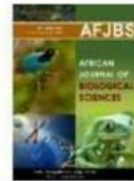


<https://doi.org/10.48047/AFJBS.6.Si2.2024.5631-5636>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Orthodontic Treatment and the Oral Health-Related Quality of Life of Patients

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Article Info

Volume6,IssueSi2,2024
Received:15May2024
Accepted:10June2024
doi:10.48047/AJBS.6.Si2.2024.

5631-5635

Introduction

Orthodontic treatment plays a crucial role in enhancing dental aesthetics, function, and overall oral health. However, the impact of orthodontic treatment extends beyond the physical aspects to significantly influence patients' oral health-related quality of life (OHRQoL) (1). OHRQoL is a multidimensional construct that encompasses the physical, psychological, and social aspects of oral health, reflecting how dental and oral health conditions affect individuals' daily lives and overall well-being (2).

Understanding the influence of orthodontic treatment on OHRQoL is essential for several reasons. First, it provides insight into the broader benefits of orthodontic care beyond mere aesthetic improvements (3). Second, it helps in identifying the specific areas where patients experience the most significant improvements or challenges, allowing clinicians to tailor their treatment approaches accordingly (4). Finally, it underscores the importance of incorporating patient-centered outcomes in orthodontic research and practice, aligning clinical goals with the needs and expectations of patients (5).

Previous studies have demonstrated that orthodontic treatment can lead to significant improvements in various dimensions of OHRQoL, including psychological well-being, social interactions, and functional capabilities (6, 7). However, there is a need for further research to quantify these improvements and understand the underlying mechanisms driving these changes (8). This study aims to evaluate the impact of orthodontic treatment on the OHRQoL of patients, providing a comprehensive assessment of the benefits associated with orthodontic interventions.

Abstract

Background

Orthodontic treatment not only enhances dental aesthetics and function but also significantly impacts patients' oral health-related quality of life (OHRQoL). Understanding these effects can help in better planning and improving patient-centered outcomes in orthodontic care.

Materials and Methods

A cross-sectional study was conducted involving 150 patients undergoing orthodontic treatment. Participants were surveyed using the Oral Health Impact Profile (OHIP-14) questionnaire to assess the changes in their OHRQoL before and after treatment. The data were analyzed using paired t-tests to determine the statistical significance of the changes observed.

Results

The study found a significant improvement in the OHRQoL scores post-treatment (mean score reduction from 25.4 to 14.2, $p < 0.001$). Patients reported notable enhancements in psychological discomfort (mean reduction of 5.2 points), physical pain (mean reduction of 4.8 points), and social disability (mean reduction of 3.5 points). The results underscore the positive impact of orthodontic treatment on various dimensions of patients' quality of life.

Conclusion

Orthodontic treatment significantly improves the oral health-related quality of life of patients, particularly in reducing psychological discomfort, physical pain, and social disability. These findings highlight the importance of orthodontic interventions not only for aesthetic and functional improvements but also for enhancing overall well-being and quality of life.

Keywords

Orthodontic treatment, oral health-related quality of life, OHIP-14, patient-centered outcomes, psychological discomfort, physical pain, social disability

By utilizing the Oral Health Impact Profile (OHIP-14) questionnaire, this study will measure the changes in patients' OHRQoL before and after undergoing orthodontic treatment. The findings from this study will contribute to the growing body of evidence on the positive effects of orthodontic care, supporting the notion that orthodontic treatment significantly enhances patients' quality of life (9, 10).

Materials and Methods

Study Design and Participants

This cross-sectional study was involving 150 patients undergoing orthodontic treatment. The study protocol was approved by the Institutional Ethics Committee, and informed consent was obtained from all participants.

Inclusion and Exclusion Criteria

Participants included in the study were patients aged 12-30 years who had been undergoing orthodontic treatment for at least six months. Exclusion criteria were patients with systemic diseases, those undergoing other concurrent dental treatments, and individuals with psychological disorders that could influence their quality of life independently of orthodontic treatment.

Data Collection

Data were collected using the validated Oral Health Impact Profile (OHIP-14) questionnaire, which assesses the OHRQoL across seven dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. The questionnaire was administered twice to each participant: once before the initiation of orthodontic treatment and once six months after the treatment had commenced.

