

# The influence of some anamnestic, demographic, and clinical variables on patient acceptance of new complete dentures

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Information obtained by the dentist during a conventional anamnesis and clinical investigation has been claimed to be important in predicting how new complete dentures will be accepted by the patient. The main purpose of the present paper was to test this hypothesis. Seventy-four experienced denture wearers with an average age of 66 years were included in the study. These patients were interviewed concerning their dental history and satisfaction with old and new complete dentures. In the clinical examination, anatomical and physiological conditions of the oral cavity, the quality of the old dentures, and the general health of the patients were assessed. Sixty-six per cent of the patients were dissatisfied with their old dentures. With regard to the new dentures, 15% of the patients were dissatisfied. The major prosthodontic problems during the period of adaptation were pain related to the mandibular dentures and difficulties with speech. Correlations between patient acceptance of new dentures and the anamnestic, demographic, and clinical variables were either statistically or practically/clinically insignificant and therefore poor predictors of how new dentures would be accepted by the patients. □ *Clinical examination; interview; patient acceptance of health care; prosthetics*

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Studies of complete denture wearers have shown that between 20% and 30% are dissatisfied with one or both dentures (1-4). A somewhat smaller proportion of patients even refuse to wear such dentures at all or wear them only part of the day (5, 6). However, when evaluated by dentists, a considerably higher proportion of dentures is regarded as being unsatisfactory (2, 3, 7).

The complete dentures in the above-mentioned studies varied in age and technical standard. But even with new and well-constructed dentures, between 10% and 15% of the patients are still dissatisfied (8-11).

Patient satisfaction with complete dentures has been correlated with age (4, 12, 13), sex (1, 9, 14, 15), previous denture experience (16), the anatomy of the denture-bearing areas (10, 17), and patient opinion of old dentures (10).

The purpose of this investigation was to make a study of similar variables with par-

ticular emphasis on their effects on patient acceptance of new complete dentures.

## Material and methods

### *Patients*

Seventy-four patients with previous experience of complete dentures were studied. These included all the patients of this kind who had new dentures constructed at the Department of Prosthodontics, School of Dentistry, University of Bergen, in the period September 1977 to May 1978. The age and sex distribution of the patients is shown in Table 1.

### *Complete denture construction*

All the dentures were constructed by undergraduate students under the supervision of experienced prosthodontists. Patients were recalled after insertion for adjustments

Table 1. Age and sex distribution

Sex	Age, years						Total	
	<60		61-80		>80		No.	%
	No.	%	No.	%	No.	%		
Men	7	9	19	26			26	35
Women	11	15	35	47	2	3	48	65
Total	18	24	54	73	2	3	74	

Mean age, 66.3; range, 39-87; SD, 9.4.

of the dentures until no decubital ulcers could be observed on the oral tissues. All the dentures had to meet the departmental standards. Accordingly, the students received whatever assistance necessary from the teaching staff. This occasionally included relines and remakes.

#### Clinical variables

All the clinical variables were subjectively assessed by the author as follows:

*The shape of the denture-bearing area.* *Favorable* = well-developed alveolar ridge with definite vertical facial and/or lingual areas. *Fair* = alveolar ridge moderately resorbed, some relatively vertical areas. *Unfavorable* = alveolar ridge severely resorbed, completely or partially without vertical areas.

*The resilience of the denture-bearing area.* *Favorable* = tissues firm, not displaceable by palpation. *Fair* = tissues slightly displaceable by palpation. *Unfavorable* = tissues easily displaceable by palpation.

*The oro-facial musculature.* *Favorable* = no definite signs of hypertrophy of tongue and cheeks. *Unfavorable* = definite signs of hypertrophy of tongue and cheeks.

The reliability of the above assessments was tested by repeating the ratings of 38 randomly selected patients after a period of at least 1 week.

In addition to these anatomical and physiological variables, assessments were also made of the quality of the old dentures and the state of health of the patients.

