

Patient Satisfaction among Previous Denture Wearers: A Survey to Determine Factors Influencing Patient Experiences and Outcomes

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Received on: 29 October 2024; Accepted on: 21 November 2024; Published on: 31 December 2024

ABSTRACT

Prosthetic rehabilitation is a crucial aspect of dental treatment that can significantly improve the quality of life for patients. This is particularly true for older adults who may experience various dental issues such as tooth wear, discoloration, and loss of teeth. Maintaining proper oral health and functionality is essential for the overall well-being of geriatric patients. Dentures are the most common and cheapest prosthetic rehabilitation technique.

Patient satisfaction is closely linked to both functional and esthetic outcomes. Factors like denture fit, stability, and ease of use directly influence patient comfort, while psychological aspects, such as self-confidence and social interaction, also impact satisfaction. Satisfaction among previous denture wearers is a critical factor in determining the success of prosthetic treatment.

Materials and methods: A closed-ended questionnaire was made and the survey was circulated among edentulous patients who were previous denture wearers. The responses were collected and analyzed.

Objectives:

- To evaluate the satisfaction levels of former denture wearers.
- To estimate the correlation between denture satisfaction and various patient-related factors, including demographic characteristics, oral health practices, and experiences after the beginning of denture use.

Results: Participants above the age of 60 were more satisfied compared with those less than 60. Individuals those living in urban areas with higher education can have higher expectations and end up being dissatisfied. Patients' satisfaction may not be affected by the experience with the dentist. The use of adhesive powder leads to lower sense of satisfaction.

Conclusion: A significant association was found between the overall patients' satisfaction and experiences while wearing denture like pain while mastication, sores, or fit of the denture. There was a statistically significant association observed between the overall satisfaction level of patients and with each of age-group and place of residence. The satisfaction of the patient was found to be influenced by multiple factors amongst which the duration of denture worn played a vital role.

Keywords: Denture wearer, Expectations, Retention, Satisfaction, Stability.

Dental Journal of Advance Studies (2024): 10.5005/djas-11014-0066

INTRODUCTION

Edentulism, which has both functional and psychosocial consequences, can be corrected with the placement of removable dentures.¹ Previous research demonstrated that individuals who are more satisfied with their dental treatment are more likely to adhere to recommended care and experience better outcomes.^{2,3} Proper denture fit evaluation and adjustment are crucial in ensuring patient comfort and acceptance of new denture wearers.⁴

Satisfaction is an important factor in determining the success of prosthetic treatment, especially for older adults with unique needs and challenges.⁵ Multiple factors, including comfort, esthetics, mastication, stability quality of the prostheses, and the overall treatment experience. Comfort fit and retention are key factors that influence satisfaction.^{6,7} Pain during initial denture use can significantly reduce satisfaction, as an improper fit often causes discomfort and can lead to the development of sores.^{3,8} Denture adhesives may enhance fit and retention, but they can also negatively impact satisfaction due to issues with taste and cleaning

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How to cite this article: Geevarghese SS, Nikita, Girdhar A, et al. Patient Satisfaction among Previous Denture Wearers: A Survey to Determine Factors Influencing Patient Experiences and Outcomes. *Dent J Adv Stud* 2024;12(3):173–177.

Source of support: Nil

Conflict of interest: None

difficulties.⁹ Many patients rely on denture adhesive powder to improve stability; however, this is generally a temporary fix. Overuse of adhesive powder can lead to irritation, potentially diminishing long-term satisfaction.¹⁰

Table 1: Methodology chart

| Objective | Design | Participants | Data collection methods | Data collection tool | Data analysis |
|--|-----------------------|-----------------------------------|-------------------------|----------------------|----------------------|
| To analyze the patient satisfaction among previous denture wearers | Cross-sectional study | Previous complete denture wearers | Survey | Questionnaire | Analysis using STATA |

Proper denture hygiene is essential, as poor denture hygiene can lead to the development of denture stomatitis, a common inflammatory condition affecting denture wearers.^{8,9}

Understanding these factors can help dental professionals improve patient outcomes and quality of life.

MATERIALS AND METHODS

It was a non-probability convenient sampling used for this study. Thirty participants who had worn dentures for at least 2 months and who came to the clinic for follow-up were enrolled. A sample size of 30 is often used as a rule of thumb for a minimum sample size in statistics because it is the point at which the central limit theorem begins to apply.¹⁰ A questionnaire (annexure attached) consisting of 20 questions including sociodemographic variables (age, gender, place of stay, highest education level, employment status, positive and negative attitude toward denture satisfaction) related to patients' perception of clinical outcome in different domains such as appearance, speech, comfort, sores, and use of denture adhesives were used (Table 1).

