

PATIENTS' ORAL HEALTH-RELATED QUALITY OF LIFE AND ORTHODONTIC TREATMENT

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Abstract\Objective:

Common dental disorders like malocclusion may have a significant effect on patients' self-confidence, social life, and oral health. This study's goal was to ascertain if orthodontic treatment affects quality of life in terms of oral health (OHQoL).

Materials and Procedures

302 participants in two "treatment" and "no treatment" groups from a cross-sectional study using self-reported data were present at a professional orthodontic practise. The patient's OHQoL was evaluated using the OHIP-14 measure, oral health impact profile. In the data analysis, a linear regression model was used.

Results:

One OHIP-14 question and one domain revealed a significant association ($P < 0.05$) between the two groups, indicating a difference in physical restriction. In the therapy group, this OHQoL domain was 1.86 times less likely to be complex than in the "no treatment" group, according to a linear regression model.

Conclusion:

Patients who had finished their orthodontic treatment had higher OHQoL scores in the physical domain than patients who had never had treatment.

Keywords: Orthodontic Treatment, Oral Health-Related Quality of Life

INTRODUCTION

One of the most prevalent irregularities in tooth development is malocclusion, which often shows up in children as misaligned teeth or an unnatural connection between the dental arches [1, 2]. Malocclusion is seen by some researchers to be an aesthetic variation from the norm rather than a widespread health issue [3, 4]. Different prevalence percentages (39-98%) have been reported by numerous studies that have assessed the prevalence of malocclusion in diverse groups [1,5]. Malocclusion causes a number of issues in those who are affected, including dissatisfaction with facial appearance, issues with the masticatory system's functionality, temporomandibular joint dysfunction, difficulties speaking and swallowing, vulnerability to facial traumatic injuries, and development of caries and periodontal issues [6]. Additionally, those who have malocclusions won't be happy with how their faces seem, which may lead to incorrect social behaviours and the emergence of emotional and mental health issues [1, 7]. In other words, a significant fraction of those who are impacted have poor Oral Health-Related Quality of Life (OHQoL) [7]. In order to correct malocclusion issues, orthodontic treatments make up a significant component of dental care and are often completed throughout adolescence and the early stages of adulthood [2, 6].

The definition of the quality of life is a subjective assessment of a person's health and, more specifically, pleasure or unhappiness with certain areas of life that are significant to the person [8]. Disturbances in a person's typical somatic, psychosomatic, and social functioning are now regarded as key factors in the assessment of oral health. A new approach and mentality toward the assessment of oral health through new quantification tools like OHQoL have been brought about by the inability of generally used instruments to do so, such as evaluating patients' capacity to chew food and enjoy the flavour of food items [9–12].

There is no known connection between malocclusion and quality of life. Evidence, however, points to the requirement for patient-centered or subjective judgments when determining if malocclusion has to be corrected. Or, to put it another way, the need for orthodontic treatment is related to OHQoL but not always to objective (clinical) criteria [13], as clinical criteria reflect the severity of the issue

and orthodontic treatment, in comparison to other dental treatments, is much more greatly influenced by social and emotional factors. Given the appropriate definition of health as something that extends beyond the confines of clinical dimensions and should be inclusive of social and emotional components, a significant number of researchers think that clinical assessment alone has substantial limits [14]. Therefore, OHQoL instruments must be used in lieu of clinical criteria to determine if a patient needs orthodontic therapy [4, 8]. With slightly contrasting findings, a number of research have examined the connection between malocclusion and the quality of life in regard to dental health [4, 15–17].

Orthodontic therapy and alterations in quality of life were not shown to be significantly correlated, according to Tylor et al. (2009) [10]. According to a research by Leao and Sheiham from 1996, young people who underwent orthodontic treatment during the preceding 10 years had a higher quality of life than those who had not [16]. According to Oliveria and Sheiham's 2003 study, patients who had successfully finished a course of orthodontic treatment had a 1.43 times greater quality of life in terms of oral health than those who had not [1]. In contrast to those who do not get such therapy, patients who have orthodontic treatment eventually report being happier with their oral health and having more confidence [18]. Six months after completing their orthodontic treatment, Zhang et al. (2007) reported that their patients' quality of life had significantly improved [19].

Although it was previously noted that assessment of the necessity for orthodontic treatment should involve measurement of the impact of malocclusion or dental abnormalities on patients, OHQoL criteria have only sometimes been employed in dentistry research in our nation [5]. In the same vein, clinicians and researchers from all over the world have been concentrating their attention on the effects of oral health and diseases related to it, the appearance of teeth, malocclusion, and treatment of such anomalies on emotional, mental, and social health of patients over the past ten years [12]. Malocclusion could lead to a decline in self-confidence and social functioning, particularly in teenagers, given the documented link between aesthetic, health, and pleasure with one's appearance and social function. However, no research have ever employed OHQoL criteria in individuals receiving orthodontic treatment in Iran, despite the country having one of the youngest populations in the world. In order to throw more light on the impact of orthodontic therapy on OHQoL in orthodontic patients in our community, the quality of life as it relates to oral health in patients receiving fixed orthodontic treatment was studied and compared with that in patients requiring orthodontic treatment.

