Evaluation of Awareness toward Various Treatment Modalities for Replacement of Teeth in Local Population of Sundar Nagar, District Mandi, Himachal Pradesh: A Survey Report

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Abstract

Background: The purpose of the study was to collect information from local population of Sundar Nagar, District Mandi, Himachal Pradesh, to assess their attitude toward replacement of teeth. Materials and Methods: An analytical, cross-sectional, epidemiological survey was conducted on 522 individuals randomly selected from a local population of Sundar Nagar, to determine attitude toward various treatment modalities for the replacement of teeth. A self-designed closed-ended questionnaire was prepared to assess the attitude of the patient, and collected data were analyzed statistically using the Chi-square test at the significance level of \( P < 0.05 \). Results: Around 87% of patients showed positive attitude for the replacement of missing teeth. Almost 78.2% of patients liked to replace missing teeth even although it is an expensive treatment. Around 47.1% of patients believed that they socialized less with a removable prosthesis because of poor stability and retention. Eighty-eight percent of patients of 40–59 years showed a positive attitude toward fixed prosthesis as compared to older age, who preferred removable prosthesis due to lack of interest in esthetics and low perceived need of prosthesis. Forty-seven percent of patients showed a positive attitude toward acceptance of implant. Conclusion: It is essential to evaluate attitude toward treatment as treatment expectations may influence treatment planning and perceived value by the patient and its outcome.

Keywords: Attitude, mastication, questionnaire, replacement of teeth

Introduction

Teeth and their supporting structures are an integral part of the facial skeleton. They support and interact closely with other parts of the skull, providing biological system for chewing, speaking, and expressing emotions. Teeth play an important role in the maintenance of a positive self-image. The loss of teeth results in significant disabilities which can profoundly disrupt social activities. Tooth loss is very traumatic and upsetting and is regarded as a serious life event that requires significant social and psychological readjustment.

The attitude toward tooth loss is changing. Elderly people have greater expectations of their dental health than in the past. It has been observed several nondisease factors such as attitude, behavior, regular dental visits, and characteristics of the health-care system play an important role in the decision to become edentulous. Research has demonstrated that edentulism may be due to combination of various cultural educational backgrounds, financial, and dental disease determinants, as well as the effect of treatment received in the past. Most edentulous patients require treatment to improve mastication, while some patients are professionals such as teachers, singers, or actors who prefer prosthesis for either phonetics or esthetics. There are several factors affecting the final treatment decision regarding the replacement of a missing tooth; these factors are case dependent. The acceptability of treatment is determined by three major factors, i.e., comfort,
function, and esthetics. Mechanical and biological factors determine comfort and function. However, a variety of social and cultural influences, attitudes, and beliefs may determine acceptance of the esthetic aspects of prosthodontic treatment.\(^7\)

A thorough patient education program should begin with the initial patient visit and be interwoven throughout denture construction.\(^1\) Many authors have suggested the use of a questionnaire to assist diagnostic and prognostic skills. Use of a questionnaire before proceeding with treatment not only assists the patient to reveal their problem but also the clinician to formulate most appropriate treatment plan addressing the awareness, need and expectation of the patient.\(^8\) Success of a prosthesis depends on patient’s acceptance based on his assumptions. Attitude of patients toward the replacement of teeth has not been investigated in Himachal Pradesh, India. Therefore, this study was planned using a questionnaire to evaluate the attitude and awareness regarding various treatment modalities for the replacement of missing teeth in the local population of District Mandi.

**Materials and Methods**

An analytical, cross-sectional, epidemiological survey was conducted to determine awareness regarding various treatment modalities toward the replacement of teeth in the local population. A total number of 522 individuals were selected for the study. Samples were asked to fill a preset questionnaire. Validated questions were asked to the sample of age groups above 20 years for both males and females, having different educational levels. Samples were randomly selected from different areas of Sundar Nagar, District Mandi, Himachal Pradesh, over a period of 1 year.

