Original Research

THE EFFECT OF MALOCCLUSION AND SELF-PERCEIVED AESTHETICS ON THE SELF-ESTEEM OF A SAMPLE OF ADOLESCENTS IN CHENNAI CITY, INDIA

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Abstract

Aim: The aims of this study were to evaluate the effect of malocclusion on self-perceived aesthetics, self-perceived orthodontic treatment need, and self-esteem; the effect of perceived social impact of malocclusion and satisfaction with dental appearance on self-perceived treatment need, self-perceived aesthetics, and self-esteem; the influence of self-perceived need and aesthetics on self-esteem; and whether receipt of orthodontic treatment influences self-esteem.

Materials and methods: The study was conducted in Chennai. The samples were randomly selected from 5 representative schools located in four demographic areas of the city. Children between the age of 12-16 years who provided consent were included in the study. Sample size calculation revealed that for a 95 per cent confidence level and 5 per cent precision, the study included 332 subjects (16). Considering high chances of refusal or incomplete responses, total of 354 students (181 males and 173 females) aged 12–16 years (mean 14 years) were approached to take part in this study.

Results: There was a significant association between the adolescents’ self-perceived need for treatment and their self-perceived dental aesthetics as evaluated by their AC scores. More than half of the subjects (55.8%) considered well-aligned teeth to be important for overall facial appearance which suggested their moderate awareness of dental aesthetics. A significant association between self-esteem and perceived dental aesthetics, individuals who saw themselves as ‘less attractive’ had a lower self-esteem than those who viewed themselves as ‘attractive’. This implies that self-esteem might be affected by self-perceived aesthetics. There was no significant difference in the GSE scale between males and females.

Conclusion: The knowledge concerning the attitudes of patients to malocclusion is becoming increasingly important in orthodontics. Based on these findings, the psychosocial detriment of an unattractive dental appearance should not be overlooked. Implementing aesthetic self-evaluation methods may be a useful tool to consider when prioritizing orthodontic treatment.

Key words: malocclusion, self-esteem, aesthetics

INTRODUCTION

Crowded, irregular and protruding teeth have been a problem for some individuals since antiquity and attempts to correct this disorder dates back to 1,000 BC. As dentistry developed in the eighteenth and nineteenth centuries, a number of devices for the "regulation" of the teeth were described by various authors and apparently used sporadically by the dentists of that era1. Orthodontics has become a more prominent part of dentistry in recent years and this trend is likely to continue. The vast majority of individuals who had orthodontic treatment feel that they benefited from the treatment and are pleased with the result. Not all patients have the dramatic changes in dental and facial appearance but nearly all recognize an improvement in both dental condition and psychologic well-being.
Malocclusion describes a spectrum of deviation from the normal or ideal occlusion to very severe anomalies. Malocclusion was classified under the heading of Handicapping Dentofacial anomaly by the World Health Organisation and was described as “an anomaly which causes disfigurement or which treatment if the disfigurement or functional defect is, or is likely to be an obstacle to the patient’s physical or emotional well-being.” Several orthodontic researches have revealed that an important motivation for orthodontic treatment is usually improvement in dentofacial appearance. The studies on the attitude of children and adolescents to malocclusion conducted in various researches especially among the Caucasians also revealed increased concern for dental appearance and desire for orthodontic treatment.

The Index of Orthodontic Treatment Need (IOTN) is one of the most widely used occlusal indices in Europe and has gained widespread use around the world. It is essentially a method of defining the severity or degree of occlusal traits that may constitute a threat to the longevity of the dentition. These traits are then allocated into grades which define the priority of treatment need.

Demand for orthodontic treatment is mainly motivated by a concern for, and a desire to, improve appearance. Assessments of dental aesthetics are complex, subjective, and vary greatly between individuals. What is an acceptable dental appearance for one person may not be acceptable for another. Objective measures for dental aesthetics have been developed in an attempt to overcome these problems. Use of such indices allows individuals with the greatest need to be assigned priority when orthodontic resources are limited, and when treatment availability is unevenly spread. Similarly, individuals with little need for treatment can be safeguarded from the potential risks of unnecessary treatment.

