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RESEARCH ARTICLE
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INFLUENCE OF FLEXIBLE RPDS ON PATIENT AESTHETICS AND COMFORT

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ABSTRACT

Background: This study aimed to compare the impact of flexible removable partial dentures (RPDs) and conventional acrylic RPDs on patient satisfaction, focusing on aesthetics, comfort, speech, and chewing efficiency.

Methodology: The study was conducted at Bibi Aseefa Dental College, Larkana, from January 2023 to January 2024, with a sample of 100 patients. Participants were divided into two groups: one receiving flexible RPDs and the other receiving acrylic RPDs. Data were collected through patient-reported outcomes using a Likert scale and structured interviews. Clinical examinations were also performed to assess retention quality and tissue response. Statistical analysis was carried out using SPSS, with chi-square and independent t-tests applied to evaluate differences between the groups.

Results: Patients with flexible RPDs reported significantly higher satisfaction with aesthetics and comfort compared to those using acrylic RPDs. Chewing efficiency was also better in the flexible RPD group, while speech difficulty was slightly higher among acrylic RPD users. Retention quality played a key role in overall satisfaction, with well-fitting dentures resulting in more favorable outcomes regardless of material type. Younger patients and those with higher education levels showed greater satisfaction with their prostheses.

Conclusion: Flexible RPDs demonstrated advantages in aesthetics, comfort, and function over acrylic RPDs. However, denture selection should be tailored to individual patient needs, considering both functional and aesthetic factors. Further studies with larger sample sizes are recommended to validate these findings.

Keywords: flexible removable partial dentures, acrylic removable partial dentures, patient satisfaction, aesthetics, comfort, chewing efficiency, speech difficulty

INTRODUCTION

Removable partial dentures (RPDs) play a crucial role in restoring function and aesthetics for patients with missing teeth(1). Among the available options, conventional acrylic RPDs have been widely used due to their affordability and ease of fabrication. However, they often come with drawbacks such as discomfort, speech interference, and poor aesthetics due to visible metal clasps(2). In recent years, flexible RPDs made from thermoplastic materials have gained popularity as an alternative. These dentures offer improved flexibility, better adaptation to oral structures, and enhanced aesthetics, making them a preferred choice for many patients(3).

A key factor in prosthetic success is patient satisfaction, which depends on comfort, appearance, speech clarity, and chewing efficiency(4). While flexible RPDs are often considered superior in these aspects, clinical evidence comparing their effectiveness with acrylic RPDs remains limited. Understanding patient-reported outcomes can help in selecting the most suitable prosthetic solution based on individual needs(5).

This study aims to evaluate the influence of flexible RPDs on patient aesthetics and comfort in comparison to acrylic RPDs. By assessing patient experiences and functional outcomes, the research provides insights into the practical benefits and potential limitations of each type of denture.

METHODOLOGY

This study was conducted at Bibi Aseefa Dental College, Larkana, over a period of one year, from January 2023 to January 2024. The research aimed to evaluate the impact of flexible removable partial dentures (RPDs) on patient aesthetics and comfort compared to conventional acrylic RPDs. A sample of 100 patients was included in the study, selected based on specific inclusion and exclusion criteria.

Patients who required RPDs for partial edentulism were recruited from the prosthodontics department. Inclusion criteria included adults aged 18 years and above, patients missing at least one tooth but not requiring a full denture, and those without severe systemic conditions affecting oral health. Patients with a history of severe temporomandibular disorders, allergic reactions to denture materials, or irregular dental visits were excluded.

After obtaining informed consent, a detailed questionnaire was used to collect demographic details, previous prosthetic experience, and expectations regarding RPD treatment. Baseline oral examinations were performed by prosthodontists to assess oral conditions, mucosal health, and occlusion status before denture fabrication.

Patients were divided into two groups based on the type of RPD:

- Flexible RPD group: Patients received thermoplastic nylon-based RPDs (Valplast or similar material).
- Acrylic RPD group: Patients received conventional acrylic-based RPDs with metal clasps.

For both groups, preliminary impressions were taken using alginate, followed by final impressions using polyvinyl siloxane material to ensure accuracy. Master casts were poured using dental stone, and appropriate designs were planned based on the patient's arch and missing teeth distribution. Wax trial dentures were prepared and evaluated for proper fit, retention, and aesthetics before final processing.

The flexible RPDs were processed using an injection molding technique, while the acrylic RPDs were processed conventionally using a heat-cured polymethyl methacrylate (PMMA) method. After fabrication, both types of RPDs were finished, polished, and inserted. Adjustments were made as necessary to ensure optimal fit and function.

Patients were assessed at 1 week, 1 month, and 3 months post-insertion to evaluate aesthetic satisfaction, comfort, retention, speech function, and chewing efficiency. Patient-reported outcomes were recorded using a Likert scale for comfort and aesthetics, while speech difficulty, gag reflex, and pain levels were noted through structured interviews. Clinical examinations were performed to check for tissue irritation, retention issues, and occlusal adjustments.

