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**Original Research Article**

# Satisfaction status of complete denture wearers provided by undergraduate students –A cross sectional study

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## Abstract

**Purpose:** The aim of this clinical study was to assess the satisfaction of patients who received conventional complete denture from under graduate students in a teaching institution for one academic year from May 2014 to April 2015.

**Material and Methods:** Satisfaction statuses from 100 elderly south Indian patients wearing conventional complete dentures made by under graduate students in an academic institution were evaluated. The evaluation was done based on the selected questionnaires from Oral Health Impact Profile (OHIP) regarding their esthetics, function, and comfort level with their dentures.

**Results:** Men were more overall satisfaction of their dentures (79.2%) than women (65.4%). Independent samples T-Test to compare mean VAS scores between satisfied and not satisfied subjects, a highly statistically significant relationship noted in esthetic VAS and comfort VAS (p=0.009).

**Conclusion:** Within the limitations of this study quality of the denture directly correlated with denture satisfaction. The results of this study were more number of patients was satisfied with their conventional complete denture made by undergraduate students monitored by group of faculties.

**Keywords:** Satisfactory Status, Conventional Complete Denture, Under graduate, Denture Assessment, Visual analog scale.

## 1. Background

World Health Organization (WHO), in 1948, defined health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity".[1] Patient satisfactions has been the ultimate goal in any dental treatment. In a patient receiving complete denture prosthesis, many factors have a combined role in achieving his/her satisfaction. An efficient mastication, good esthetics, comfortable speech and comfort in function are the factors in patient satisfaction. The ultimate goal for every patient should be maintainable health for the total masticatory system.[2] Optimum oral health must be the goal of the complete dentist. A study showed that elderly people missing their front teeth were less confident and less pleased with their looks than those who were missing posterior teeth. When oral health is overlooked, the overall status of health and the quality of life are compromised.[3]

Poor oral heath can increase the risks to general health and with compromised chewing and eating abilities, affect nutritional intake.[4] Based on the assumption that the use of denture could improve quality of life that is compromised as a result of loss of teeth; dentures are often recommended for individuals with missing teeth. According

to some studies implants compared to conventional dentures improved oral health related quality of life (OHRQoL). [5] Study by John *et al*., indicate that there is an independent and important relationship between tooth retention and quality of life, with more natural teeth resulting in better oral health related quality of life.[6] The increase in number of missing teeth was significantly correlated with OHRQoL. Denture status and demographic factors was a stronger predictor for impaired OHRQoL.[7]

In many countries, more women are edentulous than men. The older adults have a limited capacity to adapt the changes in oral and dental conditions, leading to increased amounts of complaints linked with denture wearing. Hence several studies have shown that tooth loss weakens the quality of life of a person, causing problems owing to facial appearance, speaking, chewing, nutrition and even emotional problems. Being edentulous with dentures appears to be associated with poorer intake across multiple nutrients and there is strong evidence that poor diet leads to ill health. [8]

Masticatory efficiency of well-made conventional complete denture will improve the chewing ability and food choice to some extent, but it is the amount of patient

satisfaction that determines the success of the treatment.[9] This survey was done to investigate the clinical quality of new complete dentures predicts patient satisfaction in an academic institution.

## 2. Patients and Methods

### 2.1 Patient selection:

The study was conducted on 100 patients who received conventional complete denture. They were ramdomly selected from the under graduate out patient department of prosthodontics and crown and bridge, Thai moogambigai dental college & hospital, mogappair, chennai, Tamilnadu. Patients were 48 men and 52 women aged between 50-75 years. They recalled after 2 weeks of receiving the complete denture prosthesis from UG students. All the complete dentures made by under graduates were monitored by group of faculties in the department of prosthodontics. To standardized the complete denture, students were asked to use Acryrock teeth set, DPI heat cure resin and conventional processing technique. The study was conducted over a period of one year from May 2014 to April 2015.

### 2.2 Inclusion criteria: [7,9]
1) 50-75 years aged patients who received their first conventional complete denture prostheses
2) Dentures should be made by UG students
3) Patients recalled within two weeks from the insertion.
4) Patients with good physical and mental health.
5) Patients who were able to answer the questions.

