

A Questionnaire study on Eating and oral health-related quality of life in patients undergoing fixed orthodontic treatment

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Citation: Akshay Tandon, et. al (2024), A Questionnaire study on Eating and oral health-related quality of life in patients undergoing fixed orthodontic treatment, *Educational Administration: Theory and Practice*, 30(1), 1978-1983

Doi: 10.53555/kuey.v30i1.6801

ARTICLE INFO

ABSTRACT

Aim: Oral health related quality of life (OHRQoL) has many relevant implications for patient dental care. The aim of the study was to investigate the quality of life with respect to eating habits and oral health and hygiene in patients undergoing fixed orthodontic treatment

Materials and Method: This study evaluated 64 individuals with mean age of 18 to 25 years. Participants filled out the questionnaire form consisting of 12 questions in 8 domains and the collected data was analyzed.

Results: The OHIP questionnaire results showed us that there is significant difference in quality of life in patients undergoing fixed orthodontic treatment.

Conclusion: This study helped us to find out the difference in quality of life and eating problems faced by the patients undergoing fixed orthodontic treatment which will help the orthodontists to counsel the patients and guiding them to navigate the treatment plan accordingly.

Keywords: Oral health, Fixed orthodontic treatment, Hygiene, Quality of life, Dental care.

MAIN TEXT ORIGINAL RESEARCH

Introduction

Malocclusion ranks as one of the prevalent dental issues observed, with a high occurrence across many countries. Orthodontic treatment is sought for improving the esthetics and enhancing the psychosocial well-being. Fixed orthodontic appliances, such as braces, are commonly used to correct malocclusions, misaligned teeth, and other dental irregularities but the [1] process itself often involves discomfort, dietary restrictions, and the need for diligent oral hygiene practices, which can impact various aspects of an individual's life [2]. Orthodontic treatment also has a negative impact on eating and nutritional status and quality of life [2].

Understanding these impacts can help the orthodontist to achieve patient centered approach as patient cooperation is a must in orthodontic treatment [3]. The concept of quality of life with respect to oral health reflects the condition of one's teeth, the presence of cavities, and the overall well-being of related oral tissues, which help in mastication, speech and socialization. Quality of life related to oral health is a multifaceted theory that illustrates the influence of oral health concerns on a patient's comprehensive sense of wellness, and it has evolved into a vital consideration in contemporary healthcare [4].

Treatment time with fixed appliances is immensely dependent on complexity of malocclusion and the adopted treatment approach [5]. Prior cross-sectional investigations have documented a strong correlation between dentofacial deformities, encompassing malocclusion, and a range of challenges encountered by adults. These challenges include difficulties in enunciating words and masticating food, discontent with their facial appearance, emotional distress resulting in diminished self-esteem and social interactions, as well as adverse effects on their overall quality of life (OHRQoL) [6]. However, most of these changes were assessed only in the first few months after starting treatment. Hence this study aims at evaluating the quality of life related to oral health in individuals undergoing fixed orthodontic treatment.

Materials and methodology

The study was conducted in the Department of Orthodontics and Dentofacial Orthopedics, SRM Kattankulathur Dental College and hospital. This study was a questionnaire study in the Individuals undergoing fixed orthodontic treatment. The participants are the patients who have completed 3 months of their fixed orthodontic treatment. 64 individuals participated in this study with the average age of 18-26.

The inclusion criteria encompassed individuals who met the following conditions: patients with a full set of erupted teeth, undergoing fixed multibracket orthodontic treatment, expressing a willingness to participate in the research, and maintaining regular monthly follow-up appointments. The standards for exclusion were medical and mental issues Maxillofacial surgery's past abnormalities in development, such as cleft lip and/or palate cranial abnormalities, serious temporomandibular problems, inadequate periodontal care, Dental caries left untreated, If impacted teeth are present, factors influencing diet or adhering to a specific diet, Inadequate collaboration and nonattendance at the monthly follow-ups, individuals whose teeth have not fully erupted.

The participants filled the consent form and then were explained on how to fill out the questionnaires.

The questionnaire included 12 questions which were pre verified in 8 domains This encompassed factors such as physical pain, emotional distress, physical limitations, psychological challenges, social impediments, and handicaps. The scoring utilized Likert's 5-point scale, as follows: 0 for "never," 1 for "rarely," 2 for "occasionally," 3 for "most of the time," and 4 for "almost always."