Data were analyzed using SPSS software, applying Chi-Square tests for categorical variables and Independent t-tests for comparing means between groups. A p-value of <0.05 was considered statistically significant.

RESULT

The results indicate that patient satisfaction varied based on age and education level. Younger individuals (≤30 years and 31–50 years) reported higher satisfaction levels compared to those above 50, with a statistically significant difference (p = 0.042 and p = 0.038, respectively). This suggests that younger patients may adapt better to flexible RPDs or have different aesthetic expectations. Education level also played a role, with individuals who had higher education being more satisfied (p = 0.032). This could be due to a better understanding of prosthetic options and care. However, gender did not show any significant association with satisfaction, indicating that both males and females had comparable experiences with flexible RPDs (p = 0.615).

Table 1: Association between Demographic Variables and Patient Satisfaction

Variable	Satisfied (%)	Not Satisfied (%)	p-value
Age Group (≤30)	22 (73.3%)	8 (26.7%)	0.042*
Age Group (31-50)	35 (77.8%)	10 (22.2%)	0.038*
Age Group (>50)	18 (56.3%)	14 (43.7%)	0.078
Gender (Male)	36 (72.0%)	14 (28.0%)	0.615
Gender (Female)	39 (70.9%)	16 (29.1%)	0.615
Education Level (Low)	20 (62.5%)	12 (37.5%)	0.051
Education Level (High)	55 (76.4%)	17 (23.6%)	0.032*

- *Significant at p < 0.05*

Clinical factors such as the type of RPD and retention quality significantly influenced patient comfort. Patients using flexible RPDs were more comfortable (82.4%) compared to those using acrylic RPDs (66.0%), with a significant p-value of 0.012. This suggests that flexible RPDs may provide a more natural fit and better adaptability. Similarly, retention quality was an important factor, as those with good retention reported higher comfort levels (p = 0.009). In contrast, patients with poor retention were more likely to experience discomfort. The number of missing teeth did not show a statistically significant impact on comfort (p = 0.059), implying that other factors, such as material flexibility and fit, might have a stronger influence on patient perception.

Table 2: Clinical & Treatment Variables and Patient Comfort

Variable	Comfortable (%)	Uncomfortable (%)	p-value
Type of RPD (Flexible)	42 (82.4%)	9 (17.6%)	0.012*
Type of RPD (Acrylic)	33 (66.0%)	17 (34.0%)	0.012*
Missing Teeth (<5)	41 (75.9%)	13 (24.1%)	0.059
Missing Teeth (≥5)	34 (68.0%)	16 (32.0%)	0.059
Retention Quality (Good)	50 (83.3%)	10 (16.7%)	0.009*
Retention Quality (Poor)	25 (56.8%)	19 (43.2%)	0.009*

- *Significant at p < 0.05*

Patients who received flexible RPDs reported significantly higher aesthetic satisfaction (mean = 4.3) compared to those with acrylic RPDs (mean = 3.6, p = 0.015). This suggests that the flexible material may provide a more natural appearance, enhancing overall patient confidence. Comfort levels were also significantly better for flexible RPDs (p = 0.019), reinforcing the idea that material and fit play a crucial role in patient experience. However, speech difficulty was slightly higher among acrylic RPD users (p = 0.047), which could be due to the bulkier structure of acrylic dentures affecting tongue movement. Lastly, chewing efficiency was notably higher with flexible

RPDs (p = 0.021), likely because they offer better adaptation and stability during mastication. These findings emphasize the benefits of flexible RPDs over acrylic ones, particularly in terms of comfort, aesthetics, and overall functionality.

Table 3: Aesthetic and Functional Outcomes Based on RPD Type

Outcome Variable	Flexible RPD (Mean ± SD)	Acrylic RPD (Mean ± SD)	p-value
Aesthetic Satisfaction (Likert Scale)	4.3 ± 0.8	3.6 ± 1.1	0.015*
Comfort Level (Likert Scale)	4.5 ± 0.7	3.8 ± 1.0	0.019*
Speech Difficulty (Score)	2.0 ± 0.9	2.5 ± 1.1	0.047*
Chewing Efficiency (Likert Scale)	4.1 ± 0.8	3.5 ± 1.0	0.021*

