ADA CE Program ARTICLE 3

The relationship between various parameters of complete denture quality and patients' satisfaction

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ABSTRACT

Background. Patients' appreciation of their conventional complete dentures might be affected by the quality of the dentures.

Methods. A random sample of 33 edentulous patients who were rehabilitated by means of conventional complete dentures participated in the study. Three independent investigators who underwent technique calibration evaluated the dentures on the basis of seven clinical criteria by using a validated examination form. The patients filled out a validated denture satisfaction scale. The author used Pearson product-moment correlation and analysis of covariance to identify possible correlations.

Results. The study results showed that most patients were between "reasonably satisfied" and "very satisfied" with their dentures. The author found nominally higher satisfaction among those receiving both mandibular and maxillary dentures and significant positive correlations between the overall denture satisfaction score and the stability of the mandibular denture ($P = .039$) and retention of the mandibular denture ($P = .005$). In contrast, esthetic lip support and lower lip line, occlusion, and maxillary stability and retention were not correlated with participants' overall satisfaction level ($P > .064$).

Conclusions. The results of this study show that a clinically stable mandibular denture was the most important determinant of patients' satisfaction.

Practical Implications. The study findings highlight the most important denture quality parameters that can aid clinicians in meeting their patients' expectations.

Key Words. Complete dentures; patient satisfaction; retention; stability; mandibular; maxillary.
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The majority of developed countries continue to experience three major demographic shifts: population growth, urbanization and aging. In addition, the proportion of elderly people around the world is higher than that of other age groups.[1]

Tomorrow's elderly (those now aged 45 to 64 years) have experienced improved oral health compared with that of previous generations. Given demographic trends pointing toward a continuing and rapid increase in the size and median age of the older population, one could speculate that there should be a decrease in the incidence and prevalence of edentulism—on a percentage basis—among the entire population because of improved oral health. However, this percentage decrease will be more than offset by the growth in the absolute number of people 55 years or older who will be edentulous.[2] Hence, we can expect an overall increase in the need for prosthodontic treatment among the edentulous population for the foreseeable future.

Despite the numerous treatment modalities available for the rehabilitation of edentulous people, a considerable number of patients, out of necessity or choice, receive conventional complete dentures. Moreover, in spite of the quality of such fabricated dentures, a patient's ability to wear them almost always is a challenging process.

Few researchers have investigated the relationship between complete denture quality and patient satisfaction. Some reported that the clinical quality of complete dentures is not a significant factor in determining patient satisfaction and denture use.[3-9] To address this issue, Fenlon and Sherriff[3] surveyed 363 patients with complete dentures by means of a self-administered questionnaire. The purpose of the questionnaire was to investigate the effect of the quality of new dentures on patient satisfaction at three months and two years. The authors concluded that the initial clinical quality of the dentures was

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not a significant factor with regard to patient satisfaction two years after the completion of treatment.

Similarly, Heydecke and colleagues[9] conducted a study in which clinicians and patients rated the success of complete dentures in terms of esthetics, stability, speech and general satisfaction at two months. The authors found only a poor correlation between patients' and clinicians' ratings of the same variable. In contrast, other researchers have reported that the quality of complete dentures plays a role in patient satisfaction.[10-14] Anastassiadou and Robin Heath[15] examined clinical variables and satisfaction in 119 people who wore complete dentures. The authors found a significant association between denture quality variables (that is, freeway space, retention and stability) and patient satisfaction. In a study conducted in Netherlands, van Waas[10] investigated the relationship between the technical quality of new complete dentures and patient satisfaction; the study results showed a moderately positive correlation.

Given these conflicting findings, it is reasonable to conclude that the scientific evidence regarding the relationship between clinicians' evaluations and patients' ratings of conventional complete dentures is inconclusive.

The three clinicians examined patients by using a denture quality evaluation form developed to assess the dentures objectively on the basis of seven criteria.

In studies focusing on patient-based outcomes, it is crucial for researchers to use validated denture evaluation forms and psychometric instruments. Moreover, they must calculate intraexaminer and interexaminer reliability to deem the results of such studies valid.

I conducted this study to investigate the relationship between certain parameters pertaining to the quality of complete dentures and patients' satisfaction level. The null hypothesis was that there is no correlation between the quality of complete dentures and the level of patients' satisfaction.

METHODS

Sample size calculation revealed that 22 participants were required to achieve a power of more than 80 percent to detect a correlation as large as $r = 0.56$ at a significance level of $\alpha = .05$. The human ethics board at the College of Dentistry, King Saud University, Riyadh, Saudi Arabia, approved the study protocol (protocol reference no. NF2400).

Three independent investigators identified 124 eligible patients from a pool of patients who were rehabilitated by means of conventional complete dentures from September 2009 to January 2013. The inclusion criteria required patients to be wearing their dentures currently and to be able to communicate clearly with the clinician. Exclusion criteria included the presence of physical disorders or psychological disorders that precluded normal oral function, the patient's undergoing a clinical examination, or the completion of questionnaires. The three investigators selected a random sample of 33 patients by picking names from a list.

Different clinicians, who were not involved in the study, fabricated each set of dentures so that the study could achieve external validity. The clinicians processed all dentures by using a compression molding laboratory procedure to ensure standardization.

At the start of the study, the three independent investigators discussed the study protocol in detail with each of their patients and obtained informed, witnessed and signed consent.

Denture quality evaluation. The three clinicians examined patients by using a denture quality evaluation form that we developed to assess the dentures objectively on the basis of seven criteria: esthetics (lip support, lower lip line),[16] retention and stability of both maxillary and mandibular dentures[17] and balanced occlusion. All clinical parameters were described precisely on the form and scored on a dichotomous scale (satisfactory = 1 and unsatisfactory = 0). The coefficient for the internal consistency (that is, Cronbach α) of this form is 0.69, indicating acceptable reliability.

Patients' satisfaction. After completing the clinical examinations, the three clinicians collected patient-based outcomes data by using an Arabic version of the self-reported denture satisfaction scale.[18] This version of the scale has a Likert-type response format that ranges from 1 ("not at all satisfied") to 5 ("totally satisfied"). The 12 variables assessed on this scale included the following: general satisfaction, retention, stability, comfort, speech (that is, the ability to speak), appearance/esthetics and chewing efficiency for both maxillary and mandibular dentures. The clinicians and I created a total satisfaction score by averaging the sum of the scores for the individual items; higher scores indicate greater satisfaction.

Statistical analysis. A statistician analyzed the data by using JMP statistical software (SAS, Version 11.0, SAS Institute, Cary, N.C.). With the exception of mean scores, all variables are presented as frequencies (number and percentage). The statistician used Pearson product moment correlation to determine associations of interest between the various clinical variables and satisfaction parameters measured. In addition, he used analysis of covariance (ANCOVA) to test for differences between

ABBREVIATION KEY. **DQE:** Denture quality evaluation. **DS:** Denture satisfaction. **NA:** Not applicable.