

ASSOCIATION OF PATIENT RELATED FACTORS WITH NEW COMPLETE DENTURES SATISFACTION — A STUDY

¹FAHIMULLAH

²MUHAMMAD RAZA

³MOHANMMAD SARTAJ KHAN

⁴SADIA AKRAM

⁵BADSHAH AFSAR

ABSTRACT

Objective of this study was to evaluate the association of patient related factors with complete denture satisfaction. Present study was carried out in the Prosthodontics department of Dental College during the period 2011-13. After preliminary examination new complete dentures (CD) were provided to 57 patients. To evaluate patient satisfaction with their CDs, a self-completed patient denture rating questionnaire, covering six items relating to denture esthetics, speech, mastication, retention, comfort and overall satisfaction was used. Associations between the clinical characteristics and patient satisfaction with CDs were analyzed using SPSS.

Younger women and patients with low socioeconomic were less satisfied as compared to older males and patients having high socioeconomic status. Moreover patients with favorable anatomical structures were more satisfied with their dentures.

Suitable denture fabrication, and proper instructions to the patients lead to better satisfaction by the patients.

Key Words: Complete Denture, Anatomical structures, Satisfaction.

INTRODUCTION

A decline in edentulism rates was documented in the last decade of the twentieth century.¹ However, due to ageing of the society, it is estimated that the number of edentulous patients will not decrease.¹ It deserves to be noted that the complete dentures (CDs) are commonly supply accepted as they provide a pleasing appearance and maintain normal speech, as well as occlusal support and adequate means for mastication of food.¹⁻⁴

Difficulties in the acceptance of dentures are multifactorial, therefore, the risk of the dissatisfaction should be considered. Satisfaction with CDs has been associated with several factors as confirmed by several studies.⁵⁻⁹ Among these factors, general health, age,

gender, personality traits, experience with previous dentures and patient expectation regarding treatment were evaluated in previous studies. Furthermore, it has been shown that patient satisfaction is unrelated to denture quality and to sophisticated techniques for the treatment.⁵⁻¹⁰

According to literature patient's adaptation to CDs is strongly related to the anatomical conditions, which combines denture quality and the characteristics of denture supporting tissues (DSTs). Thus, the discrepancy between the dentist's evaluation of denture quality and the patient's subjective judgment may result from inappropriate assessment of the quality of the denture-bearing surfaces.¹¹ Two other studies concluded that the shape of the residual edentulous ridge influences patients' satisfaction and the use of new dentures.¹¹⁻¹² The quality of the denture supporting tissues that is dependent upon the condition of anatomical structures seems to be more important for successful CD therapy. Large residual ridges provide better support and stability for the denture base than those which are relatively resorbed. According to a recent review of the literature, studies on this area are equivocal and lack standardized methodologies for direct comparison.¹³ Since prognostic indicators are

¹ Fahimullah, Associate Professor Department of Prosthodontics, Peshawar Dental College, Peshawar

² **Corresponding Author:** Dr Muhammad Raza, FCSP, Assistant Professor Prosthodontics, Peshawar Dental College, Warsak Road, Peshawar Email: hmraza77@yahoo.com Cell: 0333-9985955

³ Muhammad Sartaj Khan, FCPS, Assistant Professor, Department of Prosthodontics, College of Dentistry, Aljuf University, KSA

⁴ Sadia Akram, BDS, Lecturer, Department of Prosthodontics, Peshawar Dental College, Peshawar

⁵ Badshah Afsar, BDS, Lecturer, Department of Prosthodontics, Peshawar Dental College, Peshawar.

Received for Publication: June 24, 2016

Revised: August 27, 2016

Accepted: August 28, 2016

likely to take on increasing importance as a diagnostic tool for selection of patients for CDs provision, the need for further research in this area has never been higher.¹¹⁻¹³

Therefore, the purpose of this study was to evaluate the association between oral condition and satisfaction with CDs in local patients using a standardized and reproducible methodology. The research hypothesis was that the quality of the denture supporting tissues may influence treatment outcome with conventional CDs.

