

Comparative Study of Patient Satisfaction on Receiving Biofunctional Prosthetic System (BPS) and Conventional Complete Denture

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Abstract: ***Aim:** The aim of this study is to comparative study of patient satisfaction on receiving biofunctional prosthetic system (bps) and conventional complete denture. **Objectives:** The purpose of this study is to compare the relationship between patient satisfaction and the newly constructed prostheses in biofunctional and conventional complete denture, as it would indicate the success rate of the treatment given to the patient. **Background:** Complete denture therapy is the most extensive used form of treatment for replacement of missing dentition. Biofunctional prosthetic system (BPS) is the system intended to work with the body in a biologically harmonious way, optimizing function, and giving comfort and natural appearance to the patient. Patient's satisfaction is an important element in evaluating the success rate of the treatment. **Materials and methods:** This study is to be carried out on 100 patients, 50 patients who received conventional complete denture and 50 patients who received biofunctional prosthetic system (BPS) complete denture. After obtaining their written consent to participate in the study, a questionnaire will be filled in consultation with the patient. The details about the prosthesis will be recorded based on the patient's frank opinion. The patient's identity will be kept confidential. The questionnaire will be asked in the patient's own mother tongue. Once the questionnaire is complete for 100 patients, the results will be grouped based on the scale of very satisfied, satisfied, average, not satisfied, not at all satisfied for different parameters like (i) retention, (ii) aesthetic, (iii) speech, (iv) mastication, (v) finishing of the denture, and (vi) overall satisfaction. **Results:** The patients with BPS complete denture were either very satisfied (n=29, 58%) or satisfied (n=21, 42%) with the denture in overall, whereas, the patients with conventional complete denture expressed various satisfactory level such as very satisfied (n=11, 22%), satisfied (n=27, 54%), average (n=11, 22%) and not satisfied (n=1, 2%). The difference in the overall satisfactory level of the BPS denture wearer and conventional denture wearer is statistically significant (P<0.01). **Conclusion:** This study showed that the biofunctional prosthetic system complete denture is better than the conventional complete denture in every respect from a patient's point of view. For completely edentulous patients, a biofunctional prosthetic system complete denture can be recommended as a viable option.*

Keywords: Biofunctional prosthetic system (BPS) complete denture, Conventional complete denture, Patient satisfaction, Retention, Aesthetic, Speech, Mastication, Finishing of the denture, Overall satisfaction

1. Introduction

Conventional complete denture prostheses are the most preferred replacement of missing dentition. Although there have been innovations in complete denture fabrication and techniques, there are little attention towards the psychological impact of the patient after receiving the prostheses was also given importance. Even though there are edentulous patients with complete dentures are usually satisfied but there are patients who are not satisfied.¹ They suffer from several problems with their dentures, especially with regard to insufficient stability, retention, and pain during mastication. Over the period, the resulting pain and difficulty might increase during oral musculature to an extent that proper mastication and speech and confidence are risked. Psychosocial problem is the effect of unattractive facial appearance and difficulties with speech.² Psychological factors provide valuable information for the prediction of the satisfactory outcome of complete denture treatment.³ Several factors such as speech and mastication also contribute to the success of the treatment.⁴ This survey was done to investigate patient satisfaction on receiving biofunctional prosthetic system complete dentures and conventional complete denture.

2. Materials and Methods

Patient selection:

100 patients who received complete denture prosthesis (50 conventional complete dentures, 50 biofunctional prosthetic system complete dentures) were randomly selected from the outpatient section of a private dental college hospital. Patients were recalled after two weeks after receiving the prosthesis.

Inclusion Criteria:

Patients who received complete denture from the private dental college hospital recently.

Exclusion Criteria:

Patients with implant-supported complete denture.
Patients with complete denture made elsewhere.
Patients wearing complete denture for more than two weeks.

Methodology:

After obtaining their written consent to participate in the study, a questionnaire was filled by the patient with the help of the dentist. The details regarding the newly constructed prosthesis were recorded as it was reported by the patient. The patient was encouraged to give a frank opinion about their denture and was assured that the identity will be confidential. The questions were asked in their own mother tongue. Once the questionnaire was completed for 100 patients, (50 conventional complete denture, 50

biofunctional prosthetic system) they were grouped based on the scale of very satisfied, satisfied, average, not satisfied, not at all satisfied for different parameters such as i) retention, ii) aesthetics, iii) speech, iv) mastication, v) finishing of the denture, and vi) overall satisfaction for maxillary and mandibular dentures.

