

Multivariate Analysis of Different Factors Affecting the Patient General Satisfaction with Complete Dentures

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ABSTRACT

The aim of the study was to investigate different factors that affect the level of patient's general satisfaction with maxillary and mandibular complete dentures (CDs) using a multivariate analysis. A total of 100 CD wearers participated in this study. There were 46 men (37–77 years old; mean age 62.6±9.2) and 54 women (34–77 years old; mean age 60.9±9.3). In the questionnaire the patients answered the questions regarding gender, age, number of previous CDs worn, the present dentures' age and denture-wearing habits. Participants rated the level of their satisfaction with the esthetics, retention, speech, mastication, sense of taste, comfort and general satisfaction with their CDs. More than 70% of the examined patients claimed all the examined variables to be the best-score category. Of the 9 factors examined, satisfaction with the mastication and esthetics, denture-wearing habits and satisfaction with retention in the maxilla explained the variability of the patients's general satisfaction with their CDs by 72%. Satisfaction with the mastication, denture-wearing habits and satisfaction with speech and comfort in mandible explained the variability of the patients's general satisfaction with their CDs by 79%. These findings suggest that the general patient satisfaction with maxillary CDs is related more to the mastication and retention abilities, as well as with esthetics and denture-wearing habits, while in the mandible CDs is related to mastication and speaking abilities, denture-wearing habits and comfort of wearing.

Key words: complete denture, edentulousness, alveolar ridge, patient satisfaction

Introduction

Complete dentures (CDs) serve as a prosthodontic treatment option for completely edentulous patients; however, the risk of low patient acceptance should be considered¹. Previous studies have proved that the great majority of completely edentulous patients are satisfied with their CDs^{2–4}.

Satisfaction with CDs has been associated with different denture-related, patient-related and oral-related factors. In some patients it is related primarily to the functioning and the appearance of the dentures^{5,6}, in others to psychological factors such as patient personality, their social adaptation of physical adaptability^{7–11}. Different edentulous residual ridge parameters like bone height,

ridge form and the state of mobile soft tissue have been proved to be important too^{12–16}.

Although the majority of the publications report high level of patient's satisfaction with CDs in different aspects, there is always a certain percent of those who are dissatisfied. The most common reasons for dissatisfaction in CD wearers are unsatisfactory retention and comfort of lower denture, as well as chewing problems, esthetic appearance and speech^{17–19}.

The aim of the study was to investigate different factors that affect the level of patient's general satisfaction with maxillary and mandibular complete dentures (CDs) using a multivariate analysis.

Materials and Methods

The study population included 100 patients who were treated with 100 conventional maxillary and mandibular CDs, 1 to 5 years old. There were 46 men (37–77 years old; mean age 62.6±9.2) and 54 women (34–77 years old; mean age 60.9±9.3) (Table 1).

A two-part questionnaire was completed by the patients and devised for the purposes of this study. In the first part the patients were required to answer the questions regarding gender, age, number of previous dentures worn, the present dentures’ age (in years), and denture-wearing habits (continuous, during the day, during the meal, rarely, never).

In the second part of the questionnaire they were required to grade their CDs, depending on the level of satisfaction. They first graded them in general and then they graded separately the esthetics, the retention, speaking and mastication abilities, sense of taste and the comfort of wearing CDs. The patients graded them by using a scale ranging from 1 to 5 (from unsatisfactory to excellent), with the exception of comfort where the scale had been reversed (grade 5 represented maximum discomfort and grade 0 no discomfort at all).

The subsequent statistical analysis was made by using the statistical software SPSS 12.0 for Windows. Descriptive statistics were made and the normality of distribution was tested by the one-way Kolmogorov-Smirnov test. Finally, in order to explore how the examined variables may correlate the variability of patients’ rating of their general satisfaction with maxillary and mandibular CDs the multiple regression analysis (forward method) was used.

Results

The distribution of patients and gender is presented in Table 1. According to the number of previous maxillary dentures, 34% of the patients were the first-time maxillary CD wearers, 46% had their second CDs, 17% had their third CDs and only 3 had their fourth CDs. In the mandible 37% of the patients were the first-time maxillary CD wearers, 42% had their second CDs, 12% had their third CDs and only 9 had their fourth CDs.

Depending on how old the existing CDs were, there were 23% of maxillary CDs and 22% of mandibular CDs up to 3 years in function, 59% were maxillary CDs and 61% mandibular CDs from 3 to 6 years in function and 18% were maxillary and 17% mandibular CDs more than 6 years old.

