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A comparison of patient's satisfaction between complete and partial removable denture wearers

Asja Čelebić*, Dubravka Knezović-Zlatarić

Department of Prosthodontics, School of Dental Medicine, University of Zagreb, Gundulićeva 5, 10000 Zagreb, Croatia

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Summary *Objectives*. The aim of this study was to compare satisfaction between complete denture (CD) and Kennedy Class I removable partial denture (RPD) wearers.

Materials and methods. A total of 156 CD and 112 RPD wearers took a part in this study. From the primary group of the examined patients, only those whose RPDs and CDs were assessed as excellent or very good by the dentist, took a part in this study. Patients graded satisfaction of their dentures by using an analogue scale from 1 to 5 (1 = unsatisfactory; 5 = excellent).

Results. Both CD and RPD wearers were mostly satisfied with their dentures (the distribution of the scores of the patients' assessments was skewed towards the highest scores; more than half of the patients scored all the examined variables to the best score category). Complete Denture wearers were significantly more satisfied with chewing, speech and retention of maxillary denture than RPD wearers ($P < 0.05$). Removable partial denture wearers were significantly more satisfied with the retention and the comfort of wearing mandibular denture ($P < 0.05$). There was no significant difference between CD and RPD wearers for general satisfaction with their dentures, aesthetics and comfort of wearing maxillary denture ($P > 0.05$; N.S.).

Conclusions. A majority of CD and RPD wearers were satisfied with the dentures. CD wearers were more satisfied with speech, chewing and retention of maxillary denture, while RPD wearers were more satisfied with the retention and the comfort of wearing mandibular denture. Different groups of denture wearers have to make significant, but different adjustments to wear their dentures successfully.

Introduction

It seems that the great majority of patients are satisfied with their removable partial (RPD) or complete dentures (CDs).[1-12] Satisfaction with RPDs or CDs seems to have a multicausal character.[2-6,8-10,13] In addition to the factors directly related with the functioning of dentures, patient related factors also influence the final result.[1-3,5-22] Satisfaction with dentures is related in some patients primarily to comfort and the ability to masticate, whilst their aesthetics and retention also seems to be important.[2,3,14,23,24] The success of prosthodontic treatment, however, is often judged differently by dentists and patients.[2,3,18,25] The following factors related to the patient are very

*Corresponding author. Tel.: +385-14802125; fax: +385-14802159.
E-mail address: celebic@sfzg.hr

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important for in their final satisfaction of the dentures: patient's personality, attitude towards the dentures, denture experience prior to the new denture delivery and the patient's motivation for wearing a denture.[1–3,7–14,19,20] Some authors state that the most common factors related to the patients' dissatisfaction with RPDs are related to a variety of factors and the list includes: the condition, number and alignment of the abutment teeth, the gingival, periodontal and mucous tissue health, the method of denture construction and its support, the material used and the denture base shape (including the type of the major connectors), fit, masticatory problems, speech, appearance and denture cleanliness.[3,4,6,7,10,16,25,26] The most common reasons for dissatisfaction of CD wearers are unsatisfactory retention of lower CD, discomfort of wearing lower CD, chewing problems, appearance and speech.[1,2,8,9,21] However, sometimes there is disagreement between patients' appreciation of denture quality and that assessed by a prosthodontist.[1–3,7,14,18,27]

Due to the different construction of RPDs and CDs, there are different ways of achieving retention (i.e. clasps versus neuromuscular control), stability and aesthetics. All these factors may lead to differences in patients satisfaction of their dentures. There are few articles available which compare the satisfaction between RPD and CD wearers.

The aim of this study was to compare satisfaction with the dentures between CD wearers and Kennedy Class I RPD wearers.

The hypothesis. RPD wearers should be more satisfied for all examined variables as they have some natural teeth and clasps and are probably able to chew harder food. They should be less satisfied only with aesthetics, due to the possible visibility of the clasps during speech and smiling.

Methods

A total of 268 edentulous and partially dentate subjects took a part in this study. The patients were chosen at random from the files of the Department of Prosthodontics, School of Dental Medicine, University of Zagreb, Croatia. Among them 156 were edentulous and had CDs, whereas the 112 partially dentate patients wore Kennedy Class I RPDs replacing teeth posterior to the canines and/or first premolars in the both jaws. All RPDs were retained with clasps and 92% of the RPDs had indirect retainers with occlusal rest. The CDs and RPDs were from 1 to 4 years old and were fully adapted to the dentures. All the dentures were provided by qualified dentists and specialists in prosthodontics.

