

Prevalence of Malocclusion, Aesthetic Self-Perception and their Correlation among 18 to 24 Years Old College Students in Chennai

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Abstract

Background: Dental aesthetics plays a major role in determining facial appearance of a person. Facial appearance of a person contributes to his self-confidence and thereby provides social recognition to a person. The present study was conducted with the aim to assess the prevalence of malocclusion using Dental Aesthetic Index (DAI), aesthetic self – perception using Oral Aesthetic Subjective Impact Scale (OASIS) and to evaluate the correlation between these two scores among 18 to 24 years old college students in Chennai.

Materials and methods: A cross-sectional descriptive study employing cluster random sampling was conducted among the college students in Chennai. Students aged between 18 to 24 years were clinically examined for assessing prevalence of malocclusion using (DAI) followed by assessment of self-perception of aesthetics using (OASIS) with a self-administered questionnaire. Correlation between the scores was assessed using Pearson's correlation.

Results: 573 study subjects participated in the present study, 73.8% study subjects had normal occlusion or slight malocclusion 18.2% study subjects had definitive malocclusion 6.3% study subjects had severe malocclusion and 1.7% study subjects had very severe malocclusion. N=173 (30.2%) of the study subjects were very concerned about the appearance of their teeth. A significant positive correlation ($r=0.287$), ($p<0.05$) was observed between the DAI score and OASIS score among the study subjects.

Conclusion: 8.2% of the study subjects had severe malocclusion, there is no significant difference in the prevalence of malocclusion across gender, mean OASIS score was high among female compared to males and a significant positive correlation observed between DAI and OASIS, and hence OASIS measure can be used to assess the self-perception of malocclusion.

Keywords: Malocclusion; Dental aesthetics; Self-perception

Introduction

Dental aesthetics plays a major role in determining facial appearance of a person [1]. Facial appearance of a person contributes to his self-confidence and thereby provides social recognition to a person [2]. The aesthetic factors are not easily evaluated and are generally determined subjectively, Identification of malocclusion by dental professional is primary factor in motivating individual to seek orthodontic care [3]. The following patient factors – appearance improvement, age, gender, environment influence and social class and orthodontist factors – appreciation of treatment need, access to services, cost of treatment and treatment priority can be motivating factor to receive orthodontic treatment [4].

The Dental Aesthetic Index (DAI), developed in the United States of America and integrated into the International Collaboration study of Oral Health Outcomes by the World Health Organisation (WHO, 1989) as an international index, the index identifies occlusal traits and mathematically derives a single score [5]. DAI scores have also been found to be significantly associated with the perception of treatment need by students [6].

Aesthetic self-perception is more influential in determining a persons' perceived need for orthodontic treatment. Oral Aesthetic Subjective Impact Scale (OASIS) has been developed to evaluate self – perceived dental aesthetics using a questionnaire [7]. The present study was conducted to assess the prevalence of malocclusion using DAI, aesthetic self – perception using OASIS and to evaluate the correlation between these two scores among 18 to 24 years old college students in Chennai.

Materials and Methods

A cross-sectional descriptive study employing cluster random sampling was conducted among the college students in Chennai. The sample size for the present study was estimated to be 416, based on the prevalence of malocclusion in the study conducted by Dikson C and Jefferson T using statistical software Openepi [8]. Students aged between 18 to 24 years with good general health and who were willing to participate in the study were included. Students with history of orthodontic treatment, or who were under orthodontic treatment, students with developmental facial abnormalities were excluded.

Prior to the start of the study approval has been obtained from the college authorities and written informed consent has been obtained from the study participants. The survey instrument used in the present study consists of demographic data of the students followed by assessment of 'Oral Aesthetic Subjective Impact Scale' using the standardised and validated questionnaire developed by Mandall NA et al. [7].