METHODOLOGY

All edentulous patients reporting for CD treatment at the prosthodontic department of Dental College between January 2011 and December 2013 were invited to participate in the study. After a preliminary examination, patients exhibiting gross congenital / surgical defects or severe manifestations of systemic diseases in their denture supporting tissues were excluded from the study. Very ill, handicapped and uncooperative subjects were also not included. Each edentulous patient was seated in a dental chair. After explaining the purpose of the study and obtaining informed consent, data from each subject were collected by a single examiner in a standardized manner using a specifically structured two part data collection Performa. In the first part, data related to each of the subject's personal information including their age, gender, and socioeconomic status were collected. The second part of the data collection sheet was used to collect data pertaining to the various anatomical structures of the edentulous maxillary and mandibular. The anatomical structures of the maxilla that were considered as important in CD prognosis included; residual alveolar ridge height and width, hard palate depth, arch form, arch size, soft palate / throat morphology, median palatal fissure, border tissue attachment levels, alveolar mucosa, maxillary tuberosities and tori. In the mandible, residual alveolar ridge height and width, arch form, arch size, border tissue attachment levels, alveolar mucosa, lateral throat form and mandibular tori were noted. Descriptive features of each of the mentioned anatomic structures rendering them as unfavorable (score 1 features) and favorable (score 2 features) are detailed in (Table 1).

A set of CDs was fabricated for all completely edentulous patients by one Assistant Professor using a standardized technique. Primary impressions of edentulous maxilla and mandible were recorded in edentulous stock trays in irreversible hydrocolloid impression material (Algin major). After obtaining the preliminary casts in dental stone, custom trays were fabricated in self-cure acrylic resin. The borders of the trays were shortened by an amount of 2mm. After performing border molding with the green stick

impression compound, secondary impressions were recorded in Zinc Oxide Eugenol impression material (Cavex Holland). Temporary denture bases in self-cure acrylic resin were fabricated on the master casts thus obtained. Wax occlusal rims were mounted on for the subsequent recording of vertical dimension of occlusion (VDO) and centric relation (CR). These were then mounted on a Hanue semi-adjustable articulator and artificial teeth were arranged. The dentures were then trial checked and processed in heat cure acrylic resin by compression molding technique. The finished and polished dentures were inserted. Borders were adjusted and occlusion was balanced in CR.

To evaluate patient satisfaction with their CDs, a self-completed patient denture rating questionnaire, covering six items relating to denture esthetics, speech, mastication, retention, comfort and overall satisfaction was used. The answers for satisfaction could range from 1 (unsatisfied) to 10 (highest level of satisfaction). All the questions were explained to the patients, as to enable them to understand meanings of each question. All the patients were asked to choose the numbers according to their satisfaction. After completing the treatment, all the patients were asked after six months post-insertion follow up visit to choose the numbers according to their satisfaction. The Mann Whitney test was used to test the association between the satisfaction score and gender while Spearman's correlation test was used to determine the correlation between age and above mentioned score. The associations between the clinical characteristics of the maxillary and mandibular denture supporting tissues and patient satisfaction with CDs were analyzed. Confidence level was set at 95% ($p < 0.05$).

RESULTS

Fifty-seven patients, 24 (42.1%) male and 33 (57.95%) female with age range between 40-70 years were included in the study (Table 2). No missing data was found at follow up stage. Relationship of gender to satisfaction level is shown in (Table 3). There was no significant association between all the six aspect of satisfaction relating to denture like esthetics, speech, mastication, retention, comfort and overall satisfaction and gender ($p=0.83$, $p=0.37$, $p=0.85$, $p=0.48$, $p=0.06$, $p=0.86$) Table 3. Overall males were more satisfied with their CDs than females. Patients age group 40-50 years were less satisfied than older patients but the difference was statistically insignificant among different age groups, no correlation was found between all six items esthetics, speech, mastication, retention, comfort and overall satisfaction and age ($p=0.88$, $p=0.32$, $p=0.86$, $p=0.43$, $p=0.07$, $p=0.92$) Table 3. Concerning duration of edentulism and satisfaction there was no significant relation with p value 0.318. Patients having

TABLE 1: DESCRIPTION OF UN-FAVORABLE (SCORE 1) AND FAVORABLE (SCORE 2) FEATURES OF THE VARIOUS ANATOMICAL STRUCTURES / ASPECTS OF THE MAXILLARY DSTS*.