Outcome Variable

Satisfaction level was scored as the sum of five questions (fit of dentures, clarity of speech, natural appearance of teeth, any sore or irritation, and avoiding certain food) and scored as 4,3,2,1 respectively. The level of satisfaction was attributed to the following questions and each was given a score ranging from 4 to 1. 4 being "Highly satisfied" and 1, "Not satisfied."

- Fit of dentures
- Clarity of speech
- Natural appearance of teeth
- Any sores/infection
- Avoiding certain food

Score

- 4 – Highly satisfied
- 3 – Satisfied
- 2 – Neutral
- 1 – Dissatisfied

A total score above 10 was considered as satisfied and 10 and below as dissatisfied.

Results from the logistic regression analyses are presented as odds ratios (ORs) with 95% confidence intervals (CIs) of $p < 0.05$ was considered significant using Taylor linearization methods. Missing data was excluded from the analyses. Multi-collinearity if detected was ignored. All statistical operations were conducted with STATA software version 17.0 (Stata Corporation, College Station, TX, USA)

The anonymity of the study was maintained by assigning a unique serial number for each participant so the details of the participants are not revealed.

RESULTS

About 30 participants were included in the study out of which, 16 were females and 14 were males. And 17 patients were above the age of 60 and 13 were below the age of 60. About 8 participants had a satisfaction score less than or equal to 10 categorized as dissatisfied and 22 had a score above 10 categorized as satisfied (Table 2).

And 2 out of 17 individuals above the age of 60 and 6 out of 13 individuals below the age of 60 were not satisfied with the denture. The p -value of 0.035 for the age-group indicates a statistically significant difference in experiences based on age. Regarding employment status p -value (0.027) and place of residence significant p -value (0.031) indicate that financial or social factors related to employment status may affect satisfaction and rural residents may face more challenges with dentures compared with urban dwellers. Duration of denture wearer showed a significant p -value (0.001), indicating that long-term denture users are likely to have lesser issues than recent denture.

Satisfaction with the service provided at the department shows no significant correlation (0.187). The lack of statistical significance implies that overall service satisfaction may not be strongly linked to denture satisfaction but is based on many other factors. Avoidance of certain foods indicates strong significance (0.004) suggesting that avoiding foods impacts satisfaction and the absence of bad smell contributes significantly to satisfaction (p -value of 0.000). For the usage of denture adhesives, seven individuals reported they were "Not satisfied," while two were "Satisfied." This suggests that frequent use of adhesive may not enhance satisfaction over a period of time.

Logistic regression as an ORs was done (Table 3). An odds ratio (OR:0.067) for those below 60 years of age indicates that individuals above 60 were 93.3% less likely to be satisfied with their dentures compared with those below 60. Concerning education individuals with higher secondary education and above showed lower odds of satisfaction (OR: 0.05) compared with primary or no education, with only 5% as likely to be satisfied as those with primary education or no formal education. Odds Ratio (OR:1.625) for rural compared with urban depicts that individuals living in rural areas were 62.5% more likely to be satisfied with their dentures compared with those living in urban areas.

The odds ratio of (OR:1.75) for never avoided food and (OR:2.75) never used adhesive powder suggests that individuals who had never avoided any food were 75% more likely to be satisfied with their dentures compared with those who had avoided food at least once. Individuals who never used adhesive powder were 2.75 times more likely to be satisfied with their dentures compared with those who used at least once same as for the odds for those who never had pain while chewing (OR:2.37).

Table 2: Results of Pearson correlation along with *p*-value measured at a significant level of $p < 0.05$ for various factors affecting denture satisfaction.

