Correlation of previous experience, patient expectation and the number of post-delivery adjustments of complete dentures with patient satisfaction in a Brazilian population

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SUMMARY  A number of variables may influence the outcome of complete denture therapy. The objective of this study was to verify possible correlations between previous experience with dentures, patient expectation and the number of post-delivery adjustments with patient satisfaction after treatment. One hundred patients (mean age 61.9 ± 10.3) rated their previous experiences with complete dentures and their expectations before and satisfaction after treatment on a visual analogue scale (VAS) using scores from 0 (worst results) to 10 (best results). The number of post-delivery adjustments and other patient-related clinical variables was also noted. Patient expectation scores were higher than previous experience scores and satisfaction after treatment scores. Positive and weak correlations were found between previous chewing experiences with complete dentures and their expectations before and satisfaction after treatment on a visual analogue scale (VAS) using scores from 0 (worst results) to 10 (best results). The number of post-delivery adjustments and other patient-related clinical variables was also noted. Patient expectation scores were higher than previous experience scores and satisfaction after treatment scores. Positive and weak correlations were found between previous chewing experiences with complete dentures, with regard to chewing expectations and comfort of use. Phonetics and comfort of use in previous experiences presented a positive correlation with expectations for chewing, aesthetics, phonetics and comfort of use. Groups of patients with different levels of education presented significant differences in expectation scores regarding comfort of use as well. A negative and weak correlation was found between phonetics satisfaction and the number of post-delivery adjustments. Patients’ expectations for the therapy were higher than their satisfaction after treatment. Previous experiences with complete dentures could slightly influence patients’ expectations and satisfaction, whereas lower scores for previous experience with complete dentures caused lower scores for both expectation and satisfaction. Patients’ educational levels and the number of post-delivery adjustments influenced negatively the expectations about comfort of use and patient satisfaction, respectively.

KEYWORDS: complete dentures, patient expectations, patient satisfaction, previous experiences, post-delivery adjustments

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Introduction

Despite the functional benefits obtained with dental implant therapy, the use of dental implants might not be prescribed for the majority of elderly persons due to health and psychological conditions and also due to economical restraints. In such cases, complete denture therapy is indicated to restore function and aesthetics, and despite its limitations (such as denture looseness), this therapy can greatly improve the quality of life for edentulous elderly patients (1).

Removable complete dentures should be comfortable and not contribute to underlying bone resorption and generally achieve patient satisfaction (2, 3).
However, a minority of patients fail to adapt to removable complete dentures and remain dissatisfied with the treatment (4).

Several factors may influence patient satisfaction with prosthodontics therapy. Among these factors, general health, aesthetics, phonetics, experiences with previous dentures and patient expectation regarding treatment were evaluated in previous studies (3, 5–8). Although some studies found associations between those factors and complete denture satisfaction (6, 7), some did not (3, 5, 8). Psychological factors may be important in those patients who experience difficulty in adapting to new dentures (9). However, the locus of control was not associated with patient expectations and satisfaction (5).

It is important to note that patients and health professionals evaluate their expectations and satisfaction in completely different ways (8). While professionals make their prognoses based on clinical characteristics, patients usually base their expectations on previous experiences. This difference can lead to conflict and a deterioration of the patient/professional relationship, which may negatively influence patient satisfaction with dentures (10).

Based on previous studies (3, 5, 6), the following hypotheses were set for the present study: (i) satisfaction after treatment should exceed expectations and previous experience with complete dentures could influence these expectations, (ii) previous experiences with complete dentures, patient expectation and satisfaction, and the number of post-delivery adjustments should not be related to patient-related factors such as gender and age and (iii) the number of post-delivery adjustments should influence patient satisfaction.

Materials and methods

Participants

The sample comprised 100 individuals who sought complete denture therapy at the Dental Clinics of the University of Taubate. Considering the city population, the estimated edentulous proportion, an alpha = 0.05 and a hypothesised $P = 0.0072$, the Minitab 5.0 (*) power and sample size tool calculated a power sample score of 0.66.

The inclusion criteria were complete edentulousness, the use of dentures for more than 5 years and the presence of healthy denture-bearing tissues. Exclusion criteria were dementia, a history of neurosis, local and systemic malignant neoplasias, dependence on caregivers and being bedridden. The individuals who participated gave their written consent to participate in this study, which was approved by the University of Taubate ethics committee (protocol CEP/UNITAU 122/12).