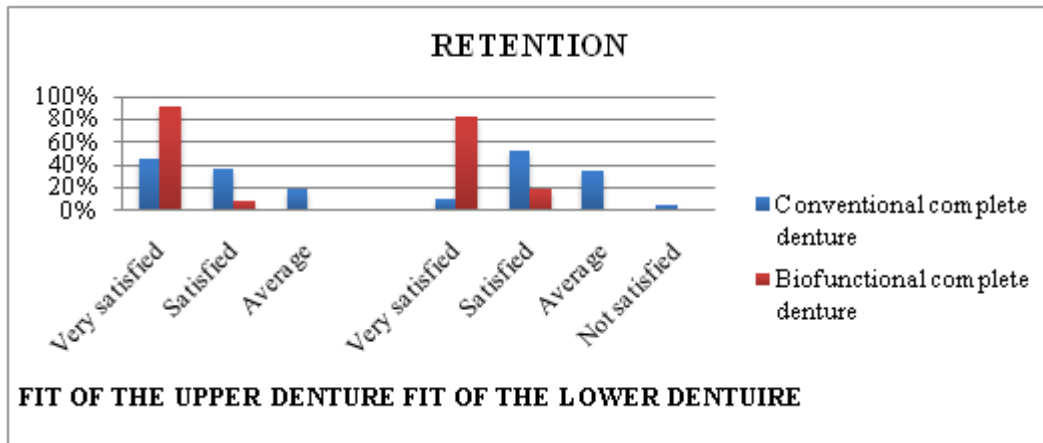
Statistical analysis:

Data was entered into Microsoft excel and analysed using SPSS version 17.0. Descriptive statistics were calculated for

response items. Chi-square test was applied for comparison of patient satisfaction among conventional and biofunctional prosthetic systems (BPS) complete denture wearers.

3. Results

I) Retention



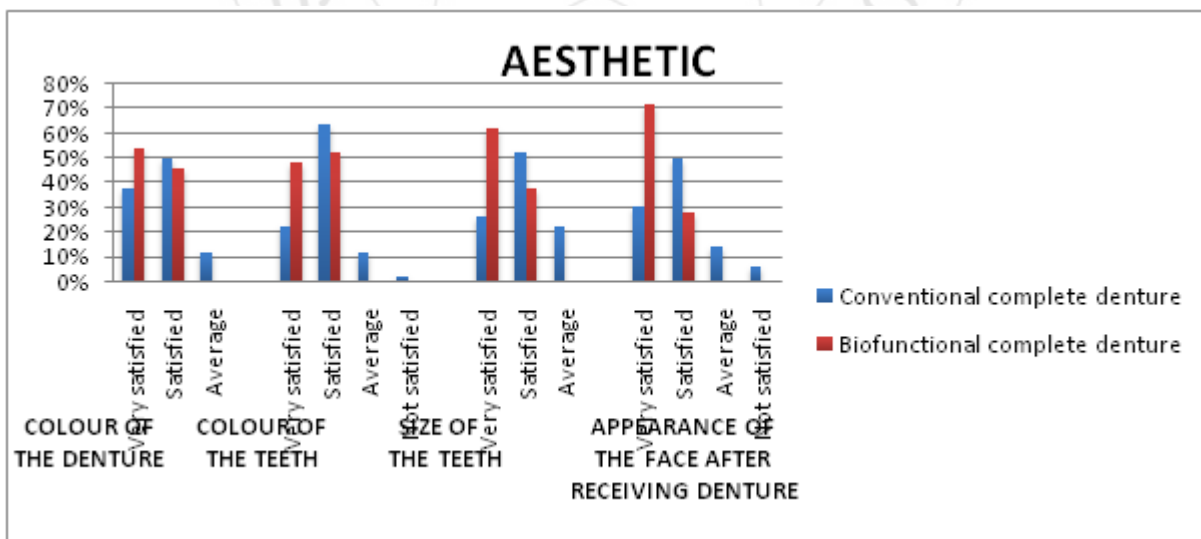
a) Fit of the upper denture

A majority of the patients (n=69, 69%) were satisfied with the fit of the upper denture with more number of BPS denture wearer (n=46, 92%) were very satisfied compared to the number of conventional denture wearer (n=23, 46%). The patients with BPS dentures are statistically significantly (P<0.01) more satisfied compared to patients with the conventional complete denture.

b) Fit of the lower denture

Most the patients with BPS complete denture (n=41, 82%) were very satisfied, whereas very least number of patients with conventional complete denture (n=5, 10%) were very satisfied with the fit of the lower denture. The satisfactory level of patients with BPS complete denture is statistically significantly higher (P<0.01) compared to that of the patients with the conventional complete denture.