METHOD AND MATERIALS

The quality of life as it relates to oral health was assessed and contrasted between two case and control groups in the current cross-sectional research. The patients in the case group were chosen from those who had previously been sent to a private orthodontic office and had had fixed

orthodontic treatment as determined by an orthodontist's diagnostic. The research only included individuals who had finished their orthodontic treatment course and were 14 years of age or older. During one of the follow-up visits following therapy, questionnaires were completed [17]. The individuals for the control group were chosen from patients who were candidates for orthodontic treatment and had been referred to the same private clinic. Before beginning orthodontic treatment, these participants were involved in the research to be assessed. Consecutive sampling was done on both groups. The research eliminated participants having a history of maxillofacial surgery, any systemic or mental health issues, and any overt anomalies of the general development pattern [8]. All of the individuals had standard dental procedures prior to beginning orthodontic therapy. As a result, the participants in the two groups were matched in terms of how oral issues such as carious lesions affected their quality of life. The individuals who volunteered to participate in the research were informed of its objectives. All patient information was kept private.

For all of the study's component portions, an interview-style questionnaire known as the OHIP-14 (Oral Health Impact Profile-14), which is the most reliable method for assessing OHQoL across all age groups, was completed. A total of 14 questions make up the OHIP-14, which assesses seven different aspects of quality of life: functional limits, physical issues, mental and emotional problems, physical problems, mental and emotional handicaps, social handicaps, and full handicap. Each of the two questions in this questionnaire's first question examines one of those areas. The respondent responds to each of these questions in reference to whether they have recently had a dental or oral health issue. According to Lickert's scale, the subject's responses are given a score of "zero" for "never," "1" for "rarely," "2" for "sometimes," "3" for "most of the time," and "4" for "nearly often." For each topic, an overall score between "0" and "56" is determined. A worse quality of life for the individuals is indicated by higher ratings. In the current investigation, the "zero" response was deemed a lack of impact in the final assessment of replies, whereas answers 1 through 4 were considered an effect to make the comparisons more understandable [17]. The Farsi translation of the English-language original questionnaire, which has been validated for validity and reliability [20], is written in that language. SPSS 17 for Windows (SPSS Inc., Chicago, Illinois, USA) was used to input and analyse data. For categorical and numerical variables, respectively, the demographic traits of the case and control groups were compared using the Chi-square and independent T tests. To estimate the mean of the OHIP score while taking into account any confounding factors, we fitted a linear regression model. The Chi-squared test was used to determine the relationship between orthodontic treatment and oral health-related quality of life, and odds ratios were used to calculate effect sizes.

RESULT

In the current research, 300 patients in total were analysed, of whom 150 were in the control group and 150 were in the case group. 100% of the participants that responded to the questionnaire did so. Males and females made up 62 % and 37 %, respectively, of the subjects. High school diploma

holders and high school students had the topics' greatest and lowest levels of education, respectively. The participants' average age was 21.34 years. The average amount of time from the start of therapy was 12.34 months in the case (treated) group. In the treated (case) and underrated (control) groups, the mean OHIP-14 parameters were 13.22 and 13.34, respectively, with no statistically significant differences ($P>0.05$). Regarding the individuals' age, gender, and educational status, there were no variations between the two groups' mean OHIP-14 characteristics ($P>0.05$). The sole question whose response indicated a statistically significant difference between the "treated" and "untreated" group was question 2, which went as follows. "Have you ever had issues with the flavour of food as a consequence of dental and oral health issues?" The chances of a disruption in this quality of life were 2.09 times more likely to occur in untreated participants than in treated ones, according to the question's linear regression model (Table 1). To put it another way, the lack of a significant difference between the two groups' responses to the other 13 questions demonstrates that, based on the respondents' responses, orthodontic treatment has not significantly improved the other areas of their OHQoL.

Table 1

Frequency Distribution of Reported Impacts on the 14 Items of the Oral Health Impact Profile Measure (OHIP-14) and Orthodontic Treatment Status

Daily activity	Treated	Untreated	P Value
Had problem pronouncing words			
Impact	30	35	0.23
No impact	120	115	
Felt their sense of taste has worsened			
Impact	22	20	0.02
No impact	128	130	
Had a painful aching in the mouth			
Impact	102	99	0.65
No impact	48	51	
Found it uncomfortable to eat any food			
Impact	85	90	0.54
No impact	65	60	
Have been self conscious			
Impact	75	85	0.21
No impact	75	65	
Felt tense			
Impact	45 (30)	54 (35.53)	0.306
No impact	105 (70)	98 (64.47)	
Had an unsatisfactory diet			
Impact	30	38	0.56

No impact	120	112	
Had to interrupt meals			
Impact	45	43	0.47
No impact	105	107	
Found it difficult to relax			
Impact	47	55	0.23
No impact	103	95	
Have been a bit embarrassed			
Impact	25	45	0.07
No impact	125	105	
Have been irritable with other people			
Impact	25	20	0.67
No impact	125	130	
Had difficulty doing usual jobs			
Impact	17	10	0.20
No impact	133	140	
Felt life in general less satisfying			
Impact	15	10	0.85
No impact	135	140	
Have been totally unable to function			
Impact	7	10	0.13
No impact	143	140	

Only the first domain of the OHIP-14 questionnaire indicated statistically significant differences ($P < 0.05$) in the comparison of the study's quality of life fields between the two groups. In other words, according to the Linear Regression Model, utilised bodily functions, including oral functions, were 1.86 times less disrupted in patients having orthodontic treatment than in subjects not receiving treatment ($P > 0.05$); no similar significant difference was seen in the other domains.

