



## Patients' expectation and satisfaction with complete denture before and after the therapy

### Očekivanje i zadovoljstvo pacijenata totalnom zubnom protezom pre i posle terapije

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#### Abstract

**Background/Aim.** Difficulties in the acceptance of dentures are multifactorial including psychosocial ones. It is questionable whether the patients' satisfaction depends only on the complete denture therapy characteristics. The aim of the study was to evaluate patients' expectation and satisfaction with complete dentures before and after the treatment concerning phonetics, chewing, comfort of use and aesthetics. **Methods.** Forty complete edentulous patients rated their expectation before and satisfaction after the treatment based on a questionnaire scores. Patient-related variables regarding age, gender and previous experience (whether worn complete denture or not) were also recorded. **Results.** Patients' rating for expectations were higher than the satisfaction after treatment regarding phonetics, chewing, comfort of use and aesthetics. A negative significant correlation was shown between the items before and after the treatment rating for phonetics, chewing, comfort of use and aesthetics. No statistical correlation was found between all the evaluated aspects' (i.e. phonetics, chewing, comfort of use and aesthetics) of expectation and satisfaction, and age, gender, and previous experience except a weak negative correlation noticed between age and comfort of denture use. **Conclusion.** Patients' expectations ratings significantly exceeded their satisfactions. Expectations and satisfaction ratings were irrespective of gender and patients previous experience.

#### Key words:

denture, complete; patient satisfaction; questionnaires; mastication; speech production measurement; esthetic, dental.

#### Apstrakt

**Uvod/Cilj.** Teškoće u prihvatanju zubne proteze su multifaktorijalne, a uključuju i psihosocijalne faktore. Pitanje je da li zadovoljstvo pacijenata protezom zavisi samo od karakteristika terapije kompletnom zubnom protezom. Cilj rada bio je da se procene očekivanja i zadovoljstvo pacijenata kompletnom zubnom protezom pre i posle lečenja, u pogledu izgovora glasova, žvakanja, osećaja komfora i estetike. **Metode.** Pomoću upitnika, ukupno 40 bezubih pacijenata ocenilo je svoja očekivanja pre lečenja i zadovoljstvo posle lečenja. Varijable povezane sa pacijentom, u pogledu životnog doba, pola i prethodnog iskustva (da li nosi ili ne nosi kompletnu protezu), takođe su zabeležene. **Rezultati.** Ocene pacijenata za očekivanja bile su više nego za zadovoljstvo posle lečenja u pogledu izgovora glasova, žvakanja, komfora pri korišćenju proteze i estetike. Negativno značajna korelacija nađena je između ocena pre i posle lečenja, za fonetiku, žvakanje, komfor pri korišćenju i estetiku. Nije nađena statistički značajna korelacija između svih procenjivanih aspekata (kao što su izgovor glasova, žvakanja, komfor pri korišćenju i estetika) očekivanja i zadovoljstva i životnog doba, pola i prethodnog iskustva, izuzev slabo negativne korelacije utvrđene između životnog doba i komfora pri korišćenju proteze. **Zaključak.** Procena očekivanja pacijenata značajno je prevazišla njihova zadovoljstva. Step en očekivanja i zadovoljstva nisu bili u korelaciji sa životnim dobom i prethodnim iskustvom pacijenata.

#### Ključne reči:

zubna proteza, totalna; bolesnik, zadovoljstvo; upitnici; žvakanje; govor, produkcija, merenje; zub, estetika.

#### Introduction

Despite the decline in edentulism rates documented by Marcus et al.<sup>1</sup>, due to ageing of the society, it is estimated that the number of edentulous patients will not decrease. Complete dentures are a favoured treatment option for edentulous patients. It deserves to be noted that the complete dentures are

commonly accepted as they provide a pleasing appearance and maintain normal speech, as well as supply occlusal support and adequate means for mastication of food. Additionally, these dentures should be comfortable and should generally make a patient satisfied. Previous studies indicate that the great majority of completely edentulous patients are satisfied with their complete dentures<sup>2,3</sup>, while great emphasis is placed on the pa-

tients who remain dissatisfied despite the clinical perfection of their oral rehabilitation, as patients' satisfaction with their dentures seems to be associated with their quality of life<sup>3-6</sup>.

Difficulties in the acceptance of dentures are multifactorial, therefore, the risk of the dissatisfaction should be considered. Satisfaction with complete dentures has been associated with several factors as confirmed by several studies<sup>7</sup>. Among these factors, general health, age, gender, personality traits, experiences with previous dentures and patient expectation regarding treatment were evaluated in previous studies<sup>8-14</sup>. Although some studies found associations between those factors and complete denture satisfaction<sup>10,11</sup>, some did not<sup>8,9,12</sup>. Furthermore, some studies<sup>14-16</sup>, albeit not all<sup>17-19</sup>, have revealed that patient satisfaction is unrelated to denture quality and to sophisticated techniques for the treatment<sup>4</sup>.

