

The Oro-Facial Investment Scale (OFIS) – A Novel Outcomes and Evaluation Measure for Self-Appraised Oro-Facial Behavioural and Aesthetic Constructs among Professional Healthcare Students of Belagavi : A Cross-Sectional Study

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ABSTRACT

Introduction: Several studies have shown that self perceived dental appearance is an important determinant in the decision to seek treatment.

Aim: The aim of the present study was to assess the self-perceived oral health knowledge, attitude, practice, behaviour and perception among 18-20 year old students of professional healthcare institutions in Belagavi city, Karnataka.

Materials and Methods: The novel 21 item Oro-Facial Investment Scale (OFIS) formulated for this study was distributed to 600 students of professional healthcare institutions (200 each from Medical, Physiotherapy and Ayurveda specialties respectively). Psychometric properties of the questionnaire were assessed. Descriptive statistics and chi-square test were applied.

Results: Total 98.17% practiced the use of facial and oral care products on a regular basis. All 600 participants disagreed that they hate their facial appearance and the way their teeth looked. Out of 200 Ayurveda students. 37 were unsatisfied with the appearance of their teeth. Also, majority of the respondents agreed that they take prompt care of oral wounds or lesions. While majority of the subjects did not feel conscious when a dentist checks their teeth, a robust 153 respondents expressed their reservations for their dental examination to be performed.

Conclusion: The OFIS seamlessly amalgamates the dental unit with the immediate facial components; hence, bringing together, in harmony, a multifaceted dimension in self assessment of the overall facial and dental behavioural practices.

Keywords: Attitudes/Behaviour, Facial appearance, Health professionals, Psychometric properties, Self-perception

INTRODUCTION

While there are things which are universally accepted as beautiful, their appeal to the individual as beautiful varies from person to person. Similarly, dental health is also a highly individualistic concept [1].

Enhancement of oral health is attained through a combination of preventive measures and community health promotion activities. Social and personal well-being is considered together with physical capacities, emphasizing the individual through empowerment and participation. Cross cultural comparisons of health behaviour are of special interest [2-4].

The role of health professionals is to enable people to make sound health choices, providing information on health promotion and prevention by facilitating the development of skills [5]. In many countries, including the Indian Republic, university students occupy a significant position in public life, and constitute as opinion leaders of the future.

Self-perceived and self-assessed oral and dental appearance, with respect to both aesthetics and function, is a prime factor for a person's willingness to seek treatment [6].

In addition, clinical indices or tools cannot depict the satisfaction of subjects or their ability to perform daily activities [7,8].

While majority of such studies on self perception have been conducted on dental students and graduates [9-12], starkly revealing, there is an acute paucity of scientific discourse on the

self perception of oro-facial behavioural and aesthetic constructs amongst healthcare professional students.

Hence, the current study envisaged to assess the self-perceived oral health knowledge, attitude, practice, behaviour and perception among 18-20 year old students of professional healthcare institutions in Belagavi city, Karnataka, India.

MATERIALS AND METHODS

The study employed a cross-sectional, observational design to collect prevalence data on self-perceived oral health knowledge, attitude, practice, behaviour and perception using a novel, self-designed Oro-Facial Investment Scale (OFIS). A priori power analysis was set up for the study. A probability of 0.05 for α error ($\alpha/2=0.025$ in each direction) was fixed for the current study.

Sample: The subjects of this study comprised of 600 students, studying in the first and second year of their respective professional healthcare course. A total of 200 students each from three healthcare institutions, viz. Jawaharlal Nehru Medical College, B.M. Kankanwadi Ayurveda College and KLE College of Pharmacy were selected. Ethical approval was obtained from the Institutional Review Board of KLE VK Institute of Dental Sciences, Belagavi. The study was planned as per the convenience and schedule of the respective institutions. Necessary permissions were taken from the college principals and departmental heads. The participants were informed about the study well in advance. All the students, aged between

18-20 years, those present on the day the study was conducted, were included in the study. A written informed consent was taken from all the study subjects. Participants suffering from any systemic disease or having a history of current/ongoing or past orthodontic treatment were excluded from the study. All the students selected for the study answered the questionnaire.

Instruments and Measures: Data was collected using a structured English language questionnaire comprising of a novel, self designed OFIS, to elucidate the self-perceived oral health knowledge, attitude, practice, behaviour and perception of the study subjects.

The proforma consisted of two parts. The first part consisted of basic socio-demographic factors. The second part consisted of a self-designed 21 itemed OFIS.

The Oro-Facial Investment Scale: The novel OFIS meticulously expedited in the current study is a ballpark adaption of the broader Body Investment Scale (Orbach I, Mikulincer M). The Body Investment Scale taps a person's emotional investment in his or her body and includes subscales relating to feelings and attitudes about the body, body care, body protection, and comfort in physical touch [13].

