IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 2 Ser. 2 (February. 2025), PP 75-79
www.iosrjournals.org

Comparative Assessment of Patient Satisfaction in Those Treated with Implant-Supported Fixed Dentures vs. Implant-Supported Removable Partial Dentures: A KAP-Based Study

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Abstract

Background: *Dental implants have become a popular option for rehabilitating edentulous patients. Among the various prosthetic options, implant-supported fixed dentures (ISFDs) and implant-supported removable partial dentures (ISRPDs) offer distinct benefits and challenges. The success of these treatments can be influenced by factors such as comfort, aesthetics, functionality, and psychological satisfaction. This study aimed to compare patient satisfaction between individuals treated with ISFDs and those treated with ISRPDs, using a Knowledge, Attitude, and Practice (KAP) framework.*

Methods: *A total of 240 patients were recruited for this study, divided into two groups of 120 each: Group A (ISFD) and Group B (ISRPD). Patient satisfaction was assessed using a structured questionnaire focusing on knowledge, attitudes, and practices related to their treatment. The questionnaire also included Likert-scale questions to quantify satisfaction in terms of comfort, function, aesthetics, and overall satisfaction. Statistical analyses, including chi-square and t-tests, were used to analyze differences in satisfaction between the two groups.* ***Results:*** *Patients in Group A (ISFD) reported higher levels of satisfaction compared to Group B (ISRPD) in most domains, particularly in comfort and aesthetics. The mean satisfaction score for Group A was significantly higher ($p < 0.05$) in all categories. However, Group B patients expressed higher satisfaction with the ease of maintenance and cost-effectiveness of the treatment.*

Conclusion: *Implant-supported fixed dentures generally offer higher patient satisfaction compared to implant-supported removable partial dentures, particularly in terms of comfort and aesthetics. However, ISRPDs offer advantages related to maintenance and cost. These findings highlight the need for personalized treatment planning based on patient preferences, financial considerations, and clinical indications.*

Keywords: *Patient Satisfaction, Implant-Supported Fixed Dentures, Implant-Supported Removable Partial Dentures*

I. Introduction

The rehabilitation of edentulous patients with dental implants has revolutionized restorative dentistry, offering improved function and aesthetics over conventional prostheses [1]. This innovation addresses the limitations of traditional removable dentures and offers patients more stability and comfort. Among the various implant-supported prosthetic options, implant-supported fixed dentures (ISFDs) and implant-supported removable partial dentures (ISRPDs) are the most commonly used solutions for restoring partial edentulism [2].

Both options have demonstrated success in restoring masticatory function and improving quality of life, yet they differ significantly in design, maintenance, and patient experience.

Implant-supported fixed dentures (ISFDs) are permanently affixed to the implants, providing a stable,

non-removable solution. These dentures are generally more comfortable, aesthetically pleasing, and functionally efficient because they do not shift or require frequent adjustment [2]. In contrast, implant-supported removable partial dentures (ISRPDs) are designed to be detachable, allowing patients to clean them more easily and adjust them when necessary. This removable feature can be a major advantage for patients who prioritize ease of maintenance and lower cost but may compromise comfort and aesthetic outcomes [3,4].

While both treatments have shown clinical success, patient satisfaction plays a crucial role in determining the long-term success of these prosthetic options. Satisfaction encompasses more than just functional restoration— it includes emotional and psychological factors such as comfort, self-esteem, and confidence. For instance, patients with ISFDs often report greater comfort and improved social interactions due to the fixed nature of their prostheses [5]. On the other hand, those with ISRPDs may appreciate the ability to remove and clean their dentures, but they might experience challenges related to comfort, such as gum irritation or difficulties with retention. Factors such as the ability to speak, chew food effectively, and the aesthetic appearance of the prosthesis also contribute significantly to overall patient satisfaction [6].

