

Evaluation of pre-denture expectations, role of clinical variables and denture quality with post-denture satisfaction in local geriatric population.

Dr. Ashwini Kini

Associate Professor, Department of Prosthodontics, D.Y. PATIL (Deemed to be University) School of Dentistry

Dr. Mayuri Bachhav

Associate Professor, Department of Prosthodontics, D.Y.PATIL (Deemed to be University) School of Dentistry

Dr. Yogesh Kini

Professor and H.O.D., P.G. Guide, Department of Oral and maxillofacial surgery. D.Y. PATIL (Deemed to be University) School of Dentistry

Dr. Vidhi Karia

Postgraduate students, Department of Prosthodontics, D.Y.PATIL (Deemed to be University) School of Dentistry

Dr. Rishabh Shetty

Postgraduate students, Department of Prosthodontics, D.Y.PATIL (Deemed to be University) School of Dentistry

Dr. Simral Mathews

Postgraduate students, Department of Prosthodontics, D.Y.PATIL (Deemed to be University) School of Dentistry

Abstract:

Objective: This study investigated the relation between pre-denture expectation, influence of clinical variables and denture quality on post denture satisfaction.

Materials and Method: A study population of 52 patients seeking complete denture treatment at the Department of Prosthodontics, was randomly selected. Among them 38 were males and 14 were females. Each patient was given a questionnaire; wherein they stated their order of expectation before receiving the denture. The oral condition and denture quality were assessed clinically. Patients were requested to complete another questionnaire (post denture insertion) that was designed to show a semi quantitative degree of satisfaction with their dentures during a 3 month follow-up period.

Results: A significant difference between proportions of order of expectations & satisfaction in patient's pre and post denture was seen. No correlation was found between satisfaction and the influence of clinical variables. A weak correlation was found between satisfaction and denture quality.

Conclusion: Patient's expectation before receiving the new denture can be measured; this can act as a guide for the dentist in educating the patient. Only a moderate role is played by the denture quality and clinical variables in post denture satisfaction.

Keywords: Pre-denture expectations, post-denture satisfaction, clinical variables, denture quality.

Introduction

Research has indicated that pre-treatment expectations of patients can profoundly influence treatment outcomes in medicine and dentistry alike¹.

The patient's attitude towards the denture is also often mentioned as an important factor for the acceptance and satisfaction with complete denture treatment². Several studies have shown a correlation between denture satisfaction and denture quality. Association between denture satisfaction and anatomic conditions has been poor or nonsignificant³. According to Albino *et al*⁴ many prosthetic failures result not from technical difficulties but from a mismatch between the perceptions and treatment expectations of the patient and those of the dentist. Most of the patients seeking denture treatment expect dentures to be comparable both functionally and esthetically, to natural dentition¹. Complete dentures can be a disappointment to such patients, thus causing difficulty in acceptance of the prosthesis. Many factors such as the quality of denture and physical condition of the mouth seem to influence a patient's satisfaction with complete dentures⁵. The patient's attitude towards dentures is often mentioned as an important factor for acceptance of complete dentures^{6,7}. Although many authors indicate towards educating the patients to a realistic view on limitations of denture wearing⁸ there have been few studies related to denture satisfaction. Many investigators have found a moderately positive relationship^{9,10}, a weak relationship or no correlation at all¹¹. Few researchers have studied the correlation between pre-denture expectations, physical conditions of the mouth, denture quality and patient's post denture satisfaction. This study aimed at studying the correlation between pre-denture patient expectation, parameters of denture quality, oral condition and post denture satisfaction.

Materials and method

A total of 52 patients seeking complete denture treatment at Department of Prosthodontics, Dr D Y Patil Dental College, Navi Mumbai were selected for the study during a period of November 2011 to January 2012. Four patients who did not report for follow-up were considered as dropout's. The ages of the patients' were between 40 years to 75 years. Among them 38 were males and 14 were females. Approval from the institutional ethical committee

board was obtained prior to the study. The patients who fulfilled the following inclusion criteria were considered for the study; adults who were free from any systemic diseases which affect oral function. Patients were excluded if they had any temporomandibular joint problems and single complete dentures. Patients were given a brief explanation of the study and their informed consent was obtained.

