

Complications and Patient Satisfaction in Partially Removable Dentures and Complete Removable Dentures: A Questionnaire-Based Study

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Abstract

Background: Removable dentures continue to be an accepted modality of dental care for the edentate as well as the partially edentate.

Aim: To assess patient satisfaction as well as the associated problems with complete and removable partial dentures through a structured questionnaire.

Materials and Methods: A cross-sectional study employing a questionnaire-based survey was done on 200 removable denture wearers in the Chengalpattu district of Tamil Nadu. A 15-item questionnaire on functional comfort, aesthetics, and complications was used. Data analysis was done using descriptive statistics and Chi-square analysis ($p < 0.05$).

Results: The results revealed significant overall patient satisfaction with the dentures, ranging from moderate to high. The results revealed 66% of the population claimed high levels of overall satisfaction ($p < 0.001$). The majority of the patients were comfortable with the use of the dentures daily (76.5%), and the dentures provided satisfactory esthetic outcomes (76%). The significant complications experienced during the use of the dentures included gagging, changes in taste, pain, and loosening of the teeth in the case of partial dentures. The results revealed that 67.5% claimed to be willing to recommend denture use to others.

Conclusion: Satisfactory outcomes for function and aesthetics are provided with removable dentures, but the management of complication cases and follow-ups are important to enhance patient acceptance. Removable dentures, complete denture.

Keywords: Removable partial denture, patient satisfaction, denture complications, prosthodontics, questionnaire study

Introduction

Edentulism and partial edentulism are prevalent dental conditions that remarkably affect the function of mastication, speech, facial aesthetics, and the general quality of life [1]. Removable prosthodontic treatment remains a generally accepted therapeutic approach owing to its cost-effectiveness, non-invasive procedure, and applicability to a broad range of patient's [2]. The partial loss of dentition classification system assists in the development of a prosthetic device that would aid in the functional restoration with little harm to the existing dentition structures [2].

Complete removable dentures are generally indicated in complete loss of dentition patients, while partially removable dentures are indicated in partial loss of dentition patients to substitute the missing teeth and to conserve the remaining dentition [3]. Though implant-supported dentures have gained popularity in recent years, removable dentures are still the preferred choice for the majority of patients. Systemic conditions, cost factors, insufficiency of support, and patient preference are some of the factors that make implant-supported dentures impractical and make removable dentures a feasible alternative for patients [4]. Improvements in denture base materials, artificial teeth, impression methods, and laboratory procedures have led to better quality and durability of removable dentures [5]. However, successful prosthodontic treatment is not only accuracy-dependent.

The extent of patient satisfaction with removable dentures is quite variable and depends on a number of factors that are

interrelated [4]. It has been seen that clinical success is not always accompanied by patient satisfaction, which underlines the subjective nature of denture acceptance [5]. Complete and partial removable dentures have, therefore, played a very important role in conventional prosthodontics. The level of patient satisfaction with removable dentures depends on a number of factors such as comfort, retention, stability, esthetics, phonetics, and masticatory efficiency [5]. The acceptance of a removable prosthesis is a highly complex process that includes neuromuscular adaptation, psychological acceptance, and patient expectations [6]. A satisfactory denture can be regarded as unsatisfactory if it fails to satisfy the functional or aesthetic requirements of the patient. The patients can also regard their dentures as satisfactory despite some minor clinical deficiencies, thus underlining the importance of subjective evaluation [6]. It has been proved in previous studies that patient acceptance of removable dentures is significantly associated with the patient's ability to perform daily functions comfortably and confidently [8]. It is a crucial aspect to understand patient acceptance to assess the success of removable prosthodontic treatment.

Patient acceptance of complete dentures is also influenced by anatomical factors, neuromuscular coordination, and the adaptability of the patient to the denture [8].

Patient-administered outcome measures by questionnaires help in understanding the subjective success of prosthodontic treatment [8]. There is a lack of information on the assessment of complications and satisfaction among the removable denture wearers in the semi-urban areas like the

Chengalpattu district. This study was conducted to assess and compare the complications and patient satisfaction among complete and partially removable denture wearers by using a structured questionnaire.

Materials and Methods

Study Design

A cross-sectional questionnaire-based observational study was conducted.

Study Area and Sample Collection

The target population was patients residing in and around the Chengalpattu district, Tamil Nadu. The participants were selected from the Department of Prosthodontics, Adhiparasakthi Dental College and Hospital, Melmaruvathur, and private dental clinics in the district. The area is a mix of urban and semi-urban, thus enabling the selection of patients from different socioeconomic groups^[9].

