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Quantitative assessment of some factors governing complete denture success

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SUMMARY

A questionnaire designed to assess satisfaction with their complete dentures was mailed to 258 edentulous patients. A total of 162 completed forms were returned. Patients were subdivided into satisfied and dissatisfied patients according to their questionnaire answers. The dissatisfied patients were older, had worn their dentures for a shorter period and required more post-insertion visits than patients in the satisfied group. These differences were statistically significant. The dissatisfied group of patients contained more females over the age of 51 years (designated as postmenopausal) than under this age when subjective criteria for success were used. The use of objective criteria did not reveal any statistically significant differences between the two age groups. There was little correlation between the dentist's and patient's evaluation of success.

OPSOMMING

'n Vraelys is aan 258 pasiënte wat volle kunsgebitte dra gestuur om vas te stel hoe tevrede hulle met hulle gebitte is. Altesaam 162 voltooide vorms is ontvang. Die pasiënte is volgens die antwoorde in twee groepe verdeel nl. tevrede en ontevrede. Die ontevrede pasiënte was ouer, het hulle gebitte vir 'n korter tyd gedra en het ook meer besoeke ná voltooiing van die werk verlang as die ander groep. Hierdie verskille is statisties betekenisvol. Die ontevrede groep het meesal uit vroue oor die ouderdom van 51 jaar (na-menoposaal) bestaan, wanneer subjektiewe maatstawwe vir sukses gebruik is. Volgens objektiewe maatstawwe was daar statisties geen betekenisvolle verskille tussen die twee ouderdomsgroepe nie. Verder was daar weinig verskil tussen die tandarts en die pasiënt se evalueering van sukses.

Human factors such as the behavioural and emotional characteristics of patients play an important role in prosthodontic treatment. Nevertheless, there is a paucity of quantitative information related to the exact role of these behavioural and emotional factors in prosthetic dentistry (International Prosthodontic Workshop, 1972; Silverman *et al*, 1976). Those investigations that have been carried out have been aimed at identifying potential patient problems by using psychological questionnaires and tests (Emerson and Gidden, 1955; Sobolik and Laerson, 1968; Bolender, Swoope and Smith, 1969; Litvak, Silverman and Garfinkel, 1971; Nairn and Brunello, 1971; Levin and Landesman, 1976; Silverman *et al*, 1976; Smith, 1976). This study was undertaken to quantify denture success and to relate this to certain patient characteristics.

MATERIALS AND METHODS

The subjects were 258 edentulous patients (186 females and 72 males) who had been treated by the same practitioner over a seven year period in a general practice confined to removable prosthodontics. These subjects were randomly selected and detailed records were available for each patient. All were caucasoids in the middle to upper class socio-economic group and possessed the educational background and language skills to answer the questionnaire.

A questionnaire (Fig. 1) comprising 8 questions to determine their assessment of their dentures, was mailed to each of the patients. Each question could be answered as "excellent", "good", "satisfactory", "poor" or "very bad". These answers were scored from 1 to 5 respectively. A success score was determined for each patient by calculating the mean for the answers of questions 1-6 for that patient.

At the time of completion of each set of dentures the

QUESTIONAIRE

Please complete this questionnaire by placing a cross (X) in the appropriate square.

PROJECT NUMBER	EXCELLENT	GOOD	SATISFACTORY	POOR	VERY BAD
1. How do you rate your dentures?					
2. How do you rate the appearance of your dentures?					
3. How do you rate your eating ability with dentures?					
4. How do you rate your speech with dentures?					
5. How do you rate the retention and firmness of the upper denture?					
6. How do you rate the retention and firmness of the lower denture?					

Do your dentures hurt or cause sore spots? .....

Do you have any further comments to make about your dentures or the denture service? .....

PLEASE RETURN THIS FORM IN THE ADDRESSED ENVELOPE.

Fig. 1 Questionnaire sent to patients

dentist recorded his assessment of the patients' satisfaction with those dentures, a score of 1 indicated total dissatisfaction and a score of 10 total satisfaction.

For analysis of the data, male and female patients were sub-divided according to their answers to the question, "How do you rate your dentures?". Those who replied excellent or good were termed satisfied and those who responded poor or very bad were classified as dissatisfied. The female patients were also subdivided into those 51 years of age and younger and those aged 52 years or more on the basis that the mean age of onset of the menopause in South African caucasoids is 51 years (Frere, 1971).

All data was recorded on computer coding forms, transferred onto punch cards and analysed on an IBM 370/158 computer using the Statistical Package for the Social Sciences (Nie *et al*, 1975). The statistical tests used to investigate differences between groups were the Students' test and the Chi-square test while the level of statistical significance chosen was $p<0,05$.

RESULTS

Completed forms were received from 162 individuals which was 63 percent of the sample. Of the 162 completed forms received, 91 (56%) were from satisfied patients, 32 (20%) were from dissatisfied patients and 39 (24%) were from the middle group who considered their dentures to be "satisfactory". This latter group was not included in the further data analysis which was, therefore, carried out on the replies of 123 subjects.

