533.
- Reissmann D.R., Benecke A.W., Aarabi G. & Sierwald I. (2015) Development and validation of the German version of the Orofacial Esthetic Scale. *Clinical Oral Investigations*, 19(6):1443-1450. <https://doi.org/10.1007/s00784-014-1365-4>.
- Reissmann D.R., John M.T., Enstad C.J., Lenton P.A. & Sierwald I. (2019) Measuring patients' orofacial appearance: Validity and reliability of the English-language Orofacial Esthetic Scale. *The Journal of American Dental Association*, 150(4):278-286. <https://doi.org/10.1016/j.adaj.2018.11.024>.
- Simancas-Pallares M., John M.T., Prodduturu S., Rush W.A., Enstad C.J. & Lenton P. (2018) Development, validity and reliability of the Orofacial Esthetic Scale - Spanish version. *Journal of Prosthodontic*

- Research, 62(4):456-461.
<https://doi.org/10.1016/j.jpor.2018.05.003>.
- Slade G.D. (1997) Derivation and validation of a short-form oral health impact profile. *Community Dentistry and Oral Epidemiology*, 25(4): 284-290.
<https://doi.org/10.1111/j.1600-0528.1997.tb00941.x>.
- Van de Vijver F. & Hambleton, R. K. (1996) Translating tests: Some practical guidelines. *European Psychologist*, 1: 89-99.
- Wetselaar P., Koutris M., Visscher C.M., Larsson P., John M.T. & Lobbezoo F. (2015) Psychometric properties of the Dutch version of the Orofacial Esthetic Scale (OES-NL) in dental patients with and without self-reported tooth wear. *Journal of Oral Rehabilitation*, 42(11):803-809.
<https://doi.org/10.1111/joor.12314>
- Zaugg F.L., Molinero-Mourelle P., Abou-Ayash S., Schimmel M., Brägger U. & Wittneben J.G. (2022) The influence of age and gender on perception of orofacial esthetics among laypersons in Switzerland. *Journal of Esthetic and Restorative Dentistry*, 34:959-968.
- Zhao Y. & He S.L. (2013) Development of the Chinese version of the Orofacial Esthetic Scale. *Journal of Oral Rehabilitation*, 40(9): 670-677.
<https://doi.org/10.1111/joor.12077>