**Methodology**

**Designing of questionnaire**

The questionnaire was compiled in the Department of Prosthodontics, Himachal Dental College, Sundar Nagar. The closed-ended questionnaire was prepared for the study based on the data collected from previous studies reported in the literature with the relevant questions. The questionnaire included the personal detail of samples such as gender, age, and education. The questionnaire was prepared to assess the attitude and perception of patients toward the replacement of teeth. The questionnaire was prepared in two different languages (English and Hindi) for the ease of understanding. The nature and purpose of the survey were explained to the samples before starting with the questionnaire and their written consent was obtained. For uneducated patients, a thumb impression was taken in the form of written consent. Samples for the study were designed according to a stratified random sample design method. Initially, a pilot study was carried out with 20 patients in the same manner as in the main study to check the feasibility of the study, and the questions were modified accordingly.

Healthy individuals above 20 years of age from different occupation and education level were included in the study. Individuals below 20 years of age were not included in the study. Ethical clearance for the study was obtained from the Ethical Review Committee of Institution.

A self-administrated questionnaire was completed personally by each of the patients who agreed to participate in the study. Data were collected by well-trained and calibrated person for analyzing the final outcome and analyzed.

**Results**

The collected data were analyzed statistically using the Chi-square test at the significance level of \(P < 0.05\). The data analysis was performed using SPSS version 16 computer program.

As shown in Table 1, all questions, starting from Q1–10, showed a statistically significant difference in attitude between age groups 20–39 years (212 individuals), 40–59 years (218 individuals), and >60 years (92 individuals). All the questions were statistically highly significant with \(P = 0.000\) and \(P = 0.001\), except Q7 which was statistically significant with a \(P = 0.015\).

As shown in Table 2, questions showing a statistically significant difference in attitude between education levels of middle school having 72 individuals, high school having 76 individuals, and senior secondary school having 374 individuals. Q5, 6, 8, and 9 were statistically highly significant with a \(P = 0.000\), and Q10 was statistically significant with a \(P = 0.002\).

As shown in Table 3, questions showing statistically significant difference between male (336 individual) and females (186 individuals) toward their attitude to replacement of teeth were Q5, 6, and 8, wherein Q5 and 6 were highly statistically significant with \(P = 0.000\) and \(P = 0.002\) and Q8 was statistically significant with a \(P = 0.054\).

**Discussion**

The perception of the prosthodontic treatment requirement varies from patient to patient depending on their age, sex, and education background. It is essential to evaluate awareness and preference of need before starting treatment as treatment expectations may influence treatment planning and perceived value by the patient and its outcome. The purpose of this survey was to determine awareness regarding various treatment modalities for replacement of teeth in the local population. Candidates were asked to fill a preset questionnaire. The questionnaire included the personal details of participants such as gender, age, and education level. Participants were randomly selected from different areas of the city Sundar Nagar over a period of 1 year. The questionnaire was completed personally by each of the consenting participants in the study. Awareness of population was studied, and the results were tabulated and compared to conclude that majority of people were aware about the need of replacing missing natural teeth by artificial means.

Oral health can be considered as an indicator of general health and quality of life.\(^9\) Good oral health is the major resource for social, economic, and personal development of individuals.\(^10\) Poor oral health and loss of teeth not only adversely affect the...
Table 1: Assessing attitude of patients regarding prosthodontics treatment according to the age