Un-Favorable (score 1) features of anatomic structures / aspects	Favorable (score 2) features of anatomic structures / aspects
Residual alveolar ridge height / width: Inadequate height but adequate width. Flat ridge (inadequate height and width). Arch size & form: Small size and or Tapering form. Alveolar mucosa: Hypertrophic / Atrophic mucosa Maxillary tuberosity: Bulbous / undercut or moderate to severely resorbed. Hard palate depth: High deep (> 15 mm). Soft palate/Throat Morphology (House 1958): Class III Mid palatal fissure: Present Border tissue attachment level (Labial): Less than 7.5 mm apical to the ridge crest. Border tissue attachment level (Buccal): Less than 7.5 mm apical to the ridge crest. Tori: Present. Lateral throat form: Class I & II (House 1958)	Residual alveolar ridge height / width: Round Crest with adequate height and width. Round Crest with adequate height but inadequate width. Arch size & form: Large or medium size and /or Square or Ovoid form Alveolar mucosa: Firm taut over the bone. Maxillary tuberosity: Moderately curved in A-P direction with some vertical inclination in the hamular notch area. Hard palate depth: Shallow or Medium (<15 mm). Soft palate / Throat Morphology (House 1958): Class I or Class II. Mid palatal fissure: Not present. Border tissue attachment level (Labial): More than 7.5 mm apical to the ridge crest. Border tissue attachment level (Buccal): More than 7.5 mm apical to the ridge crest. Tori: Not Present. Lateral throat form: Class III (House 1958)

TABLE 2: GENDER DISTRIBUTION OF PATIENTS AMONG DIFFERENT AGE GROUPS

Patient Age	Gender		Total
	Male	Female	
40-50 years	2 (3.5%)	12(21.0%)	14(24.6%)
51-60 years	9(15.8%)	19(33.3%)	28(49.1%)
61-70 years	13(22.8%)	2(3.5%)	15(26.3%)
Total	24(42.1%)	33(57.9)	57(100%)

TABLE 3: CORRELATION AND ASSOCIATION RESULTS OF THE INVESTIGATED PARAMETERS

Para-meters	Esthetics		Speech		Mastication		Retention		Comfort		Overall satisfaction	
	Be-fore	After	Be-fore	After	Be-fore	After	Be-fore	After	Be-fore	After	Be-fore	After
Age	0.62	0.88	0.48	0.32	0.67	0.86	0.66	0.43	0.04	0.07	0.37	0.92
Gender	0.65	0.83	0.43	0.37	0.66	0.85	0.61	0.48	0.03	0.06	0.29	0.86

TABLE 4: SATISFACTION SCORE LEVEL AMONG DIFFERENT SOCIOECONOMIC GROUPS

Satisfaction Score	Very low	Low	High	Very High
1-5	6(10.5%)	3(5.3%)	1(1.7%)	0(0.0%)
6-10	22(38.6%)	15(26.3%)	6(10.5%)	4(7.0%)
Total	28(49.1%)	18(31.6%)	7(12.3%)	4(7.0%)

TABLE 5: SATISFACTION SCORE LEVEL FOR UNFAVORABLE/ FAVORABLE ANATOMICAL STRUCTURES.

Satisfaction Score	Unfavorable	Favorable
1-5	8(14.0%)	2(3.5%)
6-10	1(1.7%)	46(80.7%)
Total	9(15.8%)	48(84.2%)

shorter duration of edentulism scored less satisfaction with their CDs. A significant association ($p=0.002$) was observed with regard to socioeconomic status and satisfaction level. Poor patients were less satisfied with their CDs (Table 4). The relationship of the patients oral condition satisfaction level was highly significant ($p=0.000$) indicating that patients with unfavorable anatomical edentulous jaw structure scored very low satisfaction scores (Table 5).