Acceptable physical appearance, including the dentition is an important aspect of human self-esteem. Further well-aligned teeth and a pleasing smile reflect positively at all social levels. Most people undergo orthodontic treatment to improve their dental appearance; indeed, their major desire is usually related to aesthetics, and to look attractive for self-esteem.

A number of studies show that children have developed a self-perception for the need of orthodontic treatment. Although dissatisfaction with dental appearance is broadly related to occlusal irregularities, there are differences in the recognition and evaluation of the dental features. It has been suggested that gender, socio-economic background and age as the factors playing a role in the self-perception of dental appearance. In contrast, other studies found self-perception of dental attractiveness and treatment need were similar irrespective of gender, age or social background. To date, there is conflicting evidence on the impact of malocclusion on quality of life. A recent review concluded that a greater understanding is required of the physical, psychological and social consequences of malocclusion. Therefore, there is a need for a more comprehensive and rigorous assessments of the impacts of malocclusion on quality of life and social impact.

The aims of this study were to evaluate the effect of malocclusion on self-perceived aesthetics, self-perceived orthodontic treatment need, and self-esteem; the effect of perceived social impact of malocclusion and satisfaction with dental appearance on self-perceived treatment need, self-perceived aesthetics, and self-esteem; the influence of self-perceived need and aesthetics on self-esteem; and whether receipt of orthodontic treatment influences self-esteem.

MATERIALS AND METHODS
Study area and study population:
The study was conducted in Chennai, India between August, 2012 and October, 2012. The samples were randomly selected from 5 representative schools located in four demographic areas of the city.

**Selection criteria:**

- Children between the age of 12-16 years who provided consent were included in the study.
- Children who had undergone orthodontic treatment were excluded from the study.

**Sample size calculation:**

Sample size calculation revealed that for a 95 per cent confidence level and 5 per cent precision, the study included 332 subjects (16). Considering high chances of refusal or incomplete responses, total of 354 students (181 males and 173 females) aged 12–16 years (mean 14 years) were approached to take part in this study.

Ethical approval was obtained from the Department of Public Health Dentistry, SRM Dental College, Chennai. Furthermore, each head of the school was contacted to obtain approval to examine the students. Informed consent was obtained from the parents. Students who consented were clinically examined in the school premises under natural lighting.

**Study proforma:**

A self-reported questionnaire was extracted from Serene Adnan Badran’s study [11], to assess the effect of malocclusion on self-perceived aesthetics, self-perceived orthodontic treatment need, and self-esteem.

The questionnaire was handed individually to each student to fill out in the presence of an interviewer for guidance. In addition to demographic data, the questionnaire included an assessment of satisfaction with dental appearance, perceived need of orthodontic treatment, social benefits of dental attractiveness (perceived impact of malocclusion on social acceptance), and a Global Negative Self - Evaluation (GSE) scale (Alsaker and Olweus,1986) 12.

**Variables analysed:**

**Perceived need, satisfaction with appearance, and social impact of malocclusion-**

The perceived need for orthodontic treatment was determined by asking each student whether he/she considered they needed treatment. Satisfaction with dental appearance was assessed by asking the students if they were satisfied with the way their teeth looked. The social impact of malocclusion was obtained from questions on social acceptance that were derived from the study of Serene Adnan Badran11. The students recorded their response to each question on a four-point Likert scale. The sum of the scores determined the self-perceived social impact of malocclusion or benefits of dental attractiveness as reported by the students.

**Self-esteem:**

The GSE scale (Alsaker and Olweus, 1986)12, an adaptation of the self-esteem scale of Rosenberg (1965), was used to measure students’ self-esteem. Each question contained six response options scored from 1 to 6: 1, does not apply at all; 2, does not apply well; 3, applies somewhat well; 4, applies fairly well; 5, applies well; and 6, applies exactly. The scores were summed to obtain the average self-esteem of each student.