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The questionnaire consists of 5 questions on their perception of oral aesthetics. The possible final score ranged from 5 to 35. The students were instructed on how to fill the questionnaire the response to the statements in the questionnaire is in 7 point likert scale (1 - Not at all concerned to 7 - Very much concerned). Following the completion of questionnaire, the study subjects were clinically examined to assess malocclusion using DAI (Dental Aesthetic Index) according to WHO (1997) guidelines. All 10 components of the index were assessed. Single examiner who was trained and calibrated (intra-examiner reliability \ KAPPA - 0.87) in the Department of Public Health Dentistry, Chettinad Dental College and Research Institute, Kelambakkam, conducted clinical examination to record DAI under proper illumination with patients seated in semi-supine position using a sterile mouth mirror and CPI Probe.

Statistical analysis was performed using SPSS version 23. Descriptive statistics was carried out for assessing the severity of malocclusion, mean DAI score and OASIS score. Pearson's correlation was performed to assess the correlation between DAI and OASIS scores. P-value <0.05 was taken as statistically significant.

Results

In the present study N=573 study subjects aged between 18 to 24 years participated, the mean age of the study subjects was 20 ± 2.8 years, Figure 1 depicts the distribution of study subjects according to gender, among the 573 study subjects n=244 (42.5%) were male and n=329 (57.5%) were female.

Table 1 depicts the percentage of malocclusion according to DAI, results of the present study showed that 423 (73.8%) study subjects had normal occlusion or slight malocclusion and 104 (18.2%) study subjects had definitive malocclusion and n=36 (6.3%) study subjects had severe malocclusion and n=10 (1.7%) study subjects had very severe malocclusion. One arch crowding is observed among 345 (60.2%) study subjects. Maxillary mal-alignment of teeth is observed in 220 (38.4%) and mandibular mal-alignment of teeth is observed in 237 (41.4%) of the study subjects. 80 (14%) study subjects had overjet >3 mm.

Figure 2 depicts the severity of malocclusion according to gender, 175 (71.72%) males and 248 (75.38%) females had Normal occlusion or slight malocclusion. 44 (18%) males and 60 (18.2%) females had definitive malocclusion, 19 (7.8%) males and 17 (5.2%) females had severe malocclusion and 6 (2.5%) males and 5 (1.4%) females study subjects had very severe malocclusion. The difference in severity of malocclusion is not statistically significant across gender (p>0.05).

Table 2 depicts the response of the study subjects to the OASIS components. 173 (30.2%) of the study subjects were very concerned

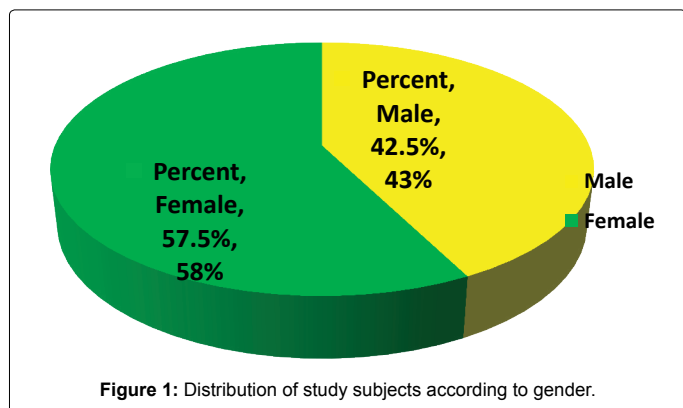


Figure 1: Distribution of study subjects according to gender.

Severity (DAI)	N	%
Normal Occlusion	423	73.8
Definitive malocclusion	104	18.2
Severe malocclusion	36	6.3
Very severe malocclusion	10	1.7
Components (DAI)		
No missing teeth	544	94.9
One arch missing teeth	21	3.7
Both the arches missing teeth	8	1.4
Crowding		
No crowding	228	39.8
One arch crowded	345	60.2
Both the arches crowded	0	0
Spacing		
No spacing	445	77.7
One arch spaced	128	22.3
Both the arches spaced	0	0
Diastema		
No diastema	471	82.2
Diastema 1 to 3 mm	102	17.8
Maxillary malalignment		
No malalignment	353	61.6
1 to 3 mm	202	35.3
4 to 5 mm	18	3.1
Mandibular malalignment		
No malalignment	336	58.6
1 to 3 mm	223	38.9
4 to 5 mm	14	2.5
Overjet		
0 to 3 mm	493	86
> 3 mm	80	14
Mandibular overjet		
Absent	571	99.7
Present	2	0.3
Anterior open bite		
No openbite	560	97.7
1 to 5 mm	13	2.3
Molar Relationship		
Normal	398	69.5
Half cusp deviation	150	26.2
Full cusp deviation	25	4.4

Table 1: Percentage of malocclusion according to dental aesthetic index.