The OFIS tool comprises of a self-administered tool and supersets 21 items (20 close-ended and 1 open-ended stem) under three broad subscales exploring questions pertaining to Knowledge (K01-K03), Attitude (A04-A11), and Practice (P12-P21). Each question had a dichotomized bivariate Yes/No response.

Psychometric Properties of the OFIS Tool

Pre-Testing: Prior to finalizing the questionnaire, it was pilot tested among a convenience sample of 50 subjects. Upon completion of the pilot response format, each subject was interviewed to gain feedback on the overall acceptability of the questionnaire in terms of length, language clarity, and on the feasibility of subjects completing and returning it. These subjects were not recruited in the final sample.

Validity of OFIS: Assessment of Content Validity—A panel of six academicians in total, who were subject experts, were asked to express their opinions in order to calculate the mean Lawshe's Content Validity Ratio (CVR), which was discerned to stand at 0.87. This judgement ascertained that the instrument samples all the relevant, essential and significant domains.

The CVR was calculated by the help of the following formula:

$$CVR = [n_e - (N/2)] / (N/2)$$

Where n_e is the number of panel members indicating an item "essential" and N is the number of panel members.

Assessment of Face Validity—On the assessment of face validity, 92% of the participants found the OFIS tool to be easy and comprehensible. This ascertained that the instrument assessed the desired qualities it intended to encapsulate and measure within its ambit.

Reliability of OFIS: Internal consistency estimates of reliability using Cronbach's Alpha were computed on domain-specific items to confirm the development of subscales of Knowledge, Attitude and Practice of the OFIS instrument. The Cronbach's coefficient was found to be 0.81, which showed a high internal reliability of the OFIS tool.

STATISTICAL ANALYSIS

Data was collected and entered in Microsoft Excel and subsequently subjected to statistical analysis. A statistical model was developed for descriptive statistics and chi-square test. The Statistical Package for Social Sciences (SPSS®) Program (SPSS Inc., 16.0 Version, Chicago IL, USA) was used to process and analyze the data. Proportional comparisons were made using chi-square tests, and the level of significance was set at 0.05.

	Medical Institution	Physiotherapy Institution	Ayurveda Institution	
Males	94	63	89	246
Females	106	137	111	354
Total	n=200	n=200	n=200	n=600

[Table/Fig-1]: Gender distribution of the study subjects in each of the institutions.

RESULTS

From the total of 600 students recruited from the three professional colleges, all (100%) of the students completed the questionnaire. A total of 246 (41%) male students and 354 (59%) female students participated in the study.

[Table/Fig-1] shows the gender distribution of the study subjects in each of the institutions. The male-female ratio was found to be 1:1.44 in the present study.

[Table/Fig-2] presents the distribution of the responses to the 21 items of the OFIS tool. A significant result was found for 13 items in totality. Majority of the participants (98.17 %) practiced the use of facial and oral care products on a regular basis. All 600 participants disagreed that they hate their facial appearance and the way their teeth looked. Out of 200 Ayurveda students, 37 were unsatisfied with the appearance of their teeth. Also, majority of the respondents agreed that they take prompt care of oral wounds or lesions. While majority of the subjects did not feel uncomfortable or conscious when a dentist checks their teeth, a robust 153 out of 600 respondents expressed their reservations for their dental examination to be performed.

DISCUSSION

To the best of our knowledge, this is the first of its kind formal assessment of the oral health related knowledge, attitude and practice pertaining to the health professional students of the Medical, Physiotherapy and Ayurveda disciplines in Belagavi City, Karnataka, India. Although attempts have been made in assessing the self perceived oral behaviours, [14-17] to pool in the students pursuing medical and paramedical courses in Belagavi City and analyzing their self perceived oral health practices using the proposed OFIS tool has been a territory never been scientifically tread upon.

There was no major difference in the responses to the 21 items of the administered tool among males and females in the present study ($p > 0.05$). This observation was in concordance with scientific literature on similar lines contributed by Tseveenjav B et al., Dagli RJ et al., and Kawamura M et al., [18-20]. However, it was in stark contrast to studies by Porat D et al., Ostberg AL et al., Nanakorn S et al., and Kassak KM et al., [21-24]. However, these studies measured self-perception using different scales and tools.

All the study participants from the three institutions unanimously believed that caring for their oral health will improve their general health. This stems out of the fact that the oral cavity indeed mirrors the well-being of an individual, and the primitive signs of many systemic ailments/diseases are reflected first in the oral cavity, and overall general health and quality of life could be worsened due to oral health problems [25].

Majority of the respondents from all three specialties agreed that they pay attention to the appearance of their face and teeth, and also were of the opinion that it was very important to take care of the face and oral health.

