

ORTHODONTIC TREATMENT NEED AS PERCEIVED BY UNIVERSITY STUDENTS USING AESTHETIC COMPONENT (AC) OF INDEX OF ORTHODONTIC TREATMENT NEED (IOTN)

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ABSTRACT

The aim of the present study was to assess the perception of orthodontic treatment need in University students using Aesthetic Component (AC) of Index of Orthodontic Treatment Need (IOTN). Stratified sampling technique was used to select sample of 223 students of Hail University from Colleges of Dentistry, Medicine, Public Health and Preparatory year. For each of the 10 pictures of AC, participants were asked to select, whether the pictures needed orthodontic treatment or not. Results showed that 24.22 % of the total students felt that picture 1 was in need of orthodontic treatment while 86.93 % thought treatment need for picture 4. For picture 5 -10, 100 % of students favored for treatment need. There were statistically significant differences in opinion of dental students as compared to other colleges, with less percentage favoring orthodontic treatment need ($p < 0.05$). More percentage of male students opted for treatment need for AC picture 1 and 4, while more percentage of female students opted for pic 2 and 3 ($p < 0.05$). It is concluded that perception of orthodontic treatment need is affected by educational background of University students ($p < 0.05$).

Key Words: Perception, orthodontic treatment need, aesthetic component, index of orthodontic treatment need.

INTRODUCTION

Perception of orthodontic treatment need depends on subjective assessment by patient and orthodontist and is influenced by a number of factors like ethnicity, cultural and socio-economic conditions.¹ Research has shown that any evaluation of orthodontic treatment need must include an assessment of aesthetic impairment of a malocclusion.^{2,3} During recent past, number of orthodontic treatment need indices have been developed.¹ Among these, one with special interest is Index of Orthodontic Treatment Need (IOTN). It consists of a standardized measure of dental aesthetic impairment, the Aesthetic Component (AC), and ratings for occlusal discrepancy (Dental Health Component).^{1,2,4,5,6,7}

IOTN was developed by the panel opinion of 74 dentists (44 orthodontists and 30 non-orthodontists). Validation exercises to determine cut – off points representing the different levels of orthodontic treatment need showed that according to professional opinion grades 1-4 of AC represent no need for orthodontic treatment, grades 5-7 represent borderline need, and grades 8-10 represent definite need of orthodontic treatment.^{2,4} IOTN like other occlusal indices uses subjective opinion of dentists and orthodontists to verify orthodontic treatment need threshold. It has been suggested that AC of IOTN should also be validated against opinion of lay persons.^{2,8}

The aim of the present study was to determine the perception of orthodontic treatment need in a sample of University students from different educational backgrounds for 10 pictures of AC of IOTN.

METHODOLOGY

For this cross-sectional study, a sample of 223 Hail University students was selected using 5% margin of error, 95% confidence interval according to stratified sampling technique from senior years of four colleges namely, Dentistry, Medicine, Public Health and Preparatory Year. Those with a previous history of orthodontic

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treatment were excluded.^{9,10} Written consent was taken from the participants before the start of study.

The 10 pictures of the aesthetic component (Fig 1) of IOTN were rearranged and assigned new arbitrary numbers.¹ Aesthetic component was explained to the participants immediately before data collection.³ Data collection was done in class rooms, while maintaining examination conditions, participants were advised not to take help from their colleagues to reduce opinion bias. Each participant received one copy of the questionnaire and a laminated photograph consisting of 10 pictures of the aesthetic component of the IOTN.¹ For each of these 10 pictures, participants were asked to select whether the picture needs orthodontic treatment or there is no

need of orthodontic treatment. Data were displayed as numbers using SPSS version 22 using MAC. Chi-square test was used to determine the association of responses from the four colleges at statistical significance level of $p < 0.05$.

RESULTS

Considering responses from the total sample (Table 1). For picture 1, 24.22% of the total students selected need of orthodontic treatment and 75.78% selected no need of orthodontic treatment. For picture 2, orthodontic treatment need was selected by 46.19% and 53.36% of students selected no need of orthodontic treatment. While 62.78% and 86.93% of students selected need of orthodontic treatment; however for pictures 5-10, 100% of the participating students were of the view that there is a need of orthodontic treatment.

