ORIGINAL PAPER

USE OF ORTHODONTIC TREATMENT NEEDS INDICES FOR ORAL HEALTH SURVEY

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ABSTRACT

Aim: The aim of our study is to compare incidence of orthodontic malocclusion based on occlusal indices and Index of Orthodontic Treatment Need (IOTN), and to evaluate the most commonly used method among the dentists for orthodontic treatment in Sarajevo. **Material and Methods:** The sample consisted of 110 (31 female and 79 male)subjects older than 16 years with complete permanent dentition. Subjects were examined according to Occlusal Index (Angle classification of malocclusion, overjet, overbite, dental arch crowding and tooth rotation) and IOTN index. We conduct survey regarding which indexes are used in deciding on orthodontic treatment need, among primary health care and Orthodontist. **Results:** The present study show differences between the presence of malocclusion and treatment need as assessed by these two used indices. Based on the survey that we conduct all primary health care doctors use Occlusal Index to decide need for orthodontic treatment, more than 95% of orthodontic specialist use Occlusal Index for treatment need estimation. **Conclusion:** When measuring and grading treatment needs we should rely on Index of orthodontic treatment need. In such high demand for orthodontic treatment need it is necessary to establish need for the orthodontic treatment as fundamental, so that individuals with greatest treatment need can be assigned priority.

Key words: IOTN, Occlusal Index, Orthodontic treatment, Treatment outcome.

1. INTRODUCTION

The objective assessment of malocclusion is important in documenting prevalence and severity of malocclusion in populations group. Many methods are developed for assessing the malocclusion (1, 2). Occlusal Index based on Angle classification is the is diagnostic index. Usually, it is used in evaluating the incidence of malocclusion in the particular population (2). However in everyday clinical praxis, most treatment decisions are based on orthodontic treatment need indices. Several indices have been developed to assess orthodontic treatment need in particular populations or communities. One of the most widely applied indices for assessment orthodontic treatment need is the Index of Orthodontic Treatment Need (IOTN) (3).

The main reasons for orthodontic treatment are usually an improvement in facial or dental aesthetic (2). The benefits of orthodontic treatment is hard to justify if treatment is based on improvement in oral or dental health for the majority of orthodontic patients (4). Previously published study indicate an encouraging awareness of the psychosocial benefits of orthodontic treatment (5).

Usually, the treatment success is based on orthodontic indices before and after treatment. For this purposes, most case presentation relies on Angle Occlusal Index before and after the treatment. This creates misconception regarding the use of indices mentioned above in clinical practice.

The aim of our study is to compare the incidence of orthodontic malocclusion based on Occlusal Index (molar and canine relationships according to Angle classification; overjet, overbite, tooth rotation and crowding in the arch) and IOTN and to evaluate the most commonly used method among the dentists for orthodontic treatment need in Sarajevo.

2. MATERIALS AND METHODS

Subjects:

The sample consisted of 110 (31 female and 79 male) subjects older than 16 years with complete permanent dentition. Subjects who were undergoing or had previously received orthodontic treatment were not included in this study.

Methods:

Clinical examinations of subjects were performed in

the school classrooms, under daylight conditions. A mouth mirror and sliding caliper were used, without radiographs or study casts. The examination was carried out by two calibrated examiners who had been previously trained and calibrated in the utilization of the IOTN and Occlusal Index (molar and canine relationships according to Angle classification; overjet, overbite, tooth rotation and crowding in the arch).

Subjects were examined according to Occlusal Index (molar and canine relationships according to Angle classification; overjet, overbite, tooth rotation and crowding in the arch) and IOTN index (the index of the need for orthodontic treatment).

IOTN has two parts - Dental Health Component (DHC) and Aesthetic Component (AC), and each subject's occlusion was assessed using both components.

Dental Health Component (DHC) falls into five categories - grades: Grade 1 and Grade 2 represent 'no/little need for orthodontic treatment', Grade 3 'borderline need for treatment' and Grade 4 and Grade 5 'severe/great need for treatment'. Within each category the different occlusal traits are included according to their severity - overjet, overbite, open bite, cross bite (anterior or posterior), displacement of teeth, and impeded eruption of teeth, Class II and Class III occlusion, clefts of the lip and/or palate and hypodontia.