CD wearers were between 39 and 89 years old (mean age 67; 57 men and 99 women) and RPD wearers were between 34 and 82 years (mean age 63; 35 men and 68 women). In the both groups the distribution of patients' levels of education and economic status was similar. A questionnaire divided into two parts was devised for the purposes of this study, and it was completed by both the patients and the prosthodontist independently.

Patients graded their satisfaction by using an analogue scale ranging from 1 to 5 (from 1 = unsatisfactory to 5 = excellent). However, when describing the comfort of denture wearing, the scale was reversed and the point zero (0) was included to describe a situation with no discomfort at all.

Patients were asked to firstly grade their dentures in general, and then they were asked to provide separate grades on the retention, aesthetics, ability to speak and masticate with their dentures and the comfort of wearing the dentures.

A specialist of prosthodontics listed evaluated the quality of the dentures and rated CDs on the quality of fit, extension and occlusion, and RPDs on the quality of fit, extension, occlusion, number of clasps, occlusal rests, major and minor connectors and quality of framework design by using the 1–5 scale (where 1 was poor quality and 5 was excellent quality).

Prior to the assessment, three different dentists (Specialists of Prosthodontics) separately evaluated 30 different RPDs and 30 different CDs. Kappa test revealed sufficient consistency between them, both for CDs (0.76–0.92) and for RPDs (0.75–0.90), and it was decided that only one of them should evaluate all patients.

All the patients (222 CD wearers and 165 RPD wearers) were examined and only those whose RPDs and CDs were assessed as excellent or very good were selected to take part in this study (112 RPD and 156 CD wearers). Other patients were excluded, as they were dissatisfied due to the low quality of their dentures. There were 81% of the CD patients whose dentures were assessed as excellent, whereas 19% of their dentures were assessed as very good. There were 79% RPD wearers whose dentures were assessed as excellent, whereas 21% of RPD dentures were assessed as very good.

The statistical analysis was made by using the statistical software SPSS 10.0 for Windows. Descriptive statistics was made and the normality of distribution was tested by the one-way Kolmogorov–Smirnov test. Finally, in order to test

the significance of the differences between CDs and RPDs the Mann–Whitney *U* test was used.

Results

The normality of the distribution for the patient's assessment of their CDs or RPDs in general, as well as retention, speech, mastication and comfort of wearing dentures differed from the normal distribution ($P < 0.05$), (one-way Kolmogorov–Smirnov test), because the distribution was entirely skewed towards the highest score area.

The results of patients' assessment of their complete dentures are shown in Fig. 1. Variables were ranged from the best to the worst grades in CD wearers as follows: retention of maxillary complete denture, speech, aesthetic, chewing, overall satisfaction, and finally retention of mandibular complete denture.

The results of patients' assessment of their removable Kennedy Class I dentures are shown in Fig. 2. Variables were ranged from the best to the worst grades in RPD wearers as follows: aesthetics, retention of maxillary removable partial denture, speech, retention of mandibular removable partial denture, overall satisfaction, and finally chewing.

Patients' assessment of pain sensation under the base of complete and removable partial dentures is shown in Fig. 3. The highest percentage of grades zero (no pain at all) was ascribed to the maxillary CD, and the lowest percentage of grades zero (no pain at all) was ascribed to the mandibular CD.

Significance of the differences in satisfaction between CD and RPD wearers is shown in Table 1. CD wearers were significantly more satisfied than RPD wearers with speech, chewing and retention of maxillary denture, while RPD wearers were significantly more satisfied with the retention and the comfort of wearing mandibular denture ($P < 0.05$). There was no significant difference between CD and RPD wearers for general satisfaction with their dentures, aesthetics and comfort of wearing maxillary denture ($P > 0.05$, N.S.).

Discussion

The normality of the distribution for the patient's assessment of their CDs or RPDs differed from the normal distribution ($P < 0.05$; one-way Kolmogorov–Smirnov test), because the distribution was entirely skewed towards the highest score area. This result is in agreement with similar studies recording the patients' satisfaction with removable dentures or fixed prosthodontic restorations.[1–4,11–13,18] However, Lamb and Ellis used a visual analogue scale scores of denture security[28,29] and reported that they were not normally distributed, but formed two separate distributions (bimodal distribution) which corresponded approximately with the sets of satisfied (visual analogue scale >50) and dissatisfied (visual analogue scale <50) patients. In a previous study of ours on patients satisfaction with complete dentures an attempt had been made to use visuale-analoge scale from 0

