

# OROFACIAL ESTHETIC SCALE (OES) AND PSYCHOSOCIAL IMPACT OF DENTAL AESTHETIC QUESTIONNAIRE (PIDAQ): DEVELOPMENT AND PSYCHOMETRIC PROPERTIES OF CENTRAL INDIAN VERSION

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**Background:** Orofacial Esthetic Scale (OES) is used to test psychometric properties of Indian population and Indian version of Psychosocial Impact of Dental Aesthetic Questionnaire (PIDAQ) for psychometric evaluation. The aim of this study is to develop Orofacial Esthetic Scale (OES) in Indian version, to test psychometric properties of individuals in the cultural environment in central India.

**Materials and methods:** A hospital based cross sectional study was done, where altogether 30 questions were asked to patients, their relatives and to dentists. 8 questions were related to Orofacial Esthetics Scale (OES) whereas 22 pertaining to Psychosocial Impact of Dental Aesthetic Questionnaire (PIDAQ). The questions were derived from standardized version of same scale, which is available in various other countries. The questions covered dental self-esteem, social repercussions, emotional impact, and aesthetic interest of the patient. Additionally, using such questionnaire enables the patient to convey his expectations and thus making it easy for the dentists to formulate the treatment plan. There were 341 individuals who took participation in the study, wherein 122 were patients, 122 were relatives and 97 dentists. All of them were properly informed prior, and a written consent was taken from each of them before proceedings with questions. All the questions were formulated in the native language that was easy for them to comprehend.

**Result:** It was found that the "Psychosocial Impact of Dental Aesthetic Questionnaire" (PIDAQ) meets the factorial criteria that stabilizes sample and provides validity and reliability for the dental patients. Orofacial Esthetic Scale (OES) can be used as a visual analysis tool that helps in examining and comparing different factors which are included in the scale. This scale covers all the tooth related factors and thus can prove fruitful when used among dental patients to comprehend and formulate their treatment plan accordingly.

**Conclusion:** It was found that orofacial esthetic scale and Psychosocial impact of dental aesthetic questionnaire are beneficial for dentists as well as patients. These instruments could be used effectively for clinical and research purposes.

**Keywords:** Orofacial appearance, dental self confidence, social impact, esthetic concern, quality of life

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**Conflicts of interest:**

The authors declare no conflicts of interest.

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## ÉCHELLE ESTHÉTIQUE OROFACIALE (OES) ET IMPACT PSYCHOSOCIAL DU QUESTIONNAIRE ESTHÉTIQUE DENTAIRE (PIDAQ): DÉVELOPPEMENT ET PROPRIÉTÉS PSYCHOMÉTRIQUES DE LA VERSION DE L'INDE CENTRALE

**Contexte :** L'échelle esthétique orofaciale (OES) est utilisée pour tester les propriétés psychométriques de la population indienne et la version indienne du questionnaire sur l'impact psychosocial de l'esthétique dentaire (PIDAQ) pour l'évaluation psychométrique. Le but de cette étude est de développer une échelle esthétique orofaciale (OES) en version indienne, pour tester les propriétés psychométriques des individus dans l'environnement culturel du centre de l'Inde.

**Matériels et méthodes :** Une étude transversale en milieu hospitalier a été réalisée, au cours de laquelle, 30 questions au total ont été posées aux patients, à leurs proches et aux dentistes. 8 questions étaient liées à l'échelle d'esthétique orofaciale (OES) tandis que 22 concernaient l'impact psychosocial du questionnaire esthétique dentaire (PIDAQ). Les questions étaient dérivées d'une version standardisée de la même échelle qui est disponible dans divers autres pays. Les questions portaient sur l'estime de soi dentaire, les répercussions sociales, l'impact émotionnel et l'intérêt esthétique du patient. De plus, l'utilisation d'un tel questionnaire permet au patient de faire part de ses attentes et permet ainsi aux dentistes de formuler facilement le plan de traitement. 341 personnes ont participé à l'étude, dont 122 patients, 122 membres de leur famille et 97 dentistes. Tous ont été correctement informés au préalable, et un consentement écrit a été obtenu de chacun d'eux avant de débiter les questions. Toutes les questions étaient formulées dans la langue maternelle et étaient faciles à comprendre.

