

ASSESSMENT OF PSYCHOSOCIAL IMPACT OF DENTAL AESTHETICS AND SELF PERCEIVED ORTHODONTIC TREATMENT NEED IN YOUNG ADULTS

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ABSTRACT

The aim of this study was to assess the psychosocial impact of dental aesthetics using the 'Psychosocial Impact of Dental Aesthetics Questionnaire' (PIDAQ) and self-rated Aesthetic Component (AC) of the Index of Orthodontic Treatment Need (IOTN), and individual attitude to own teeth and general appearance. The cross sectional study was conducted among the students of Margalla Institute of Health Sciences (MIHS), Rawalpindi with age ranging from 18-25 years. Students were asked to complete a 'Psychosocial Impact of Dental Aesthetic Questionnaire' (PIDAQ). Total of five variables 'Dental self-confidence, Social impact, psychosocial impact, Aesthetic concern & Patients Beliefs were evaluated by series of questions, and Dental Aesthetics was assessed by using of IOTN Aesthetic Component. The Kruskal-Wallis test was applied to determine differences between the mean scores for all the subject groups (1 to 4+). Chi square test was performed for patient beliefs.

All the five variables showed significant correlation with perceived severity of malocclusion with p-value of less than 0.01. The association between self-rated IOTN-AC grading and psychosocial well-being was established, signifying that the self-perceived aesthetics may be a significant factor in defining treatment need as the degree of malocclusion itself.

Key Words: Dental self-confidence, social impact, psychosocial impact, aesthetic concern.

INTRODUCTION

People vary in the observation of their physical self. In finding out the possible benefits of orthodontic treatment for a person, the association between physical appearance and awareness of an aesthetic divergence is important. In young adults, even a slight deviation can be perceived important and the impact of malocclusion on a youth's quality of life might be profound.

As malocclusion, particularly that existing in the anterior area, is often evident, it may provoke unpleasant social responses and a poor self-confidence.^{2,3} Any major deviations from the norm may result in feelings of lack of self-confidence related to appearance, em-

barrassment in social contacts, and comparison of self with others considered to be 'superior', all of which may negatively upset the quality of life of the individual.^{1,4}

Orthodontic treatment may be additionally often influenced by demand than by need.⁵ In the past, need for orthodontic treatment was evaluated from a strictly expert viewpoint. However, several studies have stated that self-perceived dental appearance is also important in the choice to pursue orthodontic care.⁶ Different scales, such as the Index of Orthodontic Treatment Need (IOTN), the Index of Complexity Outcome and Need (ICON) and the Dental Aesthetic Index (DAI) were made as a scoring system for malocclusion and may be used to rule out likely patients.

The IOTN is a grading system that grades malocclusion established on occlusal characteristics for oral health and aesthetic deficiency. The Aesthetic Component (AC) of the IOTN has frequently been used to assess treatment need on aesthetic grounds assessed by dentists (operator-rated) or patients (self-rated).⁷

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However, since it is an acknowledged fact that psychosocial concerns due to undesirable dental aesthetics may be as severe, or even more severe, than the biological problems, the indices at present in use have been complained as deficient in psychosocial factor.⁸ In this perspective, differences in perceived need and attitude to dental appearance and orthodontic care between individual are rarely documented. Up till now there have been very few studies of the importance of these concerns for the delivery of dental care, and mainly with respect to orthodontic treatment.

The present study has the objective to determine the psychological as well as social impact of dental aesthetics using the 'Psychosocial Impact of Dental Aesthetics Questionnaire' (PIDAQ) and self-rated Aesthetic Component (AC) of the Index of Orthodontic Treatment Need (IOTN) and to investigate self-perceived need and attitude to fixed orthodontic treatment and attitude to own teeth and general appearance.

METHODOLOGY

The cross sectional study was conducted among the students of Margalla Institute of Health Sciences (MIHS) Rawalpindi with age ranging from 18-25 years. The reason for choosing these ages is that the respondents would be sufficiently grown-up to be able to state their own opinion. Study was approved by the ethical review committee of MIHS. A questionnaire was given to 159 students who met the inclusion criteria of being 18-25 years of age and having no previous history of orthodontic treatment. Students already undergoing orthodontic treatment and/or having craniofacial syndromes or anomalies were excluded from the study.

