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# Patient satisfaction with upper and lower complete dentures: A service evaluation report

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## Abstract

**Purpose:** The purpose of this questionnaire-based service evaluation investigation was to assess patient satisfaction with complete dentures provided in a dental teaching hospital.

**Materials and Methods:** Patients completed the self-administered questionnaire before, immediately after, and 2-months following provision of new complete dentures. The questionnaire consisted of the following sections: Patient characteristics, current denture history and satisfaction levels for the fit of upper and lower complete dentures, chewing ability, speech, and aesthetics. Following descriptive analysis, chi-square test, student t-test, and 2-way-ANOVA were performed on satisfaction levels pre-and post-treatment in the domains of denture fit, chewing ability, speech, and appearance. Age-wise and gender-wise satisfaction level distribution along with correlations and associations between patient satisfaction levels and various factors including presenting complaint, period of edentulism, denture age, and number of previous dentures were also assessed.

**Results:** One-hundred and forty-seven participants, including 91 males (61.9%) and 56 females (38.1%) completed the study at pre-and post-complete denture provision stages. A statistically significant improvement in satisfaction scores was seen post-treatment in all domains assessed ($p<0.05$), with most respondents showing great satisfaction with treatment outcomes. Overall, satisfaction levels were noted as follows: Upper complete denture fit (82%), appearance (87%), speech (67%), chewing ability (39%) and lower complete denture fit (39%). A strong positive correlation was observed between the number of previous dentures used and patient satisfaction with upper complete denture fit (R=1).

**Conclusion:** Denture replacement positively impacts the satisfaction of patients and improves complete denture acceptance.

**Keywords:** Patient satisfaction, Complete dentures, Edentulism, cohort study, correlating factors.

## Introduction

There has been a decline in the proportion of edentulous people from 37% in 1968 to 6% in 2009 in the United Kingdom[1]. However, with the increase in the older population (2), tooth loss has become a globally recognised public health concern[3-5].

Edentulism is a chronic disability with a significant impact on the individual. With tooth loss, an individual suffers from a marked functional disability, dietary deficiencies, lasting emotional upset[6], and a reduced oral health-related quality of life (OHRQoL)[7,8]. For most of the edentulous crowd, wearing a conventional complete denture is often the only treatment option, predominantly due to affordability[3,9,10].

Complete denture wearers complain of unstable, loose, ill-fitting dentures and exhibit declined self-confidence along with reduced social interaction levels. Provision of complete dentures has shown to assist in improving individual's masticatory ability[11-13] and providing a solution to their aesthetic limitations[14,15]. Further patient-centric evaluation of treatment outcome proved that complete denture treatment also enhanced oral health-related quality of life of edentulous people[16-22].

It is critical to identify predictive indicators for patient satisfaction when considering the impact of full dentures on a patient's life. Successful rehabilitation of edentulous patients by complete dentures, that maintain high patient satisfaction levels, is determined by anatomic, clinical, and technical factors. A substantial body of evidence suggests patient satisfaction levels with conventional complete dentures to be about 65-90%[12,23]. However, a small minority of patients seem to be unsatisfied irrespective of these factors.

The factors that determine patient satisfaction with complete dentures have been investigated in several studies with varying outcomes. Van Waas identified that only patient attitude and the number of previous dentures were considered to be 'prospective tools' of

patient satisfaction levels and that oral condition or patient personality were regarded as 'unimportant factors'[24]. Celebic and Fenlon reported a significant relationship between alveolar ridge anatomy and denture quality with patient satisfaction[25,26]. Al Quran and Critchlow identified that patients with neurotic personalities were least satisfied with their complete dentures[23,27]. Sato reported that chewing, speech, pain, aesthetics, fit, retention, and comfort of dentures were highly correlated to patient satisfaction with new dentures[28]. Summing up, the literature is inconclusive in the key elements that determine patient satisfaction with the complete dentures provided; with a persistent small population of 7 to 16% of unsatisfied patients[24,26,27,29].