*The quality of the old dentures.* *Acceptable* = no defects (of either occlusion, articulation, vertical dimension, fit, base material,

or teeth). *Fair* = only minor defects. *Poor* = some major defects. *Unacceptable* = many major defects.

*The state of health of the patients.* *Good health* = obvious good health, no history of acute or chronic illnesses. *Average health* = satisfactory health status, present illnesses well controlled. *Poor health* = obvious poor health, present illnesses not well controlled.

*Prediction of dental acceptance.* After the recording of dental history and clinical findings the author attempted to identify patients who might have problems accepting their new dentures. This subjective evaluation was based both on the clinical information mentioned above and on a psychological estimate of the patient.

#### Interview

All patients were given a structured interview. Questions relating to patient satisfaction with the old dentures and dental history were asked before the new ones were inserted. Questions concerning the new dentures were asked after the initial period of adaptation, usually between 2 and 4 weeks after their insertion. By this time there should be no ulcerations of the denture-bearing areas, and the quality of the dentures had been accepted by the department.

Patient satisfaction with the old and new dentures was recorded by means of the following variables: general satisfaction, the degree of satisfaction with comfort, retention, mastication, fit, esthetics, and speech. These variables were essentially the same as those used by Bolender et al. (18) and Smith (11). An additional question concerning the amount of pain and soreness associated with the use of the dentures was also included.

Patient responses to all variables except speech and use of dentures were grouped into one of four predetermined categories, two positive (very satisfied/comfortable; fairly satisfied/comfortable) and two negative (not quite satisfied/comfortable; dissatisfied/uncomfortable). Concerning speech, the following predetermined categories were used: no problem, some problems, definite problems. Use of old and new dentures were similarly grouped into the cat-

egories: dentures used day and night, one or more dentures removed at night, and dentures used occasionally or not at all.

Patients were informed of the alternative answers in the event that they were unable to answer immediately. They were instructed that negative and positive statements were equally interesting and that their answers would have no consequences for the student who treated them.

In some instances patients were unable to answer the questions; they could not make up their mind, were unable to remember, or might have problems understanding them. The number of observations on some of the variables may therefore be less than the number of patients.

*Statistical methods and analyses*

The observations were coded and analyzed with a computer program library (19). The following methods were used: univariate descriptive statistics, contingency tables, and product moment correlations.

The degree of observed agreement between repeated measurements was calculated separately. The results were corrected for chance agreement by using Scott's pi (20).

**Results**

*Dental history and clinical findings*

Variables indicating previous denture experience and the number of previous dentures are shown in Table 2. Concerning medication, 51% of the patients claimed that they were taking drugs regularly. One kind of drug was regularly taken daily by 29%, whereas 22% regularly used two or more drugs daily. In the group of regular drug users, 30% used psychopharmaceuticals. Eighty-three per cent of the patients had consulted a physician at least once during the past year.

Only 5% of the maxillary denture-bearing areas were anatomically unfavorable. The corresponding figure for the mandibular areas was 43% (Fig. 1). This difference was

Table 2. Some variables of dental history

Variables	$\bar{x}$	Range	SD
No. of years with complete mand. and max. dentures	19.9	1-50	14.2
No. of years with present maxillary dentures	16.8	1-43	10.6
No. of years with present mandibular dentures	14.1	1-43	9.7
No. of previous max. dentures	2.1	1-5	0.9
No. of previous mand. dentures	1.6	1-5	0.9

significant (chi-square (2) = 38.7,  $P < 0.001$ ). The anatomical condition of the mandibular areas was less favorable for women than for men (chi-square (2) = 8.5,  $P < 0.025$ ). No sex difference could be demonstrated for the maxillary areas. Approximately 20% were rated as having an unfavorable degree of resilience in both jaws (Fig. 1). No sex difference was found in either jaw for this variable.