The 'Psychosocial Impact of Dental Aesthetics Questionnaire' (PIDAQ) used in this study consisted of questions pool from various previous researches examining dental aesthetics and oral health-related quality of life questionnaires.^{7,8} Thirty items were clustered into five main Groups (I-IV); Dental self-confidence I, Social impact II, Psychosocial impact III, Aesthetic concern IV were based on the four factors of Klages et al.⁸ and Group V Patient Beliefs, included nine questions, five questions incorporated as developed by Grzywacz⁷ and four more questions added concerning dental aesthetic impact on dental health, career, social success, and effect on general appearance. In order to avoid increased awareness of the patient to the factorial relevance of each question, the names of the Groups were not stated on the relevant items in the questionnaire.

The questionnaire was self-administered by the students, with the Likert scale being used to rate the replies on a scale ranging from 0 (total disagreement) to 4 (total agreement) for I-IV Groups. Group V 'Patient beliefs' were answered according to options provided. Dental aesthetics was assessed using the IOTN Aesthetic Component (AC).⁹ The students were shown 10 black and white photographs of anterior teeth presenting varying degrees of malocclusion, and were inquired to indicate which grade of photograph (1 to 10) they believed most closely appeared like their own dentition. No time limit was given to the students for the self-rating of AC. The IOTN-AC self-rating was then employed in grouping the students; respondents representing as particular IOTN-AC grade were regarded as particular groups.

Statistical analyses was performed using SPSS for Windows (version 16.0). The Kruskal-Wallis test was applied for Variable I-IV to determine differences between the mean scores for all the subject groups (1 to 4+). Due to small of number of students rating themselves as grade 4 and higher, they were pooled together. P-value equal to or less than 0.05 was taken as statistically significant. To evaluate the psychosocial impact of dental aesthetics on the emotional wellbeing of person, the mean values were associated among the four subject groups for each of variables. Chi square test was performed for variable V and descriptive statistics were carried out for gender, age.

RESULTS

The sample consisted of 159 adults with mean age of 20 years (SD±2.4), and largely female comprising 140 (88%) and males were 19 (12%). The study group consisted of BDS students at Margalla College of Dentistry. Of the total sample, 100 (62.9%) of students rated their dental appearance as IOTN-AC grade 1 (constituting Group 1), 22 (13.8%) placed themselves as IOTN-AC grade 2 (Group 2), 21(13.2%) rated themselves as IOTN-AC grade 3 (Group 3), and 16(10.1%) of the students rated their dental aesthetics as IOTN-AC grade 4 to 10 (Group 4).

'Dental self-confidence' was found to be highest for subjects rating themselves as IOTN-AC grade 1, and lowest for IOTN-AC grades 4. 'Social impact' was highest for individuals scoring themselves as IOTN-AC grades 4 and least for those evaluating their dental appearance as IOTN-AC grade 1. The mean scores for 'Psychological impact' was found to be of greatest for respondents who rated themselves as resembling

TABLE 1: MEAN SCORES BY COMPARING RESPONSES OF I-IV GROUPS WITH DIFFERENT IOTN-AC GRADING

Variable	IOTN				P value
	1 n=100	2 n=22	3 n=21	≥ 4 n=16	
1 Dental Self Confidence	90.30	74.84	64.19	43.47	.000
2 Social Impact	69.34	92.77	90.07	115.84	.000
3 Psychosocial Impact	75.06	80.30	90.26	96.97	.222
4 Aesthetic concern	72.64	88.23	77.95	117.38	.000