### 2.3 Exclusion criteria: [7,9]
1) Patients who received complete denture prostheses from PG students.
2) Patients with implant supported complete denture prostheses.
3) Patients with complete denture prostheses made from outside college elsewhere.
4) Patients wearing complete denture prostheses for more than two weeks.

### 2.4 Methodology:

The randomly selected patients were made to sit on the dental chair comfortably in the UG outpatient department. After obtaining consent from the patients, the ready-made questionnaire was filled by the intern (CRRI) students from the department. Patients encouraged giving the frank opinion about their new denture prosthesis. The questions were asked in his/her own mother tongue. All the interns were initially informed about the research objectives and highlighted the important data of this study. The questionnaire was recorded by face to face interview by the trained intern students.

The subjects were asked for selected questionnaire from Oral Health Impact Profile (OHIP). The questions were categories as esthetics assessment, assessment of function and comfort. The first section (variable 1) covered the esthetics assessment, the second section (variable 2) covered the functional assessment, and the third section (variable 3) covered the comfort of the dentures, also evaluate visual analog scale (VAS) Score.

**Variable 1: Esthetic parameters:** Contains four questions regarding esthetic assessments, such as, are you satisfied with your facial appearance (E1), are you satisfied with the size, shape, and color of the teeth (E2), do you avoid laughing or smiling (E3), and do you avoid conversation with others (E4).

**Variable 2: Functional parameters:** This contains eleven questions regarding the assessment of function such as difficulty in chewing (F1), pronunciation (F2), and swallowing food (F3), felt that your digestion has worsened (F4), food catching in your denture (F5), are you prevented from eating food you like (F6), do you avoid eating with others due to your dentures (F7), do you take long time for chewing (F8), do you have to use special food (F9), upper denture falling down while opening the mouth (F10),and lower denture getting displaced on tongue movements (F11).

**Variable 3: Comfort parameter:** This contains five questions regarding the assessment of comfort, like pain while opening or closing the mouth (C1), do you have even contact of teeth on both sides while closing the mouth (C2), have you had sore spots due to dentures (C3), felt that your denture have not been fitting properly (C4) and also whether he/she enjoying the taste of food (C5) with their denture.

**Variable 4: VAS Score:** Patient's satisfaction ratings to dentures were measured by the VAS scale. Patient asked to fill the questionnaire in visual analog scale for esthetic, function and comfort. It is scored between 1 and 10. The left side anchor on the VAS of satisfaction ratings was 'not at all satisfied' and the right side anchor was 'extremely satisfied'.

**VAS SCALE (1-10)**
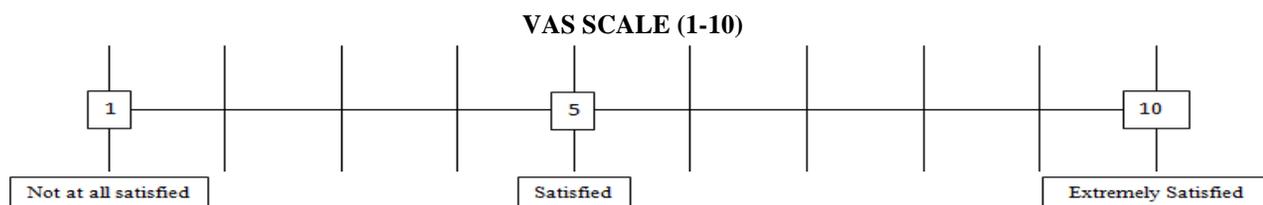


## 3. Results

The data collected from the patients were entered in Microsoft excel 2010 and statistical analysis done using SPSS 12 version. (SPSS, Inc., Chicago.) Continuous data were presented as percentage, mean VAS, standard deviation and Chi-Square. The p value of 0.05 or less was accepted as statistical significant. The p values are used to assess the degree of dissimilarity between 2 or more sets of measurements. It is actually the probability of obtaining a result, it should be considered in making decisions about the

usefulness of the treatment. Chi-Square test was done to compare the proportions between overall satisfaction levels. Independent samples T-test was done to compare mean VAS scores between satisfactions (%) and also between satisfied and not satisfied patients. Initially percentage of satisfaction was calculated and the results were 78.85% of esthetic satisfaction, 74.48% of function satisfaction, 71.15% of comfort satisfaction and overall satisfaction percentage was 74%. The subjects were divided into maximum of a satisfied (74%) and a minimum of not satisfied (26%).