Results

Domain 1 : Limitations of Functions

1. **Had trouble in word pronunciation? Table 1 shows the results obtained. Patients rarely have difficulty in word pronunciation.**

Table 1. Patients with difficulty in word pronunciation

	Male n (%) 31	Female n (%) 33	P- value	Chi-square (χ ²), [df]
Rarely	16 (51.61)	14 (42.42)	0.355	2.073, [2]
Occasionally	13 (41.94)	13 (39.39)		
Most of the time	2 (6.45)	6 (18.18)		
Almost always	0 (0)	0 (0)		

2. **Felt that sense of taste had worsened? Table 2 shows the results obtained. Patients rarely have altered taste sensation.**

Table 2. Patients with altered taste sensation

	Male n (%)	Female n (%)	P- value	Chi-square(χ ²), [df]
Rarely	21 (67.74)	21 (63.64)	0.240	2.857, [2]
Occasionally	9 (29.03)	7 (21.21)		
Most of the time	1 (3.23)	5 (15.15)		
Almost always	0 (0)	0 (0)		

Domain 2: Pain perception

3. Had pain in your mouth? Table 3 shows the results obtained. Patients have occasional pain during fixed orthodontic treatment

Table 3. Patients with different pain perceptions

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	9 (29.03)	12 (36.36)	0.650	1.641, [3]
Occasionally	12 (38.71)	8 (24.24)		
Most of the time	8 (25.81)	11 (33.33)		
Almost always	2 (6.45)	2 (6.06)		

Domain 3: Psychological effects

4. Have you been feeling self-conscious? Table 4 shows the results obtained. Patients mostly were conscious during fixed orthodontic treatment

Table 4. Patients different perceptions of self-image

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	5 (16.13)	5 (15.15)	0.608	1.833, [3]
Occasionally	13 (41.93)	9 (27.27)		
Most of the time	10 (32.26)	14 (42.42)		
Almost always	3 (9.68)	5 (15.15)		

Domain 4: Psychological disability

5. Finds it difficult to relax? Table 5 shows the results obtained. Patients occasional difficulty in mental relaxation

Table 5. Patients with mental and psychological stress and difficulty in relaxing

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	6 (19.36)	12 (36.36)	0.159	5.185, [3]
Occasionally		11 (35.48)		
Most of the time		12 (38.71)		
Almost always		2 (6.45)		

6. Has been a bit embarrassed? Table 6 shows the results obtained. Patients were occasionally embarrassed during fixed treatment

Table 6. Patients suffered with embarrassing situations due to orthodontic treatment

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	6 (19.36)	11 (33.33)	0.585	1.939, [3]
Occasionally	11 (35.48)	11 (33.33)		
Most of the time	10 (32.26)	7 (21.21)		
Almost always	4 (12.90)	4 (12.12)		

Domain 5: Eating with braces

7. While eating during your treatment, do you find difficulty in chewing foods? Table 7 shows the results obtained. Patients mostly have difficulty in eating.

Table 7. Patients with difficulty in chewing food

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	5 (16.13)	7 (21.21)	0.699	1.426, [3]
Occasionally	11 (35.48)	11 (33.33)		
Most of the time	12 (38.71)	14 (42.42)		
Almost always	3 (9.68)	1 (3.03)		

Domain 6: Changes occurred

8. Did amount of food consumption change with treatment? Table 8 shows the results obtained. Patients show considerable changes in food habits due to treatment.

Table 8. Patients with changes in food habits

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
No change	3 (9.68)	5 (15.15)	0.108	6.077, [3]
Some changes	15 (48.39)	9 (27.27)		
Considerable changes	11 (35.48)	19 (57.58)		
Whole diet changed	2 (6.45)	0 (0)		

9. Does it take more time to eat with braces? Table 9 shows the results obtained. Patients have considerable changes in eating time

Table 9. Patients with changes in eating time and pattern

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
No change	2 (6.45)	2 (6.06)	0.750	1.211, [3]
Some changes	18 (58.06)	15 (45.45)		
Considerable changes	10 (32.26)	15 (45.45)		
Whole diet changed	1 (3.23)	1 (3.03)		

Domain 7: Peer effects

10. Do you feel conscious while eating in front of family? Table 10 shows the results obtained. Patients are conscious while eating in front of family occasionally during orthodontic treatment

Table 10. Patients being extra aware and conscious while eating in front of family

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	5 (16.13)	8 (24.24)	0.378	3.091, [3]
Occasionally	13 (41.93)	15 (45.45)		
Most of the time	12 (38.71)	7 (21.21)		
Almost always	1 (3.23)	3 (9.09)		