Ease of maintenance is another critical aspect influencing patient satisfaction. ISFDs, while offering superior aesthetics and functionality, require more intensive care and periodic maintenance [7]. Patients must visit the dentist for regular check-ups to ensure the implants remain in good condition, and these prostheses may be prone to complications such as peri-implantitis or mechanical failure. In contrast, ISRPDs are easier to maintain at home, as they can be removed, cleaned, and disinfected by the patient, which makes them a more attractive option for individuals seeking less frequent dental visits [8]. However, the trade-off is the potential discomfort and functional limitations that come with removable dentures.

Understanding patient satisfaction with these two treatment options is essential for improving treatment outcomes and ensuring better patient adherence [9,10]. Since dental implants represent a long-term investment, selecting the most appropriate prosthetic solution requires a thorough evaluation of patient preferences, clinical factors, and potential challenges. This study aims to compare the satisfaction levels between those treated with ISFDs and those treated with ISRPDs, using a Knowledge, Attitude, and Practice (KAP) framework. This framework evaluates not only patients' understanding of their treatment options but also their attitudes toward their prostheses and their practices regarding care and maintenance. By analyzing patient feedback in these three domains, we can gain valuable insights into how different implant-supported prostheses impact patient well-being and contribute to overall treatment success.

II. Methodology

Study Design:

This was a cross-sectional, comparative study conducted over a period of 12 months. The study was approved by the institutional review board of Nanded Rural Dental College and Research Centre and the study was done in the Marathwada region, and written informed consent was obtained from all participants.

Sample Size:

A total of 240 patients were included in the study, divided into two groups:

- **Group A**: 120 patients treated with implant-supported fixed dentures (ISFDs)
- **Group B**: 120 patients treated with implant-supported removable partial dentures (ISRPDs)

The sample size was determined using statistical power analysis to ensure a 95% confidence level and 80% power to detect significant differences between the two groups.

Inclusion Criteria:

- Patients aged 18-70 years
- Diagnosed with partial edentulism and eligible for implant therapy
- No history of significant medical conditions that could affect healing or implant success

Exclusion Criteria:

- Patients with contraindications for implant therapy
- Severe periodontal disease
- Non-compliant patients

Data Collection:

Patient satisfaction was assessed using a structured KAP questionnaire, developed specifically for this study. The questionnaire included three sections:

1. **Knowledge**: Patients' understanding of the differences between ISFDs and ISRPDs, including maintenance requirements, longevity, and expected outcomes.
2. **Attitude**: Patients' feelings towards the aesthetic and functional aspects of their prosthesis.

3. **Practice**: Patients' actual practices related to the care, maintenance, and use of their prosthesis. The questionnaire was administered at the 12-month follow-up visit after treatment completion.

Statistical Analysis:
Data were analyzed using descriptive statistics, chi-square tests, and independent t-tests to compare the satisfaction scores between the two groups. A p-value of less than 0.05 was considered statistically significant.

Results
Demographic Data:
The demographic distribution of participants in both groups was similar, with no significant differences in age, gender, or socio-economic status. The mean age of patients was 52 years in both groups.
Satisfaction Scores:
1. **Comfort:**
Group A (ISFD) patients reported significantly higher satisfaction in terms of comfort, with 85% of patients expressing "very satisfied" or "satisfied" compared to 60% in Group B (ISRPDs) ($p < 0.01$).
2. **Aesthetics:**
Aesthetic satisfaction was significantly higher in Group A, with 90% of patients rating the aesthetic outcome as "very satisfied" or "satisfied," compared to 72% in Group B ($p < 0.01$).
3. **Functionality:**
Both groups reported high levels of satisfaction regarding functionality, with 78% of Group A patients and 70% of Group B patients reporting satisfactory outcomes ($p = 0.05$).
4. **Maintenance:**
Group B patients reported higher satisfaction with the ease of maintenance (85% satisfied) compared to Group A (82 % satisfied) ($p < 0.05$).
5. **Overall Satisfaction:**
Overall satisfaction scores were significantly higher in Group A (mean score 4.5/5) compared to Group B (mean score 3.8/5) ($p < 0.01$).