**3.1 Gender wise satisfaction level**

Chi-Square test to compare overall satisfaction between genders is statistically not significant (p = 0.125). Men are more overall satisfaction of their dentures (79.2%) than women (65.4%) (Table-1)

**3.2 Mean VAS Scores between genders:**

Independent samples T-test to compare mean VAS scores between genders shows significant result in function VAS (P=0.029). But esthetic and comfort visual analog scale for satisfaction is not significant. It shows that patients gave contradictory satisfied results with function instead of esthetic. (Table-2)

**3.3 Overall satisfaction levels:**

In terms of Chi-Square test to compare proportions between overall satisfaction levels, a significant relationship was noted between esthetic parameters E4 (p = 0.02), functional parameters F2 (p = 0.04), F3 (p=0.037), comfort parameters C4 (p=0.014), and the satisfaction levels. Whereas there is highly statistically significant for some questions like F6 (p=0.003), C5 (p=0.001). (Table-3)

**3.4 Mean VAS scores between satisfaction levels:**

Independent samples T-Test to compare mean VAS scores between satisfied and not satisfied levels were done and a highly significant relationship noted between esthetic VAS (p=0.009), comfort VAS (p=0.009) with their satisfaction levels. And there is no statistical significant in function VAS (p=0.096). (Table-4)

**Table 1: Chi-Square test to compare proportions between genders**

|  |  | Gender | | | | | | P-Value |
|---|---|---|---|---|---|---|---|---|
|  |  | Male | | Female | | Total | |  |
|  |  | N | % | N | % | N | % |  |
| Overall satisfaction | Yes | 38 | 79.2 | 34 | 65.4 | 72 | 72.0 | 0.125 |
|  | No | 10 | 20.8 | 18 | 34.6 | 28 | 28.0 |  |
|  | Total | 48 | 100.0 | 52 | 100.0 | 100 | 100.0 |  |

**Table 2: Independent samples T-Test to compare mean VAS scores between genders.**

|  | Gender | N | Mean | Std. Dev. | t-Value | P-Value |
|---|---|---|---|---|---|---|
| Esthetics VAS | Male | 48 | 8.281 | 2.2572 | 0.303 | 0.763 |
|  | Female | 52 | 8.125 | 2.8386 |  |  |
| Function VAS | Male | 48 | 7.576 | 2.2215 | 2.221 | 0.029 |
|  | Female | 52 | 6.486 | 2.6460 |  |  |
| Comfort VAS | Male | 48 | 7.583 | 2.6080 | 0.680 | 0.498 |
|  | Female | 52 | 7.231 | 2.5715 |  |  |

**Table 3: Chi-Square test to compare proportions between overall satisfaction levels**

| Esthetics parameters | | Overall satisfaction | | | | | | P-Value |
|---|---|---|---|---|---|---|---|---|
|  |  | Yes | | No | | Total | |  |
|  |  | N | % | N | % | N | % |  |
| E1 | Yes | 70 | 97.2 | 25 | 89.3 | 95 | 95.0 | 0.132 |
|  | No | 2 | 2.8 | 3 | 10.7 | 5 | 5.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| E2 | Yes | 67 | 93.1 | 23 | 82.1 | 90 | 90.0 | 0.137 |
|  | No | 5 | 6.9 | 5 | 17.9 | 10 | 10.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| E3 | Yes | 22 | 30.6 | 14 | 50.0 | 36 | 36.0 | 0.069 |
|  | No | 50 | 69.4 | 14 | 50.0 | 64 | 64.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| E4 | Yes | 11 | 15.3 | 10 | 35.7 | 21 | 21.0 | 0.024 |
|  | No | 61 | 84.7 | 18 | 64.3 | 79 | 79.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |

| Functional parameters | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| F1 | Yes | 21 | 29.2 | 11 | 39.3 | 32 | 32.0 | 0.330 |
|  | No | 51 | 70.8 | 17 | 60.7 | 68 | 68.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F2 | Yes | 14 | 19.4 | 11 | 39.3 | 25 | 25.0 | 0.040 |
|  | No | 58 | 80.6 | 17 | 60.7 | 75 | 75.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F3 | Yes | 10 | 13.9 | 9 | 32.1 | 19 | 19.0 | 0.037 |
|  | No | 62 | 86.1 | 19 | 67.9 | 81 | 81.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F4 | Yes | 13 | 18.1 | 5 | 17.9 | 18 | 18.0 | 0.981 |
|  | No | 59 | 81.9 | 23 | 82.1 | 82 | 82.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F5 | Yes | 10 | 13.9 | 6 | 21.4 | 16 | 16.0 | 0.373 |
|  | No | 62 | 86.1 | 22 | 78.6 | 84 | 84.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F6 | Yes | 9 | 12.5 | 11 | 39.3 | 20 | 20.0 | 0.003 |
|  | No | 63 | 87.5 | 17 | 60.7 | 80 | 80.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F7 | Yes | 6 | 8.3 | 6 | 21.4 | 12 | 12.0 | 0.090 |
|  | No | 66 | 91.7 | 22 | 78.6 | 88 | 88.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F8 | Yes | 28 | 38.9 | 11 | 39.3 | 39 | 39.0 | 0.971 |
|  | No | 44 | 61.1 | 17 | 60.7 | 61 | 61.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F9 | Yes | 12 | 16.7 | 6 | 21.4 | 18 | 18.0 | 0.578 |
|  | No | 60 | 83.3 | 22 | 78.6 | 82 | 82.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F10 | Yes | 10 | 13.9 | 8 | 28.6 | 18 | 18.0 | 0.086 |
|  | No | 62 | 86.1 | 20 | 71.4 | 82 | 82.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| F11 | Yes | 19 | 26.4 | 12 | 42.9 | 31 | 31.0 | 0.110 |
|  | No | 53 | 73.6 | 16 | 57.1 | 69 | 69.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |

| Comfort parameters | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| C1 | Yes | 6 | 8.3 | 6 | 21.4 | 12 | 12.0 | 0.090 |
|  | No | 66 | 91.7 | 22 | 78.6 | 88 | 88.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| C2 | Yes | 46 | 63.9 | 16 | 57.1 | 62 | 62.0 | 0.533 |
|  | No | 26 | 36.1 | 12 | 42.9 | 38 | 38.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| C3 | Yes | 14 | 19.4 | 10 | 35.7 | 24 | 24.0 | 0.087 |
|  | No | 58 | 80.6 | 18 | 64.3 | 76 | 76.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| C4 | Yes | 10 | 13.9 | 10 | 35.7 | 20 | 20.0 | 0.014 |
|  | No | 62 | 86.1 | 18 | 64.3 | 80 | 80.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |
| C5 | Yes | 53 | 73.6 | 11 | 39.3 | 64 | 64.0 | 0.001 |
|  | No | 19 | 26.4 | 17 | 60.7 | 36 | 36.0 |  |
|  | Total | 72 | 100.0 | 28 | 100.0 | 100 | 100.0 |  |

**Table 4: Independent samples T-Test to compare mean VAS scores between satisfaction levels.**

|  | Overall satisfaction | N | Mean | Std. Dev | t-Value | P-Value |
|---|---|---|---|---|---|---|
| Esthetics VAS | Yes | 72 | 8.611 | 2.2939 | 2.648 | 0.009 |
|  | No | 28 | 7.143 | 2.9435 |  |  |
| Function VAS | Yes | 72 | 7.298 | 2.2987 | 1.703 | 0.096 |
|  | No | 28 | 6.266 | 2.8678 |  |  |
| Comfort VAS | Yes | 72 | 7.917 | 2.0539 | 2.767 | 0.009 |
|  | No | 28 | 6.071 | 3.2878 |  |  |

## 4. Discussion

Participants in this study were non institutionalized elderly south Indians most of them were physically healthy. The results were likely to underestimate the impact oral health among the general elderly population of India. However the purpose of this study is to determine the satisfaction status of a patient wearing complete denture for minimum of 2 weeks after insertion. It is known that older individuals take longer time to adapt to new dentures; various questionnaires, interviews, and personality assessment have been unable to identify any particular factors that may predict a patient's satisfaction with their dentures. The level of patient satisfaction can be evaluated using different questionnaires such as VAS or OHQoL.