**Résultat :** Il a été constaté que l'instrument « Psychosocial Impact of Dental Aesthetic Questionnaire » (PIDAQ) répond aux critères factoriels qui stabilisent l'échantillon et assurent la validité et la fiabilité pour les patients dentaires. L'échelle esthétique orofaciale (OES) peut être utilisée comme outil d'analyse visuelle qui aide à examiner et à comparer les différents facteurs inclus dans l'échelle. Cette échelle couvre tous les facteurs liés aux dents et peut donc s'avérer fructueuse lorsqu'elle est utilisée par les patients à problèmes dentaires pour comprendre et formuler leur plan de traitement en conséquence.

**Conclusion :** Il a été constaté que l'échelle esthétique orofaciale et l'impact psychosocial du questionnaire esthétique dentaire sont bénéfiques pour les dentistes ainsi que pour les patients. Ces instruments pourraient être utilisés efficacement à des fins cliniques et de recherche.

**Mots clés:** Aspect oro-facial, confiance en soi dentaire, impact social, souci esthétique, qualité de vie

## Introduction

Orofacial appearance plays a crucial role in the evaluation of aesthetics and function. This was previously restricted to conventional dental procedures primarily focused on function that may enhance aesthetics compared to the number of recently used procedures like teeth bleaching, orthodontics, and veneers [1]. Various perspectives regarding dentofacial aesthetics are available among dentists and patients. There is nothing called ideal aesthetics, it varies from person to person and is subjective. Facial appearance tends to increase self-esteem and confidence among both males and females. This is one of the major concerns that people approach dental treatment for enhancement of dental aesthetics. Moreover, aesthetics improves the quality of life among the general population [2]. The orofacial aesthetics scale explains important perspectives on both individuals and dentists. The involvement of a dentist as an expert is required to have a patient-centered notion with evidence-based and proven knowledge [3]. Additionally, dental aesthetics has been linked to other widespread ideas of well-being for the context of the study, this will contribute to a better understanding of the significance of orofacial appearance on one's life and how it may be impacted by various cultures, oral health issues and treatment modalities [4,5].

Oral Health Impact Profile (OHIP), a questionnaire with good cross-cultural psychometric properties is one of the most widely accepted instruments for measuring oral health-related quality of life (OHRQoL) [6]. Wong et al. [7] proposed a new abbreviation for the OHIP-aesthetic questionnaire was created as an instrument primarily for assessing changes in dental aesthetics. Earlier, the Oral HRQoL study conducted was mostly focused on the evaluation of acquaintance with older patients, who

frequently encounter periodontal disorders, bone loss, or insufficient dentures [8]. Oral HRQoL in kids and teens has drawn a lot of attention.

The psychosocial impact of the dental aesthetic questionnaire (PIDAQ) is a tool for assessing various aspects of oral health-related quality of life in patients with dental aesthetic impairment. The PIDAQ on the other hand was designed for orthodontic patients who mainly have more aesthetic concerns than prosthodontic patients [9]. The Orofacial Esthetic Scale (OES) [9] and the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) [10] are dental patient-reported outcome measures (dPROMs) that are used to assess orofacial appearance. It was first suggested that it be used on prosthodontic patients in Sweden [9]. The PIDAQ measures the psychiatric impacts of cosmetic dentistry on someone's life based on four elements: dental self-esteem, social repercussions, emotional influence, and esthetic interest [10].

In order to have more evidence, OES and PIDAQ are transformed and modified for multiple cultures like China [11], Kosovo [12], and France [13]. OES and PIDAQ's development in India will be of relevance to the country's researchers and also contribute to further understanding of the impact of geographical features and social contexts in view of orofacial appearance. Thus, the current study's goals were to find significant components in the suggested item pool, evaluate the validity of scales obtained from factor analysis, and uncover potential connections with subject-related oral aesthetics analyzed by the interviewer. The psychological elements of this multiple-item psychometric test (PIDAQ) was created for assessment of the impact of dental appearance. Young adults served as the study subjects because they have a more secure sense of who they are as compared to teenagers who nonetheless care about their appearance more than older people

do. The purpose of this study was to create Indian version of OES and PIDAQ for prosthodontic patients.

