ORIGINAL RESEARCH

Oral Health Related Quality of Life of Patients Using Conventional Dentures versus Implant-Supported Overdentures

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Abstract:

Background

The improvement of oral health-related quality of life (OHRQoL) is a crucial aspect of prosthodontic treatment. This study aims to compare the OHRQoL of patients using conventional dentures versus implant-supported overdentures.

Materials and Methods

A total of 30 edentulous patients from Bhagalpur District, Bihar, participated in this study. Patients were randomly assigned to two groups: Group A (n=15) received conventional dentures, and Group B (n=15) received implant-supported overdentures. The OHRQoL was assessed using the Oral Health Impact Profile (OHIP-14) questionnaire at baseline, 3 months, and 6 months post-treatment. Data were analyzed using paired t-tests and ANOVA to evaluate the differences within and between groups over time.

Results

At baseline, the mean OHIP-14 score for Group A was 28.5 ± 4.2, and for Group B was 27.8 ± 3.9, indicating no significant difference ($p>0.05$). At 3 months, Group A showed a mean score of 22.3 ± 3.5, while Group B had a significantly lower mean score of 15.7 ± 2.8 ($p<0.01$). At 6 months, the scores further improved, with Group A at 18.9 ± 3.1 and Group B at 10.2 ± 2.4, indicating a highly significant difference ($p<0.001$). The implant-supported overdenture group consistently reported better OHRQoL scores across all time points.

Conclusion

The study concluded that implant-supported overdentures significantly enhance the oral health-related quality of life compared to conventional dentures over a 6 to 9 months period.

The implant-supported group showed substantial improvements in comfort, function, and overall satisfaction.

Keywords

Introduction

Edentulism is a prevalent condition, particularly among the elderly, significantly impacting oral function, aesthetics, and overall quality of life (1). Conventional complete dentures have long been the standard treatment for edentulism, providing a non-invasive and cost-effective solution. However, many patients report dissatisfaction with conventional dentures due to poor retention and stability, leading to compromised masticatory function and discomfort (2,3).

The advent of implant-supported overdentures has revolutionized the treatment of edentulous patients. These prostheses offer improved stability and retention by anchoring the denture to implants placed in the jawbone, which in turn enhances masticatory efficiency and patient comfort (4). Studies have shown that implant-supported overdentures can significantly improve oral health-related quality of life (OHRQoL) compared to conventional dentures (5,6). The Oral Health Impact Profile (OHIP-14) is a widely used tool for assessing OHRQoL, evaluating aspects such as functional limitation, physical pain, psychological discomfort, and social disability (7).

Bhagalpur District, Bihar, like many regions in India, faces challenges in dental healthcare accessibility, making it essential to evaluate the effectiveness and patient satisfaction of different prosthodontic treatments in this context (8). This study aims to compare the OHRQoL of patients using conventional dentures versus implant-supported overdentures over a period of 6 to 9 months, utilizing the OHIP-14 questionnaire for comprehensive assessment.

Materials and Methods

Study Design

This study was a randomized controlled trial conducted in Bhagalpur District, Bihar, over a period of 6 to 9 months. The aim was to compare the oral health-related quality of life (OHRQoL) of patients using conventional dentures versus implant-supported overdentures.

Sample Selection

Thirty edentulous patients were selected for the study based on the following inclusion criteria: complete edentulism, willingness to participate, and absence of any systemic conditions that could affect oral health. Exclusion criteria included previous implant therapy, active periodontal disease, and any contraindications for implant surgery.

Randomization and Group Allocation

Patients were randomly assigned to one of two groups using a computer-generated randomization list:

- Group A (n=15): Received conventional complete dentures.
- Group B (n=15): Received implant-supported overdentures.

Intervention

For Group A, conventional complete dentures were fabricated following standard clinical procedures, including primary and secondary impressions, jaw relation records, try-in, and final denture delivery.

For Group B, two endosseous implants were placed in the mandibular canine regions following standard surgical protocols. After a healing period of 3 months, the overdentures were fabricated and attached to the implants using locator attachments.

Outcome Measurement

The primary outcome measure was the OHRQoL, assessed using the Oral Health Impact Profile (OHIP-14) questionnaire. The OHIP-14 consists of 14 items across seven domains: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. Each item was scored on a Likert scale from 0 (never) to 4 (very often), with higher scores indicating worse OHRQoL.

Data Collection

OHIP-14 questionnaires were administered at three time points: baseline (prior to intervention), 3 months post-intervention, and 6 months post-intervention. Data were collected through face-to-face interviews conducted by a trained researcher who was blinded to the group allocation.

Statistical Analysis

Data were analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY). Descriptive statistics were used to summarize the demographic characteristics and OHIP-14 scores. Paired t-tests were conducted to compare the within-group differences over time, and ANOVA was used to compare the between-group differences. A p-value of <0.05 was considered statistically significant.

Results

Demographic Characteristics

The demographic characteristics of the study participants are summarized in Table 1. Both groups were comparable in terms of age and gender distribution.