| Factors affecting denture satisfaction | Satisfaction level | | | Chi-square |
|---|--------------------|----|-------|------------|
| | Yes | No | Total | |
| Age-group | | | | |
| Above 60 | 2 | 15 | 17 | 0.035 |
| Below 60 | 6 | 7 | 13 | |
| Gender | | | | |
| Female | 6 | 10 | 16 | 0.151 |
| Male | 2 | 12 | 14 | |
| Highest level of education | | | | |
| Higher secondary and higher | 4 | 2 | 6 | 0.006 |
| No formal education | 1 | 10 | 11 | |
| Primary education | 0 | 8 | 8 | |
| Up to high school | 3 | 2 | 5 | |
| Current employment status | | | | |
| Employed | 1 | 3 | 4 | 0.027 |
| Retired | 0 | 3 | 3 | |
| Self-employed | 6 | 4 | 10 | |
| Unemployed | 1 | 12 | 13 | |
| Place of residence | | | | |
| Rural | 8 | 13 | 21 | 0.031 |
| Urban | 0 | 9 | 9 | |
| Duration of wearing dentures | | | | |
| More than 1 year | 0 | 11 | 11 | 0.001 |
| 6 months to 1 year | 1 | 8 | 9 | |
| 3–6 months | 7 | 3 | 10 | |
| Sore spots or any irritation due to denture | | | | |
| Never | 0 | 4 | 4 | 0.001 |
| Often | 8 | 1 | 9 | |
| Only once | 0 | 11 | 11 | |
| Rarely | 0 | 6 | 6 | |
| Pain during chewing | | | | |
| Never | 0 | 3 | 3 | 0.001 |
| Often | 6 | 1 | 7 | |
| Only | 1 | 7 | 8 | |
| Rarely | 1 | 11 | 12 | |
| First time experienced pain | | | | |
| After a month | 1 | 5 | 6 | 0.105 |
| After 1 week | 6 | 6 | 12 | |
| Never | 0 | 6 | 6 | |
| Within 1 hour | 1 | 5 | 6 | |
| Frequency of adhesive powder used in a day | | | | |
| Multiple times | 7 | 2 | 9 | 0.00 |
| Never | 0 | 17 | 17 | |
| Once | 1 | 3 | 4 | |
| Does your denture cause a bad smell? | | | | |
| Never | 0 | 10 | 10 | 0.00 |
| Often | 7 | 0 | 7 | |

(Contd...)

Table 2: (Contd...)

| Factors affecting denture satisfaction | Satisfaction level | | | Chi-square |
|--|--------------------|----|-------|------------|
| | Yes | No | Total | |
| Rarely | 0 | 4 | 4 | |
| Sometimes | 1 | 8 | 9 | |
| Satisfied with the service of the provider? | | | | |
| Not satisfied | 0 | 10 | 10 | 0.187 |
| Neutral | 7 | 0 | 7 | |
| Satisfied | 0 | 4 | 4 | |
| Very satisfied | 1 | 8 | 9 | |
| Do you avoid certain food because of difficulties with your denture? | | | | |
| Never | 0 | 8 | 8 | 0.004 |
| Often | 5 | 2 | 7 | |
| Rarely | 0 | 7 | 7 | |
| Sometimes | 3 | 5 | 8 | |

Table 3: Unadjusted odds with confidence interval

| Background characteristics | Unadjusted odds | Confidence interval |
|---|-----------------|---------------------|
| Age (above 60)* | | |
| Below 60 | 0.067** | (0.006–0.651) |
| Education (no formal education)* | | |
| Up to high school | 0.067 | (0.04–1.02) |
| Higher secondary and above | 0.05** | (0.003–0.72) |
| Employment (no employment)* | | |
| Self-employed | 0.067** | (0.006–0.755) |
| Employed | 0.125 | (0.008–1.885) |
| Place of residence (urban)* | | |
| Rural | 1.625** | (0.67–3.92) |
| Duration of wearing dentures (3–6 months)* | | |
| 6 months to 1 year | 21** | (1.78–248.10) |
| Ever avoided any food (at least once)* | | |
| Never | 1.75 | (0.73–4.17) |
| Ever used adhesive powder (at least once)* | | |
| Never used | 2.75** | (0.23–6.18) |
| Ever had pain while chewing (at least once) | | |
| Never had | 2.37** | (1.04–5.42) |
| Ever had a bad smell (at least once) | | |
| Never had | 2.5** | (1.61–3.67) |

**Asterisk indicates statistically significant group w.r.t the reference group; *reference group

DISCUSSION

Patient satisfaction refers to the extent to which patients feel their healthcare needs and expectations are met during their interactions with healthcare providers. Patient satisfaction among denture wearers can be influenced by several factors, including fit and comfort, functionality, esthetics, adaptation period, maintenance and care, psychosocial factors, follow-up care, etc. Improving these aspects can lead to higher satisfaction rates among denture wearers. Patient satisfaction is a critical indicator of the quality of care and can influence patient loyalty, adherence to treatment plans, and health outcomes. Surveys and feedback can help practitioners understand and address such specific patient needs.

This cross-sectional study was conducted among 30 edentulous participants who were previous denture wearers for a minimum of 3 months and was analyzed using STATA. Questionnaires consisting of 20 questions including sociodemographic variables.