Each patient was given a questionnaire; wherein he/she stated his/her order of expectation before receiving the denture (Proforma 1). An experienced prosthodontist supervised the undergraduate dental students who made the dentures. Uniform standard procedures were followed in all the complete dentures constructed. The oral condition and denture quality were assessed clinically by an experienced clinician and graded accordingly (Table 1). Patients were requested to complete another questionnaire (post denture insertion) that was designed to show a semi quantitative degree of satisfaction with their dentures during a 3 month follow-up period¹² (Proforma 2).

Table 1: Parameters of oral condition & denture quality

Parameter	Quality	Description	Maxilla Score	Mandible Score
Residual ridge shape	Good	Well developed ridges with vertical buccal and/or lingual walls.	3	3
	Fair	Moderately resorbed ridges with some vertical walls.	2	2
	Poor	Severe resorption of ridges without vertical walls	1	1
Ridge Resilience	Good	Firm attached mucosa resistant to palpation.	3	3
	Fair	Slight mobility of ridge crest on palpation.	2	2
	Poor	Hyper mobile ridge.	1	1
Musculature of tongue, lips and cheek	Good	No signs of hypertrophy.	2	2
	Poor	Signs of hypertrophy (including macroglossia, high frenal attachments and well developed Masseter muscles)	1	1
Denture Quality	Good	Dentures correctly extended; Occlusal distance at rest 2-4mm when wearing dentures; bilateral balanced occlusion.	4	4
	Fair	At least one of the following; minor defects in denture extension; interocclusal distance at rest $\leq 2\text{mm}$ or $>5\text{mm}$; error between maximum intercuspation and centric relation $<1.5\text{mm}$; maximum teeth contact on working side.	3	3
		At least one of the following; over-or under extension of denture base; interocclusal		

	Poor	distance at rest ≤ 1 mm or > 6 mm; error between maximum intercuspation and centric relation > 2 mm; some teeth contact on working side.	2	2
	Bad	At least one of the following; gross defects in denture base extension; interocclusal distance at rest = 0mm or > 7 mm; little teeth contact in centric and eccentric positions	1	1

Proforma 1**Pre-Denture Questionnaire:**

1. What does he expect from the dentures
 - a) Appearance
 - b) Function
 - c) Speech
 Patient will state his order of expectations.

Proforma 2**Post-Denture satisfaction** (3months follow up).

1. Are you satisfied with the appearance of your denture
 - a) Excellent
 - b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable
2. Does your upper denture stay in place?
 - a) Excellent
 - b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable
3. Does your lower denture stay in place?
 - a) Excellent
 - b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable
4. Can you chew your food well with your dentures?
 - a) Excellent

- b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable
5. Are you satisfied with how well you speak with your denture?
- a) Excellent
 - b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable
6. Is your upper denture comfortable?
- a) Excellent
 - b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable
7. Is your lower Denture comfortable?
- a) Excellent
 - b) Good
 - c) Fair
 - d) Poor
 - e) Intolerable

Results:

Table No.2: Order of expectations of patients (pre denture)

	Appearance	Function	Speech	Total
	No. (%)	No. (%)	No. (%)	
1st Choice	10 (19.23%)	42 (80.77%)	0	52
2nd Choice	28 (53.85%)	10 (19.23%)	14(26.92%)	52
3rd Choice	14 (26.92%)	0	38(73.08%)	52

Table No.3: Order of satisfaction of patients (post denture)

	Good	Fair	Poor	Intolerable
	No. (%)	No. (%)	No. (%)	No. (%)
Appearance	48 (92.31%)	4 (7.7%)	0	0
Function	36 (68.25%)	12 (23.08%)	2 (3.85%)	2
Speech	38 (73.08%)	8 (15.39%)	6 (11.54%)	0

Of the 52 patients, the order of expectations (Table 2) in the pre denture group revealed that function of the denture was rated as the 1st choice (80.77%). Appearance (53.85%) & speech (73.08%) were rated as 2nd & 3rd choices respectively, by most of the patients.

Table No.4:Examiners denture Grading percentage

After applying 'z' test of significance denture quality assessments (Table 2& 3), there is a significant patients difference ($p < 0.05$) between proportions of clinical & denture quality assessments Post denture order of satisfaction of patients (Table 3) showed that: 68.25% of the patients were satisfied with the function of the denture, 92.31% were satisfied with the appearance of their dentures & 73.08% with speech. However, 3.85% found the dentures intolerable during function.

Between the two sample proportions
(pre & post denture).