Considering the responses from different colleges (Table 2). For AC picture 1-4, there were statistically significant differences. However, 100% of students from all four colleges rated AC pictures 5-10 as in need of orthodontic treatment. For picture 1; 10% of students from college of Dentistry, 16.67% from college of Medicine, 29.41% from college of Public Health and 38.33% from college of Preparatory year selected it in need of orthodontic treatment. For AC pictures 2, 3 and 4, there was a gradual increase in the percentages of the students who thought there was a need of orthodontic treatment. For picture 2, lowest percentage of students from different colleges who selected need of orthodontic treatment need were found in the College of Dentistry (27.5%), while the highest percentage of students who selected need of orthodontic treatment were found in the college of Public Health (64.71%).

TABLE 1: PERCEPTION OF ORTHODONTIC TREATMENT: PERCENTAGE DISTRIBUTION OF TOTAL SAMPLE

AC pictures	Total sample (n=223)	
	Need	No need
1	24.22%	75.78%
2	46.19%	53.36%
3	62.78%	37.21%
4	86.93%	13.06%
5	100%	0%
6	100%	0%
7	100%	0%
8	100%	0%
9	100%	0%
10	100%	0%

$p < 0.05$

TABLE 2: PERCEPTION OF ORTHODONTIC TREATMENT: PERCENTAGE DISTRIBUTION COLLEGE WISE

AC pictures	Colleges							
	Dentistry (n = 40)		Medicine (n = 72)		Public health (n = 51)		Preparatory year	
	Need	No need	Need	No need	Need	No need	Need	No need
1	10%	90%	16.67%	83.33%	29.41%	70.59%	38.33%	61.67%
2	27.5%	72.5%	43.05%	56.94%	64.71%	35.29%	46.67%	53.33%
3	52.5%	47.5%	50%	50%	82.35%	17.65%	68.33%	31.67%
4	82.5%	17.5%	91.67%	8.33%	80.39%	19.61%	88.33%	11.67%
5	100%	0%	100%	0%	100%	0%	100%	0%
6	100%	0%	100%	0%	100%	0%	100%	0%
7	100%	0%	100%	0%	100%	0%	100%	0%
8	100%	0%	100%	0%	100%	0%	100%	0%
9	100%	0%	100%	0%	100%	0%	100%	0%
10	100%	0%	100%	0%	100%	0%	100%	0%

$p < 0.05$

TABLE 3: PERCEPTION OF ORTHODONTIC TREATMENT: PERCENTAGE DISTRIBUTION GENDER WISE

AC pictures	Female		Male	
	Need	No need	Need	No need
1	19.35%	80.65%	30.30%	69.70%
2	49.19%	50.81%	43.43%	56.57%
3	67.74%	32.26%	56.57%	43.43%
4	85.48%	14.52%	87.88%	12.12%
5	100%	0%	100%	0%
6	100%	0%	100%	0%
7	100%	0%	100%	0%
8	100%	0%	100%	0%
9	100%	0%	100%	0%
10	100%	0%	100%	0%

