

Evaluation of Esthetic Component of The Index of Orthodontic Treatment Need: The Laymen's Perspective



Dentistry

KEYWORDS : Treatment needs, aesthetics, index of orthodontic treatment needs, malocclusion,

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ABSTRACT

Objective: The aim of this study was to evaluate orthodontic treatment need based on laymen's perspective.

Materials and Methods: A cross-sectional study was conducted on a sample population of 550 patients who were aged between 13 to 25 years. Pilot study was done in order to determine the feasibility of the study. Questionnaires were administered to the study subjects based on convenience sampling.

Results: The results showed revealed that 88.1% exhibited no or slight need for treatment, whereas 10% demonstrated moderate to borderline need, and only 2.9% proved to have a definite need for orthodontic treatment.

Conclusion: IOTN is a promising teaching aid for improving educational outcomes for orthodontic referral.

INTRODUCTION

There are many objective indices to measure oral health. These indices can determine how much a person's oral health deviates from the ideal or normal condition; therefore, appropriate treatment can be provided. In malocclusion, physical deviation from the ideal occlusion, there is a high degree of subjectivity with a variety of perceptions of orthodontic treatment need among the population.¹

Increasingly, malocclusion is considered an expression of normal biologic variation, and treatment need is often based as much on psychosocial concerns as on proven oral health risks attributable to malocclusion. Associations between malocclusion and secondary oral disease such as periodontitis, caries, and temporo-mandibular disorders are at best. The criteria for determining who receives or needs orthodontic treatment is controversial, and there is no infallible test for confirming treatment need.^{2,3}

The importance of dental aesthetics in predicting the need for orthodontic treatment is supported by the extremely high correlations that have been reported between dental aesthetics, need for treatment, and severity of malocclusion in clinical assessments.

McLain and Proffit have stated, "occlusal problems cannot be defined solely in physical terms." They say that the psychosocial consequences due to unacceptable dental aesthetics may be as serious, or even more serious, than the biologic problems.^{4,5}

The IOTN was developed to measure treatment need in people or groups to ensure that patients with the greatest needs receive treatment and to aid in orthodontic manpower planning.⁶ The aim of this study was to evaluate orthodontic treatment need in a subpopulation as on the basis of laymen perspective.

MATERIALS AND METHODS

Study design

The current undertaken study is a descriptive cross sectional study. The questionnaire, which was used for the evaluation, is pre-tested, self-structured and close-ended. For filling the questionnaire correctly, a 35-mm colour slide of the

AC of the IOTN was projected onto a 15 x10-m screen in a lecture hall, which consisted of approximately 250 to 260 students at one particular time. The purpose of the AC was been explained through a few paragraphs at the beginning of the questionnaire and the participants were instructed to record the AC grade that indicated the point at which they would seek treatment, if the photographs represented their own dentition. The questionnaire consisted of questions, which related to the student's personal experience regarding orthodontic treatment in terms of whether they had ever been referred to any kind of orthodontic treatment or if they feel that they should have been referred, whether they had ever received any orthodontic treatment, or if they had ever been refuse for any orthodontic treatment. However, there were few questions which were regarding the frequencies of dental visits (every 6 months, once a year, every 2 years, less often than every 2 years, only when in pain, never), or if anyone in their immediate family had ever received any orthodontic treatment. The study participants were asked not to confirm their answers with any other student when completing the questionnaires in order to minimise bias. The validity of the questionnaire was also checked.

Sampling method & sample size

In order to determine the study participants, a convenience sampling technique was been used. The sample size consisted of 550 students.

Inclusion & exclusion criteria

The inclusion criterion for the study was:

- (1) Students aged between 13 to 25 years
- (2) All permanent teeth present
- (3) Students who do not have any history of orthodontic treatment
- (4) Students who do not have any history of untreated dental caries
- (5) Students who do not have any history of poor periodontal health or previous extraction
- (6) Students who do

not have any chronic medical conditions or craniofacial anomalies.

(7) All students willing to participate in the study

The exclusion criteria for the study was:

Third molars were excluded

Students who were not willing to participate in the study

Students who did not gave their informed consent

Pilot study and Pre-testing of the questionnaire

Pilot study was conducted amongst 50 students comprising in order to determine the feasibility of the study. Questionnaires were administered to the study subjects based on convenience sampling. Based on the responses given by the study subjects, the data was analysed and Cronbach's coefficient was calculated, which was found to be 0.79.

Approval from authorities and ethical consideration

The required permission was taken from the concerned authorities from our institution for conducting the study. The study protocol was approved by the Institutional review board of Rama Dental College, Hospital & Research Centre.

Data collection and analysis

The collection of data was done by a pre- tested, self-structured; close- ended questionnaire followed by clinical examination of the patients by using mouth mirror and explorer. Treatment needs were also assessed by using the AC of IOTN [Figure 1].⁶ AC was assessed by comparing and matching digitally clicked intraoral frontal view photograph in occlusion to the nearest resemblance on standardized photographs of IOTN.