TABLE 1
DISTRIBUTION OF SUBJECTS IN STUDY

Variables	Men	Women	Total
No. of patients	46	54	100
Age range (in years)	37–77	34–77	34–77
X age (in years) ±SD	62.6±9.2	60.9±9.3	61.7±9.3

Most of the patients (73–78%) used their maxillary and mandibular CDs continuously (day and night), and the rest of them used them only during the day (22–27%).

The normality of the distribution for the patient’s assessment of the maxillary and mandibular CDs in general, as well as esthetics, retention, speech, mastication and comfort differed from the normal distribution ($p < 0.05$). The results of these assessments are shown in Figures 1 and 2. More than 70% of the examined patients claimed all the examined maxillary and mandibular variables to be the best-score category and there were no patients absolutely dissatisfied with their CDs (Figures 1 and 2). Around 20% of the patients rated their general satisfaction with maxillary and mandibular CDs, as well as satisfaction with esthetics, retention, speech, mastication and sense of taste with the score 4 (almost completely satisfied), (Figures 1 and 2). Only 4% of the patients rated the examined variables in maxilla with the score 3, whereas the scores 2 and 1 were not recorded. However, in the mandible 5% of the patients rated their satisfaction with all segments of their CDs with rates 3 and 2. The results of the multiple regression analysis (forward method) are listed in the Table 2. In the maxilla the combination of four independent variables – satisfaction with the mastication and esthetics, denture-wearing habits and satisfaction with retention explained the variability of the patients’s general satisfaction with their

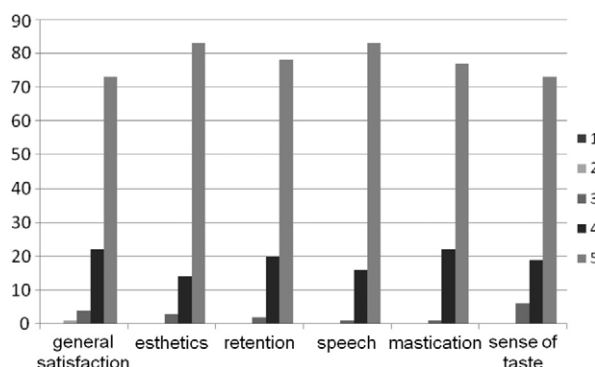


Fig. 1. Patients rating of their satisfaction with various aspects of their maxillary complete dentures.

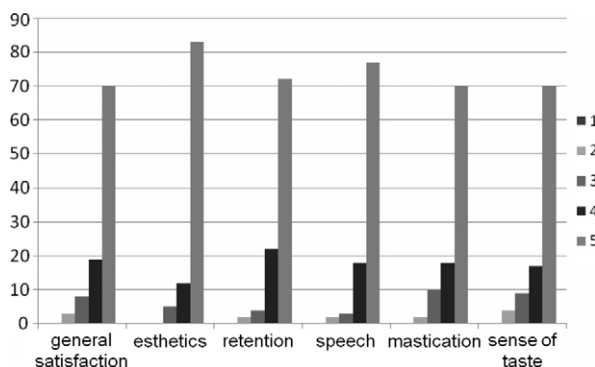


Fig. 2. Patients rating of their satisfaction with various aspects of their mandibular complete dentures.

TABLE 2
RESULTS OF EVALUATION OF ANALYZED VARIABLES FOR GENERAL SATISFACTION WITH STEPWISE MULTIPLE REGRESSION ANALYSIS

Independent variable		R	R ²	p	SE
Maxillary complete denture	Mastication	0.74	0.55	>0.05	0.41
	Esthetics	0.79	0.63	>0.05	0.37
	Denture-wearing habits	0.83	0.69	>0.05	0.34
	Retention	0.85	0.72	>0.05	0.32
Mandibular complete denture	Mastication	0.82	0.68	>0.05	0.44
	Denture-wearing habits	0.86	0.74	>0.05	0.40
	Speech	0.88	0.77	>0.05	0.37
	Comfort	0.89	0.79	>0.05	0.36

maxillary CDs (dependant variables) by 72%. In mandible the combination of different independent variables – satisfaction with the mastication, denture-wearing habits, as well as satisfaction with speech and comfort explained the variability of the patients's general satisfaction with their mandibular CDs (dependant variables) by 79% (Table 2).

Discussion

Patient satisfaction has become an increasingly important factor in prosthetic treatment²¹. The results of this study are mostly in agreement with some previous studies on patient satisfaction with CDs^{2,17,19–21}.