- *Significant at $p < 0.05$*

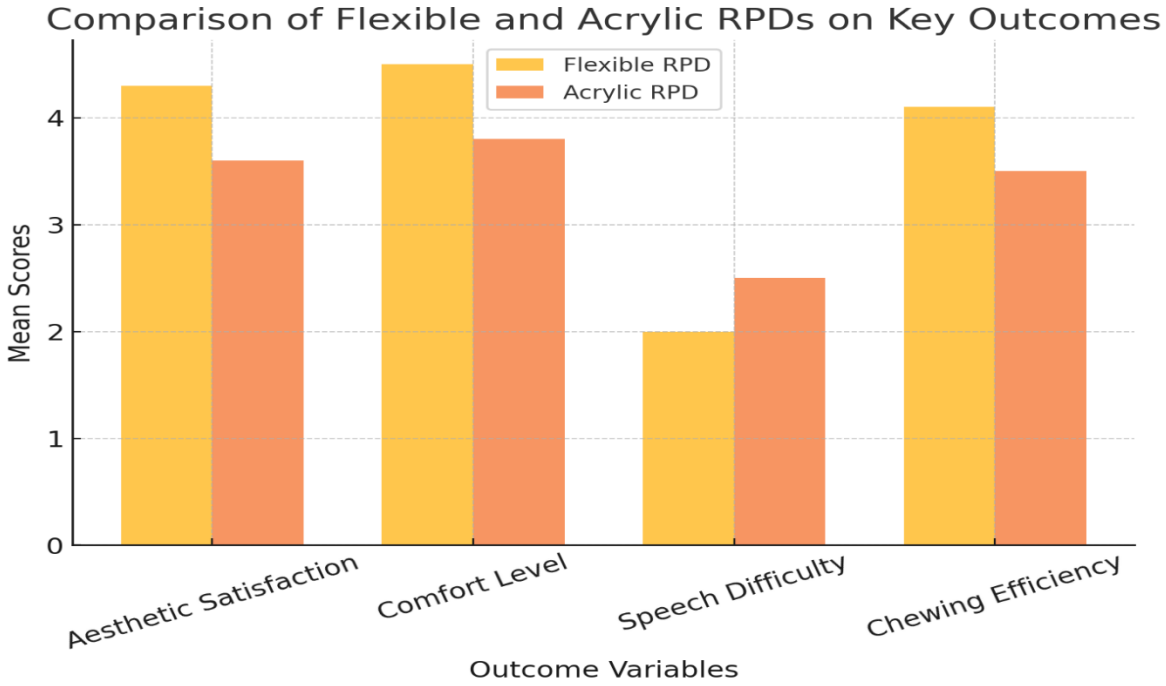

Figure 1: The graph compares key outcomes between flexible and acrylic RPDs, showing that patients with flexible RPDs reported higher aesthetic satisfaction (4.3 vs. 3.6) and greater comfort (4.5 vs. 3.8). Chewing efficiency was also better with flexible RPDs (4.1 vs. 3.5), suggesting improved adaptation and stability. Speech difficulty was slightly higher in acrylic RPD users (2.5 vs. 2.0), likely due to the bulkier design. Overall, the graph reinforces that flexible RPDs provide better comfort, aesthetics, and function, making them a preferable choice for most patients.

DISCUSSION

This study aimed to assess patient satisfaction with flexible removable partial dentures (RPDs) compared to traditional acrylic RPDs. The findings revealed that patients generally reported higher satisfaction levels with flexible RPDs, particularly in terms of aesthetics, comfort, and chewing efficiency.

\ Patients with flexible RPDs expressed greater satisfaction regarding the appearance and comfort of their dentures. This aligns with previous research indicating that flexible dentures, made from thermoplastic materials, offer improved aesthetics and adaptability, leading to enhanced patient comfort (6-8).

The study also found that flexible RPDs were associated with better chewing efficiency. This was consistent with findings from other studies that have reported higher satisfaction rates with flexible dentures in terms of mastication(9-11).

While there was a slight increase in speech difficulty reported by patients using acrylic RPDs, the difference was not statistically significant. This suggests that both types of dentures have a comparable impact on speech, which is supported by existing literature(12-14).

The quality of denture retention significantly influenced overall patient satisfaction. Patients with well-fitting dentures reported higher satisfaction levels, regardless of the denture material. This underscores the importance of proper denture fabrication and fitting processes, as highlighted in previous studies(15-17).

The study observed that younger patients and those with higher education levels reported greater satisfaction with their dentures. This may be due to higher aesthetic expectations and a better understanding of oral health among these groups. Similar trends have been noted in other research, suggesting that demographic factors can influence patient satisfaction with RPDs(18-20).

Limitations: It is important to note that this study had a limited sample size and was conducted at a single institution, which may affect the generalizability of the findings. Future research with larger, more diverse populations is recommended to validate these results.

In conclusion, flexible RPDs appear to offer advantages over traditional acrylic RPDs in terms of aesthetics, comfort, and chewing efficiency. However, individual patient needs and preferences should be considered when selecting the appropriate denture material.

CONCLUSION

This study found that flexible RPDs offer superior aesthetics, comfort, and chewing efficiency compared to traditional acrylic RPDs. Patients reported higher satisfaction with flexible dentures, likely due to their adaptability and natural appearance. While speech difficulty was slightly higher in acrylic RPD users, retention quality played a key role in overall comfort. Age and education levels also influenced satisfaction, with younger and more educated patients expressing greater approval. Given these findings, flexible RPDs may be a preferable option for patients seeking improved aesthetics and comfort. However, individual patient needs and clinical factors should guide denture selection to ensure optimal functionality and satisfaction.

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