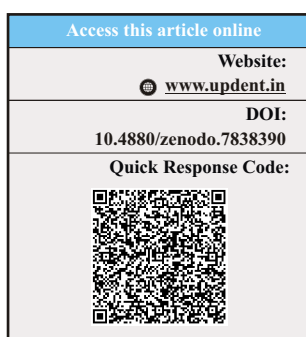


Prevalence of Malocclusion & Orthodontic Treatment Needs Among Dental Students

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Abstract

Need For Study: Actual and self perceived need for orthodontic dental treatment varies significantly. It is important to identify young professionals in actual need of treatment who can be well treated. It is important to note that no large-scale survey on orthodontic treatment needs in children/adults has been conducted in India. This study is an effort to find out the prevalence of malocclusion and orthodontic treatment needs scientifically using Index for Orthodontic Treatment Need (IOTN).

Material & Method: Survey forms, PMT sets, Cheek retractors, Enamel bowls, Kidney trays, PPE kits, Disposable mouth masks, Disposable gloves and Alcohol based antiseptic solution for hand rubbing. Clinical examination of 100 dental students from Inderprastha Dental College was done. The need for orthodontic treatment was assessed using IOTN index and overall oral health status was assessed by DHC index and AC score.

Result: According to the Dental Health Component gradings, 55% of dental students require no treatment, 33% of dental students have Borderline Need of treatment and 12% of the dental students are in Definitive Need of treatment. According to the Aesthetic Component gradings, 85% of the total sample needs no Orthodontic treatment, 8% of dental students have borderline need for treatment and 6% of the dental students are in definitive need for Orthodontic Treatment.

Conclusion: A small but significant number of dental students have definite need of orthodontic treatment.

Keywords: Index of Orthodontic Treatment Need, Dental Health Component, Aesthetic Component

Introduction

Evaluation of self-perceived needs and actual needs for orthodontic treatment and other factors which affects these treatment needs such as personal, psycho-social factors and socio-demographic factors help in planning orthodontic treatment and estimating the required resources as well as manpower.¹ Self perceived need is not always same as actual need as previous studies have shown differences between patients' and professionals' perceptions of orthodontic treatment needs. Also, actual needs as assessed by dental professionals may not be linked to patients' perceptions until and unless the condition has progressed sufficiently to be symptomatic and starts affecting the function.^{2,3} Few studies have been done to assess the orthodontic treatment need in the population.⁴⁻⁶ It is expected that a cost-effective orthodontic therapy should be target-oriented to address these treatment needs. Thus, the aim of orthodontic treatment should be not only to establish an orofacial system with harmonious interaction of teeth, masticatory musculature, and temporomandibular joints but also to prevent other impairments such as periodontal

lesions, caries, root resorptions, dental trauma, and craniomandibular dysfunction.^{7,8}

Recently, both medical and dental treatments are increasingly and continuously being evaluated under the aspect of economic efficiency and feasibility. Hence, the cost-benefit ratio of orthodontic treatment is also being questioned, since the therapeutic result must justify the financial cost of the treatment performed.

Hence, this study was undertaken to find out the prevalence of malocclusion and orthodontic treatment needs among dental students using Index for Orthodontic Treatment Need (IOTN). This study shall help to formulate policies for the future in the training and placement of orthodontists for maximizing the benefits to the needy.

Aim of the Study

To estimate the prevalence of malocclusion and ascertain the orthodontic treatment need using the Index for Orthodontic Treatment Need (IOTN) among dental students and to evaluate any relation between increased score of DHC index and AC score in the existing orthodontic problems.

Materials & Methodology

The study was conducted at Inderprastha dental college, Sahibabad on 100 dental students.

Inclusion criteria:-

- Permanent dentition with no missing teeth except third molar.
- No major local/systemic problems or trauma which affects the growth and development of facial structures or body.
- No previous history of orthodontic treatment.

Materials used were Survey forms, PMT sets, Cheek retractors, Enamel bowls, Kidney trays, PPE kits, Disposable mouth masks, Disposable gloves and Alcohol based antiseptic solution for hand rubbing.

