Aesthetic Treatment Needs for Buccally Displaced Canines in Orthodontics

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Abstract

Background and Objectives: Aesthetic and related psychosocial impairment are the major ill effects of malocclusion. Many studies have concluded that aesthetics, especially alignment of the visible anterior teeth, is often a main motivating factor for see king orthodontic treatment. The objective of the study was to assess the aesthetic treatment need of orthodontic patients with buccally displaced maxillary canines using the "Aesthetic Component of Index of Orthodontic Treatment Need (AC-IOTN)".

Methodology: We recruited 158 subjects at Khyber College of Dentistry (KCD), with a chronological age range of 12 to 30 years. Age, gender, aesthetic grade and category of treatment need were noted for all the patients. Version 20.0 of the Statistical Package for Social Sciences was used to enter and analyze the data.

Results: Our sample consisted of 71 (44.9%) males and 87 (55.1%) females. The mean age of the overall sample was 18.51± 4.2 years. There were 82 (51.9%) patients in the "no or little need" category, 25 (15.8%) patients in the "mod erate" treatment need category, and 51 (32.8%) patients in the "definite" treatment need category, where most of the patients had a grade 8 need on IOTN-AC.

Conclusion: On aesthetic need, majority of patients in definite treatment need category fell in the grade 8. Therefore it can be concluded that buccally displaced canine is one of the primary motivating factors for people to seek orthodontic treatment.

Keywords: Aesthetic component, Index of orthodontic treatment need, buccally displaced canines.

Introduction:

Aesthetic and related psychosocial impairment are the major ill effects of malocclusion.[1] Factors motivating adolescents to seek orthodontic treatment are complex, but many studies conducted in this field have concluded that aesthetics–especially alignment of the visible anterior teeth–often is a main motivating factor.[2,3,4,5]

The permanent canines are the foundation of an aesthetic smile and functional occlusion.[6] The normal position for the eruption of a buccally displaced canine (BDC) is buccal to the general line of the dental arch[7], and are commonly seen in practice.[8] Factors that interfere with the development and eruption of canines have serious consequences on aesthetics, function and stability of the stomatognathic system.[6] Since the buccal displacement of canines is visually obvious to a casual observer, it motivates patients to seek treatment[7], with the desire to optimize their appearance.[9] The increasing global demand for orthodontic care necessitates the development of methods and tools to assess and grade malocclusion[10], and ascertain treatment need.[11] The Index of orthodontic treatment need (IOTN) determines treatment needs, and helps both the dentist to determine the costs of treatment.[12]

It consists of two separate components: Dental Health Component (DHC) and Aesthetic Component (AC). AC considers the aesthetic impairment brought on by malocclusion.[13,14]

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[4]

The AC is made up of a graded scale that indicates various levels of declining dental aesthetics using a set of ten colored photographs of anterior teeth, numbered 1-10. Photograph 1 represents the most attractive and photograph 10 represents the least attractive arrangement of teeth.[15]

Canine is a tooth of prime importance in smile, aesthetics, function and support to the upper lip, therefore assessing the treatment need for a displaced canine could help in prioritizing its treatment. The aim of this study was to estimate orthodontic treatment need for the buccally displaced canines, using the aesthetic component of the IOTN.

Methodology:

We conducted a cross-sectional study in the department of Orthodontics at Khyber College of Dentistry (KCD), Peshawar. Ethical clearance was obtained from ethical review committee. The Study duration was six months from June 2020 to December 2020. Sample consisted of 158 consecutive out-patients visiting the Orthodontics department. A written informed consent was taken from each patient.

Inclusion criteria were:

- Patients 12-30 years of age
- Normal crown morphology
- Permanent dentition

Exclusion criteria were:

- Patients having supernumerary teeth
- Patients having missing teeth except third molars
- Patients with craniofacial syndromes/anomalies
- Previous orthodontic/orthopedic treatment

Each patient was seated in the natural head position (NHP) in a dental chair. Lips of the patient were retracted with a self-retaining lip retractor. The patient was asked to close on his/her back teeth. The operator then positioned him/her-self in front of the patient at the foot end and evaluate the frontal view of the anterior teeth under the dental light. The patients were graded from its intra-oral front view for AC of IOTN (Fig. 1), according to the ten-grade scale. Age, gender, grade and category were noted for all the patients in the proforma. Three categories of treatment need were scored as:

- AC grades 1-4, represented no or little need for treatment category
- AC grades 5-7, represented moderate or borderline need for treatment category
- AC grades 8-10, represented definite need for orthodontic treatment category

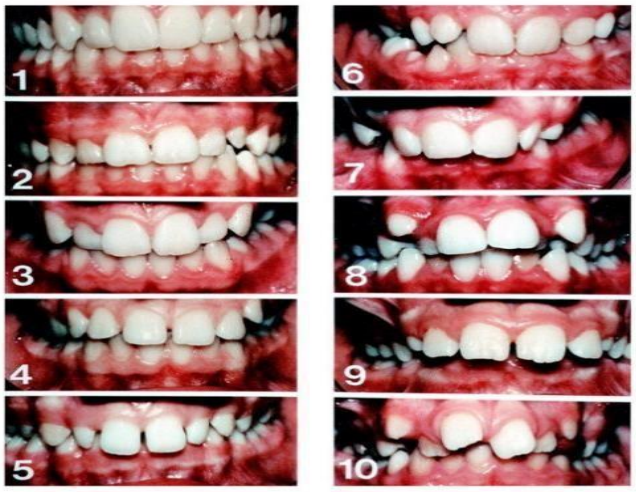

Fig. 1: The 10 grade photographical scale of AC

Data was analyzed using Statistical Package for Social Sciences (SPSS version 20.0). Mean±SD was calculated for the quantitative variables like age. For categorical data like gender and categories on IOTN, frequencies and percentages were computed.

