ORIGINAL ARTICLE

Orthodontic Treatment Need at Nishter Institute of Dentistry

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ABSRACT

Background: The Index of Orthodontic Treatment Need (IOTN) is one of the important index to find out orthodontic need of patients.
Aim: To find out the need of orthodontic treatment in patients visiting Nishter Institute of Dentistry, Multan (NID).
Method: The index was applied using plaster models and intraoral examination. The measurements of various components of IOTN index was taken with the help of digital vernier calliper.
Results: The results of various measurements of IOTN index was taken, recorded and analyzed statistically. Result of the present cross-sectional study showed that 65% patients were in grade 4 and 5 of IOTN. The analysis showed that 13% were in grade 4 of IOTN, 52% were in grade 5, 15% were in grade 3, 16% were in grade 2 and 4% patients was in grade 1 of IOTN index.
Conclusion: No significant sex differences were shown for the need of orthodontic therapy in any category of IOTN. The need of orthodontic treatment is very high in patients of Southern Punjab, Pakistan.
Keywords: Treatment Need; IOTN; Orthodontics.

INTRODUCTION

The patients seeking orthodontic treatment are being increased due to aesthetics being the primary reason[1-4]. All the patients reporting to seek orthodontic treatment cannot be included because of limited resources and time in government funded facilities at subsidized rates. For that reason, it is required to assess the need for orthodontic treatment.

Many indices have been developed to categorize and evaluate the need for orthodontic treatment (Draker 1960, 1967; Saltzmann, 1968; Summers, 1971; Linder-Aronson, 1974)[5]. These occlusal indices evaluate the malocclusion according to its severity. IOTN is a simple, repeatable and reliable index. IOTN is more practical as compared to other indices being used to assess treatment need. Brook and Shaw described IOTN in 1989[7]. Its Aesthetic Component AC was developed originally by Evan and Shaw[8] and it consists of a scale of ten color photographs showing different levels of dental attractiveness, it became popular Because of simplicity and ease of use and is used to objectively assess treatment need.

So far, the data available on the orthodontic treatment need in southern Punjab, Pakistan population is not available. The information over the treatment need in a population is important for planning orthodontic services and appropriate filtration of patients to render services to high treatment needs. IOTN index can be applied to find out the need of orthodontic treatment in any region. This if applied to public sector orthodontic centres of Punjab, Pakistan, will help in find out the orthodontic disease burden and budget allocation accordingly.

Following this rationale our study was designed to evaluate the orthodontic treatment need in patients attending orthodontics department of Nishtar institute of Dentistry, Multan. This could serve as a baseline data for planning future orthodontic researches and planning the orthodontic services in government sector.

METHODS

This cross sectional study was conducted after approval from Institutional Ethical Committee in Orthodontic Department**,** Nishter Institute of Dentistry, Multan from 1.1.2018 to 1.1.2019. Young patients, irrespective of gender with age range of 12 to 18 years were selected. The other inclusion points were: erupted permanent teeth from second molar to second molar in both the arches and patient willing to participate in this study. Following patients were excluded: any previous history of orthodontic treatment, craniofacial syndrome, medically compromised patients, TMD issues and those who were not willing to participate in this study.
Data Collection Procedure: Present study was taken place at Orthodontic Department**,** Nishter Institute of Dentistry, Multan. The sample size was 200 patients who were selected according to above-mentioned selection criteria. The index was applied using plaster models and intraoral examination. The measurements of various components of IOTN index was taken with the help of digital vernier calliper. The intraoral analysis was done to see for hypodontia, clefting, unerupted teeth, and molar relationship. Digital vernier callipers were used to measure overjet, cross-bites, crowding in front and back segments of teeth. Scoring was done as follows[17].
• Grade 1= No need for orthodontic therapy
• 2= Little need
• 3= Borderline need
• 4 & 5 represented Definitive need

The results of various measurements of IOTN index was taken recorded and analyzed statistically to find out the need of need of orthodontic treatment. The kappa statistics were use to get the data of intra and inter-accessor reliability. The mean age and sex distribution in each category of IOTN was found out. Chi-square test was used to find out the distribution of patients in each category of IOTN grade and gender comparison was also done.