The Dental Health Component (DHC)

<p>GRADE 1 (No treatment)</p> <p>1.1. Incisal/occlusal wear consistent for third molars due to crowding, displacement, the presence of supernumerary teeth, retained deciduous teeth and any pathological cause.</p> <p>1.2. Extensive hypoplasia and moderate displacements (more than 1 tooth missing in the quadrant) requiring pre-orthodontic orthodontics.</p> <p>1.3. Increased overjet greater than 3mm.</p> <p>1.4. Reverse overjet greater than 3mm with normal mandibular and speech difficulties.</p> <p>1.5. Midline shift by 4mm and/or other craniofacial anomalies.</p> <p>1.6. Malocclusion due to tooth loss.</p>	<p>GRADE 2 (Borderline need)</p> <p>2.1. Increased overjet greater than 3mm but less than or equal to 5mm with no compensatory lip.</p> <p>2.2. Reverse overjet greater than 3mm but less than or equal to 5mm.</p> <p>2.3. Anterior or posterior crossbite with greater than 3mm but less than or equal to 5mm discrepancy between centric contact position and intercuspal position.</p> <p>2.4. Contact point displacements greater than 3mm but less than or equal to 5mm.</p> <p>2.5. Lateral or anterior open bite greater than 3mm but less than or equal to 5mm.</p> <p>2.6. Deep overbite (complete or partial) or partial crossbite but no trauma.</p>
<p>GRADE 3 (Need treatment)</p> <p>3.1. Less extensive hypoplasia requiring orthodontic rehabilitation or orthodontic space closure to obtain the need for a prosthesis.</p> <p>3.2. Increased overjet greater than 3mm but less than or equal to 5mm.</p> <p>3.3. Reverse overjet greater than 3mm with no compensatory or speech difficulties.</p> <p>3.4. Reverse overjet greater than 3mm but less than 5mm with normal mandibular and speech difficulties.</p> <p>3.5. Anterior or posterior crossbite with greater than 3mm discrepancy between centric contact position and intercuspal position.</p> <p>3.6. Distinct incisal/occlusal wear with no functional occlusal contact in one or both dental arches.</p> <p>3.7. Severe contact point displacements greater than 5mm.</p> <p>3.8. Extensive lateral or anterior open bite greater than 5mm.</p> <p>3.9. Increased and complete crossbite with gingival or pulpal trauma.</p> <p>3.10. Partially erupted teeth, tipped and impacted against adjacent teeth.</p> <p>3.11. Presence of supernumerary teeth.</p>	<p>GRADE 4 (Large)</p> <p>4.1. Increased overjet greater than 5mm but less than or equal to 7mm with no compensatory lip.</p> <p>4.2. Reverse overjet greater than 5mm but less than or equal to 7mm.</p> <p>4.3. Anterior or posterior crossbite with less than 5mm discrepancy between centric contact position and intercuspal position.</p> <p>4.4. Contact point displacements greater than 5mm but less than or equal to 7mm.</p> <p>4.5. Anterior or posterior open bite greater than 5mm but less than or equal to 7mm without gingival contact.</p> <p>4.6. Increased overbite greater than or equal to 7mm without gingival contact.</p> <p>4.7. Protruded or post-erupted occlusion with multiple anomalies including up to half a unit discrepancy.</p>
	<p>GRADE 5 (None)</p> <p>5.1. Extensive inter-maxillary crossbite including contact point displacements less than 5mm.</p>

Figure 1: Dental Health Component Index

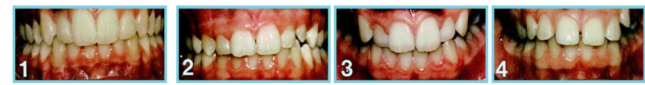
All survey forms were duly filled by the orthodontist along with the questionnaire to assess the attitude of the patient towards dental treatment.

- Patients were examined for Missing teeth, Overjet, Crossbites, Displacement of contact points and Overbites. The patients were categorized according to the most severe trait, with a score ranging therefore from 1 to 5. The Aesthetic component was graded on scale of 1 – 10.
- The need for orthodontic treatment and overall oral health status was assessed by DHC score Index (Figure 1) and AC score Index (Figure 2).

AESTHETIC COMPONENT

The pictures below are used to assess the Aesthetic Component.

Grade 1-4 = Little or no treatment required



Grade 5-7 = Moderate or borderline treatment required



Grade 8-10 = Great need for treatment



Figure 2: Aesthetic Component Index

The data recorded was subjected to chi square statistical analysis.

Results

DHC scores (Table 1, Figure 3) obtained from examining the sample population of 100 Dental students showed that Grades 1 and 2 were found in 55% of the dental students, grade 3 among 33% and Grade 4 or 5 among 12% of the dental students.

