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ORIGINAL ARTICLE

Usage of removable partial dentures in Saudi male patients after 1 year telephone interview

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KEYWORDS

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Abstract Objective: The success of removable partial dentures (RPDs) is partly dependent on patients' acceptance and compliance in using them. The purpose of this study was to describe the usage of removable partial dentures (RPDs) by patients 1 year after insertion and to evaluate the factors that influence their denture usage.

Methods: Forty-seven patients who received 75 new RPDs at the undergraduate clinic of College of Dentistry, King Saud University, were contacted by telephone 1 year later for an interview. The questions covered denture usage, patient's satisfaction and reasons for non-use.

Results: Results showed that 36% of patients discarded or occasionally used their RPDs. There was no significant association between denture usage and RPD experience, location or Kennedy classification. A significantly more RPD rejection was found when it was opposed by natural teeth or complete denture. The most quoted reason for RPD rejection was pain and discomfort.

Conclusion: Despite the short follow-up period, RPDs were poorly accepted by patients treated by undergraduate students.

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1. Introduction

Removable partial dentures (RPDs) serve as a simple and popular treatment option for partially edentulous patients, yet the possibility for not accepting this treatment by patients should

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be considered (Wostmann et al., 2005). The success of RPD treatment is partly dependent on patient compliance in wearing their RPDs. However, it appears that a significant number of RPDs are provided for patients who do not wear them. Several studies in different parts of the world have shown that a significant number of RPD patients stop using their RPDs over time (Jepson et al., 1995; Cowan et al., 1991; Yeung et al., 2002; Wetherell and Smales, 1980).

The lower motivation to wear the RPD by patients has been attributed to patient personality, poor denture fit and adaptive capability (Germundsson et al., 1984; Wakabayashi et al., 1998; Elias and Sheiham, 1998; Maupome and MacEntee, 1998). Further, Graham et al. (2006) suggested that for many patients, the perceived benefits of RPD use were not sufficient to tolerate the presence of the denture in the mouth.

Information on the patients' use of RPDs and the influencing factors would help clinicians make an informed decision in the treatment of partially edentulous patients requiring RPDs and help in reduction of potential waste of resources.

Since the RPD usage is partly related to patients' personality (Carlsson, 1998), variations among different population is expected. There is no information available on RPD usage in Middle Eastern population. The aim of this study was to examine the usage of RPDs by patients treated in King Saud University, College of Dentistry over a period of 1 year.

2. Materials and methods

The study sample comprised all male patients who were treated with removable partial dentures (RPD) in the undergraduate courses at the College of Dentistry, King Saud University, in the first semester of 2008. Patients were treated by undergraduate dental students supervised by experienced specialist faculty members. A conventional protocol for construction of removable dentures was followed. This included preliminary impressions for fabrication of custom trays, border molding and final impressions with polysulfide material; centric relation maxillomandibular jaw relationship was routinely used except in cases of stable tooth contacts being present; mounting of casts in a semi-adjustable articulator by facebow transfer and an interocclusal record (in most cases). Dentures were tried in the mouth at the wax setup stage and patients were allowed to return for adjustment after insertion. On the day of insertion, the RPD type, design, and the nature of the opposing dentitions were recorded along with information about the patient name, age, RPD experience and contact telephone number. A permission to conduct a brief telephone interview was also obtained.

The patient interview was conducted by telephone 1 year later. The questions were related to the patients' usage of their dentures, satisfaction and demand of improvement (Table 1). Reasons for discontinued or occasional use were also sought during the interview.

The relationship between the denture usage and other dependant variables were analyzed by means of the Chi-square test using the Statistical Package for the Social Science (SPSS Inc., Chicago, IL, USA). Significance level was set to $P < 0.05$.

3. Results

Of the 52 patients who were treated with removable partial denture treatments, 5 (10%) were non-contactable. Forty-seven patients (mean age 47, range 30–69) completed the telephone interview making a 90% response rate. A total of 75 RPDs had been provided to the 47 patients. Five patients

Table 1 Patients' response to the questionnaire.

	Yes	No	Occasional
Do you wear your RPD?	30	10	7
Are you generally satisfied with your RPD?	26	21	
Do you have any complaint with your RPD?	24	23	
Do you wish to improve your RPD?	32	15	

had RPD in the upper jaw, 14 in the lower jaw and 28 patients in both upper and lower jaws. The distribution of RPD type, classification and location is presented in Table 2.