It is evident, that no single factor determines patient satisfaction but rather a multitude of interrelated factors contribute towards it. The aim of this study was to prospectively assess the overall satisfaction of complete denture patients with their old dentures and with the new replacement complete dentures at two points in time: At the fit appointment, and the 2-months post-treatment. Secondary aims were, (i) to evaluate patient satisfaction for denture fit, chewing ability, speech, and overall appearance; and (ii) to relate the influence (positive/negative), of the patient factors on the assessed denture quality features and satisfaction levels.

## Materials and Methods

### Project Design

The prospective questionnaire-based service evaluation was designed and conducted in the prosthodontic undergraduate clinics of a UK dental teaching hospital with a dedicated complete denture clinical training programme as part of the curriculum. This pre-tested

questionnaire was used to assess patient satisfaction with complete dentures at various time intervals (pre-treatment, post-treatment, and 2-month-follow up). The questionnaire was completed by the respondents individually.

**Sampling, Sample Size, and eligibility criteria**

A convenience non-probability sampling approach was used in this investigation. The inclusion criteria were: Edentulous patients in need of replacement complete dentures regardless of the case complexity. The exclusion criteria were, dentate patients with implant or tooth-supported prostheses and patients who did not wish to take part in the study.

All 147 consenting patients that attended the dental hospital for maxillary and mandibular complete dentures provision were included. Patients were examined and diagnosed in the restorative consultation clinics and allocated for treatment, with the replacement of existing dentures and the provision of new complete dentures, in accordance with established evidence-based treatment protocols. All patients were treated by undergraduate dental students, following strict protocols and supervised by a designated clinical tutor with identified specialist interest in the discipline and duly trained in the techniques taught. Quality assurance was maintained throughout the process and on completion of each clinical stage with the required input from the supervising tutor as appropriate. The technical work was all conducted by specialist prosthodontic dental technologists based in the laboratories of the dental hospital.

**Designing and validating the questionnaire**

The questionnaire provided in the supplementary data (S1) was designed in accordance with criteria from the literature[30] and using clinician's expert opinions. A pilot feasibility study was conducted on 25 random patients and their feedback was used to further inform and modify the data collection tool. These responses were not included in the study data set.

**Data collection**

The questionnaire was divided into 3 sections with a total of 39 questions. Thirteen questions in the first section involved: 3 questions to collect demographic data, 4 questions to record current denture history, and the rest for assessing current denture satisfaction levels. The criteria assessed were patient satisfaction in the following domains: denture fit and comfort, ability to chew, speak, and appearance of the denture. The second section involved 20 questions assessing the above-mentioned criteria along with evaluation of services provided like: appointment convenience, information on the denture, oral care, and overall satisfaction levels. The answers were provided in a Likert response format with the following options: Very satisfied, satisfied, dissatisfied, and very dissatisfied. The third section involved the assessment of the denture defects by the clinician in charge.

Feedback forms were given to patients before treatment and following maxillary and mandibular complete denture treatment provision. A similar self-administered questionnaire with a stamped return addressed envelope was sent to these patients, 2-months post-treatment, to further assess the satisfaction levels. Where no reply was received, the mailing was repeated.

**Clinician evaluation of dentures**

The supervising clinical tutor assessed the older complete dentures, regarding errors in polished surface or occlusal errors before treatment provision and further gauged presence of any anatomical constraints or procedural difficulty for each participant. This mostly involved examining the denture bearing area, alveolar ridge morphology, fraena attachments, neutral zone/tongue space, occlusal vertical dimension, and presence of even occlusal contacts in centric relation. Errors with teeth shade, mould, position and lip support were also recorded.

Similarly, the new set of complete dentures were also assessed by the respective clinicians following treatment provision and a comparison was drawn between respective error scores.

**Data analysis**

All the data collected was transcribed and analysed by Microsoft excel 16.0 and analysed using software SPSS 10.0. Student's t-test and two-way ANOVA were used to assess differences between the groups, and Spearman's rank correlation coefficient was used to check over all correlating patient factors and denture quality parameters and further age-wise and gender-wise correlations. The significance level in this study was set at $P < 0.05$.