(Table 2, Figure 4) represents the comparison of Aesthetic component among the students examined. Grade 1-4 were found in 85% of the dental students, grade 5-7 among 9% and Grade 8-

10 among 6% of the dental students.

Chi square test on DHC and AC scores (Table 3, Table 4) showed that there was no significant difference in the treatment need among males and females ($p=0.145$ in DHC and $p=0.607$ in AC).

Chi square test on DHC and AC scores (Table 3, Table 4) showed that there was no significant difference in the treatment need among males and females ($p=0.145$ in DHC and $p=0.607$ in AC).

Table 1: Treatment Need According To Dental Health Component

DHC grade	Need for treatment	Total Percent of Students
Grade 1 and 2	No treatment	55%
Grade 3	Borderline	33%
Grade 4 and 5	Definitive treatment	12%

Chi square 200.0, $p=0.000$

Figure 3: Dental Health component Score Bar Graph

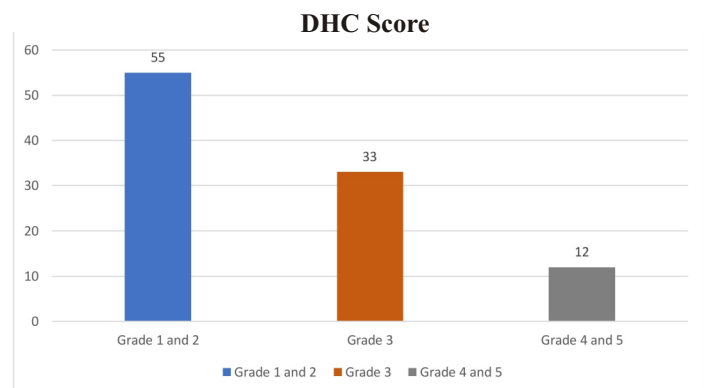


Table 2: Treatment Need According To Aesthetic Component

AC grade	Need for treatment	Total Percent of Students
Grade 1-4	No treatment	85%
Grade 5-7	Borderline	09%
Grade 8-10	Definitive treatment	06%

Chi square 200.0, p=0.000

Table 3: Dental Health Component Among Males and Females

DHC grade	Male	Female	Chi square Value	p-value
Grade 1 and 2	66.6%	50%	3.860	0.145
Grade 3	30%	34.3%		
Grade 4 and 5	3.4%	15.7%		

Discussion

The present study showed that, no treatment need was found in majority of students ie 55% of students, while 33% students had borderline needs and definitive treatment need was seen among 12% of students. Similar results were seen in the study done by Alhummayani FM and Taibah SM (2018), who found no treatment need was seen in majority of sample examined (54.3%), borderline treatment need in 21.4% and definitive treatment need was seen in 24.3% of the sample.

Also, similar results were found by Kumar Pet al¹⁰ with aesthetic component showing no treatment need in maximum people examined. examined (73.6%), borderline among 16.9% and definite treatment need in 9.5 % people.

On the other hand, Cardoso CF et al¹¹ found definite treatment need in maximum number of patients in Dental Health Component (72%) and in Aesthetic Component patients (61%) and no treatment need in minimum number of patients in DHC (9%) and AC (11%).

There was no significant difference in the orthodontic treatment needs among male and females. The result of the present study was found to be contradictory to the study done by Aikins EA et al¹² found that males required definite treatment need significantly more than females when they screened 612 Nigerian school children. This discrepancy may be due to difference in race and ethnicity.

Conclusion

✓ According to the Dental Health Component gradings, the data showed that more than 55% of dental students require no treatment, 33% of dental students are in Borderline Need of treatment and 12% of the dental students are in definitive need of treatment.

Table 4: Aesthetic Component Among Males And Females

AC grade	Male	Female	Chi square Value	p-value
Grade 1-4	96.6%	91.4%	0.998	0.607
Grade 5-7	3.33%	16.6%		
Grade 8-10	0.(0%)	3.33%		

✓ According to the Aesthetic Component gradings, 85% of the total sample needs no Orthodontic treatment. Also, 9% of dental students require the borderline need for treatment and 6% of the dental students are in definitive need for Orthodontic Treatment. The study helped us to identify young professionals in need of treatment who can be well treated under the guidance of college authorities and efficient orthodontists. The present study was conducted in a limited population. More surveys and studies similar to this study should be encouraged by the government and institutions with a larger population to have a better understanding of the orthodontic treatment needs amongst population.

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