DISCUSSION

Patients' satisfaction with their dentures is fundamental to improving oral health-related quality of life among edentulous individuals. Performance of complete dentures is evaluated by measuring outcome like longevity, function and esthetics. Both the clinicians' as well patient's appraisals are important for assessing the efficiency of a prosthesis. A recent study confirms the prosthesis positively influenced the patient quality of life, ability to perform and degree of satisfaction.¹⁰ This study results regarding patient satisfaction are an important information that can guide clinicians to provide treatment that will fulfill patient's demands and expectations.¹¹⁻¹³

Most dentists suggest that patient's age has an effect on their ability to adapt to new dentures.¹² This assumption is based on the idea that older patients need time to adjust to dentures. A number of studies 10-15 found no correlation among complete dentures, patient age, and patient satisfaction. However in our study young group were less satisfied from the esthetic of their denture, speech and comfort of wearing denture than the older one.

Generally, women are more concerned about aesthetics and are usually not satisfied with their dentures. However, this concept is old fashioned. Modern articles 16 have concluded that significant differences exist between genders regarding their acceptance and satisfaction related to dentures aesthetics, chewing, general satisfaction, retention, and comfort of wearing. Like the old fashioned concept, in our study group females were unsatisfied. The reason may be mostly the participants' belonged to rural areas of Peshawar having low socio economic status. Moreover two previous studies¹⁷⁻¹⁸ had shown correlation between socioeconomic status

and denture satisfaction. The lower the socioeconomic status, the lower the satisfaction level.

Dentures made in poor oral conditions are more difficult to wear, which reduces patient's satisfaction. The most influential factor in the influence of oral conditions on patient's satisfaction seems to be the mandibular ridge. Poor ridge leads to lower satisfaction. Similarly from present results it can be seen that patients having unfavorable ridges were dissatisfied from their dentures. Resorbed mandibular ridges have a consequence of poor satisfaction rate with mandibular dentures. Mandibular dentures with reduced satisfaction rate have been shown to be a good predictor of dissatisfaction with new dentures.¹⁹⁻²²

The quality of denture has a debatable impact on patient approval. Some authors report that quality of denture does not meet the criteria of the patient.¹¹⁻¹² In a similar study, patient's accepted their dentures despite technical problems, even patients with unfavorable anatomical structures received complete dentures and were satisfied.¹³ However, there was an increase in patient satisfaction as the quality of denture, that is retention and stability were improved. Other studies strongly supported the relationship between denture quality and patient satisfaction.¹⁷⁻¹⁹ This study showed similar results, increase in retention will lead to more patient satisfaction.

REFERENCES

- 1 Douglass CW, Shih A, Ostry L. Will there be a need for complete dentures in the United States in 2020? *J Prosthet Dent* 2002; 87: 5-8.
- 2 Zitzmann NU, Hagmann E, Weiger R. What is the prevalence of various types of prosthetic dental restorations in Europe? *Clin Oral Implants Res* 2007; 18: 20-33.
- 3 Naeem S, Qazi SR, Saeed MQ. Edentulous patients among lower socioeconomic group of rural Lahore area: a cross-sectional study. *Pak Oral Dent J* 2004; 24: 219-21.
- 4 Carlsson GE. Facts and fallacies: an evidence base for complete dentures. *Dent Update* 2006; 33(3): 134-42.
- 5 Kovac Z, Troskot Z, Uhac I, Cabov T, Lajnert V, Pavicić DK, et al. Multivariate analysis of different factors affecting the patient general satisfaction with complete dentures. *Coll Antropol* 2012; 36(3): 791-94.
- 6 Marachlioglou CR, Dos Santos JF, Cunha VP, Marchini L. Expectations and final evaluation of complete dentures by patients, dentist and dental technician. *J Oral Rehabil* 2010; 37(7): 518-24.
- 7 Baracat LF, Teixeira AM, dos Santos MB, da Cunha VD, Marchini L. Patients' expectations before and evaluation after dental implant therapy. *Clin Implant Dent Relat Res* 2011; 13(2): 141-45.
- 8 de Lima EA, dos Santos MB, Marchini L. Patients' expectations of and satisfaction with implant-supported fixed partial dentures and single crowns. *Int J Prosthodont* 2012; 25(5): 484-90.
- 9 de Siqueira GP, dos Santos MB, dos Santos JF, Marchini L. Patients' expectation and satisfaction with removable dental prosthesis therapy and correlation with patients' evaluation of the dentists. *Acta Odontol Scand* 2013; 71(1): 210-14.