## Results

A total of one hundred and forty-seven (147) participants; aged 26 years and above were recruited. The majority (68.7%) of the participants were >65 years, including 91 males (62%) and 56 females (38%). About 90 of these patients responded to the 2-month follow-up mailed postal questionnaire, giving us a response rate of 62%. Further description of patient characteristics can be found in Table 1.

Table 1 illustrates the characteristics of study participants. The table represents the patient distribution by gender, age, edentulous period, age of the current dentures, and the number of dentures used before.

**Table 1- Baseline characteristics of participants**

Figure 1 illustrates the distribution of patients as per their presenting complaints with the older complete dentures.

**Figure 1 Presenting complaints of participants with old dentures.** It demonstrates the major presenting complaints of complete denture patients attending Charles Clifford Dental Hospital.

Overall, an increase in patient satisfaction was observed in all domains assessed immediately after the provision of replacement complete dentures, as illustrated by Figure 2A. Analysis

indicated a sharp rise in the satisfaction levels over all domains; predominantly in 'fit of upper complete denture' [(very satisfied-82%), (satisfied-18%)], 'appearance' [(very satisfied-87%), (satisfied-11%)], and 'speech' [(very satisfied-67%), (satisfied-33%)]. As opposed to the initial satisfaction levels (very satisfied) ranging from 20-25% for upper denture fit, appearance and speech.

The satisfaction levels remained consistently high over the following 2-months of complete denture usage, as depicted in Figure 2B. A marked increase in satisfaction with 'lower denture fit' was observed at levels of 63%. Moreover, satisfaction levels kept increasing for 'upper denture fit' and 'chewing ability', giving values of 94% and 56% over time. Conversely, a drop-in satisfaction with appearance was noted at follow-up.

**Figure2A- Patient satisfaction before and after insertion of upper and lower complete dentures** with fit of upper and lower complete dentures, chewing ability, speech, and appearance. **2B- Long-term patient satisfaction level**- Satisfaction levels of fit of upper and lower complete dentures, chewing ability, speech, and appearance 2-month post-treatment.

Most of the complete dentures provided (94%) met patient expectations. Similarly, the follow-up revealed an overall satisfaction rate of 'very satisfied' for 87.5% and 'satisfied' for 12.5% of the patients.

Table 2 shows satisfaction levels before and after complete denture replacement. Descriptive statistics for total satisfaction scores and satisfaction for each domain.

**Table 2: Satisfaction scores before and after complete provision.**

Descriptive statistics of the difference between paired scores revealed that the data was approximately normally distributed and not skewed. Overall, the satisfaction scores increased

significantly, in all domains, following complete denture provision, at $p<0.05$, as shown in table 2. The pre-treatment mean scores for upper denture fit and appearance (2.4), further increased to a maximum of (4.0) and (3.8), respectively, post-treatment.

Treatment provided restored function and aesthetics for most edentulous patients that adapted well. However, a minority of patients experienced functional or psychological disturbances and remained unsatisfied with either the chewing ability [(dissatisfied-10%); (very dissatisfied-1%)], fit of the lower denture (3%), or aesthetics (1%) immediately post-treatment. Also, 2% of patients reported switching to using the older dentures.

**Clinician's evaluation of dentures**

Both the old and new sets of complete dentures were evaluated by clinical investigators, shown in Table 3, and subsequent errors were recorded and analysed. The major errors identified with the old dentures were in the domains of: polished surface errors [under-extension (23.1%), over-extension (15.4%)], occlusal errors [vertical dimension (27.2%)], Appearance [lip support (14.9%)], anatomical constraints [ridge morphology (27.9%)] and procedural difficulty [gag-reflex (10.9%)]. These errors were significantly reduced following treatment completion at $p<0.001$, giving error percentages of (0.7-4%).

**Table 3: Descriptive statistics of errors recorded in old and new complete dentures provided**

Additionally, the association/correlation between various factors and satisfaction levels was assessed individually, age-wise and gender-wise. The results found are reported in Table 4 and Table 5.

The result, described in table 4, show that satisfaction level varies among different age groups. It was observed that patients above 40 years of age were comparatively satisfied with the fit of upper dentures ($p = 0.045$), chewing ability, and ease in speech, while a negative correlation was observed in the case of fit of lower dentures and teeth appearance.