The majority of patients who have participated in this study were completely satisfied with all the examined segments of maxillary and mandibular CDs (70%) (Figures 1 and 2). More than 80% of the patients were completely satisfied with the esthetics and speaking ability of maxillary CDs (Figure 1). This result could be attributed to the satisfactory arrangement of the artificial denture teeth and their appearance during the function and speech, as well as to the satisfactory adaptation of the dentures to the denture bearing area and excellent retention reached during the denture fabrication. In the mandible the only variable whose best scores reached the level of 80% was again the satisfaction with the esthetics, while all the other variables' best scores settled around 70% (Figure 2).

In contrast to the maxilla where patients rated different segments of satisfaction using relatively high scores (5, 4 or 3), in mandible all the variables except esthetics were rated with the lower scores (5, 4, 3 or 2) (Figures 1 and 2). This result in the mandible was expected, specially in the segment of retention, speech and mastication abilities of mandibular CDs due to the alveolar ridge resorption and smaller retention area.

The majority of the patients, all of them for the maxilla and 94% of them for the mandible, reported no discomfort of wearing the CDs, and this could also be attributed to the satisfactory adaptation of the dentures to

the denture bearing area and excellent retention reached during the denture fabrication.

Multivariate analysis in this study allowed observation of patient general satisfaction with maxillary and mandibular CDs while controlling for the influence of 9 factors that might complicate prediction of the outcome of CD treatment. As a result, 4 parameters related to the patient general satisfaction with maxillary and mandibular CDs respectively, were identified: mastication ability, esthetics, denture-wearing habits and retention in maxilla and mastication and speech abilities as well as denture-wearing habits and comfort of wearing dentures in mandible (Table 2).

These results underline the mastication ability as the most important factor in both jaws because it explained the variability of patient general satisfaction in maxilla by 55% and in mandible by even 68% (Table 2).

Furthermore, esthetics, denture-wearing habits and retention showed significant relation to the patient general satisfaction with maxillary CDs too, while denture-wearing habits, speaking ability and comfort of wearing showed significant relation to the patient general satisfaction with mandibular CDs (Table 2). These results were expected because the patients are in the maxilla always more concerned about the appearance of the dentures due to their satisfactory retention, and in the mandible about the comfort of wearing and function due to the lower level of retention and stability of the CDs.

The recent studies investigating the modalities of increasing the level of patient general satisfaction with CDs suggest the usage of implant-retained overdentures in order to achieve much better retention and stability of the CDs and therefore increase the patients self-confidence^{22–24}.

Conclusions

All the patients were mostly satisfied with their maxillary and mandibular CDs, and there were no absolutely dissatisfied. The results of multivariate analysis suggest that the patient general satisfaction with maxillary CDs might be affected more by mastication ability,

esthetics, denture-wearing habits and retention and in mandibular CDs more by mastication and speech abili-

ties as well as denture-wearing habits and comfort of wearing dentures.

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MULTIVARIJANTNA ANALIZA RAZLIČITIH FAKTORA KOJI UTJEČU NA PACIJENTOVO ZADOVOLJSTVO POTPUNIM PROTEZAMA

SAŽETAK

Svrha ovog istraživanja bila je ispitati različite čimbenike utjecaja na stupanj pacijentovog općeg zadovoljstva njegovim gornjim i donjim potpunim protezama uporabom multivarijantne analize. U istraživanju je sudjelovalo ukupno 100 nositelja potpunih proteza, od toga 46 muškaraca (37–77 godina starosti; prosječna dob 62,6±9,2) i 54 žena (34–77 godina starosti; prosječna dob 60,9±9,3). U upitniku su pacijenti odgovorili na pitanja o spolu, dobi, broju prethodno nošenih proteza, starosti sadašnjih proteza te navici nošenja, a potom su ocijenili opće zadovoljstvo, zadovoljstvo estetikom, retencijom, govorom, žvakanjem, osjećajem okusa i žuljanje gornjih i donjih potpunih proteza. Više od 70% ispitanih pacijenata sve je ispitivane varijable ocijenila najvišim ocjenama. Od ukupno 9 ispitivanih čimbenika, u gornjoj je čeljusti zadovoljstvo žvakanjem i estetikom, te navika nošenja i zadovoljstvo retencijom potpunih proteza 72% utjecalo na varijabilnost općeg zadovoljstva, dok je u donjoj čeljusti na istu varijabilnost 79% utjecalo zadovoljstvo žvakanjem, navika nošenja te zadovoljstvo govorom i žuljanje. Ovi rezultati potvrđuju da je pacijentima pri ocjeni općeg zadovoljstva gornjim potpunim protezama važno zadovoljstvo žvakanjem, retencijom i estetikom, dok je kod donjih potpunih proteza važno zadovoljstvo žvakanjem i govorom te žuljanje proteza.