Aesthetic Component (AC) consists of a scale of ten color photographs showing different levels of dental attractiveness, with Grade 1 representing the most attractive and Grade 10 the least attractive dentitions. The validation panel judged Grades 1 - 4 represent 'no/little need for treatment,' Grades 5 - 7 'borderline need for treatment' and Grades 8 - 10 represent 'great need for treatment' on aesthetic grounds.

For Occlusal Index we assessed molar and canine relationships according to Angle classification; overjet, overbite, tooth rotation and crowding in the arch.

Survey

We conduct survey regarding which index is used in deciding on orthodontic treatment need, among primary health professional care and Orthodontist.

3. RESULTS

Statistical analyzes were undertaken using the Statistical Packages for Social Sciences (SPSS Inc. Chicago, Illinois; USA).

Survey
- We conduct the survey regarding which index is used in deciding on orthodontic treatment need.
- Primary health care professionals 100% use Angle molar relationship, overjet, and overbite.
- Orthodontist 97 % use Angle molar relationship, overjet, and overbite.

4. DISCUSSION

Orthodontic treatment, as integral part of oral health care programs need to be based on information of treatment needs. Most commonly used an index for this purposes is IOTN index (6, 7, 8). Based on the survey that we conduct all primary health care doctors use Angle classification based Occlusal Index to decide the need for orthodontic treatment, more than 95% of orthodontic specialist also use Angle index

Category	Grade	n	%
No need	1	38	34
Little Need	2	47	43
Mild Need	3	21	19
Severe Need	4	2	2
Great Need	5	2	2
Total		110	100

Table 1. Distribution of Dental Health Component of IOTN

Category	Grade	n	%	%
No need	1	50	45	
	2	14	13	92
	3	28	25	
	4	10	9	
Mild Need	5	2	2	
	6	2	2	6
	7	2	2	
Great Need	8	0	0	
	9	2	2	2
	10	0	0	
Total		110	100	2

Table 2. Distribution of the Aesthetic Component of IOTN

Sagittal relationships of the arches	Canine		First molar	
	n	%	n	%
Class I	63	57	63	57
Class ½ II	31	28	30	27
Class II	5	5	4	4
Class ½ III	8	7	11	10
Class III	3	3	2	2
Total	110	100	110	100

Table 3. Distribution of the sagittal relationships of Angle classification

Malocclusion	n	%
Present	4	4
Not present	106	96
Total	110	100

Table 4. Distribution of malocclusions based on Occlusal Index (molar and canine relationships according to Angle classification, overjet, overbite, tooth rotation and crowding in the arch).

for treatment need.

The present study show differences between the presence of malocclusion and treatment need as assessed by these two used indices. Based on the Occlusal Index that we used in this study, the malocclusion is present in 96% respondents. Compared to DHC which showed that 56% of respondents need orthodontic treatment (43% have little need of treatment), and based on AC only 8% of respondents need orthodontic treatment. Dental Health Component (DHC) represents biological or anatomical aspect of treatment need on dental and functional grounds. Aesthetic Component (AC) represents treatment need based on social well-being of the person. The main reasons for orthodontic treatment are usually an improvement in facial or dental esthetic (9).

When measuring and grading treatment needs, we should rely on Index of treatment need. At the population level problems that are functionally handicapping should be ranked first, while a single tooth problem or problems that minimally affect persons well being should be ranked

last. The national dental health policies are usually based on IOTN indexes in other to provide the health care to the one that needs it most.

Based on the previously published need for orthodontic treatment among Bosnian schoolchildren according to DHC, 53.6% of subjects need orthodontic treatment (10). Study published by Shaw find that lack of orthodontic treatment when there was need did not lead to psychological difficulties in later life (11).

So we can conclude that in such high demand for orthodontic treatment need it is necessary to establish need for the orthodontic treatment as fundamental so that individuals with greatest treatment need can be assigned priority.

5. CONCLUSION

When measuring and grading treatment needs we should rely on Index of treatment need. In such high demand for orthodontic treatment need it is necessary to establish need for the orthodontic treatment as fundamental so that individuals with greatest treatment need can be assigned priority.

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