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 definite 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].
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 definite 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 (71.7%) 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 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...
Discussion

This study was conducted to find association between DAI score 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 Dickson Claudio 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 counterpart 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.

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

| Score | Gender | N   | Mean ± SD | 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.
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