The patients' response to the questionnaire is presented in Table 1. Of all patients interviewed, only 30 (64%) patients said they wear their partial denture regularly, 7 (15%) wear it occasionally and 10 (21%) stopped using their RPDs. Of the 17 patients who do not wear their RPDs or wear it only occasionally, 7 were fitted with two RPDs and discarded both of them. Table 3 shows the distribution of RPDs usage according to Kennedy classification and location. The percentage of discarded RPDs in the maxillary arch or used occasionally was 27%. The corresponding number in the Mandibular arch was 36%.

The most common reason for discontinued or occasional use was pain and discomfort, which was reported for 12 RPDs (50%) followed by difficulty to tolerate which was reported for

Table 2 Distribution of RPD type, classification and location.

	Maxillary RPD		Mandibular RPD		Total
	Co-Cr	Acrylic	Co-Cr	Acrylic	
Kennedy class I	3	4	5	4	16
	5.7% (n = 2)		20% (n = 7)		
Kennedy class II	5	4	11	3	23
Kennedy class III	12	2	12	5	31
Kennedy class IV	1	2	1	1	5

Table 3 Distribution of RPDs usage by Kennedy classification and location.

	Kennedy classification				Total
	I	II	III	IV	
<i>Maxillary dentures</i>					
	5.7% (n = 2)		20% (n = 7)		
Still in use	7	5	10	2	24(73)
Occasional use	0	2	2	1	5(15)
Discarded	0	2	2	0	4(12)
Sub-total	7	9	14	3	33(100)
<i>Mandibular dentures</i>					
Still in use	7	8	10	2	27(64)
Occasional use	1	2	3	0	6(14)
Discarded	1	4	4	0	9(22)
Sub-total	9	14	17	2	42(100)

Percentages between brackets.

Table 4 Reasons given by the patients for discarding or occasionally using their dentures.

	Maxillary RPD n = 9	Mandibular RPD n = 15
Pain and discomfort	5(56)	7(47)
Difficulty to tolerate	2(22)	5(33)
Damage to metal and acrylic making it ill fitting	1(11)	2(13)
Better function without it	1(11)	1(7)

Percentages between brackets.

Table 5 RPD experience by denture use.

		RPD experience		Total
		Yes	No	
Denture use	Frequent	35% (<i>n</i> = 18)	65% (<i>n</i> = 33)	100% (<i>n</i> = 51)
	Discontinued/ occasional	48% (<i>n</i> = 11)	52% (<i>n</i> = 13)	100% (<i>n</i> = 24)

Chi-square (χ^2) = 0.764 (*P* = 0.382).

7 RPDs (29%). The remaining 5 RPDs were discarded for other reasons like metal fracture, acrylic fracture and better function without it (Table 4).

The relationship between RPDs usage and RPD type, experience, Kennedy classification and opposing dentitions are presented in Tables 5–8. The highest type of discarded RPDs was Kennedy class II but it was not significantly different from the other types. The only statistical significance was found between RPDs usage and the status of the opposing dentitions.

4. Discussion

The patients in this study were interviewed 1 year after RPD insertion which is considered a short period. Nonetheless, over one third of the interviewed patients discontinued wearing their RPDs or used it only occasionally. This is considered a high rate of RPDs rejection, compared to the 24% reported by Wetherell and Smales (1980) for a similar follow-up period and the 11% reported by Cowan et al. (1991) 2 years after insertion. However, in the latter study, one third of the sample could not be contacted which could cause underestimation of dissatisfied patients. Other investigators have reported a higher rate of RPD non-use than this study but after longer follow-up periods (Jepson et al., 1995; Yeung et al., 2002). Yeung et al. (2002) have found that the average period of RPD use was 12 months for dissatisfied patients. It is expected that more patients will discard their RPDs after longer follow-up periods.

The results of this study cannot be generalized to the Saudi population because of the limitation of the type and size of the

Table 8 RPD type by denture use.

		RPD type		Total
		Acrylic	Co-Cr	
Denture use	Frequent	31% (<i>n</i> = 16)	69% (<i>n</i> = 35)	100% (<i>n</i> = 51)
	Discontinued/ occasional	38% (<i>n</i> = 9)	62% (<i>n</i> = 15)	100% (<i>n</i> = 24)

Chi-square (χ^2) = 0.276 (*P* = 0.599).

sample. However, it can give an insight into RPD patients' satisfaction treated in an academic setting. It should be noted that a student-treated patient sample may not necessarily apply to other government institutions or to private dental practice due to variations in patient population, quality control and treatment planning criteria.

