RESEARCH ARTICLE

Assessment of malocclusal traits using the index of complexity, outcome and need (ICON) index in orthodontic patients reporting to a private practice


Abstract

Aims & Objectives: This study attempts to evaluate the usefulness of an index of complexity, outcome and treatment need (ICON) in a group of orthodontic patients reported to a private practice. Materials & Methods: A total of 175 consecutively treated patients identified from the Private orthodontic practice over a period of one year were selected and analysed as per the ICON Index. Statistical analysis was done using SPSS Package-17 version. Results: Among males majority of them showed substantial improvement 59(86.7%) in their treatment, followed by 7(10.2%) greatly improved cases and 2(2.9%) moderately improved cases. Amongst females majority of them were moderately improved cases; 88(82.2%), followed by 10(9.3%) substantially improved cases and 9(8.41%) greatly improved cases. Conclusion: It was observed from this study that, ICON index can be considered comprehensive enough for assessing the malocclusal traits amongst the patients.

Key Words: Adolescents; ICON (The Index of Complexity Outcome and Need); Pre and Post Treatment.

Introduction

In dentistry, the provision of orthodontic treatment has been routinely justified on the grounds of potentially improving dental aesthetics, dental health, occlusal functioning, and psychosocial adjustment (1). Numerous indices have been developed since the 1960s either to rank or score the severity of a malocclusion relative to a preconceived orthodontic ideal, or in terms of treatment need (1, 2). None of these indices have been developed and validated for both the deviation from normal occlusion and treatment need. The limitations of these various indices have been recognised for some time but, they are still being used to evaluate the results of treatment. Since these known orthodontic indices were not comprehensive enough, the Index of Complexity, Outcome and Need was introduced (1). The index takes into account five components: the aesthetics, upper arch crowding/spacing, crossbite, incisor open bite/overbite and buccal segment anterior posterior relationship (3).

This study attempts to evaluate the usefulness of an index of complexity, outcome and treatment need (ICON) in assessing the malocclusal traits, comprehensively in a group of orthodontic patients reporting to a private practice. The ICON attempts to incorporate the patient's and clinician's perceptions of orthodontic treatment into a single index.

Materials & Methods

Sample: A total of 175 consecutively treated patients were identified from the Private orthodontic practice over one year time period. Pre- (T 0) and post- (T 1) treatment dental casts of 175 patients were randomly selected from the patient archive of the private practice.

Inclusion criteria: Patients treated exclusively by only practicing Orthodontists were included in this study, with the prior consent from the patients. The study sample met the following inclusion criteria:

(1) Permanent dentition,
(2) Apparently normal crown morphology (casts showing gross abnormalities were excluded), and
(3) No features that would alter the natural mesio-distal or bucco-lingual crown diameter, such as restorations, caries, attrition, or fracture. The dental casts represented a spectrum of malocclusion types and severity before and after treatment.

Exclusion criteria: Those who had discontinued the treatment due to various reasons were excluded from the study. Patients with clefts and other craniofacial deformities were excluded.

Tools: The measurements used were those described in computing the ICON Index (1).

Statistical Analysis: The statistical analysis was done using SPSS Package Version 17. The various components of the ICON have different scales. Some components result in ordinal data (e.g. upper arch crowding/spacing crossbite), while other components are recorded on a metric scale (AC, incisor overbite, and sagittal relationship of the buccal segment, total score, and weighted score). The data were analyzed using descriptive and analytical methods for analysis.

Results:

There were totally 175 adolescents who showed varied types of malocclusal traits, which was assessed using ICON index. Table 1 shows categorisation of the male, 68(38.2%) and maximum being females 107 (60.1%), who had reported for the orthodontic intervention to the clinic.

<table>
<thead>
<tr>
<th>Total Sample</th>
<th>Males</th>
<th>Females</th>
</tr>
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<tbody>
<tr>
<td>175</td>
<td>68(38.2%)</td>
<td>107 (60.1%)</td>
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Table 1. Gender Wise Distribution of the Sample

The patients reporting to the clinic were classified based on five point complexity scale,
The results of this study shed some light on the pattern of malocclusion that is seen in Bagalkot district which is dominant mainly of displacement, cross bite, deep bite and increased overjet. However, larger scale studies are required to evaluate the actual pattern of malocclusion, via conducting survey studies on a random sample. The age group targeted in the present study were mainly adolescents, which were different than most of the previous indices, which were conducted on children and adolescents which moderately reflects the subjective perception of dental aesthetics and demand for orthodontic treatment (1, 2, 4).

Most studies on patterns of malocclusion and need for orthodontic treatment have been described regarding groups of children and orthodontic treatment need. The need of professionally defined orthodontic treatment assessed according to ICON (with score >43) in our study was similar to the findings in other studies (2, 5, 6). The findings of these studies between countries cannot be directly compared not only because of the difference in the assessment methods, but also due to the difference in the study design and the access to orthodontic treatment in public care system. Taking into account the literature and presented data, there could be a reason for the assumption that the severity of malocclusion and complexity of orthodontic treatment need can be optimally assessed using this index. Actually, it is necessary to do a more detailed investigation on the factors influencing the development of the severity of malocclusions and requiring an interdisciplinary approach of treatment on adolescents in future.

**Limitations of using ICON index for the analysis of the malocclusal traits:**

1. It was observed through our study that, ICON index doesn’t give any considerations for the Cephalometric findings.
2. Discussions have been done only on crowding while rotations are not taken into consideration.
3. Total space analysis has been not considered.

**Conclusion**

It was observed from this study that, ICON index can be considered comprehensive enough for assessing the malocclusal traits amongst the patients. All groups presented mainly moderate severity of malocclusion what corresponds with mild complexity grade of orthodontic treatment, while further detailed surveys are required for a thorough analysis.

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**Conflict of Interest:**

The author(s) declared no conflict of interests.

**Source of Funding:** Nil
References


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