	Good	Fair	Poor	Bad
	No. (%)	No. (%)	No. (%)	No. (%)
I(RRS)				
Maxilla	30(57.69%)	22 (42.31%)	0	0
Mandible	24 (46.15%)	16 (30.77%)	12 (23.07%)	0
II(RR)				
Maxilla	38 (73.08%)	14 (26.92%)	0	0
Mandible	24 (16.15%)	18(34.61%)	10 (19.23%)	0

III(M)				
Maxilla	40 (76.92%)	0	12 (23.07%)	0
Mandible	40 (76.92%)	0	12 (23.07%)	0
IV (DQ)				
Maxilla	20 (38.46%)	28 (53.85%)	4 (7.7%)	0
Mandible	18 (34.61%)	30 (57.69%)	4 (7.7%)	0

Examiners' denture quality assessments (Table 4) show that the ridge shape, tissue resilience of maxilla & mandible and musculature were generally good in all the patients. However the denture quality most of the times was rated only as fair.

After applying the 'z' test of significance between the two sample proportions (Table 3 & 4) there is a significant difference ($p < 0.05$) found between the proportions of grading when compared with function as a choice in after denture group ($p < 0.05$).

Discussion:

Expectations of patients seeking prosthodontic treatment are important for the diagnosis & subsequent therapy. As can be observed from our study, 80.77% of the patients preferred function as their first choice as compared to appearance & speech, but only 68.25% were satisfied with the functioning of their dentures. However, 92.31% of the patients were satisfied with the appearance of their denture.

Patients were more satisfied with their maxillary dentures than the mandibular. Also, the ridge tissue resilience of the maxilla & the mandible had no significant impact on the denture satisfaction. Both the maxillary & mandibular musculature showed minimal hypertrophy or high frenal attachments to the ridges. However, muscular factors had a significant impact on the retention of the dentures as perceived by the patient.

The quality of the denture was rated as mostly good to fair and was not found to be directly linked to patient satisfaction.

A large number of studies have been reported on the relationship between the quality of denture & patient satisfaction wherein most of the investigators have found a moderately positive relationship¹⁰, a weak relationship¹³ or no relationship¹ between the two. An inverse

relation was found by Manne & Mehra¹⁴ who stated that the better the quality of the denture the more dissatisfied the patient.

Our results are in agreement with Van Wass² who in his study concluded that the denture quality plays only a moderate role in patient satisfaction and that the variables of physical condition of the mouth had little influence on denture satisfaction.

Ali Kemal Ozdemir et al¹⁵ in their study, found that the lowest values were obtained for satisfaction with masticatory function. Patients who had used their prosthesis for more than three months showed higher satisfaction with masticatory function. This shows that satisfaction with masticatory function can improve, because the neuromuscular adaptation between the prosthesis and the adjacent tissues can take a long time. In addition the patient may expect the prosthesis to function similarly to the natural dentition, and this may negatively affect the adaption process. Satisfaction with aesthetics and phonetic ability requires a shorter time period. Still, longer usage of dentures positively affects satisfaction with both aesthetics and speaking ability. Langer et al¹³ reported factors affecting patient satisfaction with complete dentures and showed that patient satisfaction basically depends on the effectiveness of masticatory function, speaking ability and other social activities. Also, according to them, a low relationship was found between clinical assessments or oral health and prosthesis satisfaction.

Few studies have centred on communication process as the connecting link between dentist /patient characteristics and treatment outcome in dentistry. The context of prosthetic dentistry is composed of several complicated parts, and one is the concept of patient satisfaction. It is important for the prosthodontic treatment outcome that patients undergoing extensive prosthodontic rehabilitation be given the opportunity to ask and talk about their dental health and that the dentist should be an attentive listener¹⁶. The concept of patient satisfaction is not a simple perception but a multi-dimensional concept^{17,18}. There has been long term and intermediate satisfaction concepts in dentistry, especially in prosthetic dentistry¹⁹. Satisfaction and adaptation to prosthesis can be improved by providing health service, technical quality of work and an appropriate communication strategy with the patient, with an emphasis on inherent limitations of use of complete dentures as well as follow up and maintenance programmes^{20,21}.

Conclusion

The aim of any treatment procedure is patient satisfaction, communication with the patient, evaluating the patients' expectations and educating the patient can help us provide quality care.

