Original Article

Evaluation of esthetic component of the index of orthodontic treatment need: The orthodontists’ perspective

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INTRODUCTION

The demand for orthodontic treatment has increased dramatically in the past decade or so. The rationale underlying treatment recommendations based on esthetic impairment come from the social science researches, which indicate that unacceptable dental appearance may stigmatize, impede career advancement and peer group acceptance, encourage negative stereotyping, and have a negative effect on self-concept.\(^1\)

Orthodontic problems are usually not associated with grave mortality or morbidity; hence, they tend to be overlooked by most health professionals as less important. However, studies reveal that malocclusions have a significant impact on the psychosocial health of the affected individual.\(^2,3\)

For many years, epidemiologic studies of malocclusion suffered from considerable disagreement among investigators, especially regarding how much deviation from the ideal should be accepted within the bounds of normal. The orthodontic treatment need in the study group was assessed by esthetic component (AC) of the index of orthodontic treatment need (IOTN).\(^4,5\)

It is being widely used in dental epidemiology to prioritize orthodontic treatment and seeks to quantify the likely sociopsychological effects of each patient’s malocclusion.

Aims of the study

The study was undertaken to assess the orthodontic treatment need in 20–25-year-old patients reporting to the Department of Orthodontics and Dentofacial Orthopaedics.

Aim of the Study:
The purpose was to assess orthodontic treatment need in a subpopulation as assessed by the orthodontists.

Materials and Methods:
The study was conducted on a sample population of 753 patients aged 20–25 years to assess the need for orthodontic treatment using the esthetic component (AC) of the index of orthodontic treatment need (IOTN). Results: The AC revealed that 78.1% of the sample exhibited no or slight need for treatment, 13.2% demonstrated moderate to borderline need, and 8.7% proved to have a definite need for orthodontic treatment.

Conclusions: The AC-IOTN can definitely be considered to be used as a powerful tool for prioritizing orthodontic triage, patient counseling, and planning desired orthodontic mechanotherapy.

Abstract

Aim of the Study: The purpose was to assess orthodontic treatment need in a subpopulation as assessed by the orthodontists. Materials and Methods: The study was conducted on a sample population of 753 patients aged 20–25 years to assess the need for orthodontic treatment using the esthetic component (AC) of the index of orthodontic treatment need (IOTN). Results: The AC revealed that 78.1% of the sample exhibited no or slight need for treatment, 13.2% demonstrated moderate to borderline need, and 8.7% proved to have a definite need for orthodontic treatment. Conclusions: The AC-IOTN can definitely be considered to be used as a powerful tool for prioritizing orthodontic triage, patient counseling, and planning desired orthodontic mechanotherapy.

Key words: Esthetic component, index of orthodontic treatment need, treatment needs

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Orthopaedics, as assessed by orthodontists to plan future orthodontic services in the region as per priority in orthodontic triage, for worldwide comparisons, and as a powerful tool for patient counseling.

MATERIALS AND METHODS

The sample comprised 753 patients (360 females and 393 males - Table 1) irrespective of gender, caste, creed, and socioeconomic status essentially fulfilling the following criteria:

- 20–25 years old [Table 2]
- No history of previous/current orthodontic treatment
- Presence of all permanent teeth with/without third molars
- No large restorations
- Informed consent from patients for participation as part of the survey.

Patients were examined clinically using mouth mirror and explorer. Treatment need was assessed by using the AC of IOTN\(^6\) [Figure 1]. 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 is the most, and 10, the least attractive arrangement of teeth. The anterior teeth were graded in their dental attractiveness as seen and no endeavor was made to predict the future appearance of the dentition. Stained restorations, chipped teeth, poor gingival conditions, etc., were ignored in this assessment as recommended.

The AC of IOTN has commonly been used to evaluate the treatment need on esthetic grounds by dentists (operator-rated)\(^7\) or patients (self-rated).\(^8\)\(^\text{-}\)\(^10\)

Both patients and orthodontists can also assess the AC\(^11,12\) with the intent of removing the influence of parents and patients’ desires on the assessment of treatment need apart from considering individual variations in psychological maturity.

The AC gradings were split into three main groups [Table 3].

**Observations**

All the data were analyzed using the Statistical Package for the Social Sciences 13.0 software program, IBM Corporation, New York, USA. Results of the AC revealed that 78.1% exhibited no or slight need for treatment, whereas 13.2% demonstrated moderate to borderline need, and only 8.7% proved to have a definite need for orthodontic treatment. This states that the examiner, in general, expressed satisfaction with the esthetics of most of the screened patients, like the one shown in Figure 2 unlike the one in Figure 3 that without doubt required treatment.

**DISCUSSION**

Malocclusions may range from the severe, rather uncommon conditions such as cleft lip and palate to the more common irregularities of teeth resulting from biological variations. Management of malocclusion is contained by a number of disciplines in dentistry, primarily orthodontics and attempts to prioritize treatment have used the measure of IOTN, which relates to treatment need rather than its complexity.

A sample of 753 patients from among those reporting to the department for a routine dental check-up was considered. The age group of 20–25 years old was chosen because by then, the patients would be in a permanent dentition stage. At this age, there are less individual variations in dental age and occlusal development.\(^7\)

The AC scores were recorded by the orthodontist unlike other studies where the patients self-assessed with the intent of removing the influence of patients’ desires on the assessment of treatment need apart from considering individual variations in psychological maturity.

78.1% exhibited no or slight need for treatment, whereas 13.2% demonstrated moderate to borderline need, and 8.7% proved to have a definite need for orthodontic treatment [Figures 4 and 5].