**IOTN Index:**

The next component of the survey was the Aesthetic Component (AC) of IOTN index. After completing the questionnaire, each student was shown the 10 photographs of the AC of the Index of Orthodontic Treatment Need (IOTN; Brook and
Shaw, 1989) and asked to select the photograph that best represented the attractiveness of his/her dental appearance. This was used as a measure of their self-perceived aesthetics.

**Training and calibration of the examiner:**

Before conducting the survey, training was carried out for the examiner and the recorder in the Department of Public Health Dentistry, SRM Dental College, under the guidance and supervision of the faculty of the department.

Training of the index used in the study was done on 20 patients on two occasions over 2 successive days. Intra-examiner reliability was assessed using kappa statistic, which was in the range of 0.80-0.91 for the index measured which reflected a high degree of conformity in the observations.

**Pilot study:**

The questionnaire was piloted for understanding on 20 children. Cronbach’s alpha was used to measure reliability of the answers to questions about social impact of malocclusion and self-esteem. Cronbach’s alpha value is found to be 0.749 which is said to be acceptable reliability. The intra-examiner reproducibility of the DHC and the AC was assessed using weighted kappa.

**RESULTS**

The total sample size of the study was 354. Table 1, 2 shows the age wise and gender wise distribution of the subjects. Significant positive correlation was seen between the AC of IOTN and GSE Scale.

**Table 1- Age wise distribution of the subjects**

<table>
<thead>
<tr>
<th>AGE</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 YEARS</td>
<td>58</td>
<td>16.4</td>
<td>16.4</td>
<td>16.4</td>
</tr>
<tr>
<td>13 YEARS</td>
<td>102</td>
<td>28.8</td>
<td>28.8</td>
<td>45.2</td>
</tr>
<tr>
<td>14 YEARS</td>
<td>114</td>
<td>32.2</td>
<td>32.2</td>
<td>77.4</td>
</tr>
<tr>
<td>15 YEARS</td>
<td>36</td>
<td>10.2</td>
<td>10.2</td>
<td>87.6</td>
</tr>
<tr>
<td>&gt;15 YEARS</td>
<td>44</td>
<td>12.4</td>
<td>12.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>354</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows the age wise distribution of the subjects. 32.2% of the subjects were 14 years old (mean age); 28.8% subjects were 13 years old; 16.4% of subjects were 12 years old and 12.4% of subjects were >15 years old.

**Table 2- Gender wise distribution of the samples**

<table>
<thead>
<tr>
<th>GENDER</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>181</td>
<td>51.1</td>
<td>51.1</td>
<td>51.1</td>
</tr>
<tr>
<td>FEMALE</td>
<td>173</td>
<td>48.9</td>
<td>48.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>354</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows the gender wise distribution of the samples. 51.1% of subjects were males and 48.9% of subjects were females.

**Table 3- Pearson correlation between GSE scale and AC of IOTN**

Correlations

<table>
<thead>
<tr>
<th></th>
<th>Global Negative Self-Evaluation scale</th>
<th>AC of the IOTN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Negative Self-Evaluation scale</td>
<td>Pearson Correlation (Sig. (2-tailed))</td>
<td>N=354</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>.986**</td>
</tr>
<tr>
<td></td>
<td>.000</td>
<td>354</td>
</tr>
<tr>
<td>AC of the IOTN</td>
<td>Pearson Correlation (Sig. (2-tailed))</td>
<td>N=354</td>
</tr>
<tr>
<td></td>
<td>.986**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>354</td>
</tr>
</tbody>
</table>

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

Table 3 shows the Pearson correlation between the GSE scale and AC of IOTN. Significant positive correlation is found to be achieved between the two parameters.
Table 4- Questions related to malocclusion and self-esteem