There remains a widespread acknowledgement that psychological factors may influence the outcome of denture treatments. For instance, some authors<sup>15,19</sup> have found that psychological factors may play an important role in those patients who experience difficulty in adapting to new dentures. Furthermore, the majority of studies have evaluated the expectation as strongly associated with patients' satisfaction after treatment, yet not all the samples are observed<sup>20</sup>.

The aim of the study was to evaluate patients' expectation and satisfaction with complete dentures before and after the treatment concerning phonetics, chewing, comfort of use and aesthetics.

## Methods

The sample consisted of 40 individuals (22 women and 18 men), generally healthy, who attended the China Medical University and went through the completely new dentures therapy from February 2012 to December 2013. The selected patients were all completely toothless, in good health (to avoid the influence of their medical problems on their satisfaction with dentures), enjoying adequate cognitive ability for understanding and capacity to answer questions and to complete a form. The patients who met the eligibility criteria mentioned above received a written informed consent to participate. The study was approved by the China Medical University Ethical Review Board.

The dentures were made by graduate students under the supervision of professors, using a standardized technique

compromising the following procedure: complete initial clinical examination; making of preliminary impression using a stock tray and irreversible hydrocolloid (alginate); and final 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 occlusion and tried in, and the dentures were flaked and polymerized (72°C/12 h) and then inserted and adjusted.

### *Assessment of patient expectation before and satisfaction after the therapy*

To rate expectations before and satisfactions after the therapy, a Patient Denture Rating Questionnaire, covering four items relating to denture esthetics, speech, mastication and comfort, was used. The answers for each item could range from 0 (the worst result) to 10 (the best result). All the questions were explained to the patients, as to enable them to understand meanings of each question. All the patients were asked to choose the numbers according to their expectation. After completing the treatment (a week after the insertion), the patients were again asked to choose the numbers according to their satisfaction.

A copy of the self-completed denture rating questionnaire is presented in Table 1.

### *Assessment of patient-related variables*

Patient-related variables including gender, age and previous experience (whether worn complete dentures or not) were noted.

### *Statistical analysis*

The statistical Package for the Social Sciences (SPSS version 16.0, SPSS Inc., IBM) was used for statistical analysis. The Wilcoxon Signed Rank test was used to compare the patients' expectation before and satisfaction after the treatment.

**Table 1**

**The questionnaire sent to all the patients. The questionnaire was proposed at the same patients before and a week after the treatment. Answers to each question range from 0 (worst possible outcome) to 10 (best possible outcome)**

Questions	On this scale of 0–10, how would you score the following aspects?
How do you rate the appearance of your denture?	0 1 2 3 4 5 6 7 8 9 10
How do you rate the quality of expression and phonetics?	0 1 2 3 4 5 6 7 8 9 10
How do you rate the quality of your mastication?	0 1 2 3 4 5 6 7 8 9 10
How do you rate the removal and insertion of your denture?	0 1 2 3 4 5 6 7 8 9 10
How comfortable is your denture?	0 1 2 3 4 5 6 7 8 9 10

ment, while the Spearman's correlation test was used to determine whether correlations existed between the patients' expectation before and satisfaction after the treatment and to check for possible correlations between age and the above-mentioned scores. The Mann-Whitney test was used to test associations between the scores and gender, as well as to check possible associations between the scores and the previous experience. A  $p$ -value less than 0.05 were accepted as a statistically significant.

## Results

Of the 40 participants who completed all stages and filled in the questionnaires, 56% were female.

The results on correlations between the investigated parameters before and after the treatment are given in Table 2. A negative correlation was found between age and comfort of use expectation ( $p = 0.0041$ , -44.41%). No correlation was found between phonetics, chewing and aesthetics, respectively to age ( $p = 0.608$ , 8.63%;  $p = 0.651$ , 7.39%;  $p = 0.517$ , 10.55%).

( $p = 0.0017$ , -48.16%), comfort of use ( $p = 0.0054$ , -43.19%) and aesthetics ( $p = 0.001$ , -50.01%).

## Discussion

The subjects in this study had higher expectations regarding complete denture treatment compared to satisfaction for phonetics, chewing, comfort of use and aesthetics. Our results corroborate the findings of de Siqueira et al.<sup>12</sup>, while other studies<sup>9, 12</sup> contradict our findings. A possible explanation for the divergence is that the satisfaction with complete denture is a complex phenomenon<sup>7, 18</sup> which could be fulfilled by previous comprehensive awareness of anatomical features and, particularly, by an insight into patients' physiological and psychological capacities<sup>21-23</sup>.