TABLE 2 : COMPARING 'PATIENT BELIEFS WITH DIFFERENT IOTN-AC GRADING

		IOTN				Total n (%)	P value
		1 n (%)	2 n (%)	3 n (%)	≥ 4 n (%)		
Do you think healthy and well-arranged teeth are important for your appearance	Yes	98(98%)	22(100%)	21(100%)	15(93.8%)	156(98.1%)	.043
	No	2(2.0%)	0(0%)	0(0%)	1(6.2%)	3(1.9%)	
Do you think you should have orthodontic treatment (Braces)	Yes	28(28%)	11(50%)	11(52.4%)	8(50%)	58(36.5%)	.038
	No	72(72%)	11(50%)	10(47.6%)	8(50%)	101(63.5%)	
Is there anything you would like to change about your teeth	Yes	64(64%)	18(81.8%)	14(66.7%)	14(93.3%)	110(69.6%)	.061
	No	36(36%)	4(18.2%)	7(33.3%)	1(6.7%)	48(30.4%)	
Do you think straight and beautiful teeth can promote dental health	Yes	89(89%)	20(90.9%)	20(95.2%)	16(100%)	145(91.2%)	.040
	No	11(11%)	2(9.1%)	1(4.8%)	0(0%)	14(8.8%)	
Do you think straight and beautiful teeth can promote your career	Yes	44(44%)	15(68.2%)	12(57.1%)	5(31.2%)	76(47.8%)	.080
	No	56(56%)	7(31.8%)	9(42.9%)	11(68.8%)	83(52.2%)	
Do you think straight and beautiful teeth can promote social success	Yes	52(52%)	12(54.5%)	10(47.6%)	4(25%)	78(49.1%)	.232
	No	48 (48%)	10(45.5%)	11(52.4%)	12(75%)	81(50.9%)	
Do you think straight and beautiful teeth have significant effect on your general appearance	Yes	87 (87%)	21(95.5%)	19(90.5%)	10(62.5%)	137(86.2%)	.039
	No	13 (13%)	1 (4.5%)	2 (9.5%)	6 (37.5%)	22 (13.8%)	

IOTN-AC grade 4 and lowest in those rating themselves as IOTN-AC grade 1. 'Aesthetic Concern' was determined to be highest in IOTN-AC grade 4 and being least for IOTN-AC grade 1, being significantly different amongst the groups (.000) as shown in Table 1.

Twenty eight percent of students perceived that they needed orthodontic treatment. There were significantly more girls than boys, 84% & 16% respectively. 69.6% of respondents replied that they wanted to change something about their teeth out of which 31% wanted to change the color, 30.2% wanted to change the arrangement and 8.4% wanted to change the size of their teeth. When they were asked that 'Do they believe that orthodontic treatment with braces is painful? 70% replied with 'yes, somewhat' or 'yes a lot'. Girls and boys were equally concerned about treatment related pain. Table 2 compares 'Patient beliefs V' in respondents with

different IOTN-AC grading, summarizes the replies to the questions according to IOTN grading.

DISCUSSION

Assessment of psychosocial factors of malocclusion has been considered important part of orthodontic examination in adults recently, previously only children usually were focused. Many studies have used IOTN-AC as a data collection tool, only few have so far intended to find association between increasing grades of AC (signifies poor dental aesthetics) with decreasing psychosocial wellbeing. Our study revealed that subjects with less attractive dentition may be psychosocially deprived and have esthetic concern.

With respect to IOTN-AC grading, it was found that most of the subjects placed themselves as IOTN-AC

grade 1 followed by IOTN-AC grade 2, IOTN-AC grade 3, and minimum number of subjects placed themselves as IOTN-AC grade 4 or higher. Our results were similar to Klages et al⁸ who found out that greatest number of subjects evaluated themselves as IOTN-AC grade 1 (33.5%) and 8.8% of subjects placed themselves as IOTN-AC grade 4 or higher. Another study by Khan M¹⁰ found out that majority of the respondents placed themselves as IOTN-AC grade 2, followed by IOTN-AC grade 1, IOTN-AC grade 3, and least number of respondents placed themselves as IOTN-AC grade 4 or higher. Similar finding were that of another study by Birkland et al in their study of orthodontic treatment need in young adults.¹¹ Kerosou et al also showed the same distribution in their study with least number of respondents placing themselves in the great treatment need group based on self-rated IOTN-AC scores.¹² These results indicate a comparatively lower ratio of individuals with higher degree of dental aesthetics impairment. For all the variables namely, dental self-confidence, social impact, psychosocial impact and aesthetic concern, the comparison clearly indicates that there is strong psychosocial impact of altered dental aesthetics.