Results:

The study sample consisted of 158 subjects with a chronological age range of 12 to 30 years. Mean age calculated for the overall sample was 18.51 ±4.2 years (Table 1).

Table 1: Age of the patients in a sample

	Sample (N)	Minimum	Maximum	Mean	Std. Deviation
AGE	158	12	30	18.51	4.221

Age distribution of the sample is shown in Fig 2 in the form of a graph and the distribution of the study participants according the "AC grade" of their treatment need is given in Table 2.

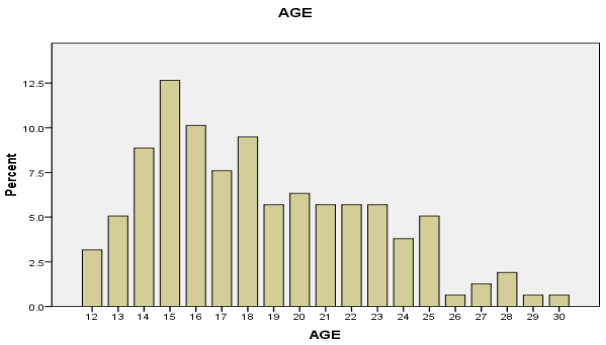

Fig 2: Age distribution of sample

Table 2: Distribution of Aesthetic Component in sample

Treatment need	No. of patients	Percentage
No Or Little Treatment Need (Grade 1-4)	82	51.9%
Moderate Treatment Need (Grade 5-7)	25	15.8%
Definite Treatment Need (Grade 8-10)	51	32.8%
Total	158	100

Distribution of grades for aesthetic component (AC) were 24 (15.2%) AC grade 1, 12 (7.6%) AC grade 2, 30 (19%) AC grade 3, 17 (10.8%) AC grade 4, 5 (3.2%) AC grade 5, 9 (5.7%) AC grade 6, 10 (6.3%) AC grade 7, 45 (28.5%) AC grade 8, 5 (3.2%) AC grade 9, 1(0.6%) AC grade 10. In the category of definite treatment need (grade 8-10), most of the patients occupied grade 8 and minimum were in grade 10. (Figure 3)

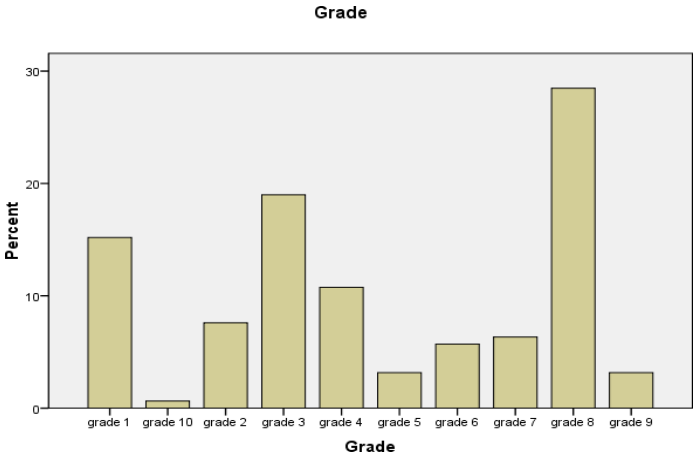

Fig 3: This graph shows the treatment need grades according to the Aesthetic component of IOTN

Discussion

The mismatch between the treatment demand, patient burden and availability of resources requires orthodontic treatment to be categorized according to the treatment need. Where there are limited resources, priority should be given to the patients with definite treatment need. Therefore categorization is important for the estimation of real treatment need of the population, a fact that needs to be taken into account especially when the resources are limited.

The study used the aesthetic component of Index of Orthodontic treatment need (IOTN) to find the orthodontic treatment need. IOTN has been commonly used both locally and internationally, thus allowing comparison of our study results with those conducted in other populations.

In our study, we assessed treatment need of the orthodontic patients on the aesthetic basis. In definite treatment need category of AC, malocclusions with buccally displaced maxillary canines fall in grade 8. Although grade 9 and 10 are more severe malocclusions but buccally displaced canines are more common and readily visible so pose a greater aesthetic concern.

In the present study, in the category of definite treatment need (grade 8-10), most of the patients occupied grade 8 and minimum were in grade 10.

In a local study conducted by Zahid S and Bashir U, distribution of grading for the definite treatment need category of AC was 77 (18.7%) in AC 8, 41 (10%) in AC 9 and 52 (12.6%) in AC 10.[16] Their results were consistent with ours and shows greater no. of patients in the grade 8. Likewise, In a study conducted in Turkey, “Grade 8” was predominantly found among the orthodontic patients in a “definite” treatment need category.[17] Similar findings have been reported by other studies conducted by Soni S et al. 2011 and Shrestha S et al. 2012 respectively.[18,19]

In another study conducted by Otuyemi et al, the grade 8 was dominant in definite treatment need category of IOTN. Their results were also consistent with the results of our study.[20]

Limitation

Our study had a limitation that we subjectively assessed malocclusion on the basis of aesthetic treatment need. Malocclusion should be categorized on the basis of aesthetics as well as dental factors for a more objective assessment of the orthodontic treatment need.

Conclusion

On aesthetic component of IOTN, the majority of patients fell in the grade 8 of the definite treatment need category. Therefore it can be concluded that buccally displaced maxillary canines is one of the primary reasons for the patients to seek orthodontic treatment.

CONFLICT OF INTEREST: None
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Authors Contributions

1.Palwasha Gul- Data collection and analysis
2. Syed Suleman Shah- Study design and Article writing
3.Tahira Hussain- Analysis and Proofreading