Furthermore a negative significant correlation was determined between expectation and satisfaction for all the evaluated criteria (i.e. phonetics, chewing, comfort of use and aesthetics). As edentulous patients generally expect that new complete dentures fit and function equal to or even better than their

Table 2

The results on correlations between the investigated parameters before (expectation) and after the treatment (satisfaction)

Parameter	Phonetics		Chewing		Comfort		Aesthetics	
	before	after	before	after	before	after	before	after
Age	0.608 (8.63%)	0.572 (9.22%)	0.651 (7.39%)	0.079 (28.06%)	0.0041* (-44.41%)	0.076 (28.37%)	0.517 (10.55%)	0.917 (1.70%)
Gender	0.625	0.593	0.638	0.325	0.947	0.882	0.795	0.195
Previous experience,	0.196	0.231	0.333	0.472	0.573	0.611	0.195	0.818

\*A statistically significant difference (Spearman's correlation test and Mann-Whitney test).

No significant association was found between the four aspects of expectations, and gender ( $p = 0.625$ ,  $p = 0.638$ ,  $p = 0.947$ ,  $p = 0.795$ ), and previous experience ( $p = 0.196$ ,  $p = 0.333$ ,  $p = 0.573$ ,  $p = 0.195$ ). The same holds true for the association between the four aspects of satisfactions, and gender ( $p = 0.593$ ,  $p = 0.325$ ,  $p = 0.882$ ,  $p = 0.195$ ), age ( $p = 0.572$ , 9.22%;  $p = 0.079$ , 28.06%;  $p = 0.076$ , 28.37%;  $p = 0.917$ , 1.70%), and previous experience ( $p = 0.231$ ,  $p = 0.472$ ,  $p = 0.611$ ,  $p = 0.818$ ).

The mean scores for the four aspects before and after the therapy are given in Table 3. The analysis showed a significantly decreased in the mean scores on phonetics ( $p = 0.000136$ ), chewing ( $p = 0.000007$ ), comfort of use ( $p = 0.000002$ ) and aesthetics ( $p = 0.000006$ ). Moreover, there was a negative significant correlation between before and after treatment rating for phonetics ( $p = 0.026$ , -35.14%), chewing

natural teeth, despite the presence of resorbed ridges, collapsed muscles and other physical changes that occurred. Considering patients' baseline physical condition regarding harmony, smile appearance, denture comfort and masticatory and phonic ability, the new dentures provide an adequate solution from dentist's point of view. However, patients do not take into account their own baseline considerations. Sensation of foreign object, nausea, phonetic problems and difficulty in chewing, are among common complaints of edentulous patients during the first few days after insertion of their complete dentures. Since complete dentures do not generally match the patients' expectations, patients are no longer willing to wear their dentures, developing a feeling of mistrust toward their dentist and his/her treatment plan and demand that dentists make numerous and sometimes technically unnecessary adjustments. However, patients should understand that compromises may be necessary.

Table 3

Comparison of expectation ratings before and satisfaction ratings after, presented as means  $\pm$  standard deviations

Parameter	Before	After	$p$ -value
Phonetics	9.53 $\pm$ 0.85	7.85 $\pm$ 1.72	0.000136*
Chewing	9.28 $\pm$ 0.88	7.53 $\pm$ 1.15	0.000007*
Comfort	9.6 $\pm$ 0.67	6.75 $\pm$ 2.12	0.000002*
Aesthetics	9.34 $\pm$ 0.87	7.58 $\pm$ 1.08	0.000006*

\*A statistically significant difference (Wilcoxon test).

Dentists ought to be fully aware of patients' expectations before treatment and provide a patient with detailed introduction into the problem, which not aims to explain the limitations and possibilities of complete denture treatment *per se*, but rather to help a patient to learn how to cope with the complete dentures. Therefore, the rate of satisfaction may be raised.

Other variables (previous experience, age and gender) were also tested to assess patients' expectations before and satisfaction after the therapy. However, the majority of these possible associations proved not to be statistically significant in this sample, with the exception of a weak negative correlation between age and comfort of use. These results are incongruent with previous studies<sup>24,25</sup>, but suggested by other studies<sup>20,23</sup>.

The limitations of the present study involve a relatively small number of patients, which limits possible evaluation of

causal relationship among the evaluated variables and some other factors, such as denture quality, personality traits and patient/professional relationship<sup>12,13,23</sup>.

## Conclusion

Patients' expectations ratings significantly exceeded their satisfactions. Expectations and satisfaction ratings were irrespective of gender and previous experience.

Hence, pondering the necessity of gaining a deeper comprehensive of patients' psychosomatic phenomena, it seems that more extensive, clinically and patient-based research should be carried out to gain more knowledge about patients' expectations and final evaluation after complete denture treatment.

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Received on February 29, 2014.

Revised on March 27, 2014.

Accepted on April 4, 2014.

Online First January, 2015.