According to Berg [10] construction of a good complete denture depends on technical, biological and physiological interactions between the patient and dentist. Asja celebic[11] stated that level of education, self-perception of affective and economic status, and quality of life are all related to patient satisfaction. Not only the quality of the denture bearing area but the denture wearing experience itself seems to be more important in determining patient satisfaction with mandibular complete dentures. Ellis *et al*[12] in his pilot study reported that there was increased satisfaction among patients with improved aesthetics. Aesthetics has direct initial impact on patient satisfaction.

Tooth loss causes disorder in the quality of life of the individual, especially when it affects their well-being, appearance and nutritional status.[13] The interrelation ship between oral health and general health is particularly being discussed among older people. General health and oral health are interrelated and any compromise in chewing and eating habits affects nutrition intake. It has been reported that complete denture quality does not influence masticatory efficiency.[14] Since prosthodontic as well as surgical treatment can be performed to improve patient satisfaction, oral health-related quality of life must be influenced by the quality of the prosthetic treatment. [15-20]

Most edentulous individuals over the age of 65 years are wearing dentures that are 10 years old, and as a result, mucosal changes are present in 44-63% of cases. The need for treatment based on clinical judgment, suggested that 40% of the 5 year old dentures and 80% of the 10 years old dentures should be replaced. [21] With regard to speaking, retention and stability of a denture are essential for complete denture wearers to speak fluently.[22]

Statistical analysis shows that patient are more satisfied while conversation with others (E4=0.02), and their pronunciation (F2=0.04), also shows no sign of difficulty in swallowing foods (F3=0.037). Patient satisfied with the dentures given by under graduate students in terms of retention (C4=0.014). Patient are very happy by eating the foods they like (F6=0.003) and enjoying the taste of it. (C5=0.001) The study group shows that their complete dentures more satisfied in function rather than esthetic and comfort. Because of patient attitude was more focused on chewing efficiency.

It is possible that some psychological aspects play a role and explain complete denture impacts on daily living & patient's satisfaction with their oral status and complete denture treatment. [23, 24] In this study denture treatment included adjustment after denture delivery, patient asked about painful spots and general comfort of the denture. These studies suggest that tooth loss can affect QOL for elderly people. Routine recalls seem to be important for wearers of complete dentures, as several insidious complications may develop and cause damage to the dentures as well as the patients' oral tissues. [25, 26]

A common problem is the failure of the participants to complete all the sections of the questionnaires which effect overall impact score. [27] Elderly patient required treatments if they experience pain, difficulty in chewing, or a deterioration of oral appearance if existing denture have been broken or lost.[28] The incidence of insufficient retention or stability of mandibular complete denture with time due to the influence of accelerated residual bone resorption and decreased chewing is the main complaint reported by the patients.[29] Patient attitude in VAS scores between satisfaction levels showed very highly significant results in esthetic and comfort (p=0.009), it shows that overall satisfaction of complete denture in relation to good esthetic and comfort during chewing. Patient's satisfaction was directly in proportion with quality of denture which was in turn strictly evaluated by group of faculties.

## 5. Conclusion

Denture quality, patient's level of acceptability and quality of life are all related to patient satisfaction. However the quality of denture shows the strongest correlation with patient satisfaction. Short term edentulous patients wearing complete dentures for the first time and with better quality of denture-bearing areas were more satisfied. Within the limitations of this study men were more satisfied regarding their complete denture than women. Overall satisfaction of the patients shows more on function than esthetic and comfort. The results of this study were more number of patients was satisfied with their conventional complete denture made by undergraduate students monitored by faculties.

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