Study Population

A total of n = 200 patients wearing removable dentures were included.

The target population included a total of 200 removable denture wearers who were surveyed using a structured questionnaire. Of the participants, 102 were males and 98 were females, including both complete denture and removable partial denture wearers. The participants were chosen from patients who had undergone removable prosthodontic care and were interested in taking part in the study. All the participants had been wearing their dentures for a sufficient amount of time to allow adaptation and meaningful assessment of satisfaction and complications.

Male and female patients from semi-urban areas were selected to represent the demographic distribution of the study area. Participants were required to be cooperative and able to understand and answer the questionnaire, which was conducted in English and Tamil to ensure proper reporting of patient outcomes.

Questionnaire Assessment

Patient satisfaction and denture-related complications were assessed using a structured questionnaire consisting of 15 items, designed to evaluate multiple dimensions of removable denture use. For systematic analysis, the questionnaire was divided into three segments based on the nature of assessment.

Part I: Overall Satisfaction and Functional Comfort (Questions 1-6)

The first part of the study assessed the overall satisfaction and functional comfort related to removable dentures.

- **Question 1:** Assessed the overall satisfaction with the use of higher scores indicating higher levels of satisfaction
- **Questions 2 to 6:** Assessed the comfort felt on a daily basis, speech confidence, denture stability during eating, ease of cleaning and maintenance, and ease of insertion and removal.

The questions were more towards the functional adaptation of the patient.

Part II: Aesthetic and Sensory Perception (Questions 7-10)

The second part of the study evaluated the aesthetic perception and changes associated with the use of dentures.

- **Question 7:** Evaluated the improvement of facial appearance as perceived by the patient.
- **Questions 8 to 10:** Evaluated gag reflex, taste sensation, and halitosis.

The second part of the study evaluated the psychological, aesthetic, and sensory perceptions associated with removable dentures.

Part III: Complications, Acceptance, and Compliance (Questions 11-15)

The third part of the study evaluated the complications, acceptance, and compliance associated with dentures.

- Question 13 evaluated loosening of the supporting natural teeth in partial denture wearers.
- Questions 14 and 15 assessed halting the use of dentures due to complications and willingness to recommend denture use to others

This section offered information on acceptance, complications, and compliance.

Inclusion Criteria

- Patients wearing complete or partially removable dentures
- Minimum denture usage period of [3–6 months]
- Patients residing in and around Chengalpattu district
- Patients willing to participate^[10]

Exclusion Criteria

- Patients with implant-supported prostheses
- Patients with maxillofacial defects
- Patients with systemic, neuromuscular, or psychological disorders affecting response reliability^[11]

Statistics and Results

Descriptive and Inferential statistical analysis was carried out to identify patient satisfaction and complications related to removable dentures. The obtained data was analysed using Microsoft Excel software. Frequency and percentage were determined for all responses in the questionnaire. Chi-square goodness-of-fit tests were used to identify if the observed response was significantly different from the expected equal distribution. A p-value of less than 0.05 was considered statistically significant.

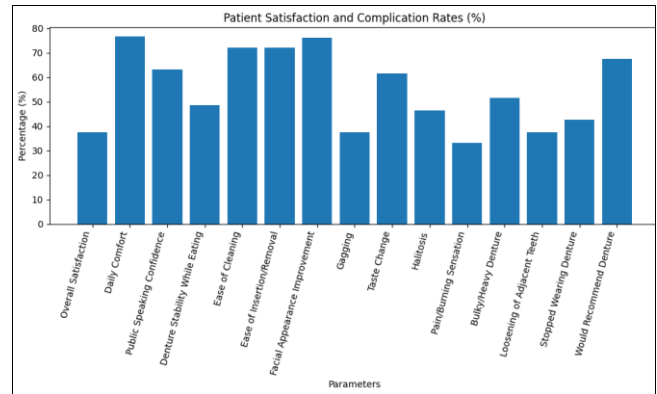
The overall satisfaction of removable dentures, using a five-point Likert scale, revealed a statistically significant difference from the expected equal distribution ($\chi^2 = 88.40$, $df = 4$, $p < 0.001$). Most patients showed moderate to high satisfaction, with 37.5% of patients being highly satisfied and 28.5% being very satisfied, showing a positive overall attitude towards removable denture therapy.