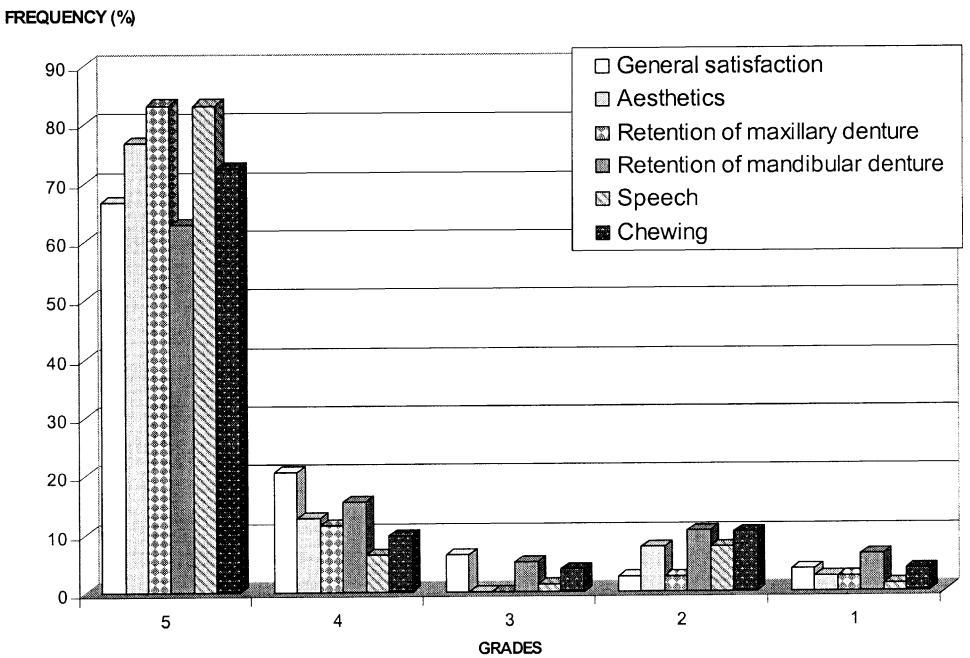

Figure 1 Patients' assessment of their complete dentures (grade 5 is excellent and grade 1 is unsatisfactory).

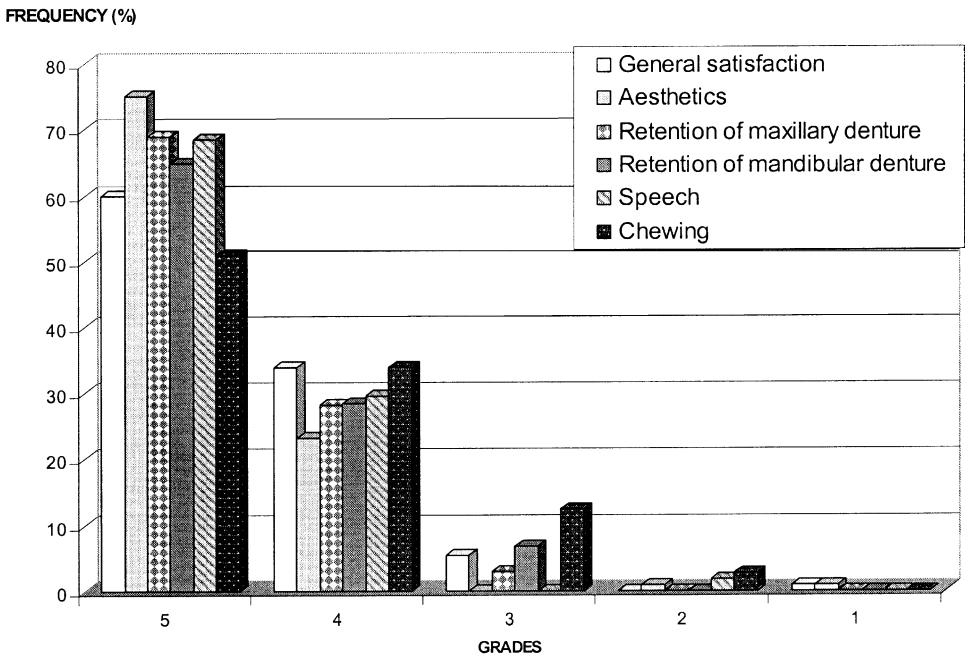

Figure 2 Patients' assessment of their removable Kennedy Class I (grade 5 is excellent and grade 1 is unsatisfactory).

to 10, but the distribution of patients satisfaction was not bimodal, it was also entirely skewed to high score categories and therefore it was decided to use analoge 1–5 scale for further investigation, as patients were more familiar with it because it is used as a common grading scale in our educational system.[2]

As the score distribution was not normal, to compare CD and RPD wearers the non-parametric statistical test had to be applied i.e. Mann–Whitney U test.