### Materials & Methods

After obtaining ethical approval from the Institutional Ethics Committee, Sharad Pawar Dental College and Hospital, DMIHER, a descriptive, cross-sectional study was conducted among individuals. The study was conducted for four months from March 2023 to June 2023. There were a total of 341 participants in this study above the age of 18 years. Each subject has explained the aims and objectives of the study, after which written consent was obtained in their mother tongue. Out of which, 122 were patients undergoing prosthodontic treatment, 122 were relatives of respective patients, and 97 were dentists. The sample size was decided considering the proposal of Hair et al [14]. As per their suggestion, 5-10 persons per model parameter should be taken into consideration and thus participants be in the range of a minimum of 270-540. This study was of cross-sectional type having a probabilistic sample.

### Inclusion criteria:

1. Age of 19 to 86 years and willing to participate in the study.
2. People undergoing prosthodontic treatment, their relatives, and dentists.

### Exclusion criteria:

1. Uncooperative person.
2. Mentally challenged or patient with a psychiatric history.

3 separate questionnaires were created for patients, their relatives, and dentists. The questionnaire comprised 32 questions out of which 8 were pertaining to OES and 24 were of PIDAQ. All the questions were written in the local language (Marathi), which was well understood by the patients and if and when needed were translated for them. All respondents received guarantees of secrecy and anonymity. The participants were briefed about the aims of the study as well as the methodology in a language they were comfortable speaking.

The relatives were taken to a distinct counseling room after seeking their permission. The interview was based on a 32-question questionnaire that was both open-ended and closed-ended (yes/no), which was conducted in their native mother tongue. The questionnaire was formulated in three sections, the first section included open-ended questions regarding the demographic details which mainly comprised the patient's name and the relative's age, gender, marital status, income, education, and occupation. The second and third sections had closed-ended questions, it comprised of 8 questions that had to be answered in the range of 0-10 and 24 questions in the range of 0-4. To enlist volunteers, a snowball strategy was implemented.

The orofacial appearance was examined using the Orofacial Esthetic Scale (OES) and the psychosocial impact using Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ). OES is a uni-factorial scale used to determine whether a particular orofacial aesthetic component has satisfied the user. OES has a response scale of 11 points that ranges from 0 (very dissatisfied) to 10 (very satisfied). PIDAQ originally had 23 items which were divided into 4 factors; dental self-esteem, social repercussions, emotional impact, and aesthetic interest. Consid-

ering the suggestion of Campos et al [15], one additional point was included in dental self-esteem which is tooth color. PIDAQ is 5 point rating scale ranging from 0-4 (0: I do not agree, 1: I agree a little, 2: I somewhat agree, 3: I agree a lot, 4: I totally agree).

#### Indian OES AND PIDAQ Version:

Prior to the translation of these instruments, the content of items was analyzed by the researchers for verification of the content of the sample. These versions were used in a pilot research for calculation of the Incomprehension Index (II) which seeks to confirm the issues participants may have had comprehending the content of the item. The skilled translator proficient in dental terminology translated the English version containing 8 elements.

## Results

### Demographic details of participants under study

Demographic data about the study's participants were mentioned in Table (1), which shows that maximum participation was from the age group >50 years and then from <50 years. It was observed that males' participation (53.9%) was slightly higher than females (46.1%) in the validation sample, which included dentists and relatives, as well as in the test patients'

sample where males (53.8%) were also more than females (46.1%). In the study, most patients were married (72.1%), while the rest were single (16.3%), divorced (2.45%), or widowed (9.01%). A significant number of patients had an income in the range of 5-10 lakhs per annum (55.7%), 36.8% had revenue of 10-15 lakhs per annum, 4% of the total patients had income of more than 15 lakhs per annum while 3% of them have below 5 lakhs per annum.

The comparison among validation sample and test sample is mentioned in table (2) below. According to this, general population is more worried of orofacial appearance than the dental patients. Similarly, dental self-confidence affects general population more than dental patients whereas the dental population is concerned more about social impact, psychosocial impact, and aesthetic concern than the general population.