DISCUSSION

In the current research, the oral health-related quality of life (OHQoL) in the two patient groups who had fixed orthodontic treatment and those who had not was assessed and compared. In situations where the therapy had an impact on the improvement of OHQoL indicators, the research attempted to identify the many components of the influence on the quality of life.

When comparing various research in this regard, the first thing that stands out is how variable the instruments used to assess how orthodontic treatment affects patients' quality of life are. Some researchers have made use of measures for broadly assessing quality of life, such the SF36, which is often used in medical research. Taylor (2009) contends that while orthodontic treatment

enhances a patient's look, dental health, and social well-being, it does not seem to have a major impact on their overall quality of life [10]. In his research, Azuma (2008) concurrently employed two general and oral-specific (OHQoL) questionnaires and came to the conclusion that although general questionnaires like the SF36 do not demonstrate increases in quality of life after malocclusion correction, oral-specific questionnaires do [7]. Research by Mtaya, Zhang, and O'Brien may be highlighted as examples of studies that are comparable to the current study and have employed the two CPQ and Child-OIPD instruments [1, 11, 19]. The two techniques indicated above were utilised since the individuals in the research in question ranged in age from 11 to 14 years. However, OHIP-14 was used similarly to the current investigation in a study by Oliveira and Sheiham in which the participants were 15–16 years old [17]. However, in a study conducted by Oliveria and Sheiham, the quality of life in the treated subjects was 1.43 times better than that in the untreated subjects [17]. In the current study, there were no significant differences in the means of the whole OHIP-14 scores between the two treated and untreated groups. The findings of a study by Gherunpong (2004), who reported that patients believed malocclusion had an effect on physical activity, especially eating [21], are consistent with the findings of the present study. Gherunpong (2004) found that the untreated subjects reported the disturbance of "food taste perception" among 14 other aspects and the disturbance of "physical functioning" among 7 other aspects in a significant way compared to the treated subjects.

Two research by Leao and Zhang produced different findings from the current study. They claimed that patients' quality of life had improved in areas including looks, emotions, and mental health [16, 19]. Therefore, it is clear that patient satisfaction with orthodontic therapy varies greatly. It is significant to highlight that patients' perceptions of change in this element of life quality following therapy depend in part on their mental/emotional state and baseline degree of self-confidence [8]. Improved function and appearance of patients are the main goals of orthodontic treatment, and these improvements are anticipated to have a positive impact on patients' mental, emotional, and social wellbeing.

The impact of the therapy on such features, however, is debatable. In this regard, the patients' subjective evaluation is crucial. It's likely that the patient's and community's perceptions of aesthetics and acceptable occlusion standards vary from these requirements. Ethnic variations have also been mentioned as contributing factors to the increase in social acceptability after treatment [5].

It's also feasible that other areas other than function may have reached statistical significance with a bigger sample size.

Gender and OHQoL were not significantly correlated in the current study's participants.

According to the findings of related research, gender differences cannot be taken into account as predictors of OHQoL [5, 8] despite higher expectations placed on females in regard to improvements in social acceptability after therapy.

The findings of the current investigation did not indicate a significant correlation between the respondents' age, educational attainment, and OHQoL.

Young people expect their looks to improve more than teenagers do, according to the findings of a research conducted in Amsterdam [5], even if they don't anticipate that their oral functions would advance in a similar way. Social idols play a part in the relationship between aesthetic appearance and an increase in self-confidence in youngsters; heroes in movies often have beautiful teeth, while bad guys typically have cracked and discoloured teeth [8]. An orthodontist provided orthodontic therapy in the current investigation. In Northern Ireland, a study of 139 general dentists and 28 orthodontists revealed that general dentists tend to focus more on the functional elements of their patients whereas orthodontists focus on the mental, emotional, and social benefits of therapy [5].

As previously mentioned, the patients in the present study reported greater improvements in the functional aspects of their smiles following orthodontic treatment than in their mental health and social acceptance. This finding could be explained, in part, by the absence of questions specifically about orthodontic treatment in the available questionnaires, including the one used in the present study [14]. Additionally, keeping a good standard of oral hygiene and patient participation with scheduled appointments are two factors that affect the final assessment of changes brought on by orthodontic therapy.

Currently, the majority of experts think that "kind of occlusion" has no effect on OHQoL, although further study is required in this area.

CONCLUSIONS

The findings of this research demonstrated that fixed orthodontic treatment improves oral health-related quality of life in the functional elements of the oral cavity, in addition to its recognised impacts on patients' face aesthetic concerns.

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