

The Oral Health Impact Profile in Early Adults for Orthodontic Treatment: A Questionnaire Study

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Abstract

Background and Objectives: Oral health possesses significance for functional, physiological, and structural well-being of an individual. Oral health-related quality of life (OHRQoL) relates to the impact of dental esthetics on social acceptance and self-concept. The aim of this study is to know the need and effect of orthodontic treatment need on quality of life in early adults. **Materials and Methods:** The study sample comprised 124 young adults (47 males, 77 females, age range 11–30 years). Each participant was assessed using index of orthodontic treatment need and the shortened version of the oral health impact profile questionnaire. **Results:** 37.9% of males and 62.1% of females were in need for treatment in this study. Problem in pronouncing words, self-conscious and tensed feeling criteria are highly significant. Food eating, unsatisfactory diet, interrupted meal, difficulty in relaxation, difficulty in doing useful jobs and less satisfactory life are significant criteria. **Conclusion:** Finding of this study emphasizes the impact of malocclusion OHRQoL in both male and female young adult orthodontic patients.

Keywords: Early adults, index of orthodontic treatment need, Oral health-related quality of life, Orthodontics, Quality of life, Treatment needs.

INTRODUCTION

There are many objective indexes available in literature to measure oral health. These indexes can determine how much a person's oral health deviates from the ideal or normal condition; therefore, appropriate treatment can be provided.^[1] These indicators of clinical disease, thereby providing information about the "burden of illness" within populations and the effectiveness of health services in reducing that burden of illness.^[2] The oral health impact profile (OHIP) was developed by Slade and spencer in 1994 as a self-rating patient centered instrument designed to assess the priorities of care by documenting social impact among individuals and groups, understand oral health behaviors, evaluate dental treatment and provide information for planning for oral health.^[3] This model is based on the World Health Organization's classification in which impacts of disease are categorized in a hierarchy ranging from internal symptoms, apparently primarily to the individual (represented in the dimension of functional limitation), to handicaps that affect social roles, such as work.^[3] Short form OHIP-14 as modified by Slade in 1997 had originally been used to assess oral health

quality of life in geriatric population; however, it has also been used to assess quality of life in individuals with malocclusion.^[4] Originally OHIP-14 was in English it's translated and validate Hindi Version came in year 2019.^[5] It is a good method of recording malocclusion is important to know the prevalence and severity of malocclusion in that population group.^[6] Brook PH, Shaw in 1989 develop index of orthodontic treatment need (IOTN) a modified index used by the Swedish dental health board was used to record the need for orthodontic treatment on dental health and functional grounds. This index uses five grades, with precise dividing lines between each grade. An illustrated 10-point scale was used to assess independently the esthetic treatment need of the patients.^[7] There was need for such study was observed in central India population which can analyze treatment need and quality of life.

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MATERIAL AND METHODS

Screening of 200 patients (Age 18–22) was conducted in this study to know the need and effect of orthodontic treatment need on quality of life among early adult patients. Out of 200 patients 170 were included in this study. Total 30 patients were not included in this study as 12 patients were not willing to participate and 18 patients did not know how to read and write. Participants who were excluded in this study include patients who have medical problems, history of earlier orthodontic treatment and untreated mental and physical impairments. Participant were divided according to IOTN score like no treatment need, borderline need, treatment need. Further OHIP-14 questionnaires distributed among all participants to evaluate oral health-related quality of life (OHRQoL). Likert scale was used to evaluate responses of the questions. The answers of the questions were evaluated as follows: 0 = never, 1 = hardly ever, 2 = occasionally; 3 = fairly often; and 4 = very often. The positive impact of the answer was represented by fairly often, very often and occasionally. While a negative impact were represented as never and hardly ever. After collection of data from all the filled questionnaires, statistical analysis was performed using student *t* and Chi-square test. Statistical Packages for the Social Sciences software were used to do all the statistical analysis.

RESULTS

The maximum and minimum age of the study sample was 30 and 11 years, respectively (Table 1). Overall, the 124 participants according to IOTN scores i.e., 8.9%, 6.5%, and 84.7% were falling under no treatment need, borderline, and need for orthodontic treatment respectively (Table 2). In both male and female participants, problem in pronouncing word, self-consciousness, feeling tensed, embarrassment, and irritability with people are highly significant. Uncomfortable in eating food, unsatisfactory diet, difficulty in relax, difficulty in doing useful jobs and less satisfactory life are significant parameters. There was no significant impact of orthodontic treatment in taste worsening, aching mouth and unable to function parameters (Table 3a and b).