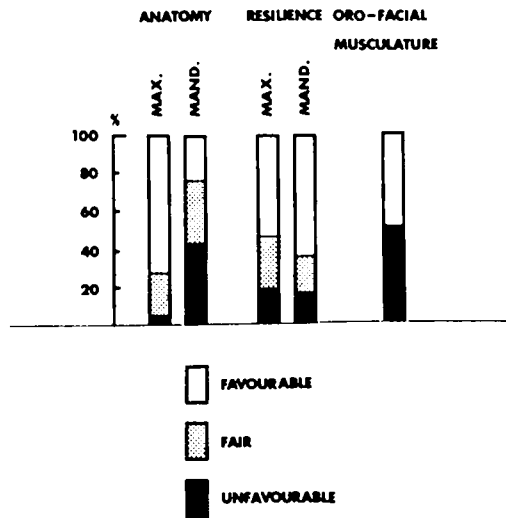


Fig. 1. Clinical evaluations of anatomy and resilience of denture-bearing areas and nature of oro-facial musculature.

Table 3. Intraexaminer variability of some clinical estimates

Variable	Total agreement		Scott's pi
	No.	%	
Anatomy max.	31	82	0.57
Anatomy mand.	32	84	0.76
Resilience max.	24	63	0.42
Resilience mand.	30	79	0.54
Oro-fac. musc.	29	76	0.53

The total number of repeated ratings was 38.

In 51% of the cases the oro-facial musculature was hypertrophic, rendering the construction and wearing of dentures difficult (Fig. 1). The oro-facial musculature was more often hypertrophic in women than in men (chi-square (1) = 3.9,  $P < 0.05$ ). The intraexaminer variability of the assessments of the shape and resilience of the denture-bearing areas and the nature of the oro-facial musculature is shown in Table 3.

When the old dentures were evaluated clinically, 92% were of an unacceptable poor

quality. Fifty-eight per cent of the patients appeared to be in average health, 23% in good, and 19% in poor health.

#### *Patient appreciation of old dentures*

Sixty-six per cent of the patients were, to various extents, dissatisfied with the old dentures. Between 60% and 70% had problems with comfort, retention, fit, and the amount of soreness and pain associated with the use of the mandibular dentures. The maxillary dentures seemed to be tolerated considerably better; less than 20% appeared to have similar problems (Fig. 2). More than one third of the patients were displeased with the esthetics of their old mandibular dentures. Fewer were displeased with the esthetics of the maxillary dentures, but the difference was not significant (Fig. 2).

Almost half the patients felt that they could not chew adequately with their old dentures. Speech, in comparison, seemed to cause fewer problems (Fig. 2). Both the old dentures were used day and night by 55% of the patients. At least one of the dentures was removed at night by 38%; 7% used

Table 4. Correlations between general patient satisfaction with new dentures and some variables of dental history and clinical findings

Variables	Correlations	No.
Age of patient	0.11	74
Sex	0.03	74
No. of years with complete mand. + max. dentures	-0.19	74
No. of years with max. dentures	-0.19	70
No. of years with mand. dentures	-0.25*	69
No. of previous max. dentures	-0.00	74
No. of previous mand. dentures	0.07	74
Use of drugs	0.01	73
Type of drugs	-0.01	37
No. of consultations with physician	-0.16	70
Use of dentures	0.30**	74
Anatomy max. area	-0.04	74
Anatomy mand. area	0.22	74
Resilience max. area	-0.10	74
Resilience mand. area	0.06	74
Oro-facial musculature	0.05	74
Clinical evaluation old dentures	-0.22	61
Clinical evaluation of pat. health	-0.13	74
Dentist estimate of problems	0.31**	74

\*Significance,  $p < 0.05$ .

\*\* Significance,  $p < 0.01$ .