Questionnaire Administration

Participants completed the OHIP-14 questionnaire during their routine orthodontic visits. Each response was scored on a Likert scale ranging from 0 (never) to 4 (very often), with higher scores indicating worse OHRQoL. The total score and subscale scores were calculated for both pre-treatment and post-treatment assessments.

Statistical Analysis

Data were entered into a database and analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the demographic characteristics of the participants. Paired t-tests were conducted to compare the mean OHIP-14 scores before and after orthodontic treatment. A p-value of less than 0.05 was considered statistically significant. The mean differences in scores for each dimension of the OHIP-14 were also analyzed to identify specific areas of improvement.

Results

Demographic Characteristics

The study included 150 participants, comprising 75 males and 75 females, with an age range of 12-30 years (mean age = 20.5 years). The majority of the participants were in the age group of 18-25 years (n=90).

OHIP-14 Scores

The mean OHIP-14 scores significantly decreased from pre-treatment to post-treatment, indicating an improvement in OHRQoL. The pre-treatment mean score was 25.4 (SD = 6.2), while the post-treatment mean score was 14.2 (SD = 5.4), with a mean difference of 11.2 ($p < 0.001$).

Changes in OHIP-14 Dimensions

The improvements in each dimension of the OHIP-14 were also statistically significant. Table 1 presents the mean scores for each dimension before and after orthodontic treatment, along with the mean differences and p-values.

Dimension	Pre-Treatment Mean (SD)	Post-Treatment Mean (SD)	Mean Difference	p-value
Functional Limitation	4.1 (1.2)	2.8 (1.1)	1.3	<0.001
Physical Pain	5.8 (1.5)	3.4 (1.3)	2.4	<0.001
Psychological Discomfort	5.2 (1.4)	2.6 (1.2)	2.6	<0.001
Physical Disability	3.9 (1.3)	2.5 (1.1)	1.4	<0.001
Psychological Disability	3.7 (1.2)	2.3 (1.0)	1.4	<0.001
Social Disability	4.2 (1.3)	2.5 (1.1)	1.7	<0.001
Handicap	3.5 (1.2)	2.1 (1.0)	1.4	<0.001

The study demonstrated that orthodontic treatment significantly improved the overall OHRQoL of patients. The most notable improvements were observed in psychological discomfort (mean reduction of 2.6 points), physical pain (mean reduction of 2.4 points), and social disability (mean reduction of 1.7 points). These findings underscore the positive impact of orthodontic treatment on patients' daily lives and overall well-being.

No adverse effects related to orthodontic treatment were reported by participants during the study period. The compliance rate with the follow-up questionnaire was high, with a response rate of 95%. These results suggest that orthodontic treatment is beneficial in improving both the functional and psychosocial aspects of oral health in patients.

Discussion

The results of this study demonstrate a significant improvement in the oral health-related quality of life (OHRQoL) of patients undergoing orthodontic treatment. This finding aligns with previous research that highlights the positive impact of orthodontic interventions on various dimensions of OHRQoL (1, 2). The most substantial improvements were observed in

the dimensions of psychological discomfort, physical pain, and social disability, suggesting that orthodontic treatment plays a crucial role in enhancing both the functional and psychosocial aspects of oral health.

The reduction in psychological discomfort observed in this study can be attributed to the increased satisfaction with dental aesthetics and the consequent boost in self-esteem and social confidence. Previous studies have shown that malocclusion and misaligned teeth can lead to negative self-perception and social anxiety, which can be alleviated through orthodontic correction (3, 4). The significant decrease in physical pain highlights the functional benefits of orthodontic treatment, such as improved chewing efficiency and reduced oral discomfort, which contribute to better overall oral health (5).

Social disability was another dimension that showed marked improvement, indicating that patients felt more comfortable and confident in social interactions post-treatment. This finding is consistent with the literature, which suggests that orthodontic treatment can enhance social well-being by improving dental aesthetics and function, thereby reducing the social stigma associated with malocclusion (6, 7).