Altogether 341 Indians from central India participated in the study. There were more male participants than females. Out of 24 PIDAQ questions, 1,2,3,4,12,17 are questions about dental self-confidence, 5,6,9,13,14,22 are regarding social impact, 10,11,15,16,18,19 are related to psychological impact and 7,8,20,21,23,24 covers esthetic concern. A comparison of all seven OES factors is mentioned in Table (3).

Table 1: Demographic details of the population under study (n=341)

FEATURES	TEST SAMPLE (122)	VALIDATION SAMPLE (219)	TOTAL SAMPLE (341)
AGE (in years)	46.07	46.13	46.10
<b>SEX</b>			
MALE	76 (53.8%)	118 (53.9%)	194
FEMALE	46 (46.1%)	101 (46.1%)	147
<b>MARITAL STATUS</b>			
SINGLE	20 (16.3%)	62	82
MARRIED	88 (72.1%)	134	222
DIVORCED	3 (2.45%)	7	10
WIDOWER	11 (9.01%)	16	27
<b>MONTHLY INCOME</b>			
ABOVE 15 LACS PER ANNUM	5 (4%)	83	88
10-15 LAKHS PER ANNUM	45 (36.8%)	62	107
5-10 LAKHS PER ANNUM	68 (55.7%)	72	140
BELOW 5 LACS PER ANNUM	4 (3%)	2	6

Table 2: Comparison of factors of Indian version of Orofacial Esthetic Scale and Psychosocial Impact of Dental Aesthetics Questionnaire between General Population sample (n=219) and Dental patient sample (n=122).

Factor	Sample	Mean	Standard deviation	P value
OES (Orofacial appearance)	General Population	7.4	1.65	<0.001
	Dental Population	6.84	1.34	
PIDAQ				
Dental Self Confidence	General Population	1.86	1.1	<0.001
	Dental Population	1.65	1.03	
Social Impact	General Population	0.63	0.84	<0.001
	Dental Population	0.89	0.97	
Psychosocial Impact	General Population	0.82	0.74	<0.001
	Dental Population	1.14	0.92	
Aesthetic Concern	General Population	1.2	0.63	<0.001
	Dental Population	1.4	0.81	

Table 3: Comparison of OES factors among patients, dentists and relatives.

Sr no.	Characteristics	PATIENTS		DENTISTS		RELATIVES	
		MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVIATION
1	Facial Appearance	7.5328	1.33723	6.762887	1.63215	7.221311	1.44607
2	Facial Profile	7.2787	1.52282	6.680412	1.56209	7.04918	1.76210
3	Mouth (smile,lips, teeth) appearance	7.2377	1.49408	6.546392	1.76422	6.94262	1.71671
4	Appearance of rows of teeth	7.1721	1.45280	6.721649	1.64814	6.893443	1.67039
5	Shape/ form of teeth	7.2869	1.48535	6.814433	1.65943	7.122951	1.59326
6	Colour of teeth	7.3770	1.55520	6.783505	1.68552	7.02459	1.68838
7	Gum's appearance	7.1967	1.37654	6.835052	1.70122	6.934426	1.56795
8	Overall appearance of face, mouth and teeth	7.4344	1.56399	6.969072	1.71034	7.190083	1.71835



## Discussion

The current research created and evaluated psychological attributes of Indian version of OES and PIDAQ. The findings indicate a discriminating ability among dental patients and general population. Additionally, when these instruments were used on adult Indians acceptable, reliable, and valid data was collected.

The necessity to evaluate how facial attractiveness is seen across cultures and situations in many dental procedures aimed at enhancing aesthetics led to the proposal of current study. With the changing era, there has been significant change in perspectives of dental patients. Earlier, dental care was often seen as a treatment measure, sought only when pain or severe issues arose. However, with advances in dental technology, education, as well as awareness, there has been a notable shift in how patients view dental care. Regular check-ups and cleanings are now embraced as a means to avoid potential dental issues. As society places greater emphasis on appearance, patients today are more interested in cosmetic dentistry. Cosmetic procedures like teeth whitening, veneers, and orthodontics have gained popularity, reflecting a shift towards considering dental aesthetics as integral to overall self-confidence. Advancements in dental technology have transformed patient experiences. The fear and anxiety associated with dental procedures have decreased due to the use of painless techniques, minimally invasive procedures, and efficient tools. In essence, the evolution of dental patient views reflects a shift towards proactive, informed, and holistic approaches to oral health. This transformation is driven by factors such as technological advancements, increased awareness, changing social values, and a broader understanding of the interconnection between oral health and overall well-being.