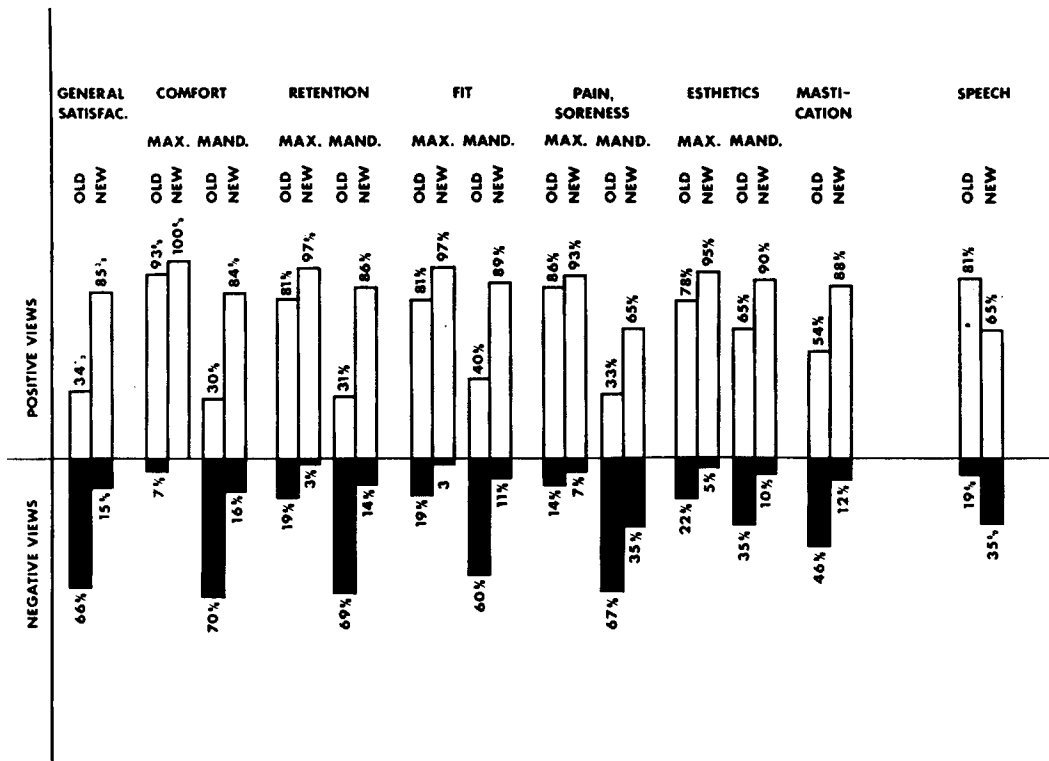


Fig. 2. Patient satisfaction with old and new dentures. Positive views: all variables except speech: very or fairly satisfied/comfortable; speech: no problems. Negative views: all variables except speech: not quite satisfied/comfortable or dissatisfied/uncomfortable; speech: some or definite problems.

their dentures either occasionally or not at all.

*Patient appreciation of new dentures*

Fifteen per cent of the patients were to some extent dissatisfied with their new dentures. Although patient satisfaction with the new mandibular dentures was greatly improved compared with the old ones, between 11% and 16% still had negative views about comfort, retention, and fit. As many as 35% had experienced pain and soreness with the mandibular denture during the adjustment period. In comparison, the maxillary denture seemed to cause few or no problems (Fig. 2).

Concerning esthetics, 5% of the patients were displeased with the new maxillary dentures. Almost twice as many were displeased with the new mandibular dentures. The dif-

ference was, however, not significant. Almost 90% of the patients were generally satisfied with mastication. Some problems with speech was experienced by 35%, whereas less than 20% had similar problems with the old ones (Fig. 2). This difference was significant (chi-square (1) = 4.9, P < 0.05).

Both the new dentures were used day and night by 42% of the patients. At least one denture was removed at night by 51%, and 4% of the patients used their new dentures only occasionally or never at all.