p< 0.05

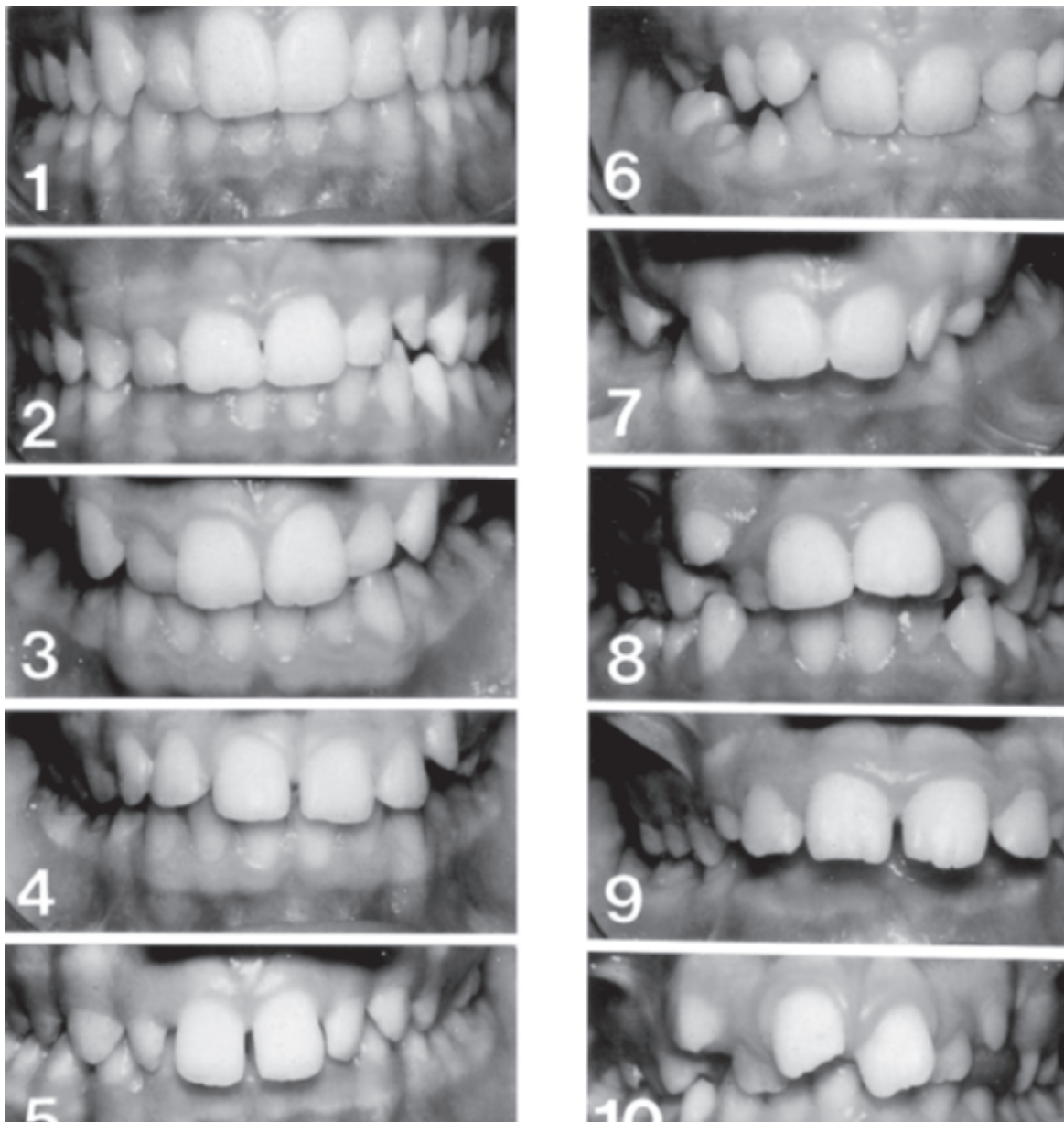


Fig 1: Aesthetic component (AC) of index of orthodontic treatment need

For AC picture 3, Colleges of Dentistry and Medicine shared almost the same percentage of students who selected need of orthodontic treatment (52.5% and 50% respectively), while highest percentage of students in favor of orthodontic treatment need were found in the college of Public Health (82.35%).

Regarding the responses of male and female participants (Table 3). It is clear that for picture 1 and 4, more percentage of male students were in favor of orthodontic treatment (30.30% and 87.88% respectively) as compared to 19.35% and 85.48% of females who opted for orthodontic treatment need. For picture 2 and 3, more percentage of female students voted for treatment need as compared to male students (for picture 2, 49.19% of female students as compared to 43.43% and for picture 3, 67.74% of female students as compared to 56.57%). For pictures 5-10, 100% of both male and female students shared the same opinion that there is a need of treatment.