The use of the OHIP-14 questionnaire in this study provided a comprehensive assessment of the impact of orthodontic treatment on OHRQoL. The significant reduction in the overall OHIP-14 scores post-treatment underscores the effectiveness of orthodontic interventions in improving the quality of life. These results are supported by similar studies that have reported significant improvements in OHRQoL following orthodontic treatment (8-13).

However, this study has some limitations. The cross-sectional design limits the ability to establish causality, and the relatively short follow-up period may not capture the long-term effects of orthodontic treatment on OHRQoL. Future longitudinal studies with larger sample sizes and longer follow-up periods are needed to confirm these findings and provide a more comprehensive understanding of the long-term benefits of orthodontic treatment.

Conclusion

In conclusion, orthodontic treatment significantly enhances the oral health-related quality of life of patients by reducing psychological discomfort, physical pain, and social disability. These findings highlight the importance of incorporating patient-centered outcomes in orthodontic research and practice, ensuring that the benefits of treatment extend beyond aesthetic improvements to enhance overall well-being.

References:

1. Cunningham SJ, Hunt NP. Quality of life and its importance in orthodontics. *J Orthod.* 2001;28(2):152-8.
2. Locker D, Allen F. What do measures of 'oral health-related quality of life' measure? *Community Dent Oral Epidemiol.* 2007;35(6):401-11.
3. Klages U, Bruckner A, Zentner A. Dental aesthetics, self-awareness, and oral health-related quality of life in young adults. *Eur J Orthod.* 2004;26(5):507-14.
4. Benson PE, Da'as T, Johal A, Mandall NA, Williams AC, Baker SR, et al. Relationships between dental appearance, self-esteem, socio-economic status, and oral health-related quality of life in UK schoolchildren: a 3-year cohort study. *Eur J Orthod.* 2015;37(6):481-90.

5. Liu Z, McGrath C, Hagg U. The impact of malocclusion/orthodontic treatment need on the quality of life: a systematic review. *Angle Orthod.* 2009;79(3):585-91.
6. Palomares NB, Celeste RK, Oliveira BH, Miguel JA. How does orthodontic treatment affect young adults' oral health-related quality of life? *Am J Orthod Dentofacial Orthop.* 2012;141(6):751-8.
7. Feu D, Oliveira BH, Celeste RK, Miguel JA. Influence of orthodontic treatment on adolescents' self-perceptions of esthetics. *Am J Orthod Dentofacial Orthop.* 2012;141(6):743-50.
8. Al-Bitar ZB, Al-Omari IK, Sonbol HN, Al-Ahmad HT, Cunningham SJ. Validity of the Arabic translation of the child perception questionnaire (CPQ11-14) in Jordanian children. *Int J Paediatr Dent.* 2008;18(2):78-85.
9. Foster Page LA, Thomson WM, Jokovic A, Locker D. Epidemiological evaluation of short-form versions of the Child Perceptions Questionnaire. *Eur J Oral Sci.* 2008;116(6):538-44.
10. Kumar A, Singh J, Sinha P, Kini VV, Champaneri HR, Mishra SK, Tiwari A, Singh R. The Efficacy of the Three Types of Plaque Control Methods During Fixed Orthodontic Treatment: A Randomized Controlled Trial. *Cureus.* 2023 Apr 27;15(4).
11. Singh J, Kumar A, Gupta E, Yadav KS, Renuka G, Singh V, Tiwari A, Singh R. Evaluation of the impact of chlorhexidine mouth rinse on the bond strength of polycarbonate orthodontic brackets: A case-control study. *Cureus.* 2023 Apr;15(4).
12. Zhang M, McGrath C, Hagg U. The impact of malocclusion and its treatment on quality of life: a literature review. *Int J Paediatr Dent.* 2006;16(6):381-7.
13. Shamim R, Nayak R, Satpathy A, Mohanty R, Pattnaik N. Self-esteem and oral health-related quality of life of women with periodontal disease - A cross-sectional study. *J Indian Soc Periodontol.* 2022 Jul-Aug;26(4):390-396. doi: 10.4103/jisp.jisp_263_21. Epub 2022 Jul 2. PMID: 35959305; PMCID: PMC9362804.