*Correlations*

Correlations between patient satisfaction with new dentures and variables of dental history and clinical findings are shown in Table 4. Correlations between satisfaction with new dentures and satisfaction with pre-

Table 5. Correlations between general patient satisfaction with new dentures and some variables related to patient satisfaction with old dentures

Variables	Correlations	No.
General satisfaction	0.17	74
Comfort max. dentures	-0.05	74
Comfort mand. dentures	0.17	74
Retention max. dentures	-0.02	74
Retention mand. dentures	0.19	74
Fit max. dentures	-0.14	72
Fit mand. dentures	0.24*	72
Pain, soreness max. dentures	-0.03	73
Pain, soreness mand. dentures	0.10	73
Esthetics max. dentures	-0.13	73
Esthetics mand. dentures	0.21	72
Mastication	0.06	74
Speech	0.27*	74

\* Significance,  $p < 0.05$ .

vious dentures are shown in Table 5. Five of these variables had significant correlations. Their absolute values, however, were low ( $r \leq 0.32$ ).

## Discussion

### *Criteria for selecting patients*

The problems of adaptation that confront a patient who has a replacement set of dentures made may be different from those of the new denture patient (21), the patient receiving one denture only with a full or partial natural dentition in the antagonist jaw (4), or the patient who is only having one of his dentures renewed. For this reason, the present investigation was limited to those already wearing complete dentures in both jaws.

### *Evaluation of clinical variables*

Because the clinical variables were recorded by only one person they might have been systematically over- or under-recorded. When these variables are correlated with patient satisfaction with dentures such over- or under-recordings will, however, not influence the value of the correlation coefficient (22).

The intraexaminer variability of the

assessments of the shape and resilience of the denture-bearing areas and the nature of the oro-facial musculature was fairly high for most variables (Table 3) but not worse than for some other dental variables, such as gingivitis and caries (23, 24).

### *Dental history and clinical findings*

The importance of a thorough examination of the anatomical and physiological conditions present in the oral cavity and a conscientious recording of the dental history of the patient is emphasized in standard textbooks on prosthodontics (25, 26). The inference is that with a proper knowledge of these factors, the dentist is able to foresee potential problems, with regard to both dental treatment and patient acceptance of the new dentures. This hypothesis, however, has never been properly tested as far as the problem of patient acceptance of dentures is concerned.

The age of the patient has been claimed to be important for the acceptance of complete dentures (25, 27), but little research has been done. Mäkilä (12) found that patients under 65 years of age were more capable of adapting to their dentures than those over 65 years. The patients in Mäkilä's study belonged to the lowest socio-economic group and paid little or nothing for their dentures. Such patients may be less demanding concerning their dentures than those who are more affluent. A possible age effect is therefore more likely to manifest itself. However, in agreement with several others (4, 13, 28), no significant age effect was found in this study.

In accordance with Michman & Langer (16) no significant correlation was found between patient satisfaction with dentures and the number of years with complete maxillary and mandibular dentures. Nor were significant correlations found between patient satisfaction with new dentures and the anatomy of the denture-bearing areas (Table 4). This last observation is in accordance with the findings of Seifert et al. (10). Mäkilä (17), on the other hand, found that the shape of the palate had an effect on patient satisfaction with retention. This

effect, however, could only be demonstrated on patients above the age of 65. In this connection it should be noted that it is difficult for one observer to assess reliably the anatomical condition of the denture-bearing areas (Table 3) and even more difficult for more than one (29). Conclusions, therefore, cannot be drawn.

Although sex differences with regard to the anatomical condition of the mandibular denture-bearing areas and the oro-facial musculature were indicated in the present study, no sex difference in the degree of patient acceptance of dentures could be demonstrated. As far as sex difference is concerned, there appears to be some disagreement between authors. Langer et al. (9) and Carlsson et al. (14) could find no such difference, whereas Silverman et al. (15) claimed that men accepted their dentures best. Barenthin (1) found that women were somewhat more 'sensitive' than men to the condition of their dentures. At any rate, it seems safe to conclude that sex is not a powerful predictor of patient acceptance of dentures.