<table>
<thead>
<tr>
<th>Options</th>
<th>Gender</th>
<th></th>
<th>Pearson chi-square value</th>
<th>df</th>
<th>Asymp. Sig. (2 sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think you need orthodontic treatment</td>
<td>Not at all</td>
<td>58</td>
<td>123</td>
<td>11.481</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>May be</td>
<td>86</td>
<td>87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you satisfied with the way your teeth look</td>
<td>Not at all</td>
<td>125</td>
<td>81</td>
<td>17.883</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>A little</td>
<td>56</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you been teased about your teeth</td>
<td>Never</td>
<td>18</td>
<td>6</td>
<td>26.941</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>43</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Most of times</td>
<td>47</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>73</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think having straight teeth makes you successful in life</td>
<td>Not at all</td>
<td>62</td>
<td>33</td>
<td>54.548</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>A little</td>
<td>38</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Probably</td>
<td>44</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Definitely</td>
<td>37</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think having straight teeth makes you more popular</td>
<td>Not at all</td>
<td>107</td>
<td>53</td>
<td>28.966</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>A little</td>
<td>74</td>
<td>120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

P<0.05 indicates that there is significant difference between males and females in their outlook towards malocclusion.

DISCUSSION

In this study, the student’s perception of his/her dental aesthetics was measured using the AC of the IOTN where each student had to choose the photograph that most resembled his/her dental aesthetics. The validity of using dental photographs or the AC of the IOTN in representing dental attractiveness has previously been reported.[14] The results of the present research showed that there was a significant association between the adolescents’ self-perceived need for treatment and their self-perceived dental aesthetics as evaluated by their AC scores.

When assessing their attractiveness, females placed themselves at the more attractive end of the scale than males, which was in line with another study.[15] This is somewhat expected since females aspire to look more attractive and place more emphasis on their looks than males. The most significant factor affecting self-perceived need of treatment in this study was the dissatisfaction of the students with their own dental appearance.

In a study done by Emmanuel O. Ajayi et al, the half of the children (51.7%) expressed desire to straighten their teeth whereas 35% were not interested in orthodontic treatment and 13.3% were uncertain. There was no significant association
found between concern for dental aesthetics and desire for orthodontic treatment among the sexes with similar frequencies of 18.2% and 16.7% in boys and girls respectively who were dissatisfied with their teeth arrangement and desired to have orthodontic treatment to straighten them. However, less orthodontic concern was shown by the boys (9%) compared to 2% of the girls. Also, the frequency of 37% girls who were satisfied with their dental appearance and still wanted treatment was higher than 21% observed in the boys. Holmes in his study of English children also reported that a greater proportion of females perceived themselves as having less attractive dentitions and greater treatment need despite any objective evidence to support this view. More than half of the subjects (55.8%) considered well-aligned teeth to be important for overall facial appearance which suggested their moderate awareness of dental aesthetics.

The results of this study showed a significant association between self-esteem and perceived dental aesthetics. Individuals who saw themselves as ‘less attractive’ had a lower self-esteem than those who viewed themselves as ‘attractive’. This implies that self-esteem might be affected by self-perceived aesthetics. There was no significant difference in the GSE scale between males and females, which was in agreement with the study of Birkeland et al.

Individuals who had received orthodontic treatment had greater self-esteem than those who had not. Although many studies that compared the effect of orthodontic treatment on self-esteem did not reveal a significant change in self-esteem after treatment.

In this study, both students’ self-esteem and self-perceived aesthetics and need for treatment were influenced by the opinion of other people. Burden and Pine found the role of peer groups to be important when determining orthodontic treatment.

Students, who were also greatly dissatisfied with the appearance of their teeth, placed themselves at the least attractive end of the AC scale, perceived a great need for treatment, and suffered from low self-esteem.

Other studies reported that children with a normal dental appearance are judged to be better looking, more desirable as friends, and more intelligent, while those with a poor appearance are more subjected to teasing and harassment.

The knowledge concerning the attitudes of patients to malocclusion is becoming increasingly important in orthodontics. Based on these findings, the psychosocial detriment of an unattractive dental appearance should not be overlooked. Implementing aesthetic self-evaluation methods may be a useful tool to consider when prioritizing orthodontic treatment.

REFERENCES