Interestingly, data showed that the female patients were less satisfied with their dentures as compared to male patients. However, females were found to be more satisfied with the fitting of lower dentures (R = 0.08).

**Table 4 Age-wise and gender-wise correlations between denture quality parameters and overall patient satisfaction.**

Table 5 shows the relationship between various factors and the level of satisfaction amongst patients. Edentulous patients showed a positive correlation in the case of speech (0.0774) and denture fit (0.0617) while the relationship was negative in terms of chewing ability (-0.0539) and appearance (-0.0933). Similarly, a negative trend was found in terms of chewing ability (-0.041) and age of denture. A very strong relationship was observed between the number of dentures used before and the fitting of upper dentures (1.0) as compared to the rest of the factors. A positive trend was found among patients in case of presenting complaints especially with the satisfaction of upper dentures fitting (0.1287) and ease in speaking (0.0524).

**Table 5 Correlations between patient factors and various denture quality parameters**

## Discussion

The randomly selected sample of 147 patients was adequate for assessing patient satisfaction levels. This substantial sample size and random sample selection procedure helped reduce any exclusion biases, under-representation, or over-representation and eliminated any risk of chance associations. This is in accordance with previous studies conducted in university-based dental hospitals[13,24,26,31-33] emphasizing that treatment offered by supervised undergraduate students is technically satisfactory[13]. However, there was a loss of few participants at the 2-month follow-up assessment, giving us a response rate of 62%. This can be attributed to a

change of address, loss of patient interest, or other medical reasons. These values stand for satisfaction with dentures provided in a teaching hospital in one region and might not reflect the general practice situation. Nonetheless, it can be argued that the findings of the current study can be applied to patients with similar clinical and sociodemographic profiles.

As our study aimed at assessing the changes in patient satisfaction with the complete dentures provided rather than measuring the effect this had on their Oral-health-related-quality-of life (OHRQoL); the data collection tool used, like other studies [13, 24-25, 34-36] was a self-developed questionnaire. This questionnaire was tested via a pilot study prior to data collection.

All operator-related variables (clinicians in charge, technicians involved, denture fabrication techniques, patient recalls) were controlled for all the patients to eliminate any confounding factors.

Initially, 59% of patients complained of loose older dentures which can have psychological and social implications further affecting the Quality of life[19, 34]. Hence, it is necessary to identify the issue and improve denture retention and stability in the new complete dentures provided to improve the OHRQoL of patients.

The results, as per previous literature, showed patients as being either 'satisfied' or 'very satisfied' with denture comfort, retention, stability, chewing, and speech post-treatment1[3,18-19,21,24-26,37-39]. As per Yen and Sivakumar increased denture satisfaction leads to increased OHRQoL [34,22]. Moreover, a further increase in satisfaction was recorded 2-months post-denture insertion for upper/lower denture fit and chewing ability except for appearance. Similarly, Stober reported an increase in satisfaction level of 52 patients when he longitudinally followed them over 2 years[19]. On the contrary, Fenlon and Sheriff reported a

239 decrease in satisfaction with denture fit, the comfort of the upper complete denture, and the
240 patient's view of denture aesthetics over time[30].
241 Increase in satisfaction level at follow-up can be explained by the neuromuscular adaptation
242 of the muscles around the denture, in turn affecting speech and chewing ability. The quality
243 of mandibular residual ridge [24,26], the difference in the denture bearing area, reduced salivary
244 flow rate in a crowd of geriatric patients due to poly medication or xerostomia[31] are a few
245 reasons that can explain the differences in satisfaction levels between upper and lower
246 denture fit.
247 Overall a dissatisfaction rate of 0.7% was noted. This can be attributed to high patient
248 expectations, resorbed mandibular ridge, or neurotic personality traits of patients.
249 In a study that assessed the impact of psychological factors on complete denture treatment
250 acceptance, 16% of the patients were constantly dissatisfied, which was attributed to the
251 negative impact of neurotic personality on patient satisfaction[27]. Evidence suggests that 20-
252 35% of patients remain dissatisfied following complete denture provision[27,29,40-43]. A
253 substantial body of evidence suggests mandibular-implant supported overdenture as the
254 minimum standard of treatment for edentulous people, which in turn significantly affects
255 patient satisfaction and quality of life[44-46]. Probably the dissatisfied patients (0.7%) will benefit
256 from implant-supported prostheses.
257 Complete denture patients are surrounded by negative effects of edentulism and almost
258 immediately notice stark differences psychologically, physically, and emotionally when
259 provided with a well-fitting set of dentures. As new fitting dentures can enhance retention
260 and stability[47], our study found a strong correlation between satisfaction with denture fit
261 (upper/lower) and the number of previous dentures used. Likewise, Celebic reported
262 increased satisfaction of older age group and more experienced denture wearers[26]. Another