11. Do you feel conscious while eating in front of friends? Table 11 shows the results obtained. Patients are extra conscious while eating in front of friends most of the time

Table 11. Patients being extra aware and conscious while eating in front of friends

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	3 (9.68)	4 (12.12)	0.499	2.373, [3]
Occasionally	9 (29.03)	9 (27.27)		
Most of the time	17 (54.84)	14 (42.42)		
Almost always	2 (6.45)	6 (18.18)		

Domain 8: You and your dentist

12. How often do you avoid eating foods since brushing is difficult with braces? Table 12 shows the results obtained. Patients occasionally didn't eat food or hard food during treatment.

Table 12. Patients with decreased food consumption

	Male n (%)	Female n (%)	P- value	Chi-square (χ^2), [df]
Rarely	4 (12.90)	6 (18.18)	0.504	2.342, [3]
Occasionally	18 (58.07)	13 (39.39)		
Most of the time	7 (22.58)	10 (30.30)		
Almost always	2 (6.45)	4 (12.12)		

Chi-square analysis determined the relationship between the male and female categories with the reported answers for each question from the different domains. The analysis reports that the *p*-value for each question was greater than 0.05, implies that there was no difference between the male and female categories for each question.

Discussion

According to Yasamin Babae Hemmati et al Orthodontic therapy has a negative, although transient, impact on OHRQoL [3]. Our Research indicates that, of all the daily activities, orthodontic treatment has the biggest effect on eating behavior. In line with the findings of Yasamin Babae Hemmati et al, our study supports the notion that the onset of orthodontic treatment can temporarily affect the quality of life with related to oral health(OHRQoL). One of the most impacted aspects of daily activities is eating behavior, as evidenced in both our research and Hemmati's study [3]. In our investigation, we observed substantial changes in the quantity of food intake among patients who had completed three months of fixed orthodontic treatment. This underlines the significant influence of orthodontic treatment on dietary habits, which can be attributed to factors like discomfort, dietary restrictions, and the need for meticulous oral hygiene. While these challenges are transient, they are an integral part of the orthodontic journey, and recognizing this impact on OHRQoL is crucial. To address this, a patient-centered approach is recommended, acknowledging the temporary disruptions while emphasizing the long-term benefits orthodontic treatment provides for oral health and overall well-being.

According to Adrián Curto Patients exhibiting elevated levels of anxiety reported a more unfavorable effect on their Quality of Life with respect to oral health (OHRQoL) [7]. which is psychological disability. according to them The concept of OHRQoL relies on the individual patient's personal experiences and perceptions.; The findings of their study indicated that, among the dimensions assessed psychological disability had the maximum score (with a mean of 3.20 ± 1.08), succeeded by functional limitation (with a mean of 2.52 ± 0.81). In contrast, handicap (with a mean of 0.37 ± 0.56) and social disability (with an average of 0.43 ± 0.69) were the dimensions that had the least pronounced influence on the patients. When we compare the results of Adrián Curto's study with our own, it becomes clear that both studies explore the notion of Quality of Life related to oral health (OHRQoL) and its subjective character. Both studies recognize that OHRQoL subjective primarily shaped by the patient's individual experiences and perceptions. Notably, Adrián Curto's research unveiled that individuals with elevated anxiety trait expressed negative influence on their OHRQoL, with psychological disability having the highest score among the dimensions assessed. our study found that psychological discomfort received the highest score, suggesting that the psychological dimension is prominently affected in the context of fixed orthodontic treatment. Both studies underscore the significance of understanding the subjective nature of OHRQoL and its effects on patients, emphasizing the need for a patient-centered approach in orthodontic care to address these concerns effectively.

The effectiveness of orthodontic treatment relies on the cooperation and adherence of the patient to the prescribed guidelines. Numerous factors play a role in patient compliance, such as the degree of unease, pain, and anxiety encountered throughout treatment, as well as their treatment expectations. Discomfort can notably affect a patient's determination to proceed with treatment and their readiness to comply to the prescribed instructions. According to our study we can say that females experienced more physical pain and psychological disability than males. According to Siti Adibah Othman no orthodontic bracket system provides a superior Quality of Life in relation to oral health (OHRQoL) [8]. Patients might encounter certain effects in the start of treatment.