Complete dentures therapy

The dentures were made by graduate students under the supervision of professors, using a standard technique consisting of the following steps: a complete initial interview; a clinical examination; the making of a preliminary impression using a stock tray and irreversible hydrocolloid; and a definitive impression using custom trays and light-bodied silicone impression material, after border moulding. The denture bases were polymerised with heat-cured acrylic resin (Vipi Cril Plus) at 72 °C for 12 h. Occlusal wax rims were made over the denture bases and adjusted as necessary. The bases were mounted in centric relation at a predetermined occlusal vertical dimension in semi-adjustable articulators. The artificial acrylic resin teeth were arranged in balanced occlusal and tried in, and the dentures were flasked and polymerised (72 °C/12 h) and then inserted and adjusted.

Assessment of patient expectation before and satisfaction after therapy

To assess expectations before and satisfaction after therapy, a visual analogue scale (VAS) ranging from 0 to 10 was used, in which 0 represented the lowest rating (worst possible outcome) and 10 the highest (best possible outcome). Before treatment began, the patients chose numbers that corresponded with their expectations. After treatment, they chose numbers that corresponded with their satisfaction with the outcome. Patients also assigned scores for four aspects before and after treatment: chewing, aesthetics, phonetics and comfort of use.

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Assessment of clinical and patient-related variables

Clinical and patient-related variables including gender, age, educational level, previous experiences with removable complete dentures and the number of post-delivery adjustments were recorded.

Data analysis

The data were tabulated, and descriptive statistics were formulated. To verify possible relationships between variables, one-way analysis of variance (ANOVA) was used. Wherever the ANOVA found statistically significant differences, the multiple-comparison Tukey’s test was also used. The Spearman’s correlation test was also used to determine whether correlations existed between the quantitative variables. All tests adopted a significance level of 5%.

Results

Fifty-six participants were female (56%), and the average age of the entire sample was 61.9 years (s.d. ± 10.3), ranging from 39 to 83 years (Table 1). No statistically significant differences were found between the two genders (P = 0.090) for any of the parameters studied, and the data were accordingly pooled for further analysis. To check for possible age-related differences in the data, the sample was divided into three categories according to age (Table 1). No statistically significant differences were observed for previous experience with complete dentures, patient expectation and satisfaction scores.

The mean scores for the various parameters in the pooled data are given in Table 2. The use of ANOVA in comparing the scores for previous experience, expectations and satisfaction showed that a statistically significant difference existed among the scores (P < 0.001), in which the higher score was usually the score for expectations (except for aesthetics) and the lower score was for previous experience.

Positive and weak correlations were found between previous chewing experiences and chewing expectations (P = 0.015; 24.3%) and comfort of use (P = 0.039, 20.7%). Previous experiences for phonetics and comfort of use correlated with expectations for chewing (P = 0.011, 25.3%; P = 0.003, 29.8%, respectively), aesthetics (P = 0.026, 22.3%; P = 0.007, 26.7%, respectively), phonetics (P = 0.021, 23.1%; P = 0.008, 26.3%, respectively) and comfort of use (P = 0.012, 25.1%; P = 0.012, 25.1%, respectively), respectively. A negative and weak correlation was found between phonetics satisfaction and the number of post-delivery adjustments (P = 0.028, -21.9%), in which lower numbers of post-delivery adjustments correlated with higher patient satisfaction scores.

Regarding educational level, 7% of the participants were illiterate, 74% attended elementary school, 16% attended high school, and only 3% had a college education. Statistically significant differences were found between patient expectation scores and comfort of use scores (P = 0.031). Patients with a college education had lower scores than illiterate patients (P = 0.018%; multiple-comparison Tukey’s

Table 1. Distribution of the sample. Average, standard deviation (s.d.), quartiles (Q1 and Q3), minimum and maximal ages and the number of patients for the entire sample and the division in three age categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Average</th>
<th>s.d.</th>
<th>Q1</th>
<th>Q3</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire sample</td>
<td>61.9</td>
<td>10.3</td>
<td>54.5</td>
<td>68.5</td>
<td>39</td>
<td>83</td>
<td>100</td>
</tr>
<tr>
<td>Age categories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 59 years</td>
<td>50.8</td>
<td>5.9</td>
<td>47</td>
<td>56</td>
<td>39</td>
<td>59</td>
<td>36</td>
</tr>
<tr>
<td>60–69 years</td>
<td>64.3</td>
<td>3.4</td>
<td>61</td>
<td>68</td>
<td>60</td>
<td>69</td>
<td>43</td>
</tr>
<tr>
<td>&gt;70 years</td>
<td>75.4</td>
<td>3.8</td>
<td>72.7</td>
<td>78.5</td>
<td>70</td>
<td>83</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 2. Mean visual analogue scale values and standard deviation (s.d.) for previous experience with removable complete dentures, patient expectation and satisfaction, and the number of post-delivery adjustments