All 600 participants disagreed that they hate their facial appearance and the way their teeth looked. However, there was a mixed response when asked if they feel comfortable with the appearance of their teeth. Also, 18.5% of the Ayurveda students were unsatisfied with the appearance of their teeth. Similarly, 19.5% of medical students were uncomfortable with the appearance of their teeth. Results revealed that a significant 235 out of the total participants thought

S. No.	Question	Response (%)	Medical Institution (n=200)	Physiotherapy Institution (n=200)	Ayurveda Institution (n=200)	χ^2 p-value
	Knowledge					
K01	Do you believe that caring for your oral health will improve your well-being?	Yes	100	100	100	-
		No	0	0	0	
K02	Do you pay attention to the appearance of your teeth and face?	Yes	94.5	81.5	80.0	<0.001*
		No	5.5	18.5	20.0	
K03	Do you think that it is very important to take care of the face and oral health	Yes	94.5	80.5	76.0	<0.001*
		No	5.5	19.5	24.0	
	Attitude					
A04	Do you hate your facial appearance and the way your teeth look?	Yes	0.0	0.0	0.0	-
		No	100.0	100.0	100.0	
A05	Do you feel angry towards the appearance of your face/teeth?	Yes	0.5	0.0	3.5	<0.001*
		No	99.5	100.0	96.5	
A06	Do you feel uncomfortable/conscious when a dentist checks your teeth?	Yes	21.5	28.5	26.5	<0.001*
		No	88.5	71.5	73.5	
A07	Are you satisfied with the appearance of your teeth?	Yes	92.5	88.5	81.5	<0.001*
		No	7.5	11.5	18.5	
A08	Do you feel comfortable with the appearance of your teeth?	Yes	80.5	82.5	74.5	<0.001*
		No	19.5	17.5	25.5	
A09	Do you think that your face or teeth have imperfections?	Yes	60.0	69.5	53.0	<0.001*
		No	40.0	30.5	47.0	
A10	If yes, what are the imperfections you perceive?	Irregular Teeth	44.5	31.0	34.5	
		Dirty/Yellow Teeth	45.0	49.5	54.5	
		Decayed Teeth	10.5	19.5	11.0	
A11	Are you frustrated with the appearance of your teeth?	Yes	3.5	2.5	4.5	0.5531
		No	96.5	97.5	95.5	
	Practice					
P12	Are you interested in getting tooth ornamental jewellery done?	Yes	36.0	42.0	18.0	<0.001*
		No	64.0	58.0	82.0	
P13	Are you interested in getting oral piercing done?	Yes	0.0	1.0	1.5	0.243
		No	100.0	99.0	98.5	
P14	Do you take special care of your teeth and oral health when you feel a sign of general health illness?	Yes	76.5	68.5	66.5	0.0677
		No	23.5	31.5	33.5	
P15	Do you wash your face and mouth several times a day?	Yes	94.5	93.5	100.0	0.0017*
		No	5.5	6.5	0.0	
P16	When you are injured, do you immediately take care of the oral wound?	Yes	100.0	100.0	93.5	<0.001*
		No	0.0	0.0	6.5	
P17	Do you tend to check your mouth breath before meeting people?	Yes	42.5	43.5	46.5	0.7037
		No	57.5	56.5	53.5	
P18	Do you use facial and oral care products regularly?	Yes	94.5	100.0	100.0	<0.001*
		No	5.5	0.0	0.0	
P19	Do you pamper your face, lips, and teeth?	Yes	52.5	56.5	46.5	0.1314
		No	47.5	43.5	53.5	
P20	Do you tend to keep a distance from the person with whom you are talking to?	Yes	68.5	43.5	72.5	0.622
		No	31.5	56.5	27.5	
P21	Do you change your toothbrush atleast every 3 months	Yes	92.5	71.5	69.5	<0.001*
		No	7.5	28.5	30.5	

[Table/Fig-2]: Distribution of the responses to the 21 itemed OFIS tool.
Test applied: Chi square test, *indicates statistically significant difference at $p < 0.05$

that their teeth had some imperfection. Majority of the medical students attributed this imperfection to irregularly placed teeth (44.5%), whereas the Physiotherapy and Ayurveda students quipped that having dirty/yellow teeth was their perceived imperfection.

Being in the direct and allied health care stream, the respondents from the institutions were asked general healthcare questions, stressing on the oral care aspects during these events. A 76.5% of medical students opined that they take special care of their teeth and oral health when they feel any sign of illness/general health

indisposition, whereas 33.5% of the Ayurveda participants differed in their choice. All the Medical and Physiotherapy students further perceived immediate oral wound care after any injurious event as an important prerogative; however, 13 (6.5%) participants of the Ayurveda group seemed to emanate a lackadaisical attitude towards prompt oral care practice by not taking expeditious action to care for the oral/teeth related injury. There is a possibility that the respondents depicting a different perception towards prompt oral wound care believe that a natural course of action through the

innate healing capacity of the body is adequate to ward off or self limit these injuries.