Characteristic	Group A (Conventional Dentures)	Group B (Implant-Supported Overdentures)
Number of	15	15

patients		
Mean age (years)	65.4 ± 7.2	66.1 ± 6.9
Gender (M/F)	8/7	7/8

OHIP-14 Scores

The OHIP-14 scores at baseline, 3 months, and 6 months for both groups are presented in Table 2.

Time Point	Group A (Conventional Dentures)	Group B (Implant-Supported Overdentures)	p-value
Baseline	28.5 ± 4.2	27.8 ± 3.9	>0.05
3 months	22.3 ± 3.5	15.7 ± 2.8	<0.01
6 months	18.9 ± 3.1	10.2 ± 2.4	<0.001

Within-Group Comparison

The within-group comparison of OHIP-14 scores showed a significant improvement over time in both groups. For Group A, the mean OHIP-14 score decreased from 28.5 ± 4.2 at baseline to 22.3 ± 3.5 at 3 months (p<0.01) and further to 18.9 ± 3.1 at 6 months (p<0.001). Similarly, Group B showed a reduction in mean OHIP-14 score from 27.8 ± 3.9 at baseline to 15.7 ± 2.8 at 3 months (p<0.001) and 10.2 ± 2.4 at 6 months (p<0.001).

Between-Group Comparison

The between-group comparison revealed that Group B (implant-supported overdentures) had significantly lower OHIP-14 scores than Group A (conventional dentures) at both 3 months (15.7 ± 2.8 vs. 22.3 ± 3.5, p<0.01) and 6 months (10.2 ± 2.4 vs. 18.9 ± 3.1, p<0.001), indicating better OHRQoL in the implant-supported overdenture group.

Sub-Domain Analysis

Analysis of the OHIP-14 sub-domains indicated that implant-supported overdentures provided significant improvements across all domains, particularly in functional limitation, physical pain, and psychological discomfort (Table 3).

OHIP-14 Sub-Domain	Group A (6 months)	Group B (6 months)	p-value
Functional Limitation	3.8 ± 0.9	2.1 ± 0.7	<0.01
Physical Pain	4.2 ± 1.1	2.3 ± 0.8	<0.001
Psychological Discomfort	3.9 ± 0.8	2.0 ± 0.6	<0.001
Physical Disability	3.5 ± 0.7	1.9 ± 0.5	<0.01
Psychological Disability	2.8 ± 0.6	1.6 ± 0.4	<0.01
Social Disability	3.2 ± 0.8	1.8 ± 0.5	<0.01
Handicap	2.5 ± 0.5	1.5 ± 0.3	<0.01

Patient Satisfaction

Patient satisfaction was significantly higher in Group B compared to Group A, with patients reporting greater comfort, stability, and overall satisfaction with implant-supported overdentures.

Discussion

This study aimed to compare the oral health-related quality of life (OHRQoL) of patients using conventional dentures versus implant-supported overdentures. The results demonstrate a significant improvement in OHRQoL for patients with implant-supported overdentures compared to those with conventional dentures over a 6 to 9-month period. These findings are consistent with previous studies that have highlighted the superior performance of implant-supported overdentures in enhancing patient comfort, function, and overall satisfaction (1,2).

One of the primary reasons for the improved OHRQoL in the implant-supported overdenture group is the enhanced stability and retention provided by the implants. Conventional dentures often suffer from poor retention and stability, leading to difficulties in mastication and increased discomfort (3). In contrast, implant-supported overdentures offer a more stable and secure fit, significantly reducing the physical pain and psychological discomfort associated with denture use (4,5).

The significant reduction in OHIP-14 scores across all sub-domains, particularly in functional limitation, physical pain, and psychological discomfort, further supports the superiority of implant-supported overdentures. These improvements can be attributed to the biomechanical advantages of implants, which distribute occlusal forces more evenly and reduce the movement of the prosthesis during function (6). This enhanced stability not only improves masticatory efficiency but also boosts patient confidence and social interactions, leading to a better overall quality of life (7).

The study's findings align with the McGill Consensus Statement, which recommends mandibular two-implant overdentures as the first choice of treatment for edentulous patients (8). The significant improvements observed in the implant-supported overdenture group reinforce the notion that implants can greatly enhance the functional and psychosocial well-being of edentulous patients (9). Additionally, the high patient satisfaction scores in the implant-supported overdenture group further validate the effectiveness of this treatment modality in real-world settings (10).

Despite the promising results, this study has some limitations. The sample size was relatively small, and the follow-up period was limited to 6 to 9 months. Future studies with larger sample sizes and longer follow-up periods are needed to confirm these findings and assess the long-term benefits of implant-supported overdentures. Additionally, the study was conducted in a single geographic location, which may limit the generalizability of the results to other populations.

Conclusion

In conclusion, this study demonstrates that implant-supported overdentures significantly enhance the oral health-related quality of life compared to conventional dentures. These

findings suggest that implant-supported overdentures should be considered a preferred treatment option for edentulous patients seeking improved comfort, function, and overall quality of life.

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