The age of the old mandibular dentures, on the other hand, had a possible bearing on the chances of patient acceptance of new dentures (Table 4). This seems reasonable, because mandibular dentures are generally not as well tolerated as maxillary ones (Fig. 2). When patients with fairly recent mandibular dentures want new ones, they probably do so because their general tolerance of dentures is low.

However, patients usually overadapt to poor dentures (1, 7, 30), and their tolerance even seems to increase with the age of the dentures (31). In view of this, it is hardly surprising that patients who made little use of their old dentures were also somewhat more likely to be dissatisfied with their new ones (Table 4).

Only to a small extent was it possible to identify patients who would have problems accepting their new dentures. The correlation between actual patient satisfaction and dentist estimate of patient satisfaction with new dentures was significant (Table 4). However, the coefficient was so low that it must be regarded as trivial in a clinical context.

This reservation also applies to the former two variables.

The possibility cannot be precluded that variables other than those examined in the present study may be of importance. However, the present variables are among those that are most frequently mentioned (25, 26, 32).

In conclusion, only two out of eight variables concerned with dental history and clinical findings were significantly correlated with patient satisfaction with new dentures. These correlations had low values. The present findings, therefore, do not tend to support the hypothesis that such single variables have prognostic values of practical significance.

#### *Patient appreciation of old dentures*

The proportion of patients who were generally dissatisfied with their old dentures was more than twice as high as that reported by others (1, 2, 4). However, this difference could only be demonstrated with regard to the mandibular dentures. Furthermore, a higher proportion of patients was dissatisfied with masticatory function and esthetics than in previous reports (6, 33, 34). These differences in patient appreciation of dentures may be related to the fact that, unlike the patients in the above-mentioned reports, all the present patients were motivated for new dentures.

An interesting paradox in this connection, but outside the scope of this discussion, is why more than one third of the patients were relatively satisfied with their dentures and still motivated for new ones.

Of the factors concerned with patient appreciation of old dentures, only patient opinion regarding the fit of the mandibular dentures and speech were significantly correlated with general satisfaction with new dentures (Table 5). The values of the correlations were low and therefore without practical/clinical importance. Single variables concerned with patient appreciation of old dentures therefore appear to have little effect in predicting how new dentures will be accepted.

*Patient appreciation of new dentures*

Patient satisfaction with dentures has been recorded in different ways. In view of this, both reported and present results are remarkably similar. Even with new well-made dentures, between 10% and 15% of the patients will be dissatisfied to some extent (8–11). This confirms the clinical observation that successful treatment with complete dentures is not solely a technical problem and indicates that social and psychological factors may also play an important part (11, 14, 15, 35–37).

The new maxillary dentures were better accepted than the mandibular ones. The difference, however, was considerably reduced compared with the old dentures.

The most serious complaint with the new dentures was pain and soreness when the mandibular one was used (Fig. 2). However, most of these complaints were of a transitory nature; as the dentures were adjusted during the post-insertion period, the pain and soreness usually disappeared.

In accordance with the results of others (8, 11, 14), few patients claimed to be dissatisfied with the esthetics and mastication of their new dentures. Speech, on the other hand, caused more problems with the new dentures than with the old ones. Difficulties with speech seem to be quite common, particularly immediately after the insertion of new dentures. Mäkilä (12) has reported that 75% of denture patients experience such difficulties initially. After 1 year 23% still had problems with speech. This indicates that patients adapt more quickly to most of the other aspects of denture wearing.

In the present study 35% had similar problems. However, these patients were usually interviewed a few weeks after the insertion of their new dentures. By this time some adaptation with regard to speech had most likely taken place.

Even though the patients had been warned in the clinic against the potential hazards of keeping their dentures in place all the time, there was no difference in the use of the old and new dentures. The deterioration in appearance when the dentures are removed probably makes it difficult for the patient to

follow the advice of the prosthodontist in this respect.

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