study, assessing the effect of various impression techniques found out that patients had the lowest satisfaction levels with the first three sets of mandibular dentures provided[48]. One would debate that patients with multiple dentures have low expectations before the treatment and hence when provided with a well-fitting set of dentures give greater satisfaction scores. Research proves that patient satisfaction with treatment is linked with prior patient expectations[49]. Further positive and negative correlations noticed can be explained by the fact, that the older the current denture of a patient is the more compromised is the chewing efficiency due to resorption of alveolar ridges, compromised denture fit, and general wear and tear of the denture. Similarly, the longer the patient has been edentulous for, the greater is the satisfaction with new denture fit and speech but getting used to denture appearance and learning the skill of mastication takes a while.

As for the limitations of the current study: data acquisition was not blinded and that could have pressurised the patients to rate high scores, giving an element of response bias. However, all patients were encouraged to maintain their independence in answering questions honestly. This was ensured with the provision of a sealed envelope for the completed questionnaire and limiting the access only to the author in charge, thus, eliminating the effect of the patient-dentist relationship.

All measured variables/factors relied solely on the patient's subjective interpretation of denture fit, comfort, aesthetics, speech and chewing ability and were not based on a measurable vector. Arguably, satisfaction with complete dentures varies for every patient and a self-reported response style allows for patients to express their opinions independently. Patients can be satisfied with their inadequate dentures[29,40] and the evaluation of their dentures might not correlate with clinician's assessments, denture quality[33] or anatomic factors[26,50]. It can be debated that patient satisfaction and in turn, the quality of life can alter

over longer periods of follow-up[30,51], as opposed to the 2-month follow-up period of the current study. This can be explained by the limited resources and time constraints during this study. However, similar follow-up periods have been observed in other studies in similar setups[13,18,21-22,52] and the current study design enables longitudinal data analysis at various intervals.

Future research should aim at following up patients for a longer period, including more objective and clinically measurable methods of assessing patient satisfaction relative to variable factors. Future studies on the same subject can incorporate analyses of personality traits and patient OHRQoL at various time intervals pre-and post-denture treatment, or even at follow-up stages, to assess its direct relationship with patient satisfaction level.

## Conclusion

The qualitative and quantitative findings of this service evaluation represent that edentulous patient's satisfaction can be significantly improved, on all measured domains, with the provision of well-fitting, retentive and stable replacement complete dentures. These findings further reiterate the benefits of conventional complete dentures as a viable treatment option for edentulous patients; Hence, indicating the 'clinical meaningfulness' of the effect of replacement complete dentures on patient satisfaction levels and patient acceptance of complete dentures provided.

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**Authors' contributions**

Keyvan Moharamzadeh contributed to study conception and designing alongside data acquisition, interpretation, and critical review of the manuscript. Nicolas Martin contributed to study conception, study designing and critical review of the manuscript. Mrs Rachel Martin, contributed significantly towards data acquisition and reviewing the manuscript. Hadeer Bhutta contributed to study conception, data acquisition, data analysis, data interpretation, and drafting of the manuscript. All the authors read and approved the final manuscript.

**Ethical Considerations**

This service evaluation project was approved by the Clinical Effectiveness Unit, Sheffield Teaching Hospitals NHS Foundation Trust. Since this was not a research project, it was exempt from ethical approval.