Number 1 was been considered the highest and number 10 was been considered the least attractive arrangement of teeth. The anterior teeth were been graded in their dental attractiveness as seen and no endeavour was made to predict the future appearance of the dentition.

The questionnaire was administered by a single investigator. The study was conducted between January 2016 to June 2016. The data was collected, compiled and then percentage and frequency distribution were calculated.

RESULTS

Five hundred and fifty study subjects participated in the study. The participants comprised 259 males (47.09%) and 291 females (52.90 %). The age group of 13–25 years old was been chosen because at that time, the students would be in a permanent dentition stage and at this age, there are less individual variations in their dental age and occlusal development.

Previous experience of orthodontic treatment

The students returned the questionnaires and hence it had was seen that 88.1% exhibited no or slight need for treatment, whereas 10% demonstrated moderate to borderline need, and only 2.9% proved to have a definite need for orthodontic treatment.

Frequency of Dental attendance

It was seen that if there was aesthetic component grade 4, the frequency of dental visits were more (33.6%) while with aesthetic component grade 5, the frequency of dental visits after every 6 months decreased to around 4.5%.

<u>Aesthetic Component (AC) Grade</u>	<u>Dental visits every 6 months (n= study subjects)</u>	<u>Percentage (%)</u>
1	68	12.3
2	110	20
3	135	24.5
4	185	33.6
5	25	4.54
6 or more	27	4.9

Table 1 shows the relationship between the frequency of dental attendance and choice of Aesthetic Component (AC) grade.

<u>Aesthetic Component (AC) Grade</u>	<u>n= no. of study subjects</u>	<u>Percentage (%)</u>
1	38	6.9
2	40	7.27
3	50	9.09
4	245	44.5
5	60	10.9
6	22	4.0
7	35	6.36
8	20	3.63
9	20	3.63
10	20	3.63

Table 2 shows the Aesthetic Component (AC) grade where orthodontic treatment would be requested (n = 550).

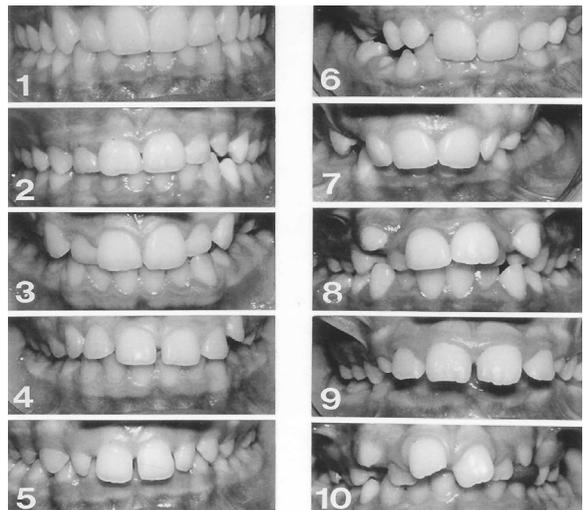


Figure 1 The Aesthetic Component (AC) of the IOTN (Brook and Shaw, 1989)

DISCUSSION

The present study is conducted on the evaluation of the aesthetic component of the index of orthodontic treatment needs by a laymen's perspective. It is believed that patients are very well aware of the conditions and about their desires to seek an orthodontic treatment. For having a better compliance of the patients, a better understanding is required between the patient and the orthodontist.

The present study reveals that only 2.9% children proved

to have a definite need for orthodontic treatment while 88.1% exhibited no or slight need for treatment and 10% demonstrated moderate to borderline need for orthodontic treatment. In the year 2009, a study was conducted by Migale et al in Southern Italy amongst the fifth graders where it was found that only 21.6% children need definite orthodontic treatment.⁷ Also, in 2002 a study was conducted amongst Malaysian children where again it was found that 22.8% children needed definite orthodontic treatment.⁸

Perceptions of orthodontic treatment need

Our study showed that 44% subjects assessed that they require orthodontic treatment at AC grade of 4 level. Many studies reveal that mostly orthodontic treatment is required at AC grade 4 levels.^{9, 10, 11} The basic concept behind AC is to help patients grade their own attractiveness to a level in order to make a decision for their treatment.

It could be argued that dental professionals are best placed to make judgements on the aesthetic values held by potential patients and their families. However, there is evidence that dental professionals' assessment of aesthetic acceptability differs from the layperson.^{12, 13} In some European countries, general dentists and orthodontists have been using indices of treatment need to prioritize state funded orthodontic treatment for children with major irregularities.¹⁴ Therefore, we can conclude that the benefit of treatment is not always fully obvious, and a more comprehensive diagnostic evaluation and parent-child discussion is advisable before treatment is initiated.

CONCLUSION

The study conducted showed that the threshold for the initiation of orthodontic treatment defined by the AC of the IOTN should be lowered so that grade 4 is included in the treatment need category. In addition, the frequency of dental visits was been found to be more in cases of Grade 4 level. The baseline data was obtained for planning future orthodontic services and patient counselling in the region as per priority in orthodontic triage. IOTN is a promising teaching aid for improving educational outcomes for orthodontic referral and is further recommended for the orthodontists to use the aid.

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