References

- 1) Davis E.L, Albino J.E, Tedesco A.L, Portenoy B.S. Expectations and satisfaction of denture patients in a university clinic. J Prosthet Dent-1986; 55:56-63.
- 2) Van Waas M.A.J, DDS, PhD. The influence of psycho logic factors on patient satisfaction with complete dentures. J Prosthet Dent-1990:90:545-8.
- 3) Narhi T, Ettinger R, Lam EWM. Radiographic findings, ridge resorption and subjective complaints of complete denture patients. Int J Prosthodont 1997; 10; 183-189.
- 4) Albino J.E, Tedesco L.A, Conny D.J. Patient perceptions of dental –facial esthetics: Shared concerns in orthodontics and prosthodontics. J Prosthetic Dent 1984; 52:14-19.
- 5) Van Wass M.A.J. The influence of clinical variables on patient satisfaction with complete dentures. J Prosthet Dent 1990-63; 307-10.
- 6) Brewer AA. Treating complete denture patients. J Prosthet Dent 1964; 14:1015-30.
- 7) Koper A. Why dentures fail? Dent Clin North Am 1964:8:721-34.
- 8) Bell DH Jr. Prosthodontic failures related to proper patient education and lack of patient acceptance. Dent Clin North Am 1972; 16:109-18.
- 9) Norheim PW, Valderhaug J. Distribution and evaluation of complete dentures in a population in northern Norway. J Oral Rehabil 1979; 6:257-66.
- 10) Yoshizumi DT. An evaluation of factors pertinent to the success of complete denture service. J Prosthet Dent 1964; 14:866-78.
- 11) Wolff Andy, DMD, Gadre Anil, DMD, Begleiter Alfred, DMD, Moskona David, DMD, Cardash Harold, BDS,LDS,RCS. Correlation between patient satisfaction with complete dentures and denture quality, oral condition, and flow rate of submandibular/ sublingual salivary glands. Int J Prosthodont 2003; 16; 45-48.
- 12) Ridwaan Omar, Esam Tashkandi, Tariq Abduljabbar, Mohamed Aleem Abdullah, Riyadh F. Akeel. Sentiments expressed in relation to tooth loss: A qualitative study among edentulous Saudis. Int J of Prosthodont 2003;16:515-520.

- 13) Langer A, Michmann J, Seifert I, Factors influencing satisfaction with complete dentures in geriatric patients; J Prosthet Dent 1961; 11: 1019-1031.
- 14) Manne S, Mehra R. Accuracy of perceived treatment needs among geriatric wearers. Gerodontology 1983; 2; 67-70.
- 15) Ali Kemal Ozdemir, DDS, PhD, Hatice Deniz Ozdemir, Nilufer Tulin Polat, DDS, PhD, Mehmet Turgut ,DDS, PhD, Hafize Sezer, PhD. The effect of Personality type on denture satisfaction .Int J Prosthodont 2006; 19:364-370.
- 16) Katarina Sondell, DDS, Bjorn Soderfeldt, PhD, DrMedSc, Sigvard Palmqvist, DDS, Odont Dr Phd. Dentist-patient communication and patient satisfaction in prosthetic dentistry. Int J Prosthodont 2002; 15:28-37.
- 17) Newsome PR, Wright GH.A Review of patient satisfaction.2; Dental patient satisfaction: An appraisal of the literature.Br Dent J 1999; 186:166-170.
- 18) Hakestam U, Soderfeldt B, Glantz E. Glantz P-O. Dimensions of satisfaction among prosthodontic patients. Eur j Prosthodont Restorative Dent 1997; 3:111-117.
- 19) Oates AJL,Fitzgerald MAG,Alexander G.Patient decision-making in relation to extensive restorative dental treatment. Part II: Evaluation of patient decision-making model.Br Dent J 1995; 179:11-18.
- 20) Maria Elisa de Souza e Silva, Claudia Silami de Magalhaes, Efigenia Ferreira e Ferreira. Complete removable prosthesis: from expectation to (dis)satisfaction. Gerodontology 2009; 26:143-149.
- 21) McNaugher G.A, Benington I.C, Freeman R. Assessing expressed need and satisfaction in complete denture wearers. Gerodontology 2001:18:51-57

Legends:

- 1) Table 1: Parameters of oral condition & denture quality.
- 2) Table 2: Order of expectations of patients (Pre denture).
- 3) Table 3: Order of satisfaction of patients (Post denture).
- 4) Table 4: Grading Percentage (Examiners clinical & denture quality assesment).