**Conflict of interest**

The authors declare that they have no conflict of interest.

**Supplementary material**

It comprises of the data collection tool (questionnaire) submitted at different time intervals.

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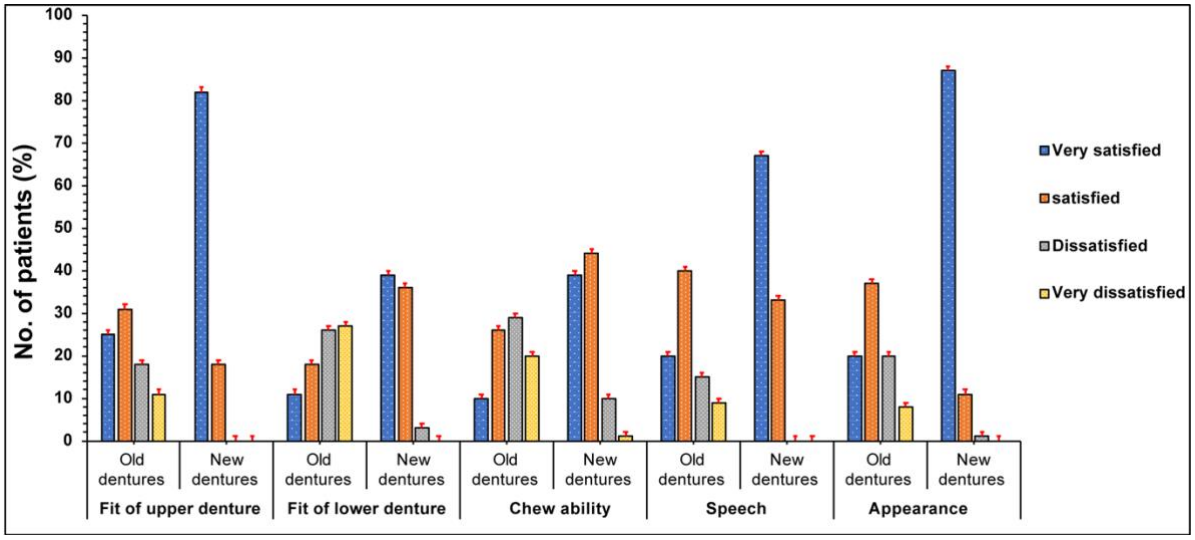
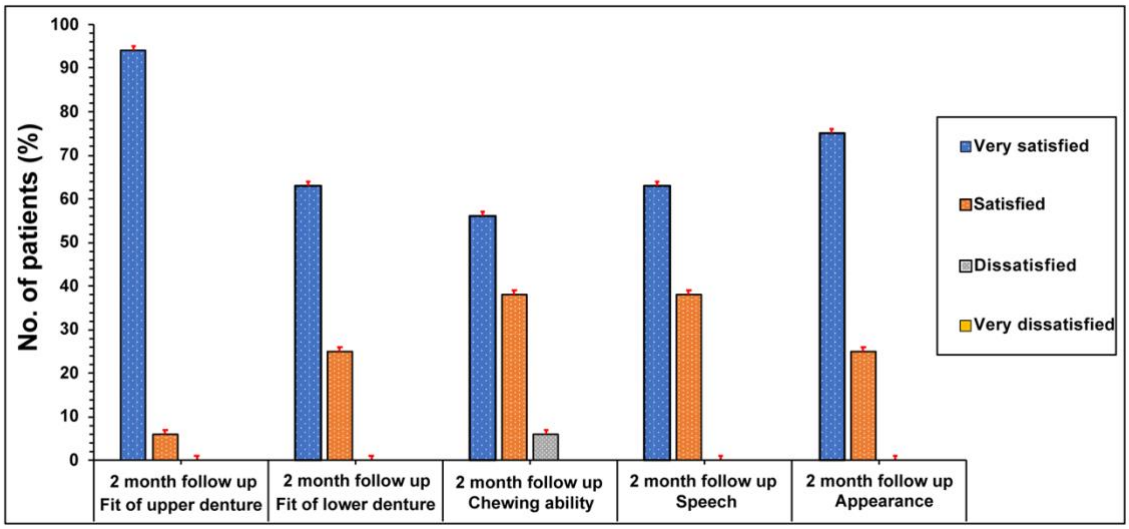



**Figure 2 Presenting complaints of participants with old dentures.** It demonstrates the major presenting complaints of complete denture patients attending Charles Clifford Dental Hospital.