Whereas, 98.17% of total participants (589 out of 600) practiced the use of facial and oral care products regularly, there was however, a revealing mixed response when asked whether they pamper their face, lips and/or teeth. Medical (47.5%), Physiotherapy (43.8%) and Ayurveda (53.3 %) groups disagreed to follow the aforesaid practice. These two seamlessly interlinked questions probably throw light on the difference between the perception of necessity and luxury. Oral care, if instructed, reinforced and practiced adequately and regularly, does not require supplementation with other cosmetic or adjuvant products. Nevertheless, the 261 participants who agreed to pamper their face, lips and/or teeth rendered it intelligible that they are seemingly aware of the importance of oral hygiene and maintenance, and willing to invest on oral and facial care products to enhance the aesthetic component of their appearance and smile too. They may also be influenced by the aggressive marketing strategies adopted by companies manufacturing oral care and cosmetic products.

The youth are proving to be particular and self-conscious about their overall appearance and smile. Body art-work and cosmetic dental treatment are increasingly being sought after in order to enhance their personality, impart a unique trait and make an impeccable impression that is noteworthy [26]. Delving into such newer practices, a statistically significant 192 informants (36% Medical, 42% Physiotherapy and 18% Ayurveda) exhibited enthusiasm in adorning their tooth with tooth/veneer jewellery, dazzlers/twinkles or a tooth skyce. A surprisingly revealing 16% of the male participants answered they were interested in getting this procedure done.

Contemporary and post-modern perspectives interpret these as signifiers of the self and attempts to attain mastery and control over the body in an age of increasing alienation. It is an expression of individuality and uniqueness [27]. This postulates the emerging interest in accepting and embracing newer and unconventional trends in cosmetic dental care, slowly tending towards a cosmetic need and necessity, more pronounced in the urban societal settings. Also, males who appraised a boulevardier perception were keen on getting a tooth jewel. Others have viewed such practices as motivated by the desire for peer acceptance [28-30].

An impressive 99.17% of the 600 participants shunned the idea of getting oral piercings involving the tongue, lips, and cheeks done. Being in the healthcare arena, the respondents probably seemed to be aware that such practices, not just being painful, could have dire consequences such as significant risk of infection, speech impediment, hypersensitivity reactions, nerve damage or scarring [31-34].

While majority of the participants did not perceive to be overtly conscious or uncomfortable with an oral examination being performed, an indicative 153 participants responded otherwise. The reason attributed to this could be probably dental fear or phobia [35]. Also, many people feel uncomfortable about the physical closeness of the dentist or hygienist to their face [36]. Others may feel self-conscious about the appearance of their teeth or possible mouth odours [37].

Medical 42.5 %, Physiotherapy 43.5% and Ayurveda 46.5% subjects revealed that they tend to check their mouth breath before meeting people. This could throw light upon the fact that halitosis could be a negative influence to their self-esteem and self-confidence, and that they perceived oral malodor as an important aspect to tackle while striving towards oral well-being [38].

Investigating the basic investment for a good oral hygiene practice, a statistically significant majority of respondents declared that they buy a new toothbrush once in at least three months.

Although, there seem to be a pool of validated scales assessing the oral behaviours and practices of an individual, scientific literature

reveals a dearth of sound instruments/tools that club the Oral and facial behavioural and investment practices in congruity. The OFIS tool displayed impressive psychometric properties, coupled with the ease of use and administration. The brevity (21 Items for a KAP Study), item content (Oral and facial self-reported aesthetic and behavioural constructs), bipolarity (Items exploring positive and negative constructs) and universality (cross-cultural applicability) makes the OFIS tool to be explored as a global experience.

The authors express their gusto for others to use the OFIS in future studies on different groups of populations, especially those not related to the healthcare field. Studies are also encouraged to be undertaken to discern the difference in aesthetic self-perception among subjects residing in the urban settings and rural peripheries. These could be contributive to a valuable insight to the self-appraisal of the oro-dental structure, self-reporting potential and possible treatment expectation from the population.

LIMITATION

One limitation of the study could be attributed to the fact that no oral examination was conducted to clinically assess the oro-dental findings and then find a possible association with the self perceived notions of the participants.

CONCLUSION

The OFIS serves to stand as a novel outcomes and evaluation measures tool and envisages in heralding a new vista towards self-appraised oro-facial behavioural and aesthetic constructs. It seamlessly amalgamates the dental unit with the immediate facial components; hence, bringing together, in harmony, a multifaceted dimension in self assessment of the overall facial and dental behavioural practices.

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