| Questions                                                                 | Options                      | 20-39 years, n (%) | 40-59 years, n (%) | >60 years, n (%) | P     |
|---------------------------------------------------------------------------|------------------------------|--------------------|--------------------|-----------------|-------|
| (1) I believe in regular visits for dental check up                       | Agree                        | 172 (81.1)         | 196 (89.9)         | 85 (92.3)       | 0.001**|
|                                                                           | Disagree                     | 14 (6.6)           | 2 (0.9)            | 0               |       |
|                                                                           | Neither agree nor disagree   | 26 (12.3)          | 20 (9.1)           | 7 (7.6)         |       |
| (2) I think I need to replace missing tooth or teeth?                      | Agree                        | 168 (79.2)         | 194 (89)           | 90 (97.8)       | 0.000**|
|                                                                           | Disagree                     | 24 (11.3)          | 14 (6.4)           | 2 (2.2)         |       |
|                                                                           | Neither agree nor disagree   | 20 (9.4)           | 10 (4.6)           | 0               |       |
| (3) I think replacement of missing teeth improves appearance?              | Agree                        | 164 (77.4)         | 196 (89.9)         | 88 (95.7)       | 0.000**|
|                                                                           | Disagree                     | 26 (12.3)          | 14 (6.4)           | 4 (4.3)         |       |
|                                                                           | Neither agree nor disagree   | 22 (10.4)          | 8 (3.7)            | 0               |       |
| (4) I think replacement of missing teeth helps in eating?                  | Agree                        | 164 (77.4)         | 204 (93.6)         | 85 (92.3)       | 0.000**|
|                                                                           | Disagree                     | 18 (8.5)           | 4 (1.8)            | 2 (2.2)         |       |
|                                                                           | Neither agree nor disagree   | 30 (14.2)          | 10 (4.6)           | 5 (5.4)         |       |
| (5) I would like to replace my missing teeth even if it is expensive?     | Agree                        | 154 (72.6)         | 192 (88.1)         | 62 (67.4)       | 0.000**|
|                                                                           | Disagree                     | 26 (12.3)          | 4 (1.8)            | 10 (10.9)       |       |
|                                                                           | Neither agree nor disagree   | 32 (15.1)          | 22 (10.1)          | 20 (21.7)       |       |
| (6) I believe removable prosthesis makes me feel less socialize with my friends | Agree                        | 86 (40.6)          | 122 (56)           | 38 (41.3)       | 0.000**|
|                                                                           | Disagree                     | 70 (33)            | 34 (15.6)          | 16 (17.4)       |       |
|                                                                           | Neither agree nor disagree   | 56 (26.4)          | 62 (28.4)          | 38 (41.3)       |       |
| (7) I think fixed prosthesis is better than removable prosthesis?         | Agree                        | 120 (56.6)         | 148 (67.9)         | 62 (67.4)       | 0.015* |
|                                                                           | Disagree                     | 22 (10.4)          | 10 (4.6)           | 2 (2.2)         |       |
|                                                                           | Neither agree nor disagree   | 70 (33)            | 60 (27.5)          | 28 (30.4)       |       |
| (8) In fixed prosthesis treatment options, I want implant-supported prosthesis because it is best option than others? | Agree                        | 84 (39.6)          | 106 (48.6)         | 18 (19.6)       | 0.000**|
|                                                                           | Disagree                     | 28 (13.2)          | 12 (5.5)           | 2 (2.2)         |       |
|                                                                           | Neither agree nor disagree   | 100 (47.2)         | 100 (45.9)         | 72 (78.3)       |       |
| (9) I want implant-supported bridge but I am afraid about the surgical procedure? | Agree                        | 86 (40.6)          | 78 (35.8)          | 18 (19.6)       | 0.000**|
|                                                                           | Disagree                     | 34 (16)            | 32 (14.7)          | 2 (2.2)         |       |
|                                                                           | Neither agree nor disagree   | 92 (43.4)          | 108 (49.5)         | 72 (78.3)       |       |
| (10) I want implant supported bridge but I think it is more expensive than other treatment options? | Agree                        | 84 (39.6)          | 96 (44)            | 18 (19.6)       | 0.000**|
|                                                                           | Disagree                     | 36 (17)            | 16 (7.3)           | 4 (4.3)         |       |
|                                                                           | Neither agree nor disagree   | 92 (43.4)          | 106 (48.6)         | 70 (76.1)       |       |