For the Yes/No responses, there was a statistically significant difference for most of the functional, aesthetic, and comfort aspects. A large number of patients showed they were quite comfortable wearing their dentures on a daily basis ($\chi^2 = 56.18$, $p < 0.001$) and confident speaking in public ($\chi^2 = 13.52$, $p < 0.001$). Ease of cleaning and maintenance, as well as insertion and removal, was also significantly favourable ($\chi^2 = 38.72$, $p < 0.001$).

Aesthetic improvement due to the use of dentures was found to be statistically significant ($\chi^2 = 54.08$, $p < 0.001$) with a large number of participants. However, complications such

as gagging ($\chi^2 = 12.50, p < 0.001$), alteration in taste sensation ($\chi^2 = 10.58, p = 0.001$), pain or burning sensation ($\chi^2 = 23.12, p < 0.001$), and loosening of adjacent natural teeth in partial denture wearers ($\chi^2 = 12.50, p < 0.001$) were also found to be statistically significant.

There were no statistically significant differences found for looseness of denture during eating ($\chi^2 = 0.18, p = 0.67$), feeling of bulkiness or heaviness ($\chi^2 = 0.18, p = 0.67$), and halitosis ($\chi^2 = 0.98, p = 0.32$). However, an important finding was that a large number of participants stopped using dentures due to complications ($\chi^2 = 4.50, p = 0.034$). However, the desire to recommend the use of dentures to others was significantly high ($\chi^2 = 24.50, p < 0.001$).



| Questions | Options | Frequency | Percentage |
|---|----------------------------|-----------|------------|
| How much would you rate your overall satisfaction with wearing your removable denture? | Very Slightly dissatisfied | 9 | 4.5% |
| | Slightly dissatisfied | 9 | 4.5% |
| | Moderately satisfied | 50 | 25.0% |
| | Very satisfied | 57 | 28.5% |
| | Highly satisfied | 75 | 37.5% |
| Are you comfortable wearing your removable denture daily? | Yes | 153 | 76.5% |
| | No | 47 | 23.5% |
| Do you feel confident speaking in public while wearing your denture? | Yes | 126 | 63.0% |
| | No | 74 | 37.0% |
| Does your denture feel loose or unstable while eating? | Yes | 103 | 51.5% |
| | No | 97 | 48.5% |
| Is it easy for you to clean and maintain your denture? | Yes | 144 | 72.0% |
| | No | 56 | 28.0% |
| Is it easy for you to insert and remove your denture? | Yes | 144 | 72.0% |
| | No | 56 | 28.0% |
| Do you feel your denture improves your facial appearance? | Yes | 152 | 76.0% |
| | No | 48 | 24.0% |
| Do you experience frequent gagging while wearing your denture? | Yes | 75 | 37.5% |
| | No | 125 | 62.5% |
| Do you feel your denture has caused changes in your taste sensation? | Yes | 123 | 61.5% |
| | No | 77 | 38.5% |
| Do you feel your denture contributes to bad breath (halitosis)? | Yes | 93 | 46.5% |
| | No | 107 | 53.5% |
| Do you experience pain or burning sensation while wearing your denture? | Yes | 66 | 33.0% |
| | No | 134 | 67.0% |
| 12. Do you feel your denture is too bulky or heavy inside your mouth? | Yes | 103 | 51.5% |
| | No | 97 | 48.5% |
| 13. Have you experienced loosening of natural teeth adjacent to the denture (in partial denture cases)? | Yes | 75 | 37.5% |
| | No | 125 | 62.5% |
| 14. Have you ever stopped wearing your denture because of complications? | Yes | 85 | 42.5% |
| | No | 115 | 57.5% |
| 15. Would you recommend denture use to your friends, family, and colleagues? | Yes | 135 | 67.5% |
| | No | 65 | 32.5% |

Discussion

The current cross-sectional study using a questionnaire evaluated patient satisfaction and complications related to full and partial removable dentures in patients of the Chengalpattu district. The results emphasize that although patient satisfaction with removable dentures is high, a significant proportion of patients still experience functional and biological complications that may affect their long-term acceptance and use.

The significant tendency towards moderate to high satisfaction indicates that removable dentures are an effective and acceptable prosthodontic treatment modality, especially in semi-urban areas, where cost-effectiveness and non-invasive treatments are critical. The high degree of satisfaction may be attributed to advances in denture manufacturing, improved materials, and improved communication between the patient and the dentist during treatment.