- 10 Gaspar MG, Dos Santos MB, Dos Santos JF, Marchini L. Correlation of previous experience, patient expectation and the number of post-delivery adjustments of complete dentures with patient satisfaction in a Brazilian population. *J Oral Rehabil* 2013; 40(8): 590-94.
- 11 Fenlon MR, Sherriff M. An investigation of factors influencing patients' satisfaction with new complete dentures using structural equation modelling. *J Dent* 2008; 36: 427-34.
- 12 Ghani F, Fahimullah. Attributes of maxillary complete denture supporting tissues in subjects at a dental hospital. *JPMI* 2010; 24: 174-81.
- 13 Critchlow SB, Ellis JS. Prognostic indicators for conventional complete denture therapy: a review of the literature. *J Dent* 2010; 38: 2-9.
- 14 Gaspar MG, dos Santos MBF, Dos Santos JFF, Marchini L. Correlation of previous experience, patient expectation and the number of post-delivery adjustments of complete dentures with patient satisfaction in a Brazilian population. *Journal of Oral Rehabilitation*. 2013; 40(8): 590-94.
- 15 Miranda BB, Dos Santos MB, Marchini L. Patients' Perceptions of Benefits and Risks of Complete Denture Therapy. *J Prosthodont*. 2014.
- 16 Shrivastava R, Srivastava R, Shigli K, Prashanth MB, Kumaraswamy BN, Nethravathi TD. Assessment of dental anxiety and its correlation with denture satisfaction in edentulous patients. *J Contemp Dent Pract*. 2012; 13(3): 257-60.
- 17 Celebić A, Knezović-Zlatarić D, Papić M, Carek V, Baucić I, Stipetić J. Factors related to patient satisfaction with complete denture therapy. *J Gerontol A Biol Sci Med Sci*. 2003; 58(10): M 948-53.
- 18 Baran I, Ergün G, Semiz M. Socio-demographic and economic factors affecting the acceptance of removable dentures. *Eur J Dent*. 2007; 1(2): 104-10.
- 19 Michaud PL, de Grandmont P, Feine JS, Emami E. Measuring patient-based outcomes: is treatment satisfaction associated with oral health-related quality of life? *J Dent*. 2012; 40(8): 624-31.
- 20 Gjengedal H, Berg E, Boe OE, Trovik TA. Self-reported oral health and denture satisfaction in partially and completely edentulous patients. *Int J Prosthodont*. 2011; 24(1): 9-15.
- 21 Huuonen S, Haikola B, Oikarinen K, Söderholm AL, Remes-Lyly T, Sipilä K. Residual ridge resorption, lower denture stability and subjective complaints among edentulous individuals. *J Oral Rehabil*. 2012; 39(5): 384-90.
- 22 Yamaga E, Sato Y, Minakuchi S. A structural equation model relating oral condition, denture quality, chewing ability, satisfaction, and oral health-related quality of life in complete denture wearers. *J Dent*. 2013; 41(8): 710-17.
- 23 Costa AP, Machado FC, Pereira AL, Carreiro AaF, Ferreira M. Technical quality and satisfaction related to full conventional dentures. *Cien Saude Colet*. 2013; 18(2): 453-60.
- 24 Bilhan H, Erdogan O, Ergin S, Celik M, Ates G, Geckili O. Complication rates and patient satisfaction with removable dentures. *J Adv Prosthodont*. 2012; 4(2): 109-15.

CONTRIBUTIONS BY AUTHORS

- | | |
|---------------------------------|----------------------------------|
| 1 Fahimullah: | Execution and generation of idea |
| 2 Muhammad Raza: | Researcher and writer |
| 3 Mohanmmad Sartaj Khan: | Literature provider |
| 4 Sadia Akram: | References writing |
| 5 Badshah Afsar: | Facilitator |