469

470 **Figure2A- Patient satisfaction before and after insertion of upper and lower complete dentures** with

471 fit of upper and lower complete dentures, chewing ability, speech, and appearance. **2B- Long-term**

472 **patient satisfaction level**- Satisfaction levels of fit of upper and lower complete dentures, chewing

473 ability, speech, and appearance 2-month post-treatment.

474

475 **Table 1- Baseline characteristics of participants,**

| Variables | Number | Frequency (%) |
|---|---|---|
| Sex | | |
| Male | 91 | 62 |
| Female | 56 | 38 |
| Age group (year) | | |
| <25 years | 0 | 0 |
| 26-45 years | 6 | 4.1 |
| 46-65 years | 40 | 27.2 |
| >65 years | 101 | 68.7 |
| Edentulous since | | |
| <6mths | 8 | 5.4 |
| 6m-2yrs | 19 | 13 |
| 2-5yrs | 12 | 8.2 |
| >5yrs | 104 | 70.7 |
| Does not remember | 4 | 2.7 |
| How old are the current dentures? | | |
| 0-6mths | 5 | 3.4 |
| 6m-2yrs | 30 | 20.4 |
| 2-5yrs | 15 | 10.2 |
| 5-10yrs | 28 | 19 |
| >10yrs | 60 | 41 |
| Does not remember | 9 | 6 |

| Number of dentures used before | | |
|---|---|---|
| 0 set | 7 | 5 |

476

477 **Table 2: Satisfaction scores before and after complete denture provision.**

| Domain | Satisfaction Score between 0-4 Mean (SD) | | Mean difference (SE) | 95 % Confidence Interval | | Paired t test |
|---|---|---|---|---|---|---|
| | Before | After | | Lower | upper | |
| FIT of upper denture | 2.4 (0.1) | 4.0 (0.05) | 1.6 (0.08) | 4.59 | 3.31 | $p < .001$ |
| FIT of lower denture | 1.7 (0.1) | 2.7 (1.5) | 1.0 (0.12) | 3.11 | 2.35 | $p < .001$ |
| Chew | 2.0 (0.57) | 3.0 (0.5) | 1.0 (0.04) | 4.24 | 1.76 | $p < .05$ |
| Speech | 2.3 (0.15) | 3.6 (0.1) | 1.3 (0.01) | 3.85 | 3.35 | $p < .001$ |
| Appearance | 2.4 (0.1) | 3.8 (0.08) | 1.4 (0.08) | 4.01 | 3.61 | $p < .003$ |
| [a]P < 0.05 denotes significance. P < 0.001 denotes high significance | | | | | | |

478 .

479 **Table 3: Descriptive statistics of errors recorded in old and new complete dentures provided**