*P<0.05; significant; **P<0.001; highly significant

dietary intake and nutritional status, thereby compromising general health, but can also deny them the pleasure of taking food of one’s choice.\[11\] Furthermore, it has been concluded from the various studies done by Levin and Landesman,\[12\] Korsch et al.,\[13\] and Davis et al.\[14\] that a questionnaire helps to improve diagnostic and prognostic skills of the dentist and assists patient to reveal their problems. Hence, considering the oral health in mind, a survey was designed and conducted to determine the attitude of patients regarding various treatment modalities toward the replacement of missing teeth in local population of Sundar Nagar (H.P). Importance of patient-mediated concern in prosthetic planning, especially in regard to replacement of missing teeth has appeared to be gaining momentum in the recent years. As the loss of teeth is more apparent with aging, hence individuals above 60 years of age showed a positive attitude toward dental visits. Around 86.6% of patients believed in regular visits for a dental checkup, 87% of patients had positive attitude for replacement of missing teeth. About 78.2% of patients liked to replace missing teeth even although it is an expensive treatment. The low proportion of those who had no prosthesis may be due to the fact that older people (>60 years) had lack of dental facility due to lack of awareness, financial constraints, and reduced mobility and lack of interest in esthetics.\[15\] Those who have attained higher levels of education are more apt to have greater financial opportunity and to place a higher priority on dental health.\[16\]

In India, removable dentures have been the most widely available and traditional way of replacement. It is relatively
Table 2: Assessing attitude of patients regarding prosthodontics treatment according to education

| Questions                                                                 | Options                                | Middle school and below | High school | Senior secondary and above | P      |
|---------------------------------------------------------------------------|----------------------------------------|-------------------------|-------------|-----------------------------|--------|
| (1) I believe in regular visits for dental check up                       | Agree                                  | 66 (91.7)               | 70 (92.1)   | 348 (93.04)                 | 0.091  |
|                                                                            | Disagree                               | 0                       | 0           | 4 (1.6)                     |        |
|                                                                            | Neither agree nor disagree              | 6 (8.3)                 | 6 (7.9)     | 22 (5.8)                    |        |
| (2) I think I need to replace missing tooth or teeth?                      | Agree                                  | 58 (80.5)               | 62 (81.5)   | 322 (86.1)                  | 0.964  |
|                                                                            | Disagree                               | 6 (8.3)                 | 6 (7.9)     | 30 (8.0)                    |        |
|                                                                            | Neither agree nor disagree              | 8 (11.1)                | 8 (10.5)    | 22 (5.9)                    |        |
| (3) I think replacement of missing teeth improves appearance?              | Agree                                  | 58 (80.5)               | 62 (81.6)   | 322 (86.1)                  | 0.395  |
|                                                                            | Disagree                               | 6 (8.3)                 | 10 (13.2)   | 28 (7.5)                    |        |
|                                                                            | Neither agree nor disagree              | 8 (11.1)                | 4 (5.3)     | 24 (6.4)                    |        |
| (4) I think replacement of missing teeth helps in eating?                  | Agree                                  | 62 (86.1)               | 64 (84.2)   | 328 (87.7)                  | 0.929  |
|                                                                            | Disagree                               | 4 (5.6)                 | 4 (5.3)     | 16 (4)                      |        |
|                                                                            | Neither agree nor disagree              | 6 (8.3)                 | 8 (10.5)    | 30 (8.0)                    |        |
| (5) I would like to replace my missing teeth even if it is expensive?      | Agree                                  | 42 (58.3)               | 60 (81.2)   | 304 (81.3)                  | 0.000**|
|                                                                            | Disagree                               | 6 (8.3)                 | 6 (7.9)     | 28 (7.5)                    |        |
|                                                                            | Neither agree nor disagree              | 24 (33.3)               | 10 (13.2)   | 42 (11.2)                   |        |
| (6) I believe removable prosthesis makes me feel less socialize with my friends | Agree                                  | 24 (33.3)               | 46 (60.5)   | 176 (47.1)                  | 0.000**|
|                                                                            | Disagree                               | 8 (11.1)                | 12 (15.8)   | 100 (26.7)                  |        |
|                                                                            | Neither agree nor disagree              | 40 (55.6)               | 18 (23.7)   | 98 (26.2)                   |        |
| (7) I think fixed prosthesis is better than removable prosthesis?         | Agree                                  | 40 (55.6)               | 46 (60.5)   | 244 (65.2)                  | 0.097  |
|                                                                            | Disagree                               | 2 (2.8)                 | 4 (5.3)     | 28 (7.5)                    |        |
|                                                                            | Neither agree nor disagree              | 30 (41.7)               | 26 (34.2)   | 102 (27.3)                  |        |
| (8) In fixed prosthesis treatment options I want implant-supported prosthesis because it is best option than others? | Agree                                  | 10 (13.9)               | 28 (36.8)   | 170 (45.5)                  | 0.000**|
|                                                                            | Disagree                               | 4 (5.6)                 | 4 (5.3)     | 34 (9.1)                    |        |
|                                                                            | Neither agree nor disagree              | 58 (80.6)               | 44 (57.9)   | 170 (45.5)                  |        |
| (9) I want implant-supported bridge but I am afraid about the surgical procedure? | Agree                                  | 16 (22.2)               | 22 (28.9)   | 144 (38.5)                  | 0.000**|
|                                                                            | Disagree                               | 2 (2.8)                 | 6 (7.9)     | 60 (16.0)                   |        |
|                                                                            | Neither agree nor disagree              | 54 (75.0)               | 48 (63.2)   | 170 (45.5)                  |        |
| (10) I want implant-supported bridge but I think it is more expensive than other treatment options? | Agree                                  | 18 (25.0)               | 24 (31.6)   | 156 (41.7)                  | 0.002* |
|                                                                            | Disagree                               | 4 (5.6)                 | 6 (7.9)     | 46 (60.5)                   |        |
|                                                                            | Neither agree nor disagree              | 50 (69.4)               | 46 (62.3)   | 172 (46.0)                  |        |