The first factor 'Dental self-confidence' suggested a significant impact of dental aesthetics on the emotional state of an individual. The results of our study show that with decreasing self-confidence there is increased level of altered aesthetics as IOTN-AC grades suggest and is perceived by the subjects themselves. Same are the results of the study by Klages et al which summarized that a lower grades of IOTN-AC show more well aligned set of dentition, and this may be due to more favourable oral health status, and a superior degree of contentment regarding dental attractiveness ensuing a better social concept.¹³

The second factor 'Social impact' comprises of matters referring to possible problems in social circumstances due to personal awareness of a discouraging individual dental appearance. Our finding confirms the previous interpretations¹⁴ that individuals with malocclusions might be qualified as unfavourable personality characters by others and this may bother the self-concept and self efficacy of the affected subjects. Klages et al. have proved a direct effect of dental aesthetics on all 'oral health-related quality of life scale values, with a greater social appearance concern in individuals with poor dental aesthetics.i,⁵ According to Onyeaso et al, over 40% of respondents reported feeling less confident as a result of their malocclusions, with normal

activities constrained in some of the subjects including laughing in public, meeting people and forming close relationships.¹⁵

The third factor, the 'Psychological Impact' of dental aesthetics, is collection of items dealing with a sense of inferiority and sadness when the affected subjects link themselves with persons with superior dental aesthetics. Onyeaso et al. have reported depression associated to altered dental aesthetics in 27% of their individuals.¹⁵ The highly statistically significant group differences in this study show the relationship of weakening psychological well-being with progressively poor dental aesthetics. Klages et al. show results in parallel to ours, with IOTN-AC grades 1 to 4 and above demonstrating an increasing trend of psychological effect along the IOTN-AC range.¹⁸

The fourth factor "Aesthetic concern" includes accounts referring to dissatisfaction of one's own dental appearance when challenged by mirror, photographic and/or video images. 'Self-perceived concern' assesses the individuals need for orthodontic attention, and as the results show, is found to be highest in individuals categorising themselves as IOTN-AC grade 4 and above. The relationship of a greater self-perceived treatment need with increasing severity of malocclusion has also been shown by Mandall et al. who determined that children who are teased about their teeth are more likely to take orthodontic treatment.¹⁶ Onyeaso et al. reported that 56.6% of their subjects reported for orthodontic treatment for aesthetic purposes.¹⁵

The 'Dental Self-confidence', 'Psychosocial impact' 'social impact' and aesthetic concern scales confirmed the strongest differences between the IOTN-AC groups under consideration, these results are equivalent to those achieved by Klages et al., representing that all these variables are independent factors.¹⁸ Further confirmed by the findings of Cunningham et al. that social impact and aesthetic concern are different and independent psychosocial factors,¹⁷ and that social and psychological effects of oral health are also independent.

Regarding fifth factor 'Patient Beliefs' 86.2% individuals judged that healthy and well-arranged teeth are important in facial appearance, Grzywacz⁷ reported that 100% of 84 children aged 12 years judged that healthy and well-arranged teeth were important in facial appearance. Vander Geld et al found that facial appeal was correlated with character traits & self-confidence/self-esteem and highlighted the need for further study on the aesthetic aspects of the oral

region.¹⁸ Phillips and Beal showed that, in adolescents, the positive feelings towards the dentofacial region is more important factor in one's self-concept than the severity or perceived severity of the malocclusion or the adolescent's perception of their malocclusion.¹⁹ Therefore, the expected benefits of orthodontic treatment would include an enhancement of self-esteem and a reduction in social anxiety. 36% of the subjects were willing to undergo orthodontic treatment, fear of pain associated with fixed appliance therapy was greater among girls than boys. This is in agreement with other studies.²⁰ The results from this study shows an inverse relation being perceived between the IOTN-AC grading with psychosocial well-being. Thus, the IOTN-AC may be considered an effective tool in assessing the psychosocial impact of dental aesthetics.

CONCLUSION

There was strong association between subjects perceiving the need for orthodontic treatment and their psychosocial wellbeing. It seems prudent to endorse the benefits of orthodontic treatment based on the need as assessed normatively by the orthodontist and subjectively as perceived by the patient. Although, the AC is effective in determining the detrimental effects of altered dental aesthetics, the recommendations for an index incorporating a psychometric scale for assessment of orthodontic-specific aspects of quality of life still stand strong.

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