Both, CD and RPD wearers were mostly satisfied with their dentures (Figs. 1 and 2), more than half of the patients scored all the examined variables to the best score category (score 5), except for the comfort of wearing dentures. In this category the majority of the patients had no pain at all, which meant that they were satisfied (Fig. 3).

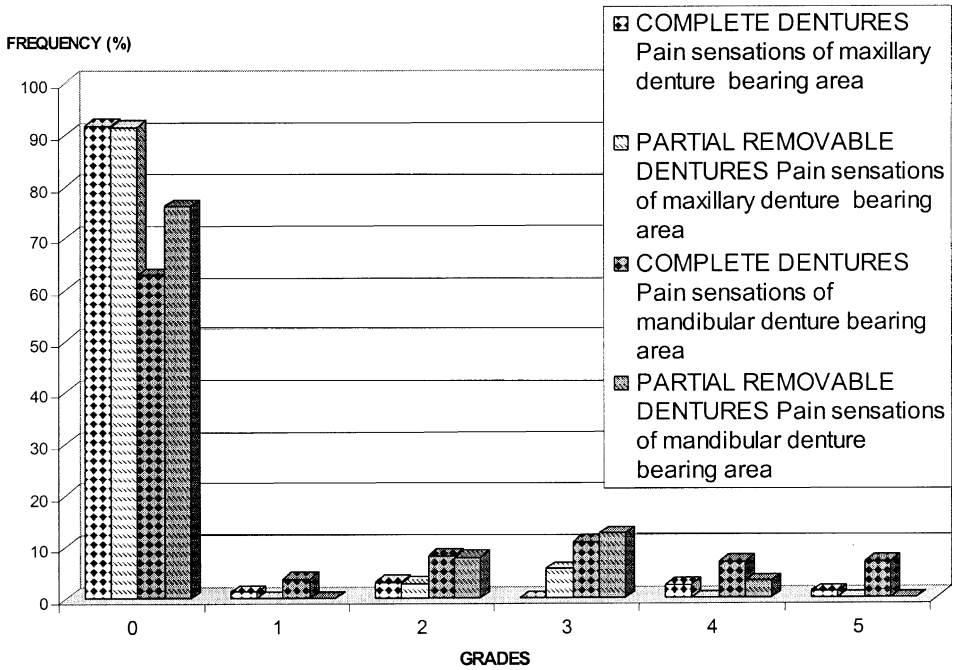

Figure 3 Patients' assessment of pain sensation under the base of complete and removable partial dentures (Grade 0, no pain to Grade 5, maximum pain). (* complete denture; ** removable partial denture).

Table 1 Significance of the differences in satisfaction between complete and removable partial dentures.

	General satisfaction	Aesthetics	Retention of maxillary denture	Retention of mandibular denture	Speech	Chewing	Comfort of wearing maxillary denture	Comfort of wearing mandibular denture
p. (2-tailed)	0.57	0.97	0.03*	0.02*	0.02*	0.014*	0.96	0.02*

However, CD wearers attributed more grades 5 to all assessed categories than RPD wearers, but they also gave more scores 1 or 2. (Figs. 1 and 2).

These results are in agreement with some previous studies on patients satisfaction with CDs or RPDs.[1–4,10,21] There was no significant difference ($P > 0.05$, N.S.) between CD and RPD wearers for general satisfaction with their dentures ($P > 0.05$; Table 1), although CD wearers attributed more scores 1 and 2 (approx. 7%) than RPD wearers, who attributed more scores 4 and none of scores 1 or 2 (Figs. 1 and 2).

There was no significant differences between CD and RPD wearers in satisfaction with aesthetics of their dentures ($P > 0.05$; Table 1, Figs. 1 and 2) although higher percentage of scores 1 and 2 was registered in CD wearers, which is a surprising result if we keep in mind that clasps in RPDs do not contribute to a pleasant aesthetic appearance and the abutment teeth are canines and/or the first premolars. Probably, scores 1 or 2 might have been attributed to aesthetics from those patients whose appearance was considerably changed by insertion of CDs.