DISCUSSION

The importance of patient's perception of orthodontic treatment need cannot be ignored because at the end it is the patient who receives orthodontic treatment and satisfaction from improved aesthetics and function.^{5,11} Perceptions of orthodontic treatment need are determined by number of factors as age, gender, urban/rural areas of livings.^{9,12} As one of the factors which affect perception of treatment is educational background^{10,13,14}, the objective of the present study was to find any differences in perception of orthodontic treatment need among Hail University students from different educational backgrounds.

One of the interesting findings of this study was that from picture 5-10, 100% of the students labeled them as in need of orthodontic treatment. More than 50% of students selected picture 3 as in need of orthodontic treatment. Results of this study are somewhat similar to findings of Singh, Hamdan and Rock¹, which showed that AC picture 4 and above were assessed as needing orthodontic treatment by more than 50% of the subjects. Similarly in an another study, Orlagh Hunt and colleagues² found that aesthetic component picture 6-10 were considered to require orthodontic treatment by 100% of the participants.

There were statistically significant differences in student's responses from four colleges (Table 2) for AC picture 1-4 ($p < 0.05$). Pictures 5-10 shared the same opinion of treatment need by all students of the four colleges. This finding is similar to the trend observed in the responses from the total sample. In College of Dentistry, 10% students favored orthodontic treatment for picture 1. For picture 2, 27.5% showed a need of orthodontic treatment, while for picture 3 and 4, 52.5%

and 82.5% students felt a need of orthodontic treatment. For College of Medicine, 16.67% of students felt need of orthodontic treatment for picture 1, for picture 2 the corresponding figure was 43.05%, while for picture 4, 91.67% favored orthodontic treatment need. Somewhat similar findings can be found for colleges of Public Health and Preparatory Year.

It can be noted further that for picture 1, only 10% of the students from college of Dentistry felt a need of treatment, while the college in which the highest number of students opted for treatment need was College of Preparatory Year (38.33%). Similarly for picture 2, in college of Dentistry lowest percentage of students (27.5%) selected need of treatment while in college of Public Health, highest number of students (64.71%) opted for treatment need. For picture 3 and 4, the colleges with the lowest percentage of students favoring treatment need were college of Medicine (50%) and college of Public Health (80.39%). As discussed earlier for responses of the total sample, more than 50% of students from all colleges (Table 1) thought a need of treatment for picture 3. This is similar to responses from students in college of dentistry and college of medicine (Table 2). Whereas for college of Public Health even for picture 2, 64.71% of students opted for orthodontic treatment need.

Results of the present study are in agreement with research done elsewhere² which showed that when AC picture 4 is reached, majority of participants (74%) indicated need of treatment. Results of this study are in agreement with the findings of Lubna Khan and colleagues⁸, which showed that by picture 4, 71% of sample reported need for treatment and by picture 5, 93.1% of sample reported orthodontic treatment need. Results of the present study are also similar to the results of the above mentioned study which show that greater percentage of nursing students as compared to Dental students selected treatment need for the same AC pictures.

Considering the responses from male and female students (Table 3). For picture 1 and 4 more percentage of male students favored treatment need whereas for picture 2 and 3 more percentage of female participants opted for treatment need. For pictures 5-10, all male and female students selected treatment need. Almost 50% of females voted for picture 2 to be in need of orthodontic treatment, whereas corresponding percentage from male sample was found for picture 3. Studies done elsewhere show that females are more conscious to any deviation in dental arch form because of its impact on facial form.¹¹

In one Nigerian study, it was found that there were no significant gender differences for perception of treatment need.⁵ The same findings were found by

other researchers.^{6,15} However, in one of the study done in Latvia¹⁴, females felt more need of orthodontic treatment. Limitations of the current study are that students were recruited from University representing highly selective group of young adults.¹⁶ Results of this study should not be considered as true representative of the young adult population of the Hail region. Further studies are needed to complement the outcomes of this study.

CONCLUSION

Perception of orthodontic treatment need is influenced by educational background. Less percentage of dental students suggested orthodontic treatment need as compared to students from other colleges.

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