ORIGINAL ARTICLE (APMC – 443) DOI: 10.29054/APMC/17.443

Applicability of Index of Orthognathic Functional Treatment Need (IOFTN)

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ABSTRACT

Introduction: The Index of Orthognathic Functional Treatment Need (IOFTN) was introduced to overcome the limitations of IOTN index to determine treatment need for Orthognathic surgery, and to assist in prioritising public resources for Orthognathic surgery. **Objective:** To apply IOFTN in patients who were in preparation for Orthognathic surgery. **Study design:** Across sectional study. **Setting:** Department of Orthodontics, Faisalabad Medical University (FMU), Faisalabad. **Duration of study:** 6 months from 10.6.2017 to 10.12.2017. **Sample size:** The calculated sample size was 50 patients. **Sampling technique:** Purposive sampling technique. **Data collection procedure:** Findings were recorded on data collection Performa. The data was analysed in Statistical Package for the Social Sciences software package (SPSS) 21. **Results:** Results showed that 90 % of the cases scored grade 4 and 5. 51% of female patients and 49% of male patients were needed definite Orthognathic treatment according to IOFTN. No significant gender difference was found for Orthognathic treatment need. IOFTN showed 40% (Grade 5), 45% (Grade 4), 7% (Grade 3), 2=% (Grade 2) and 0% (Grade1) results respectively.7 % of the patients were classified as being in need of moderate treatment, with 2 % having mild treatment needs. Class II malocclusions (60%) and Class III skeletal patterns (40%) were the most prevalent type. **Conclusion:** IOFTN found 90% of orthognathic patients as having great to very great functional needs.

Keywords: ICON; IOTN; PAR.

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Submitted for Publication: 05-12-2017 *Accepted for Publication: 13-07-2018*

Article Citation: Azeem M, Shahzad B, Asghar R, Haq A, Iqbal J, Gardezi AA. Applicability of Index of Orthognathic Functional Treatment Need (IOFTN). APMC 2018;12(3):170-2.

INTRODUCTION

The Index of Orthognathic Functional Treatment Need (IOFTN) is not currently being used to determine suitability for Orthognathic treatment; however, it is a useful aid for assessing and referring patients and takes into account functional and facial appearance. A rating or scoring system which assigns a mathematical numeric grade to a patient's occlusion is known as orthodontic index.[1] Several orthodontic indexes have been proposed to access orthodontic treatment need according to complexity of patient's malocclusion. The IOTN, PAR and ICON are perhaps the most commonly used indexes.[2]

There are certain limitations of IOTN index, such as, there is no scoring for cases of class II division 2 or class III incisor patients and in health component, various functional indications for Orthognathic surgery are not mentioned e.g. gummy smile.[3]

To address these shortcomings, the IOFTN was developed by Ireland et al.[4]The IOFTN is unique in incorporating functional scoring as integral part of the evaluation of treatment need.[5] It is applied to patients who have 'malocclusions that are not amenable to orthodontic treatment alone, due to skeletal deformity, and will ordinarily apply to those patients who will have completed facial growth prior to surgery.[6-8] IOFTN grades are as follows (figure 1):[4]

- IOFTN grades 1 represent **no need for treatment**
- IOFTN grades 2 represent **mild need for treatment**
- IOFTN grades 3 represent **moderate need for treatment**
- IOFTN grades 4 represent **great need for treatment**
- IOFTN grades 5 represent **very great need for treatment**

Current cross-sectional study was design to apply IOFTN in patients who were in preparation for Orthognathic surgery in orthodontic department. To our knowledge, present study is the first reporting on the use of IOFTN in Pakistan.

METHODOLOGY

Study design: A cross sectional study.
Setting: Orthodontics Department, FMU, Faisalabad.
Duration of study: 6 months from 10-6-2017 to 10-12-2017.
Sample size: The calculated sample size was 50 patients
Sampling technique: Purposive sampling technique

This study was conducted after ethics approval, in which 50 patients who were in preparation for Orthognathic surgery, above18 years of age, irrespective of gender were included.

Inclusion Criteria: Chronological ages above 18 years. Patient willing for participation

Exclusion Criteria: Previous Orthognathic treatment. Incomplete records

Data Collection Procedure

IOFTN was assessed using orthodontic records, to find out the orthodontic treatment need by application of IOFTN Index (Figure 1). Findings were recorded on data collection Performa. Scoring was done as follows:[7]

- IOFTN grades 1 represented **no need for treatment**

• IOFTN grades 2 represented **mild need for treatment**
• IOFTN grades 3 represented **moderate need for treatment**
• IOFTN grades 4 & 5 represented **great to very great need for treatment**

DATA Analysis: The mean age and gender distribution among the selected sample was calculated.

Chi-square test was applied to find the distribution of grades according to the gender. Comparisons were made among the male and female categories.

RESULTS

The mean age of the patients was 20.15 years. The sex distribution was 60%females and40% males. The mean age of male patients was 21.19 years and mean age of female patients was 20.11 years. (Table 1)

90% needed definite treatment, 7 % of the patients were classified as being in need of moderate treatment, while 2% having little or no treatment need. IOFTN showed 40% (Grade 5), 45% (Grade 4), 7% (Grade 3), 2=% (Grade 2) and 0% (Grade1) results respectively. (Table 2)

Out of those 90% patients that needed definite orthodontic treatment, 51% were females and 49% were males. No significant gender difference was found. (Table 3)

Class II malocclusions (60%) and Class III skeletal patterns (40%) were the most prevalent type.