RESULTS

The mean age of the sample was 17.32±2.43 years. The gender participation showed that 58% were girls (16.22±2.65) and 42% were boys (17.02±2.14) (Table I). Result of the present cross-sectional study showed that 65 % patients were in grade 4 and 5 of IOTN. The analysis showed that 13% were in grade 4 of IOTN, 52% were in grade 5, 15% were in grade 3, 16% were in grade 2 and 4% patients was in grade 1 of IOTN index (Table II).
No significant sex differences were shown for the need of orthodontic therapy in any category of IOTN (Table III).

Table I: Age and Sex Distribution. (n=200)

Parameter	Results
Mean Age	16.11±2.33 Years
Males	80 (40 %)
Females	120 (60 %)

Table II: Results of D-IOTN. (n=200)

Grades	% of Patients
Very great Treatment Need	15%
Great Treatment Need	53%
Borderline Treatment Need	16%
Little Treatment Need	14%
No Treatment Need	2%

Table III: Gender distribution in definitive treatment need group. (n=200)

Gender	Definitive Treatment Need Yes%
Male	45%
Female	55%
Total	100%

DISCUSSION

The evaluation of need of orthodontic treatment by D-IOTN method is a key tool to assess need of any orthodontic population. Present study was conceived on 200 Pakistani patients. The sample for current study was not collected from general population group, but from orthodontic department of our institutes.

of current study showed that 68% were in definitive need of therapy, while 2% were found to be having no need of therapy. Results of present study can be compared with other available studies[19-23]. Zahid et al. in his study showed that 75% of the subjects were in definite treatment need category. Our results are in contrast to findings of Naeem et al. who found that 41% of the cases needed definite care, 41% of the patients needed moderate care, with 18% having no care need as per IOTN. Difference in results can be linked to the fact that Naeem et al. used aesthetic component of IOTN index instead of D-IOTN used in present study.

In present study, out of 68% patients that needed definite therapy, 55% were females and 45% were males i.e. no statistically significant gender difference. This is in agreement with findings of study by Zahid et al where no significant gender difference was found for therapy need. However results are in contrast with findings of another study by Zahid et al, where 36% of female patients and 41% of male patients were found to be in need of definite orthodontic care as per D-IOTN. Results are also in contrast with findings of Naeem et al who found that 37 % of females and 52 % of males needed definite therapy. Our results are also in accordance to studies by Güray et al., Uur et al., Uncuncu and Souames, who showed insignificant difference among males and females for treatment need[24-27].

Firestone et al concluded similar results in their study, in which 14.3% patients were found to be in moderate care need and 81.6% in great care need. A study conducted in Turkish population by Ucuncu concluded that 12% patients were in need for moderate care need and 83.2% for great care need.

There are various orthodontic indices available such as IOTN, PAR, ICON and dental disability index. These indices can also be utilized for diagnosis, treatment planning, prognosis of orthodontic malocclusions and planning orthodontic disease control programmes. Keeping in mind the fact that there are very few public sector orthodontic centres in Punjab, D-IOTN can be applied to the patients visiting these dental care institutes, so that patients with definitive treatment need get treatment on priority basis. This is similar to the Schanschieff report on H-IOTN which was applied in NHS in UK, to avoid unnecessary therapy of mild orthodontic subjects and H-IOTN was also found to be a helpful sieve in allocating orthodontic care in a fair and transparent way[28].

It is necessary to point out certain shortcomings of current study i.e. small sample size, short study duration, and sample is representative of only two orthodontic centres of Pakistan. However, in presence of certain shortcomings still present study provided useful data regarding needs of orthodontic patients in Pakistani population. Future large scale studies are suggested with improved methodology and longer study duration.

CONCLUSION

- The need of orthodontic treatment is very high in patients of southern Punjab, Pakistan.
- Result of the present cross-sectional study showed that 65 % patients were in grade 4 and 5 of IOTN.
- No significant gender differences were found

Conflict of interest: Nil

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