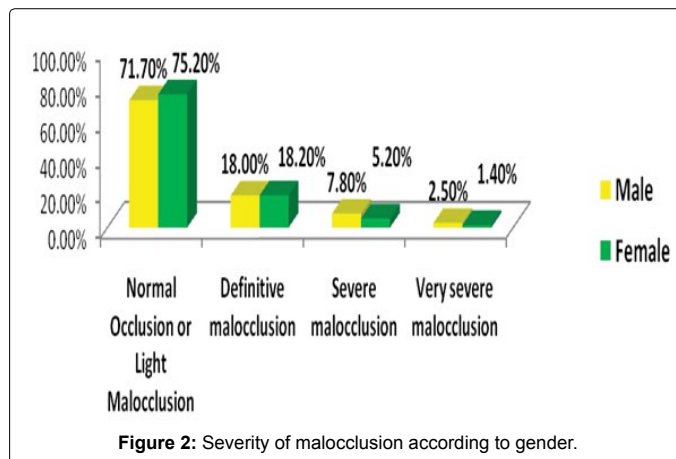


Figure 2: Severity of malocclusion according to gender.

Questionnaires	n	%
How do you feel about the appearance of your teeth?		
Participant 1	73	12.8
Participant 2	21	3.6
Participant 3	37	6.4
Participant 4	73	12.8
Participant 5	135	23.6
Participant 6	71	12.4
Participant 7	163	28.4
Have you found that other people have commented on the appearance of your teeth?		
Participant 1	179	31.2
Participant 2	105	18.4
Participant 3	55	9.6
Participant 4	92	16
Participant 5	64	11.2
Participant 6	32	5.6
Participant 7	46	8
Have you found that other people have teased you about the appearance of your teeth?		
Participant 1	275	48
Participant 2	117	20.4
Participant 3	64	11.2
Participant 4	57	10
Participant 5	25	4.4
Participant 6	21	3.6
Participant 7	14	2.4
Do you try to avoid smiling because of the appearance of your teeth?		
Participant 1	376	65.6
Participant 2	64	11.2
Participant 3	34	6
Participant 4	41	7.2
Participant 5	34	6
Participant 6	9	1.6
Participant 7	14	2.4
Do you ever cover your mouth because of the appearance of your teeth		
Participant 1	392	68.4
Participant 2	76	13.2
Participant 3	39	6.8
Participant 4	30	5.2
Participant 5	23	4
Participant 6	5	0.8
Participant 7	9	1.6

Note: #Independent samples t-test, (p>0.05 – Not significant); *Independent samples t-test, (p<0.05 – Statistically significant)

Table 2: Distribution of study subjects according to the OASIS score.

about the appearance of their teeth. A significant positive correlation ($r=0.287$), ($p<0.05$) was observed between the DAI and OASIS scores among the study subjects.

Table 3 depicts the comparison of mean DAI score and OASIS score according to gender, there is no significant difference in the mean DAI score according to gender and the mean OASIS score for the females was 14.79 ± 5.29 (Mean \pm SD), higher than the males 12.50 ± 5.96 (Mean \pm SD) the difference was statistically significant.

Discussion

This study was conducted to find association between DAI score

Score	Gender	N	Mean	Std. Deviation	t-value	Degrees of Freedom	p-value
DAI#	Male#	244	22.76	5.537	0.634	571	0.526
	Female#	329	23.02	4.388			
OASIS*	Male*	244	12.50	5.961	4.867	571	0.000
	Female*	329	14.79	5.293			

Table 3: Comparison of mean DAI and OASIS scores according to gender.

and Oral Aesthetic Subjective Impact Scale (OASIS) self-perception of appearance among 18 to 24 year old college students.