In the present study, it was observed that participants above the age of 60 were more satisfied compared with those less than 60. This can be due to lower expectations, social pressure, less concern about the cosmetic aspects of dentures, and more focus on their functional benefits. It is found to be different to where it states that no statistical significance was found between the patient age and gender to denture satisfaction.¹¹ Individuals with higher education and those living in urban areas can have higher expectations and end up having lower satisfaction, which is in agreement.¹² Education, certain lifestyles, such as public speaking or professions, force individuals to be conscious regarding the appearance of their dentures and hence have lesser satisfaction compared with their counterparts.¹³

Experience with a dentist does not affect patients' satisfaction with their complete dentures agrees as many other factors contribute to the satisfaction of denture-wearing patients.¹⁴

Individuals may develop strategies for dealing with any challenges associated with wearing dentures, such as adjusting their diet or speech patterns. As the individual becomes accustomed to the feel and function of the dentures, satisfaction may improve, so the satisfaction tends to increase more with time.^{15,16} Participants who have used adhesive powder have lesser satisfaction might be due to the unpleasant taste of the material, sticky feeling in the mouth, or rash or itchiness due to the adhesive powder which was found to be not in agreement.¹⁴

CONCLUSION

This study revealed a significant association between overall patient satisfaction and various factors, including pain during chewing, sore spots, and the fit of the dentures.¹⁷ Participants above the age of 60 were more satisfied compared with those less than 60. Notably, the duration of time that patients had been wearing their dentures significantly influenced their overall satisfaction.¹⁸ Individuals living in urban areas with higher education had higher expectations and participants who used adhesive powder were found to have lower sense of satisfaction.¹⁹ Among the multifactorial influence, patients' satisfaction was not affected by the experience with the dentist. Experiences from dentists do not really play a huge role in denture satisfaction. These findings highlight the multifaceted nature of patient experiences with dentures and suggest areas for improvement in denture care and design.

Limitations

Our sample was only taken from patients attending the college clinic and cannot be generalized.

The sample size of 30 limits the generalizability of the findings, as the small sample may lead to overrepresentation or underrepresentation of certain data points.

Satisfaction level was assessed using only five variables, which may not capture the full range of factors influencing patient satisfaction.

ACKNOWLEDGMENT

This is self-funded research. No external funding was received.

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ANNEXURE**Patient Satisfaction for Denture Wearer****Evaluation of Patient Satisfaction for Denture Wearer****Demographic Features****Unique Identification Number***Beneficiary No/Serial number of participant*

1. What is your age-group?
 - a) Under 40
 - b) 40–50
 - c) 50–60
 - d) Above 60
 2. What is your gender?
 - a) Male
 - b) Female
 - c) Other
 - d) Don't wish to reveal
 3. What is your highest level of education?
 - a) No formal education
 - b) Primary education
 - c) Up to high school
 - d) Higher secondary and higher
 4. What is your current employment status?
 - a) Unemployed
 - b) Employed
 - c) Self-employed (farming, business)
 - d) Retired
 5. Place of residence
 - a) Urban
 - b) Rural
- Denture-related Questions*
6. How long have you been using dentures?
 - Less than three months
 - Three to six months
 - Six months to one year
 - More than one year
 7. How satisfied are you with the fit of the denture?
 - Very satisfied
 - Moderately satisfied
 - Neutral
 - Dissatisfied
 8. How satisfied are you with the appearance of your dentures?
 - Satisfied always
 - Satisfied when I got the dentures but now I am not
 - Neutral
 - Dissatisfied
 9. How would you rate the clarity of your speech with your dentures?
 - Very clear
 - Clear but I struggle with few letters/words
 - Neutral
 - Not clear
 10. How natural do your dentures look compared with real teeth?
 - Looks exactly like natural teeth.
 - Was looking natural now started looking artificial
 - Neutral
 - Looks artificial
 11. How comfortable are your dentures during daily use?
 - Extremely comfortable since beginning
 - Was not comfortable in the beginning but gradually became comfortable
 - Neutral
 - Not comfortable
 12. Did you experience any sore spots or irritation due to your dentures?
 - Never
 - Only in the beginning
 - Rarely
 - Often
 13. Did you experience any pain during chewing?
 - Never
 - Only in the beginning
 - Rarely
 - Often
 14. When was the first time you experienced pain?
 - Never
 - Within one hour
 - After a week
 - After a month
 15. Have you experienced any difficulty in cleaning your dentures?
 - Never
 - Rarely
 - Sometimes
 - Often
 16. Do you rinse your oral cavity after removing the denture?
 - Never
 - Rarely
 - Sometimes
 - Often
 17. How satisfied are you with the support and service provided by your dental care provider?
 - Very satisfied
 - Satisfied
 - Neutral
 - Not satisfied
 18. Do you avoid certain foods because of difficulties with your dentures?
 - Never
 - Rarely
 - Sometimes
 - Often
 19. Does your denture cause a bad smell?
 - Never
 - Rarely
 - Sometimes
 - Often
 20. How many times do you have to use adhesive powder on your denture before insertion in a day?
 - Never
 - Rarely
 - Once
 - Multiple times.