| Observations | | Feedback (%) | | T-test score | Mean Difference | 95% CI | | P value |
|---|---|---|---|---|---|---|---|---|
| | | Old Dentures | New Dentures | | | Lower | Upper | |
| **Errors in polished surface** | Over-extension | 15.40 | 8.84 | 13.68 | 1.36 | 1.16 | 1.57 | <.001 |
| | Under-extension | 23.10 | 1.36 | 22.31 | 1.05 | .96 | 1.15 | <.001 |
| | Frenae attachment | 3.80 | 2.72 | 6.75 | 1.41 | .89 | 1.94 | <.001 |
| | Neutral zone space | 7.70 | .68 | 10.75 | 1.08 | .85 | 1.32 | <.001 |
| | Tongue space | 6.00 | 2.04 | 6.22 | 1.34 | .79 | 1.91 | .002 |
| | | | | | | | | |
| **Occlusal errors** | Vertical dimension | 27.21 | .68 | 34.44 | 1.02 | .96 | 1.09 | <.001 |
| | Even in CR | 7.48 | 2.04 | 8.64 | 1.21 | .89 | 1.53 | <.001 |
| | Even articulation | 4.76 | .00 | 00 | 00 | 00 | 00 | 00 |
| | Teeth not over ridge | 3.40 | .00 | 00 | 00 | 00 | 00 | 00 |
| | | | | | | | | |
| **Appearance** | Shade | 4.08 | .00 | 00 | 00 | 00 | 00 | 00 |
| | Mould | 4.76 | .68 | 7.17 | 1.12 | .71 | 1.54 | .001 |
| | Horizontal incisal plane | 8.16 | .68 | 11.32 | 1.07 | .86 | 1.30 | <.001 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Lip support | 14.97 | .68 | 19.58 | 1.04 | .93 | 1.16 | <.001 |
| | Position of teeth | 6.80 | .00 | 00 | 00 | 00 | 00 | 00 |
| | | | | | | | | |
| **Anatomical constrains** | IO access | .7 | .68 | 1.84 | 1.49 | -748 | 751 | .52 |
| | Ridge size/morphology | 27.89 | 4.08 | 18.80 | 1.12 | 1.01 | 1.25 | <.001 |
| | Muscle attachments | 4.08 | .00 | 00 | 00 | 00 | 00 | 00 |
| | Fibrous/flabby ridge | 6.12 | 1.36 | 7.80 | 1.18 | .82 | 1.55 | <.001 |
| | Sup. Mental N | 0.68 | .00 | 00 | 00 | 00 | 00 | 00 |
| | Unusual anatomy | 4.76 | 2.04 | 6.83 | 1.30 | .83 | 1.77 | <.001 |
| | | | | | | | | |
| **Procedural difficulty** | Gag reflex | 10.88 | 2.04 | 10.96 | 1.15 | .93 | 1.39 | <.001 |
| | Habitual mand posturing | 7.48 | 1.36 | 8.95 | 1.15 | .86 | 1.45 | <.001 |
| | Diff CR | 4.76 | 1.36 | 6.65 | 1.22 | .75 | 1.69 | .001 |
| | Dry mouth | 3.40 | .68 | 5.49 | 1.16 | .50 | 1.83 | .011 |

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**Table 4 Age-wise and gender-wise correlations between denture quality parameters and overall patient satisfaction.**

| Characteristics | Correlation R | P value (> 0.05) |
|---|---|---|
| **Age-wise satisfaction with** | | |
| Fit of upper denture | 0.1643 | .045996 |
| Fit of lower denture | -0.0512 | .538171 |
| Chewing ability | 0.0416 | .615659 |
| Ease of speech | 0.0749 | .365601 |
| Teeth appearance | -0.2243 | .006203 |
| **Gender-wise satisfaction with** | | |
| Fit of upper denture | -0.037 | .655264 |
| Fit of lower denture | 0.0892 | .280983 |
| Chewing ability | -0.0093 | .913549 |
| Ease of speech | -0.1105 | .183221 |
| Teeth appearance | -0.0509 | .546179 |

484 **Table 5 Correlations between patient factors and various denture quality parameters**

| **Patient factors** | **Correlation with satisfaction levels of various denture quality parameters** | | | | |
|---|---|---|---|---|---|
| | **Fit of upper denture** | **Fit of lower denture** | **Chewing ability** | **Speech** | **Appearance** |
| **Edentulous since** | 0.0552 | 0.0076 | -0.0539 | 0.0774 | -0.0933 |
| **Age of current dentures** | 0.0617 | 0.0108 | -0.0412 | 0.0171 | 0.0099 |
| **No. of dentures used before** | †1.000 | -0.0723 | -0.044 | -0.048 | -0.1611 |
| **Presenting complaints** | 0.1287 | -0.024 | -0.021 | 0.0524 | -0.0553 |
| Correlations larger than r = 0.40 are statistically significant at P < .05.<br>Correlations near zero show weak relationship.<br>† Strong positive correlation (r > 0.5). | | | | | |

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