DISCUSSION

Vinita Mary *et al.*^[8] concluded that both male and females were conscious about their appearance whereas in our study it is found that females have slightly higher impact scores than males. Our study result were similar to study done by Masood *et al.*^[9]

Oral health is a standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well-being (Department of Health, 1994). The importance of health-related quality of life has seen considered widespread acceptance in medicine although oral health does not. This is despite the fact that oral diseases and conditions are highly prevalent and the consequences are not

Table 1: Demographic distribution of study subjects according to age and gender

Gender	Number	Age (year)		Range
		Mean	SD	
Male	47	18.11	4.25	12–29 year
Female	77	18.30	5.03	11–30 year
Total	124	18.23	4.73	11–30 year
Student “ <i>t</i> ” test value		0.216		
Significance “ <i>P</i> ” value		0.829 (NS)		

Table 2: Distribution of study subjects according to orthodontic treatment need and gender

Gender	IOTN			Total
	No treatment need	Borderline cases	Severe treatment need	
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Male	2 (1.6)	1 (0.8)	44 (35.5)	47 (37.9)
Female	9 (7.3)	7 (5.6)	61 (49.2)	77 (62.1)
Total	11 (8.9)	8 (6.5)	105 (84.7)	124 (100.0)
Chi square value		4.725		
Significance “ <i>P</i> ” value		0.094 (NS)		

only physical, but also economic, social, and psychological. They seriously impair quality of life in a large number of individuals and may affect various aspects of life including function, appearance, and interpersonal relationships.^[10]

There is a growing interest in the relationship between malocclusion/orthodontic treatment need and HRQoL. There is ample evidence that patients focus primarily on esthetic and social aspects of OHRQoL as a motive for seeking orthodontic treatment; this is true for children as young as age eight and for adult patients.^[11] The OHIP is one of the tool for the assessment of OHQoL. The OHIP is designed to determine the perception of the social impact of oral disorders and has well-documented psychometric properties. Pakkala *et al.*^[12] found no association between malocclusion and speech difficulty whereas Lee *et al.*^[13], Vallino and Tompson^[14] and Jay *et al.*^[15] supported result of our study that malocclusion highly significantly effect pronunciation, patients with a large overjet and deep bite have a trend to pronounce sibilants such as /s/, /z/, /j/ and /ch/ differently though according to Slade^[16] speech is complex process performed in combination with brain, teeth, lips, tongue, and muscles that can compensate mutually to ensure perceptually normal pronunciation.

In this study, malocclusion has significant effect on uncomfortable to eat food, unsatisfactory diet and interrupts meal as supported by some other studies.^[17–19] which reported that individuals with malocclusion have a reduced amount of masticatory efficiency in comparison to individuals with

Table 3a: Effect on daily events and need for orthodontic treatment

OHIP-14	IOTN			Chi-square value	“P” value
	No treatment need	Borderline cases	Severe treatment need		
	n (%)	n (%)	n (%)		
Had problem in pronouncing words					
No impact	9 (81.8)	7 (87.5)	57 (54.3)	6.012	0.049 (HS)
Impact	2 (18.2)	1 (12.5)	48 (45.7)		
Felt sense of taste worsened					
No impact	10 (90.9)	4 (50.0)	71 (67.6)	3.870	0.144 (NS)
Impact	1 (9.1)	4 (50.0)	34 (32.4)		
Had painful aching in mouth					
No impact	7 (63.6)	3 (37.5)	66 (62.9)	2.043	0.360 (NS)
Impact	4 (36.4)	5 (62.5)	39 (37.1)		
Found it uncomfortable to eat food					
No impact	9 (81.8)	2 (25.0)	72 (68.6)	7.585	0.023 (S)
Impact	2 (18.2)	6 (75.0)	33 (31.4)		
Had been self-conscious					
No impact	9 (81.8)	1 (12.5)	24 (22.9)	18.350	0.001 (HS)
Impact	2 (18.2)	7 (87.5)	81 (77.1)		
Felt tense					
No impact	9 (81.8)	3 (37.5)	22 (21.0)	18.972	0.001 (HS)
Impact	2 (18.2)	5 (62.5)	83 (79.0)		
Had an unsatisfactory diet					
No impact	10 (90.9)	4 (50.0)	55 (52.4)	6.099	0.047 (S)
Impact	1 (9.1)	4 (50.0)	50 (47.6)		
Had to interrupt meals					
No impact	10 (90.9)	3 (37.5)	61 (58.1)	6.203	0.045 (S)
Impact	1 (9.1)	5 (62.5)	44 (41.9)		
Found it difficult to relax					
No impact	9 (81.8)	4 (50.0)	45 (42.9)	6.107	0.047 (S)
Impact	2 (18.2)	4 (50.0)	60 (57.1)		

normal occlusion. In addition, a review of eight studies suggested that malocclusion may affect diet in terms of choice of food and nutritional status,^[20] whereas taste is less being affected in malocclusion subjects.