Comfort during regular use was positively expressed by a majority of patients and had strong statistical significance. Comfort is an important factor for denture acceptance, as discomfort usually results in reduced use or complete abandonment of the denture. Similar results have been obtained in earlier studies, where comfort and retention were found to be the most important predictors of patient satisfaction with removable prosthetics.

Public speaking confidence was also significantly high, which indicates that the dentures had acceptable phonetic function. Speech adaptation has been observed to improve with time and patient training, which may be the reason for the positive result, as all patients had a minimum usage time of 3-6 months with the dentures.

Ease of cleaning, maintenance, insertion, and removal showed statistically significant positive outcomes. The outcomes of this study show that patients were adequately informed about denture care, which is a crucial factor in preventing oral infections, halitosis, and mucositis. Better dexterity and simpler denture designs could also be the reason for these outcomes.

Aesthetic improvement is one of the most favourably rated parameters. Facial rejuvenation is a very crucial factor in improving self-esteem and social confidence, particularly in edentulous patients. This highlights the importance of proper tooth positioning, lip support, and flange design in removable dentures.

Although the rates of satisfaction were favourable, there were some complications that were significantly observed. Gagging and alterations in taste were prevalent, particularly in complete denture wearers. These can be ascribed to overlying palatal coverage, insufficient denture extension,

or psychological factors. Pain or burning sensation was also observed in a large number of patients, which can be ascribed to sore spots, occlusal discrepancies, or mucosal irritation.

Loosening of adjacent teeth in partial denture wearers was statistically significant, emphasizing the biomechanical challenges involved in removable partial dentures. Insufficient clasp design, excessive occlusal forces, and inadequate periodontal support can be ascribed to this complication.

Notably, looseness of dentures during mastication, feelings of bulkiness, and halitosis did not demonstrate statistically significant differences. This could suggest that the retention and stability are acceptable in most patients, as well as the maintenance of good hygiene practices by the participants.

The alarming result was the number of patients who stopped using dentures due to difficulties. This highlights the importance of follow-up appointments and educating the patient to improve compliance. However, most patients were receptive to the idea of using dentures, which suggests that there is a positive attitude towards removable prosthodontic rehabilitation.

Comparison with Previous Studies

The findings of the current study are in line with previous studies that have shown moderate to high levels of satisfaction among removable denture wearers. Such high levels of satisfaction with aesthetics and comfort have also been reported in complete and partial denture patients. The ease of maintenance and improvement in facial appearance have also been identified as key factors in patient acceptance, as reported in the studies of earlier authors.

The incidence of complications such as gagging, pain, and taste alteration in the current study is in line with the findings of earlier literature, where mucosal irritation and functional discomfort were reported. The problem of loosening of adjacent teeth in partial denture patients has also been well established, and the need for proper design principles and regular assessment has been emphasized.

The non-significant findings of the current study regarding denture looseness and halitosis are not in line with the findings of some studies that have identified these as key concerns. These differences may be attributed to variations in patient education, quality of dentures, and oral hygiene practices

Limitations and Future Directions

The current study has some limitations. Since it is a cross-sectional study, it reflects the patient perception at a point in time and does not measure the changes in satisfaction over a period of time. The possibility of response bias also exists in the study, as the questionnaire is self-administered, and the patient perception is subjective and influenced by individual expectations.

The study did not measure the data for complete and partial denture wearers separately, which could have given more specific information about the differences related to prosthesis. The clinical parameters like the age of the denture, method of fabrication, and skill of the operator were also not measured.

Future studies should be designed to measure the changes in satisfaction and complications over a period of time. Comparison studies between complete and partial dentures, as well as between different materials and designs, are recommended.

Conclusion of Discussion

Within the limitations of this study, it can be concluded that removable dentures are capable of delivering satisfactory functional and aesthetic results for the majority of patients. Although overall levels of satisfaction were high, the presence of significant complications indicates the need for meticulous clinical practice and patient care.

Conclusion

Removable prosthodontic rehabilitation is still a valid and effective treatment modality for edentulous and partially edentulous patients. The current study has shown a statistically significant trend towards moderate to high patient satisfaction with removable dentures. Despite the fact that a number of complications were noted, the majority of patients adapted well to their dentures and were willing to recommend them to others.

Attention to proper denture design, patient motivation, and post-insertion care can further improve patient satisfaction and minimize complications. The results of the current study can provide important information on patient attitudes towards removable dentures in semi-urban communities.

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