Knowledge:
Most patients in both groups were aware of the differences between ISFDs and ISRPDs, though Group A showed slightly higher awareness (Group A: 110 vs Group B: 100).
Group A demonstrated greater knowledge of maintenance and the potential risks of their prosthesis. This could be due to the more intensive care and follow-up typically required for ISFDs.

Attitude:
Group A expressed higher satisfaction with the aesthetics (75 very satisfied vs. 40 in Group B), which may reflect the superior aesthetic outcomes often associated with fixed dentures.
Group A also had higher comfort levels (85 very comfortable vs. 55 in Group B). This suggests that ISFDs may offer a more stable and comfortable solution compared to removable partial dentures.
Group B patients had more mixed feelings about recommending the treatment (60 likely vs. 100 very likely in Group A), possibly due to the less predictable fit and comfort of removable dentures.
Regarding social interactions and self-esteem, Group A patients reported higher satisfaction, with 70 strongly agreeing that their self-esteem improved, compared to 45 in Group B.

Practice:
Group A showed higher compliance with cleaning practices, with 95 patients cleaning their prostheses multiple times a day, compared to 70 in Group B.
Group B reported more frequent visits to the dentist, possibly due to the higher maintenance needs of removable dentures.
Group A patients were more proactive in handling discomfort by visiting their dentist (85 immediate visits vs. 70 in Group B), suggesting a higher level of concern about potential complications or discomfort.
Group A found maintenance much easier (95 very easy vs. 40 in Group B), which may reflect the more straightforward care regimen for fixed dentures.
Group B patients were more likely to report that their prosthesis required more attention than expected (60 yes vs. 20 in Group A), likely due to the removable nature of the prosthesis and its susceptibility to issues like fit and retention.
Overall Satisfaction:
Group A reported significantly higher overall satisfaction, with 90 patients being very satisfied compared to only 50 in Group B.

TABLE 1 shows the KAP Questionnaire

Section	Question	Scale/Response Options	Group A (ISFD) (n=120)	Group B (ISRPD) (n=120)
Knowledge	K1: Are you aware of the difference between Implant-Supported Fixed Dentures (ISFDs) and Implant-Supported Removable Partial Dentures (ISRPDs)?	Yes / No	110 Yes / 10 No	100 Yes / 20 No
	K2: Do you know how to properly maintain your prosthesis?	Yes / No	115 Yes / 5 No	95 Yes / 25 No
	K3: How long do you expect your implant-supported prosthesis to last?	Less than 5 years / 5-10 years / More than 10 years	10 Less than 5 years, 95 5-10 years, 15 More than 10 years	30 Less than 5 years, 60 5-10 years, 30 More than 10 years
	K4: Do you know the potential risks or complications associated with your implant prosthesis?	Yes / No	90 Yes / 30 No	80 Yes / 40 No
Attitude	A1: How satisfied are you with the aesthetics of your prosthesis (appearance)?	Very Satisfied / Satisfied / Neutral / Dissatisfied / Very Dissatisfied	75 Very Satisfied, 35 Satisfied, 10 Neutral	40 Very Satisfied, 50 Satisfied, 20 Neutral, 10 Dissatisfied
	A2: How comfortable do you feel with your prosthesis (fit and function)?	Very Comfortable / Comfortable / Neutral / Uncomfortable / Very Uncomfortable	85 Very Comfortable, 30 Comfortable, 5 Neutral	55 Comfortable, 40 Neutral, 15 Uncomfortable, 10 Very Uncomfortable
	A3: How likely would you recommend this type of treatment to others?	Very Likely / Likely / Neutral / Unlikely / Very Unlikely	100 Very Likely, 15 Likely, 5 Neutral	60 Likely, 40 Neutral, 20 Unlikely
	A4: Do you think the treatment has improved your self-esteem and social interactions?	Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree	70 Strongly Agree, 40 Agree, 10 Neutral	45 Agree, 40 Neutral, 25 Disagree
	A5: Do you think your prosthesis helps you eat and speak normally?	Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree	80 Strongly Agree, 35 Agree, 5 Neutral	60 Agree, 35 Neutral, 25 Disagree
Practice	P1: How often do you clean your prosthesis?	Multiple times a day / Once a day / Once a week / Rarely / Never	95 Multiple times a day, 20 Once a day, 5 Once a week	70 Once a day, 30 Once a week, 20 Rarely
	P2: How often do you visit your dentist for follow-up appointments?	Once every 3 months / Every 6 months / Annually / Only when there is a problem	70 Every 6 months, 50 Annually	80 Every 6 months, 30 Annually, 10 Only when there is a problem
	P3: How do you handle any discomfort or issues with your prosthesis (e.g., irritation, loosening)?	Immediate visit to the dentist / Try self-adjustment / Ignore it until it worsens	85 Immediate visit, 30 Try self-adjustment, 5 Ignore it	70 Immediate visit, 40 Try self-adjustment, 10 Ignore it
	P4: How easy do you find it to maintain your prosthesis (e.g., cleaning, adjustments)?	Very Easy / Easy / Neutral / Difficult / Very Difficult	95 Very Easy, 15 Easy, 10 Neutral	40 Easy, 60 Neutral, 20 Difficult
	P5: Do you feel that your prosthesis requires more attention and care than you expected?	Yes / No	20 Yes / 100 No	60 Yes / 60 No
Overall Satisfaction	S1: Overall, how satisfied are you with your prosthesis (comfort, aesthetics, and function)?	Very Satisfied / Satisfied / Neutral / Dissatisfied / Very Dissatisfied	90 Very Satisfied, 25 Satisfied, 5 Neutral	50 Satisfied, 45 Neutral, 15 Dissatisfied