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Average</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>complete dentures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chewing</td>
<td>6.70</td>
<td>3.24</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>7.54</td>
<td>2.68</td>
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<tr>
<td>Phonetics</td>
<td>8.15</td>
<td>2.40</td>
</tr>
<tr>
<td>Comfort of use</td>
<td>7.37</td>
<td>3.00</td>
</tr>
<tr>
<td>Patient expectations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chewing</td>
<td>9.42</td>
<td>0.94</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>9.49</td>
<td>0.88</td>
</tr>
<tr>
<td>Phonetics</td>
<td>9.51</td>
<td>0.85</td>
</tr>
<tr>
<td>Comfort of use</td>
<td>9.57</td>
<td>0.83</td>
</tr>
<tr>
<td>Patient satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chewing</td>
<td>7.25</td>
<td>3.12</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>9.80</td>
<td>6.30</td>
</tr>
<tr>
<td>Phonetics</td>
<td>8.64</td>
<td>2.02</td>
</tr>
<tr>
<td>Comfort of use</td>
<td>7.64</td>
<td>2.92</td>
</tr>
<tr>
<td>Number of post-delivery</td>
<td>1.43</td>
<td>1.04</td>
</tr>
</tbody>
</table>
Discussion

The first hypothesis of this study, that satisfaction after treatment should exceed expectations and that previous experiences with complete dentures could influence both expectations and satisfaction scores, was partially rejected because the scores for satisfaction for all of the aspects did not overcome the expectation scores, with the exception of aesthetics. Although this hypothesis was based on studies that found satisfaction scores to be higher than those for patient expectations (5, 6), other studies (3, 8) corroborate our findings. This divergence is explained by the fact that the success of complete dentures rehabilitation is influenced by several factors (5, 11), which emphasises the importance of clinicians carefully explaining to patients the limitations of the therapy (3).

The lack of correlation between patient expectation and patient satisfaction is in agreement with our results for patients who underwent single-crown and partial implant-supported prostheses (7). Conversely, other studies found significant correlations between expectation and satisfaction for phonetics and aesthetics in removable denture wearers (8), and for aesthetics and function in patients who had been rehabilitated with implant-borne prostheses (6). This highlights the great variability that may be found due to differences in prescribed treatment and the intrinsic characteristics of individual patients, such as psychological factors (12).

The second hypothesis of this study, that previous experiences with complete dentures, patient expectation and satisfaction, and the number of post-delivery adjustments should not be related to patient-related factors, was partially verified. This result is in agreement with previous studies that evaluated patient expectations and satisfaction with complete dentures (3, 5–8). However, other studies have found differences between gender and patient satisfaction with complete dentures (13, 14), which may be related to women's negative self-perception of oral health (15). A significant difference was found between the scores for patient expectation and comfort of use, in which patients with a lower educational level presented higher scores compared with patients who had graduated. An interesting finding is that 100% of the illiterate patients had the highest score for all of the expectation variables and aesthetic satisfaction after treatment, but these findings should be interpreted with caution because the number of subjects in the illiterate and college-educated categories is low. Previous studies involving educational levels did not find any differences between patient satisfaction and the type of oral rehabilitation prescribed (6, 16, 17).

The third hypothesis, that the number of post-delivery adjustments should influence patient satisfaction, was also partially verified. A negative correlation was found between phonetics satisfaction and the number of post-delivery adjustments, in which the lower score was the number of post-delivery adjustments and the higher was patient satisfaction.

It could be argued that the VAS presents different levels of responsiveness in different settings, and therefore, the wording of the response alternatives could affect the responses (18), but the scales used have been evaluated and appear reliable and valid (19). Moreover, one previously calibrated clinician conducted all the interviews with the patients to avoid the influence of the operator in the patients' answers. The limited sample size also precludes applying the results to populations other than Taubaté. Despite this, the present study brings new insights that improve the comprehension of factors that influence patient satisfaction with complete denture therapy.

In conclusion, these patients had higher expectations beforehand than satisfaction after treatment. Previous experiences with complete dentures could slightly influence patient expectation and satisfaction. The educational level may influence the expectations for comfort of use, because patients with lower educational levels tended to give higher scores for expectations. The number of post-delivery adjustments also influenced patient satisfaction, in which the lower number of post-delivery adjustments correlated with higher scores for phonetic satisfaction.

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References


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