DAI Index in the present study showed that 73.8% had normal occlusion or mild malocclusion which matches with the study done by Frazao et al. (71.3%) [9], higher than the study conducted by Dikson Claudino et al. [8] where normal occlusion or light malocclusion is found among only 54.4% of the study subjects as there is a difference in the racial characteristics, socio-economic status and gender among the study subjects. Prevalence of normal occlusion in the population studies is comparatively higher than the study conducted by Reddy PS et al. 57% due to the difference in age leading to complete development of jaw bones and dentition in the population [10].

OASIS score was significantly higher among the female study subjects compared to male counter parts due to the innate nature of female in this age group being more concerned about their aesthetics, the results are in contrast to the study conducted by Bhagyalakshmi A et al. [11] where there is no significant difference across gender in OASIS score among the 12 year old study subjects.

OASIS score in the present study was high among the study subjects with severe malocclusion i.e. high DAI scores, the results are similar to the study conducted by Flores MC et al. [3] where the children with high score for aesthetic component of Index of Orthodontic Treatment Needs reported with high OASIS scores. In the present study, students with developmental defects of oro-facial region, other common oral diseases like dental caries, periodontal disease and Socio-Economic Status which can determine a persons' oral health care are not recorded, further studies are recommended to examine the above factors on esthetic perception. OASIS measure can be used as a tool for assessing self-perception of facial aesthetics as it correlates with the clinical examination using Dental Aesthetic Index.

Conclusion

Severe malocclusion is seen among 8.2% of the study subjects, there is no significant difference in the prevalence of malocclusion across gender, mean OASIS score was high among female compared to males and a significant positive correlation observed between DAI and OASIS, and hence OASIS measure can be used to assess the self-perception of malocclusion.

References

1. Srivatsava SC, Verma V, Panda S, Anita G (2013) Perception of esthetics of different malocclusion traits by laypersons. J Indian Orthod Soc 47: 474-478.
2. Leslie AZ, Joann MM (2008) Social psychological face perception: Why appearance matters. Soc Personal Psychol Compass 2: 1497.
3. Flores CM, Major PW, Salazar FR (2004) Self-perceived orthodontic treatment need evaluated through 3 scales in a university population. J Orthod 3: 329-334.
4. Shaw WC, O'Brien KD, Richmond S (1991) Quality control in orthodontics: Factors influencing the receipt of orthodontic treatment. Br Dent J 170: 66-68.
5. Yeh MS, Koochek AR, Vlaslaic V, Boyd R, Richmond S (2000) The relationship of 2 professional occlusal indexes with patients' perceptions of aesthetics, function, speech, and orthodontic treatment need. Am J Orthod Dentofacial Orthop 118: 421-428.

6. Spencer AJ, Allister JH, Brennan DS (1992) Utility of the dental aesthetic index as an orthodontic screening tool in Australia. Thesis, University of Adelaide.
7. Mandall NA, McCord JF, Blinkhorn AS, Worthington HV, O'Brien KD (2000) Perceived aesthetic impact of malocclusion and oral self-perceptions in 14-15-year-old Asian and Caucasian children in greater Manchester. *Eur J Orthod* 22: 175-183.
8. Dikson C, Jefferson T (2013) Malocclusion, dental aesthetic self-perception and quality of life in a 18 to 21 year-old population: a cross section study. *BMC Oral Health* 13: 3.
9. Frazão P, Narvai PC, Latorre MR, Castellanos RA (2002) Malocclusion prevalence in the deciduous and permanent dentition of schoolchildren in the city of São Paulo, Brazil, 1996. *Cadernos de Saúde Pública* 18: 1197-1205.
10. Sreedhar R, Joseph J, Sarvanan S, Arumugham IM (2010) Normative and perceived orthodontic needs among 12 year old school children in Chennai, India—A comparative study. *ATI-Applied Technologies & Innovations* 3: 40-47.
11. Bhagyalakshmi A, Shivalinga BM, Nitin VM, Avinash BS, Suma S, et al. (2015) IOTN index based malocclusion assessment of 12 year old school going children in Mysore city. *Int J Adv Res* 3: 1235-1240.