Index of Orthognathic Functional Treatment Need

This index applies to those malocclusions that are **not amenable to orthodontic treatment alone, due to skeletal deformity,** and will ordinarily apply to those patients who will have completed facial growth prior to surgery (commonly 18 years of age and older). It relates only to the **functional** need for treatment and should be used in combination with appropriate psychological and other clinical indicators.

5. Very Great Need for Treatment
5.1 Defects of cleft lip and palate and other craniofacial anomalies
5.2 Increased overjet greater than 9 mm
5.3 Reverse overjet ≥ 3 mm
5.4 Open bite ≥ 4 mm
5.5 Complete scissors bite affecting whole buccal segment(s) with signs of functional disturbance and or occlusal trauma
5.6 Sleep apnoea not amenable to other treatments such as MAD or CPAP (as determined by sleep studies)
5.7 Skeletal anomalies with occlusal disturbance as a result of trauma or pathology
4. Great Need for Treatment
4.2 Increased overjet ≥ 6 mm and ≤ 9 mm
4.3 Reverse overjet ≥ 0 mm and < 3 mm with functional difficulties
4.4 Open bite < 4 mm with functional difficulties
4.8 Increased overbite with evidence of dental or soft tissue trauma
4.9 Upper labial segment gingival exposure ≥ 3mm at rest
4.10 Facial asymmetry associated with occlusal disturbance
3. Moderate Need for Treatment
3.3 Reverse overjet ≥ 0 mm and < 3 mm with no functional difficulties
3.4 Open bite < 4 mm with no functional difficulties
3.9 Upper labial segment gingival exposure < 3mm at rest, but with evidence of gingival/periodontal effects
3.10 Facial asymmetry with no occlusal disturbance
2. Mild Need for Treatment
2.8 Increased overbite but no evidence of dental or soft tissue trauma
2.9 Upper labial segment gingival exposure < 3mm at rest with no evidence of gingival/periodontal effects
2.11 Marked occlusal cant with no effect on the occlusion
1. No Need for treatment
1.12 Speech difficulties
1.13 Treatment purely for TMD
1.14 Occlusal features not classified above

Figure 1: IOFTN

Table 1: Age and Sex Distribution. (n=50)

Parameter	Results
Mean Age	20.15 Years
Males	20 (40 %)
Females	30 (60 %)

Table 2: Results of IOFTN. (n=50)

Grades	% of Patients
Very great Treatment Need	40%
Great Treatment Need	45%
Borderline Treatment Need	7%
Little Treatment Need	2%
No Treatment Need	0%

Table 3: Gender distribution in Grade4 & 5. (n=50)

		Definitive Treatment Need
		Yes (%)
Gender	Male	49%
	Female	51%
Total		100%

DISCUSSION

IOFTN was developed in UK, but its applicability has not been investigated in Pakistan. Present study was conceived on 50 patients. The sample for present study was not taken from orthodontic population, but from ongoing patients.

Results of present study showed that 90% were in great or very great need of treatment, while 2% were found to be having little need of treatment. Out of those 90% patients that needed definite orthodontic treatment, 51% were females and 49% were males i.e.no gender differences.

Results of present study can be compared with other local studies.[9-11]Zahid et al. showed that 75% was in definite treatment need according to health Component of IOTN with no gender difference which is similar to findings of our studies. In another study by Zahid et al, 36% of female patients and 41% of male patients were found to be needed definite orthodontic treatment according to IOTN with no gender difference which is in agreement with findings of our studies. Our results are in contrast to findings of Naeem et al. who found that 41 % needed definite therapy, in which 52 % were males, but only the aesthetic component of IOTN was used in this study. Our results are also similar to Güray et al. (1994), Uur et al. (1998), Uncuncu N (2001) and Souames M (2006) who showed insignificant difference among males and females for treatment need.[12-15]Firestone et al (1999) also yielded similar results. A study conducted in Turkish subjects found 12.0% need for moderate treatment and 83.2% for great treatment need. All above mentioned comparisons are with IOTN studies.

As far as comparison with IOFTN studies, our results are in agreement with other international studies. Barber et al.[16]

concluded that 86% of all participants scored 4 or 5 using the IOFTN. Harrington et al.[5]and Borzabadi et al.[6] concluded that above 90% of all participants scored 4 or 5.

To our knowledge, current research is the first on application of IOFTN in Pakistan. However further large scale, multi centric studies are suggested.

CONCLUSION

- IOFTN found 90% patients as having great to very great functional needs.
- 7 % were in moderate while 2 % were in mild treatment needs group.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

AUTHORS	Contribution to The Paper	Signatures
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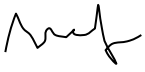
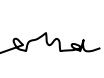
Dr. Arfan ul Haq Associate Professor Orthodontics / Dean of Dentistry, Dental Section-FMU Faisalabad	Main supervisor, wrote and critically reviewed the manuscript	
Dr. Javed Iqbal Associate professor Oral Biology, Dental Section-FMU Faisalabad	Critically reviewed the manuscript & final editing	
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