A decline in the sense of taste was reported by both genders, with males indicating it "occasionally" and females "rarely" or "most of the time". According to Hakeem Olatunde Agbaje et al in the initial phases of fixed appliance therapy, there were noticeable shifts Quality of Life related to oral health (OHRQoL) [5]. OHRQoL UK documented an initial decline in OHRQoL, which was subsequently followed by gradual enhancement. The initial declines may have been attributed to physical discomfort, limitations and pain associated with the use of appliances [6]. Our study showed Occasional painful aching in the mouth was experienced by both genders, with no significant gender difference.

According to Louise A. Carter. participants stated that their orthodontist's advice, the appliance's physical characteristics, their fear of breaking it, and their desire to minimize shame all contributed to their dietary restrictions [2]. In addition, participants complained about messy eating, chewing issues, flavor changes, and eating slowly.in comparing these results with our study we found Both males and females reported feeling self-conscious occasionally or most of the time, with no significant gender difference and Both males and females reported difficulties in pronouncing words, with no significant gender difference.

Females reported difficulties in relaxing "most of the time" more frequently than males. No significant gender difference was found for feeling embarrassed. Both genders experienced difficulties while eating with

braces, with females reporting this "most of the time". No significant gender difference was observed. Females reported more "considerable changes" and "whole diet changed" compared to males who experienced "some changes". Both genders reported varying feelings when eating with braces in front of family and friends. No significant gender difference was found in these social dimensions. Both genders reported avoiding foods at varying frequencies due to difficulties in cleaning braces.

Conclusion

In summary, this research highlights the multifaceted influence of fixed orthodontic treatment on the quality of life related to oral health. (OHRQoL) of patients. While some gender-related differences were noted in specific areas, both males and females faced similar challenges during orthodontic treatment. This underscores the importance of a patient-centered approach to support patients and enhance their oral health and overall well-being throughout the orthodontic journey to provide support and guidance to patients navigating these challenges for improved oral health and overall well-being.

Conflict of interest: Nil

Source of support: Nil

Acknowledgements: Nil

Presentation at Conference: Nil

References

1. Choi SH, Cha JY, Lee KJ, Yu HS, Hwang CJ. Changes in psychological health, subjective food intake ability and oral health-related quality of life during orthodontic treatment. *J Oral Rehabil.* 2017 Nov;44(11):860-869. doi: <https://doi.org/10.1111/joor.12556> . Epub 2017 Sep 10. PMID: 28853165.
2. Carter LA, Geldenhuys M, Moynihan PJ, Slater DR, Exley CE, Rolland SL. The impact of orthodontic appliances on eating - young people's views and experiences. *J Orthod.* 2015 Jun;42(2):114-22. doi: <https://doi.org/10.1179/1465313314Y.0000000128> . PMID: 26118682.
3. Babaee Hemmati Y, Mirmoayed A, Ghaffari ME, Falahchai M. Eating- and oral health-related quality of life in patients under fixed orthodontic treatment. *Clin Exp Dent Res.* 2022 Oct;8(5):1192-1201. doi: <https://doi.org/10.1002/cre2.631>
4. Abed Al Jawad F, Cunningham SJ, Croft N, Johal A. A qualitative study of the early effects of fixed orthodontic treatment on dietary intake and behaviour in adolescent patients. *Eur J Orthod.* 2012 Aug;34(4):432-6. doi: <https://doi.org/10.1093/ejo/cjr032>
5. Agbaje HO, Kolawole KA, Otuyemi OD. Evaluation of early changes in oral health-related quality of life amongst Nigerian patients undergoing fixed orthodontic appliance therapy. *Int Orthod.* 2018 Sep;16(3):571- 585. doi: <https://doi.org/10.1016/j.ortho.2018.06.003>
6. Abdulrahman, A. A. (2018). The impact of orthodontic treatment on eating related quality of life on different cultures and different age groups (United Kingdom and Kurdistan populations). Newcastle University <http://theses.ncl.ac.uk/jspui/handle/10443/4075>
7. Curto A, Alvarado-Lorenzo A, Albaladejo A, Alvarado-Lorenzo A. Oral-Health-Related Quality of Life and Anxiety in Orthodontic Patients with Conventional Brackets. *Int J Environ Res Public Health.* 2022 Aug 29;19(17):10767. doi: <https://doi.org/10.3390/ijerph191710767>
8. Othman SA, Mansor N, Saub R. Randomized controlled clinical trial of oral health-related quality of life in patients wearing conventional and self-ligating brackets. *Korean J Orthod.* 2014 Jul;44(4):168-76. doi: <https://doi.org/10.4041/kjod.2014.44.4.168>