II) Aesthetics



a) Colour of the denture

There were statistically significant (P<0.05) difference in the satisfaction of patients with BPS complete denture (n=27, 54%) compared to patients with conventional complete denture (n=19, 38%) with regard to the colour of the denture.

b) Colour of the teeth

The satisfaction of patients on the colour of the teeth is statistically significant high in patients with BPS complete denture (n=24, 48%) compared to patients with conventional complete denture (n=11, 22%).

c) Size of the teeth

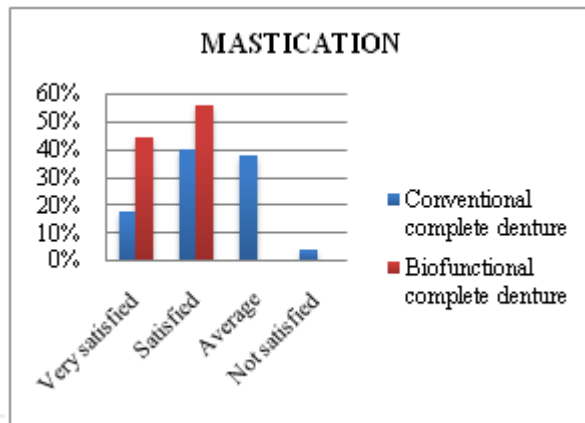
Patients with BPS complete denture (n=31, 62%) are statistically significantly (P<0.01) more satisfied with the size of the teeth compared to patients with conventional complete denture (n=13, 26%)

number patients with BPS complete denture (n=25, 50%) compared to patients with conventional complete denture (n=14, 28%).

d) Appearance of the face after receiving the denture

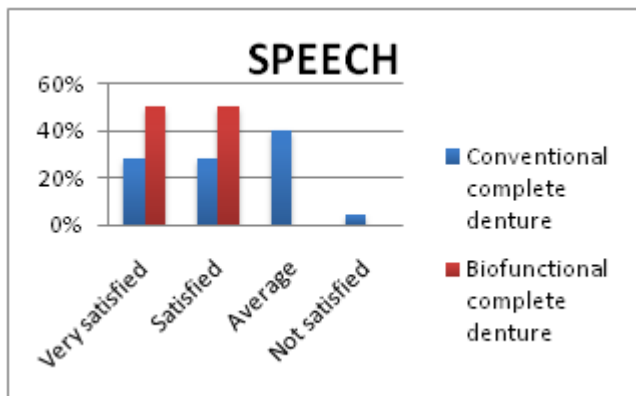
Most of the patients with BPS complete denture (n=36, 72%) were satisfied with the appearance of face after receiving the denture, whereas, only (n=15, 30%) of the patients with conventional complete denture are satisfied with this factor.

IV) Mastication



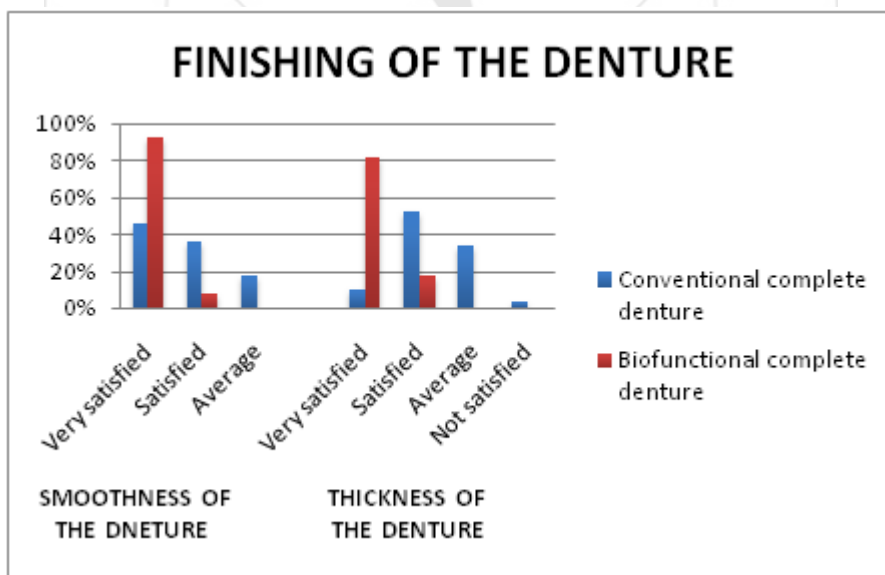
The number of patients with BPS complete denture (n=22, 44%) satisfied with the masticatory factor was statistically significant (P<0.01) compared to the number of patients with conventional complete denture (n=9, 18%).