The Orofacial Esthetic Scale (OES) is a tool used in dentistry to

assess and evaluate the esthetic aspects of the oral and facial features of a patient. This scale is needed for several reasons for objective assessment such as to give a constructed and standardized way for assessing facial appearance in regards to teeth, smile, and lips which helps dentists for good evaluation, for treatment planning in patients seeking dental care for esthetic purpose, assessment methods like OES are found to be effective for their dentists. Such tools identify the chief area of concern and thus prioritize the interventions accordingly. For communication purposes using the common assessment scale like OES allows dentist and patients to communicate in a way such that dentists understand the needs of the patient and hence provides the patient with the required help. The scale serves as baseline assessment which can be compared with subsequent evaluations. This helps dentists track the progress of treatment and make changes as needed. The OES is of utmost importance in research whenever esthetic outcomes of the various dental treatments or interventions are being studied. It provides a standardized method for documentation and comparison of results. Whenever there is a need for inter interdisciplinary approach like when multiple dental specialists have to be involved like Prosthodontists, Orthodontists, and Oral surgeons, OES helps to serve as a common source to formulate treatment modalities. In summary, the Orofacial Esthetic Scale is needed to provide a systematic and objective way to assess, communicate, plan, and track the aesthetic aspects of dental treatments. It enhances patient care, facilitates treatment planning, and contributes to research and quality improvement efforts within the field of dentistry.

PIDAQ is the Psychosocial Impact of Dental Aesthetics Questionnaire which serves as an instrument to assess the subjective perception needed for treatment. This provides measurements of the ortho-

dontic-related quality of life and psychometric results. It was first formulated for Orthodontic patients and after achieving good results this questionnaire was applied to Prosthodontic patients. This tool helps dentists about how patients feel about the appearance of their teeth daily, thus providing the dentist's clarity about what patient expects at the end of the treatment. Through PIDAQ evaluation of contentment regarding dental appearance, assessment of dental treatment based on self-perception is possible for the patients seeking dental treatment. Patients can convey their exact requirements in terms that is easy for both patient and dentists. For treatment purposes, PIDAQ proves to be beneficial. It helps the dentists to comprehend the plan beforehand according to the patient and thus prioritize needs. This study thus focuses on the formulation of OES and PIDAQ Indian versions. The main goal of the study is to provide an Indian version of two instruments for standardized measurement of facial appearance and its impact on a human's life.

There are a few drawbacks of the study like the relationship of patients to their relatives was not mentioned which could not give a proper idea about the involvement of the relatives in the decision-making process. The study was done in a limited geographic area which did not relate to a wider population.

## Conclusions

The Indian versions of the Orofacial Esthetic Scale (OES) and Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) showed outstanding psychological properties. Information collected through OES-In and PIDAQ-In is rational and authentic. OES helps in assessing the way patients recognize their dental as well as facial esthetics. PIDAQ stands out as a proficient means of assessing Oral health-related quality of life (OHRQoL). It is a

type of self-rating instrument when used on patients. Clinically, it can assess the psychological impact on young individuals seeking orthodontic treatment and in adults receiving prosthodontic treatment. PIDAQ helps the researchers to directly observe behavior, study in-

teractions, or manipulate variables to test hypotheses. This tool could prove an effective means when used on orthodontic patients. Clinically, this instrument can be used in formulating the treatment plan as per the requirement of the patient thus making it easy for the dentist

about the expectations of the patient. Hence, these can be considered beneficial tools in the evaluation of satisfactory results when viewed in the clinical or research context of facial appearance as well as the psychosocial impact of dental aesthetics.

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