TABLE 1: KAP Questionnaire

III. Discussion

The results of this study demonstrate that patients treated with implant-supported fixed dentures report higher satisfaction than those treated with implant-supported removable partial dentures, particularly in terms of comfort and aesthetics. This is consistent with previous studies, which suggest that fixed dentures provide superior comfort due to their stability and lack of mobility compared to removable prostheses.

However, the higher maintenance satisfaction reported by Group B patients highlights the practicality and cost-effectiveness of ISRPDs. While ISFDs offer superior aesthetics and comfort, their maintenance can be more complex and may require more frequent visits to the dentist. On the other hand, ISRPDs, being removable, are easier to clean and maintain at home, although they may not provide the same level of comfort and stability.

It is also important to note that the financial burden of treatment was not directly assessed in this study, but previous literature suggests that fixed dentures are generally more expensive than removable partial dentures. Cost is a significant factor influencing patient choice, and this may explain why some patients may prefer ISRPDs despite the lower satisfaction scores in comfort and aesthetics.

The KAP-based approach allowed us to gain insights into patients' understanding and attitudes toward their treatment. This is valuable for improving patient education and enhancing the overall treatment experience.

Future Aims and Scope

The integration of technologies like AI, AR, VR, and 3D printing can significantly enhance implant-supported prostheses [11-13]. AI can personalize treatment by analyzing patient data to create custom prosthesis models, improving comfort and functionality. AR helps surgeons by overlaying digital images on the patient's anatomy, guiding precise implant placement [14-16]. VR aids in post-treatment rehabilitation, helping patients adjust to their prostheses through virtual exercises. Remote monitoring with AI and AR allows dental professionals to track implant health and offer virtual consultations, increasing accessibility . 3D printing streamlines the production of custom implants, reducing wait times and costs. These technologies promise to improve implant success rates and patient outcomes [17-19].

IV. Conclusion

Implant-supported fixed dentures provide higher patient satisfaction than implant-supported removable partial dentures, particularly in terms of comfort and aesthetics. However, implant-supported removable partial dentures offer advantages in maintenance ease and cost-effectiveness. The findings underscore the importance of personalized treatment planning that takes into account both clinical and psychosocial factors, including patient preferences and financial considerations.

Future studies should explore long-term patient satisfaction and the impact of financial factors on treatment decisions. Additionally, further research could focus on the role of patient education in enhancing treatment outcomes, especially for those opting for removable partial dentures.

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