There was no statistically significant association between RPDs usage and their Kennedy classification was found in this study. On the contrary, it has been shown that distal extension RPDs are often not well tolerated (Watson et al., 1986; Wetherell and Smales, 1980). The results of this study, however, are in agreement with other reports (Van Waas et al., 1994; Frank et al., 1998; Yeung et al., 2002).

The status of the opposing dentition was significantly related to RPD use. However, contrary to the finding of Frank et al. (1998), there was more RPDs rejection when they are opposed by natural teeth or complete dentures. These results suggest that patients treated by RPD in each jaw showed less RPDs rejection than patients treated by a single RPD in one jaw. There is no obvious explanation for this observation.

It would be expected that patients with previous denture experience would tolerate the RPDs better (Frank et al., 1998). However, in this study, denture experience did not show significant association with RPD use. Similar results were reported in previous studies (Akeel, 2009; Zlataric et al., 2003).

It was not possible in this study to verify if patients' rejection of RPDs were due to denture factors or patient factors. Although denture quality were shown to correlate to patient satisfaction, it was not sufficient to explain dissatisfaction of all patients (Akeel, 2009). In this study, however, the most

Table 6 Kennedy classification by denture use.

		Kennedy classification				Total
		I	II	III	IV	
Denture use	Frequent	27% (<i>n</i> = 14)	26% (<i>n</i> = 13)	39% (<i>n</i> = 20)	8% (<i>n</i> = 4)	100% (<i>n</i> = 51)
	Discontinued/occasional	8% (<i>n</i> = 2)	42% (<i>n</i> = 10)	46% (<i>n</i> = 11)	4% (<i>n</i> = 1)	100% (<i>n</i> = 24)

Chi-square (χ^2) = 4.692 (*P* = 0.196).

Table 7 Status of opposing dentition by denture use.

		Opposing dentition			Total
		CD	RPD	NT	
Denture use	Frequent	14% (<i>n</i> = 7)	82% (<i>n</i> = 42)	4% (<i>n</i> = 2)	100% (<i>n</i> = 51)
	Discontinued/occasional	17% (<i>n</i> = 4)	58% (<i>n</i> = 14)	25% (<i>n</i> = 6)	100% (<i>n</i> = 24)

Chi-square (χ^2) = 8.155 (*P* = 0.017), CD = complete denture, NT = natural teeth.

common reason for discontinued use of the denture was pain and discomfort. This is in accordance with the results of Yeung et al. (2002). Additionally, Koyama et al. (2008) have shown that pain was among the few factors significantly related to RPDs patients' satisfaction. The nature of complaints by patients in this study suggests a similar trend.

Other possible reason for not wearing RPDs is the reduced subjective need as suggested by Elias and Sheiham (1998). In addition, Graham et al. (2006) stated that patients' non-compliance in RPDs use is the results of the discrepancy between patients' perceived need and professionally assessed need. They considered that RPDs may be more hindrance than help for some patients when physical function is considered for the entire mouth.

In our study, it can be speculated that the patients' subjective need for a RPD was not high for the patients who discontinued their use. The RPDs are offered free for partially edentulous patients treated in the college. This could lead to overtreatment especially when the patients can function satisfactory without it. It has been suggested that RPDs use does not necessarily improve patient satisfaction unless it increases occlusal units (van Waas et al., 1994). Other studies have shown that improved esthetics are more important motivation for patients to wear RPDs than function (Graham et al., 2006; Koyama et al., 2008; Zlataric and Celebic, 2008).

It would require a great deal of tolerance and adaptation to use a RPD in an efficient way. Van Waas et al. (1994) have shown that older subjects with a RPD are in general less satisfied and report more problems than subjects without a RPD. They suggested limiting the indication for a RPD in the elderly people. The high number of discarded RPDs in this study supports the latter notion.

5. Conclusion

In conclusion, this study emphasizes the importance of careful patient's selection for RPDs. The possibility for patients' non-use of their RPDs should be considered as well as the cost effectiveness of RPD treatment. More research is needed to better understand reasons for patients' non-compliance.

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