According to Koroluk *et al.*^[21] a randomized controlled clinical trial has shown that orthodontic treatment may reduce the incidence of trauma by correction of an increased overbite and overjet whereas Nicolau *et al.*^[22] also confirmed traumatic dental injuries in adolescents. In our study, no significant co relation where found between malocclusion and painful aching mouth may be because as in some other studies it is found that the etiology of orofacial pain is multifactorial, and

Table 3b: Effect on daily events and need for orthodontic treatment

OHIP-14	IOTN			Chi-square value	“P” value
	No treatment need	Borderline cases	Severe treatment need		
	n (%)	n (%)	n (%)		
Had been a bit embarrassed					
No impact	10 (90.9)	3 (37.5)	17 (16.2)	31.135	0.001 (HS)
Impact	1 (9.1)	5 (62.5)	88 (83.8)		
Had been irritable with people					
No impact	11 (100.0)	6 (75.0)	30 (28.6)	26.607	0.001 (HS)
Impact	0 (0.0)	2 (25.0)	75 (71.4)		
Had difficulty doing useful jobs					
No impact	10 (90.9)	6 (75.0)	55 (52.4)	7.139	0.028 (S)
Impact	1 (9.1)	2 (25.0)	50 (47.6)		
Felt life in general less satisfactory					
No impact	11 (100.0)	5 (62.5)	60 (57.1)	7.714	0.021 (S)
Impact	0 (0.0)	3 (37.5)	45 (42.9)		
Had been unable to function					
No impact	10 (90.9)	4 (50.0)	68 (64.8)	4.032	0.133 (NS)
Impact	1 (9.1)	4 (50.0)	37 (35.2)		

OHIP: Oral health impact profile

while malocclusion per se does not cause orofacial pain, it can give rise to pain indirectly by leading to temporomandibular disorder, and dental, gingival, and mucosal trauma.^[23-26] Another reason for same may be as given by O’Brien *et al.*^[27] that the rationale for health-related quality of life assessment in orthodontics and noted that majority of the orthodontic conditions are asymptomatic and relate to esthetics, rather than features such as pain or discomfort.

In this study, it was found that malocclusion highly affect participants self-consciousness as Klages *et al.*^[28] study suggest that self-perceived minor irregularities in dental esthetics might have a considerable impact on OHRQoL and thus lead to support “what is beautiful is good” hypothesis to orthodontics given by shaw.^[29] Participants also felt tensed this may be due to reason that physical attractiveness plays a role in the creation of the victimized child and this would certainly seem to include facial and dental features.^[30]

In this study, participant who need orthodontic treatment has life in general is less satisfying. Researchers have consistently found that facial attractiveness affects interpersonal success, particularly in school and employment settings. Attractive children and adults generally receive more favorable judgments and academic and performance reviews than do unattractive individuals.

Other studies support that appearance of teeth and the smile are critical components of facial attractiveness^[31,32] and severely

compromised esthetics had the most important role in negative OHQOL, and their greatest impact was at the psychosocial level.^[33] This may get them tensed and difficultly in doing useful jobs, whereas several studies reported that there is no strong evidence that orthodontic treatment in children results in significant changes in self-concept or an increase in self-esteem.^[30,34,35]

Because dental esthetics is an important element of facial appearance, poor dental appearance such as severe crowding in anterior teeth, or a median diastema, might negatively influence the general dentofacial appearance.^[36] Victims are liable to play a more submissive role in social interaction, rarely initiate prosocial behavior and have inferior social skills.^[37-39] Participants social life is deprived they feel embarrassed and irritable with people.

Subjects involved in this study support this factor as in a study done by Hassan and Amin,^[40] self-consciousness, tension, embarrassment, irritability and life satisfaction were the factors which were significantly affected in individual who need orthodontic treatment need. In a study by Chen *et al.*^[41] reported psychological discomfort and the psychological disability domains had the greatest effect which is similar to our study.

In our study, no significant effect was found in unable to function similarly as by study done by Prahl-Andersen^[42] who stated that malocclusion might become enormously handicapping not because of the functional disability, but because it can adversely affect social relationships.

CONCLUSION

Although it is generally accepted that malocclusion has physical and psychological consequences. According to IOTN patients with malocclusion reported significantly more impacts on their life and hence a poor quality of life compared with a non-malocclusion group. Although it is seen that population having malocclusion have weak social skills because of low confidence, self-consciousness, difficult to relax, they feel embarrassed, felt tensed, irritable with people, in general life is unsatisfactory where as other factor like painful aching mouth, alteration in taste and unable to function are not affected by malocclusion. Still more studies are needed to understand patient effect on life by malocclusion and their thoughts regarding orthodontic treatment need. As young population is mostly affected due to major changes occur in their life during this period it is difficult to understand their perception hence large number of data is needed before we come to any conclusion.

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