CD wearers were significantly more satisfied than RPD wearers with the retention of maxillary dentures ($P < 0.05$, Table 1, Figs. 1 and 2). Although there was no scores of 1 or 2 in RPD wearers, they gave a higher percentage of scores 4 than CD wearers. Actually, higher scores were expected for retention of maxillary dentures in RPD wearers due to clasps, but this was not confirmed by the results. However, maxillary CDs may achieve good retention in cases of good functional impression (peripheral seal) and a favourable denture bearing area. It is perhaps possible that RPD wearers compare retention of their dentures to their natural teeth and therefore perceive the retention of upper denture as poorer.

RPD wearers were significantly more satisfied with of the retention of mandibular denture than CD wearers ($P < 0.05$, Table 1, Figs. 1 and 2). This was, however not an unexpected fact if we consider problems with the retention of mandibular CD and mandibular residual ridge resorption. This is almost three to four times larger in the edentulous mandible than in the maxilla and may lead to an unfavourable denture bearing area.[30,31] In CD wearers more than 20% of patients were unsatisfied or hardly satisfied (scores 1 or 2) and none of RPDs wearers gave scores 1 or 2 for the retention of mandibular denture. This shows that clasps play an important role in the retention of mandibular RPD denture and natural teeth with indirect retainers in prevention of residual ridge resorption.[26,31–33]

CD wearers were significantly more satisfied than RPD wearers with the speech ($P < 0.05$, Table 1, Figs. 1 and 2). The median as well as modal values were 5 in the both groups, however CD wearers had higher percentage of score 5 than RPD wearers, who had more scores 4. Probably, RPD wearers might be more aware of discomfort provoked by their palatal plate constructions. They are also able to articulate without dentures, as they have their natural frontal teeth left in mouth, while complete denture group with no natural teeth need artificial frontal teeth in their dentures for articulation and are not able to articulate sounds clearly without dentures. Ikebe et al.[34] found out that in a group of CD wearers, the greatest dissatisfaction was with speech (28.5%) while in RPD wearers, it was with chewing ability (21.7%). However, this is different from the results of this study with CD wearers being more satisfied with speech and may be the result of our patients being selected on the criteria that they were provided with fully functional dentures, including good retention and vertical dimension. Ikebe et al.[35] examined patients in a geriatric institution in Japan and found that their dentures were of variable quality, so it is possible that their complete dentures had poor retention and shortened vertical dimension and therefore 28.5% of patients could be dissatisfied with speech.

CD wearers were significantly more satisfied than RPD wearers with chewing ($P < 0.05$, Table 1, Figs. 1 and 2). We expected RPD wearers to be more satisfied and to perform better chewing performance due to few natural teeth in their mouth and clasps and indirect retainers which improve retention and stability of RPD, but it was

not confirmed by these results. Ikebe at al.[35] also found out that RPD wearers were mostly dissatisfied (21.7%) with chewing. However, CD wearers might be more aware of their handicap of not having any teeth left in the mouth and therefore may be more satisfied. This is opposite to RPD wearers, who might have unrealistic expectations, as they probably compare their dentures with natural teeth. It may also be that the diet is not the same between CD and RPD wearers. CD wearers might have modified their diet and might eat softer foods that require less chewing and less vigorous chewing muscle contraction, which result in weaker forces towards the denture bearing area. Budtz-Jorgensen and Isidor[36] found out that treatment with distally extending cantilever bridges in the mandible is a favourable alternative to treatment with RPDs in elderly patients with a reduced dentition, as patients were less satisfied chewing with RPDs.

There was no significant difference between CDs and RPDs for the comfort of wearing maxillary denture ($P > 0.05$, N.S. Table 1, Fig. 3). However, CD wearers were significantly more unsatisfied with comfort of wearing mandibular denture ($P < 0.05$, Table 1, Fig. 3). This finding was expected, due to the well known problems with the retention and stability of mandibular CD, which may be overcome in mandibular RPDs due to indirect retainers and clasps.[16,25,28–34]

These results show that a clinician should discuss thoroughly with patients about all the possible problems which could be expected in two different groups prior to new denture construction, as CD and RPD wearers have to make significant, but different adjustments to wear their dentures successfully. This might make their expectation more realistic and a period of adaptation to new dentures less traumatic.

Conclusions

Based on the results of this study we can arrive to a conclusion that both, CD and RPD wearers were mostly satisfied with their dentures. CD wearers were significantly more satisfied than RPD wearers with speech, chewing and retention of maxillary denture, while RPD wearers were significantly more satisfied with the retention and the comfort of wearing mandibular denture ($P < 0.05$). There was no significant difference between CD and RPD wearers for general satisfaction with their dentures, aesthetics and comfort of wearing maxillary denture ($P > 0.05$; N.S.).

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