III) Speech



There is a statistically significant (P<0.01) different in satisfaction level in regard to speech with respect to more

V) Finishing of the denture



a) Smoothness of the denture

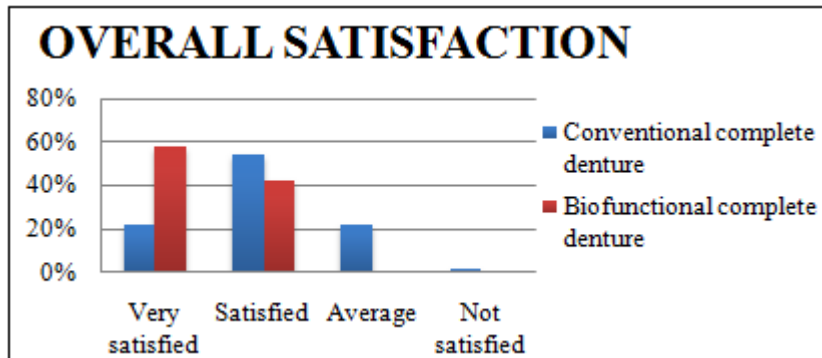
There were statistically significant (P<0.01) difference in comparison of satisfactory level on the smoothness of the denture between patients with conventional complete denture (n=8, 16%) and patients with BPS complete denture (n=30, 60%).

whereas, more number of patients with conventional complete denture (n=28, 56%) were just satisfied with that factor of the denture. There were statistically significant (P<0.01) difference in comparison of satisfactory level on the thickness of the denture with conventional and BPS complete denture.

b) Thickness of the denture

More number of patients with BPS complete denture (n=25, 50%) were very satisfied the thickness of the denture,

VI) Overall Satisfaction



The patients with BPS complete denture were either very satisfied (n=29, 58%) or satisfied (n=21, 42%) with the denture in overall, whereas, the patients with conventional complete denture expressed various satisfactory level such as very satisfied (n=11, 22%), satisfied (n=27, 54%), average (n=11, 22%) and not satisfied (n=1, 2%). The difference in the overall satisfactory level of the BPS denture wearer and conventional denture wearer is statistically significant (P<0.01).

4. Discussion

Patient satisfaction has been the main target in any dental treatment. In a patient receiving complete denture prosthesis, many factors have a combined role in achieving his/her satisfaction. For an efficient mastication, good aesthetics, comfortable speech and wearing comfort for the patient have been the main concern. To meet both ends of patient-dentist relationship and treatment outcome could be achieved by a psychological assessment as related to satisfaction. In a study conducted by Marinus AJ, et al,⁵ they evaluated the patient-dentist relationship after the completion of treatment. Patients were asked for satisfaction upon the treatment and also their attitude and expectation from the new denture were recorded with the help of a questionnaire. Treatment to be a success, not only operators objectives have to be met with, but also most importantly, the patient has to be satisfied. However, patient's personality is a relative factor in assessing the criteria for their satisfaction. In another study done by Marinus AJ,⁶ on determinants of dissatisfaction with dentures the results showed that satisfaction with dentures for most patients is determined personally and, for dentist and patient it is often unpredictable. Michael Robert Fenlon et al,⁷ stated that Quality of the mandibular residual alveolar ridges, retention and stability of the mandibular dentures, the accuracy of reproduction of retruded jaw relationship and patient adaptability were powerful elements of patients' satisfaction with complete dentures.