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**Table 1: The division of sample according to gender**

| Gender  | Frequency | Percentage |
|---------|-----------|------------|
| Female  | 360       | 47.8       |
| Male    | 393       | 52.2       |
| Total   | 753       | 100.0      |

**Table 2: Division of the subpopulation according to the age**

| Age (in years) | Frequency | Percentage |
|----------------|-----------|------------|
| 20             | 98        | 13.02      |
| 21             | 111       | 14.74      |
| 22             | 136       | 18.06      |
| 23             | 143       | 18.99      |
| 24             | 152       | 20.18      |
| 25             | 113       | 15.01      |
| Total          | 753       | 100.0      |

**Table 3: Esthetic component grades**

| Grade  | Treatment need                        |
|--------|---------------------------------------|
| 1-4    | No need for treatment                 |
| 5, 6 and 7 | Moderate/borderline need for treatment |
| 8, 9 and 10 | Definite need for orthodontic treatment |

**Table 1: The division of sample according to gender**

**Table 2: Division of the subpopulation according to the age**

**Table 3: Esthetic component grades**
In evaluating the AC in a sample population in Shiraz,[13] 91.3% of the population was in no need for treatment, 2.44% in moderate need, and 6.21% in great need for treatment. On the contrary, 22.8% of the Malaysian children were found to have a definite need according to AC in a study conducted by Abdullah and Rock in 2001.[14]

Analysis of registrations of the AC of the IOTN should be interpreted with some caution. It has shortcomings, for example, the lack of photographs showing hypodontia, anterior spacing, and a Class II division 2 dentition. There is always some uncertainty in assessing the photographs of different types of malocclusion to identify one which corresponds to one’s own dental appearance. Kok et al., (2004)[12] suggested that concern about a malocclusion is not closely related to the severity of the malocclusion in terms of esthetics as measured by the IOTN-AC. This index is constructed for Caucasians, and Dawjee et al. 2002[15] suggested that the 10 photographs should be complemented with photographs of patients from other ethnic backgrounds.
These studies not only provide a global perspective of high orthodontic treatment need, but also confirm a persistently high orthodontic treatment need over the past decade.

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. In addition, the demand for orthodontic treatment has increased in contemporary setting due to increasing awareness and perceptions resulting in extensive waiting rolls. It is essential, therefore, that health authorities should carefully prioritize and plan the provision of orthodontic treatment. The introductions of easily comprehensible, reproducible, valid, and reliable indices of therapeutic need such as the AC of IOTN have allowed improved focusing of services.

CONCLUSIONS

- A baseline data were obtained for planning future orthodontic services in the region as per priority in orthodontic triage. The data collected can help for worldwide comparisons with other populations
- The AC-IOTN is, hence, being used as a powerful tool for patient counseling and planning desired orthodontic mechanotherapy in the department.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES
1. Cons NC, Jenny J, Kohout FJ. DAI. The Dental Aesthetic Index. Iowa City, Iowa: College of Dentistry, University of Iowa; 1986.
2. Mandall N, McCord J, Blinkhorn AS, Worthington H, O’Brien K. Perceived aesthetic impact of malocclusion and oral self-perception in 14-15 year old Asian and Caucasian children in Greater Manchester. Eur J Orthod 1999;21:175-83.
3. O’Brien K, Wright JL, Conboy F, Macfarlane T, Mandall N. The child perception questionnaire is valid for malocclusions in the United Kingdom. Am J Orthod Dentofacial Orthop 2006;129:536-40.
4. Evans R, Shaw W. Preliminary evaluation of an illustrated scale for rating dental attractiveness. Eur J Orthod 1987;9:314-8.
5. Brook PH, Shaw WC. The development of an index of orthodontic treatment priority. Eur J Orthod 1989;11:309-20.
6. Shaw WC, O’Brien KD, Richmond S. Quality control in orthodontics: Factors influencing the receipt of orthodontic treatment. Br Dent J 1991;170:66-8.
7. Fida M. Orthodontic treatment need in a sample Pakistani population. J Coll Physicians Surg Pak 2000;10:360-4.
8. Grzywacz I. The value of the aesthetic component of the index of orthodontic treatment need in the assessment of subjective orthodontic treatment need. Eur J Orthod 2003;25:57-63.
9. Hunt O, Hepper P, Johnston C, Stevenson M, Burden D. The aesthetic component of the index of orthodontic treatment need validated against lay opinion. Eur J Orthod 2002;24:53-9.
10. Al-Zubair NM, Idris FA, Al-Selwi FM. The subjective orthodontic treatment need assessed with the aesthetic component of the index of orthodontic treatment need. Saudi J Dent Res 2015;6:9-14.
11. Birkeland K, Boe OE, Wisth PJ. Orthodontic concern among 11-year-old children and their parents compared with orthodontic treatment need assessed by index of orthodontic treatment need. Am J Orthod Dentofacial Orthop 1996;110:197-205.
12. Kok YV, Mageson P, Harradine NW, Sprod AJ. Comparing a quality of life measure and the Aesthetic Component of the Index of Orthodontic Treatment Need (IOTN) in assessing orthodontic treatment need and concern. J Orthod 2004;31:312-8.
13. Danaei SM, Amirrad F, Salehi P. Orthodontic treatment needs of 12-15 year old students in Shiraz, Islamic republic of Iran. Rev Santé Méditerranée Orient 2007;13:326-34.
14. Abdullah MS, Rock WP. Assessment of orthodontic treatment need in 5,112 Malaysian children using the IOTN and DAI. J Community Dent Health 2001;18:242-8.
15. Dawjee SM, Ackerman A, Shaw WC. An aesthetic component of the IOTN for black subjects. J S Afr Dent Assoc 2002;57:258-63.
16. de Oliveira CM. The planning, contracting and monitoring of orthodontic services, and the use of the IOTN index: A survey of consultants in dental public health in the United Kingdom. Brit Dent J 2003;195;704-6.