Of the 91 patients who were satisfied with their dentures, 25 were males and 66 were females. Four of the dissatisfied patients were males and 28 were females. The male to female ratio was, therefore, 1:2,6 for satisfied patients and 1:7 for dissatisfied patients. The apparently greater proportion of females in the dissatisfied group was not statistically significant ($X^2= 2,16$).

Table 1 lists the mean age of the patients, the mean number of years that dentures had been worn by each patient at the time of assessment, as well as the mean number of post-insertion visits for each subject. Use of Student's t test showed statistically significant differences between the satisfied and dissatisfied groups. The satisfied patients were significantly younger, had worn their dentures for a longer period and had required approximately half the number of post-insertion visits compared to the dissatisfied patients.

For the answers to Question 1, i.e. "how do you rate your dentures?" women aged 52 years or more rated the dentures significantly worse than did the women of 51 years or younger ($X^2 = 5,36$, $p<0,05$). No significant differences were found between these two age groups for their replies to the remaining 5 questions and for their success scores.

Correlation between the dentist's estimation of patient satisfaction and the patient's answer to Question 1, namely how do you rate your dentures?" was low. The lowest correlation was with the dissatisfied patient ($r = -0,05$) and the highest correlation was with the satisfied patients ($r = -0,18$), neither of which was statistically significant. Correlation of the calculated success score for each patient with the dentist's estimation of patient satisfaction was higher ($r= -0,45$) and was statistically significant ($p<0,001$).

DISCUSSION

The response to the questionnaire was approximately as had been expected. The findings presented in this

Table I Details of patients' age, length of time dentures had been worn and the number of post-insertion vists. Variations in n are due to a lack of knowledge of exact age, how long their dentures had been worn or where there was uncertainty over the number of post-insertion visits.

	Satisfied		Dissatisfied		Student's t	P
	n	mean ± SD	n	mean ± SD		
Age in years	83	55,9 ± 13,4	29	60,5 ± 11,0	1,66	<0,05
Years dentures worn	88	19,8 ± 11,5	30	14,6 ± 10,1	2,82	<0,002
Number of post-insertion visits	85	7,7 ± 9,8	24	14,5 ± 12,4	2,62	<0,002

study relate only to subjects who returned the questionnaire, so it is possible that the subjects analysed may comprise a biased sample and may not be fully representative of all the patients treated. The dissatisfied patients might have been motivated to use the questionnaire to express grievances whereas the satisfied patients might not have been motivated by the same strong feelings.

The use of an interviewer might have ensured a more random spread of subjects completing the questionnaire. However, it was decided not to use an interviewer as it was felt that it was equally possible that the interviewer might have influenced the patient's response.

There was a higher proportion of females compared to males in this study. However, as no statistically significant differences could be found between the mean success scores for male and female patients, Basker, Davenport and Tomlin's (1976) statement that many more intractable problems occur in women than in men could not be supported.

The high prevalence of females in this study is difficult to explain. Possibly the female patients might have been more prepared to go to the trouble of filling in the questionnaire. Other reasons that might have played a role include the longer life expectancy of females; the fact that it has been reported that among Americans, more women than men have lost their permanent teeth (Selected Dental Findings in Adults, 1965) and the same might be true in South Africa; and perhaps most important, females may have a higher motivation to seek dental treatment. This latter reason is supported through a study in a periodontal practice by Volchansky, Loudon and Flores (1977).

It has been suggested that post-menopausal females have more difficulty with their dentures than pre-menopausal females (Massler, 1951; Kimball (1960), Ramsay, 1970; Hearthwell, 1970; Anderson and Storer, 1973; Heartwell and Rahn, 1974; Sharry, 1974; Boucher, Hickey and Zarb, 1975; Lavelle, 1975; Basker, Davenport and Tomlin, 1976). As the age of onset of the menopause and possible perimenopausal hormone therapy was not known, it was not possible to test this hypothesis fully in our study. Subdivision of the female subjects into those above and below the mean age of onset of the menopause in South Africa did, however, not indicate that the female patient of 52 years or older was significantly less satisfied with her dentures.

Since life expectancy is increasing, the prosthodontist will be called upon to treat an increasing number of elderly patients. This study supports the hypothesis that older patients have more difficulty in adapting successfully to dentures (Anderson and Storer, 1975; Basker, Davenport and Tomlin, 1976; Boucher, Hickey and Zarb, 1975; Heartwell and Rahn, 1974; Ramsay, 1970). The oral manifestations of the ageing process may contribute to this (Boucher, Hickey and Zarb, 1975) as well as a progressive loss of neurones which cause a reduction in the ability of the older patient to form new reflex arcs (Anderson and Storer, 1973).

This study has shown that the longer the denture has been worn, the less problems the patient has. This may be explained by the fact that patients who have been wearing dentures for a longer period of time may have established "denture" reflex arcs and may be able to manipulate dentures more readily. After a longer period of time, they may also have resigned themselves to their edentulous predicament with greater equanimity (Koper, 1967).

Subjective assessment by the dentist has been shown in this study to have little correlation with patient scores, although there was a correlation between the dentist's assessment of patient satisfaction and the more objective questions 2-5 in the questionnaire. These findings emphasise the need for prosthodontists to develop objective standards for determining denture success.

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