The present survey was conducted in a private dental college hospital with 100 patients (50 conventional complete denture patients and 50 BPS complete denture patients) who had received complete denture prostheses recently. Denture satisfaction was assessed based on retention, aesthetics, speech, mastication, finishing of the denture and overall satisfaction. The grading scale used was very satisfied, satisfied, average, not satisfied, not at all satisfied. The following results were obtained, 92% of the patients with BPS complete denture and 46% of the patients with

conventional complete denture were very satisfied with the fit of upper denture and 82% of the patients with BPS complete denture and 10% of patients with conventional complete denture were very satisfied with the fit of lower denture.

This was, however not an unexpected fact if we consider problems with the retention of mandibular complete denture and mandibular residual ridge resorption. This is almost three to four times larger in the edentulous mandible than in the maxilla and may lead to an unfavourable denture bearing area.^{8,9} This reduction is probably because the amount of retention provided by adhesion is proportionate to the area covered by the denture. Mandibular dentures cover less surface area than that of maxilla and therefore are subject to a lower magnitude of adhesive and retentive forces.¹⁰ The difference in satisfactory level between BPS and conventional complete denture probably because in cases of BPS denture, the surrounding muscular forces are in balance and lingual flanges are contoured in such a way that they provide adequate space for normal actions of the tongue.¹¹

Colour of the denture base and the artificial teeth has been the major factor in achieving satisfactory appearance in denture patients. In our study, about 54% of the patients with BPS denture and 38% of the patients with conventional denture were very satisfied with the color of the denture, 48% of the patients with BPS denture and 22% of the patients with conventional denture were very satisfied with the colour of teeth, 62% of BPS denture wearer and 26% of conventional denture wearer were very satisfied with the size of the teeth, and 72% of patient with BPS denture and 30% of the patients with conventional denture were very satisfied with the appearance of the face.¹² Ellis J et al, in his pilot study, reported that patients with improved aesthetics were more satisfied. Aesthetics has a direct initial impact on patient satisfaction. The results that are most similar to this study is those of Van der Waas.^{13,14} According to his results, 55% of patients were completely satisfied, 26% of patients were reasonably satisfied, and 15% of patients were dissatisfied with their complete dentures.

Production of sounds with the prosthesis placed on a movable tissue like oral mucosa has always been problematic. The denture prosthesis, however well adapted will undergo a small amount of movement when placed on a movable base. Hence, speech with new denture is always not satisfactory, at least during its initial period of its wearing. In our survey, 50% of patients with BPS denture and 28% of patients with conventional denture were very

comfortable with speech. E Berg,^{15,16} also in his assessment of 74 denture patients stated that major prosthodontic problem during the period of adaptation was related to speech. However, with the persistent wearing and practice, all patients get accustomed to a good speech.

Mastication is another most essential function to be carried out with the dentition. With roots of natural teeth embedded within the bone, this function is carried out effortlessly. However, with the denture prosthesis that is placed in contact with mucosa, it is a herculean task to perform.¹⁷ A patient who is in a transition from dentulous to edentulous state finds it difficult to handle the movements of the prosthesis on a moving foundation. Edentulous patients are clearly handicapped in masticatory function, and even clinically satisfactory complete dentures are a poor substitute for natural teeth.¹⁰ In the present survey, it was found that only 44% of patients with BPS denture and 18% of the patients with conventional denture were very satisfied with mastication. However, this factor is tissue dependent and motivational factor by the patient plays a vital role in improving masticatory efficiency.¹⁸

Smoothness and thickness of the denture have been associated with the comfort of wearing prostheses. 60% of the BPS denture patients and 16% of conventional denture patients were very satisfied with the smoothness of the denture and 50% of BPS denture wearer and 16% of conventional denture wearers were very satisfied with the thickness of the denture. Hence, were comfortable in wearing the prostheses.

The comfort of wearing gives overall satisfaction to the wearer.¹⁹ 58% of the patients with BPS denture and 28% of the patients with the conventional denture were very satisfied with the denture.

5. Conclusion

During a patient's management, an operator may be satisfied with the quality of work done by them, but the success of the treatment is determined by the amount of patient satisfaction.²⁰ Hence assessment of patient satisfaction should be a routine part of any practice after the treatment is complete. This will help in constant improvement in the quality of services provided by healthcare workers.²¹ This study showed that the biofunctional prosthetic system complete denture is better than the conventional complete denture in every respect from a patient's point of view. For completely edentulous patients, a biofunctional prosthetic system complete denture can be recommended as a viable option.

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