*P<0.05; significant; **P<0.001; highly significant

cheap and affordable for most socioeconomic classes and has been found to be satisfactory to the patient in terms of appearance, retention, and stability[17,18]. In this survey, around 47.1% of participants believed that they socialized less with a removable prosthesis because of poor stability and retention. Eighty-eight percent of individuals of 40–59 years showed a positive attitude toward fixed prosthesis as compared to older age who preferred removable prosthesis due to lack of interest in esthetics and low perceived need of prosthesis. The P value was also found out to be significant for males than females because males of this region were more socially active than females, so they had more knowledge about dental treatment.

In this survey, 63.2% of patients believed that fixed prosthesis was better than removable prosthesis which might be because fixed prosthesis was more comfortable and gave more psychological satisfaction as compared to removable prosthesis. These findings are similar to Al-Quran et al.[19] who described that highest rate of dissatisfaction with removable prosthesis because of poor retention, poor esthetics, and requires extra care for maintenance of oral hygiene than fixed prosthesis. Considering the influence of education on knowledge, attitude scores increased from low level to graduation level. Rosenoer and Sheiham[20] stated that the measure of treatment need should include the perception and attitude of patients to the planned treatment.

Dental implant treatment has been at the forefront of clinical dental practice for over the past four decades. With an increasing success rate of implant treatment, more patients are
opting for dental implants as a premier choice for replacement of missing teeth. In this survey, only 47% of patients showed positive attitude toward acceptance of implant. Similarly, 48% of patients had an idea about the surgical procedure followed during implant placement. Factors such as high education qualification compared with reasonably high income and age can influence the finding of this research. The study by Berge\cite{21} also claimed people of age 45 years and above with high level of education were well informed about dental implants.

Hence, to overcome the surgical procedures in implant therapy, dental surgeons need to allay the fear in patients regarding the dental implant treatment by explaining surgical procedure carefully and comprehensively. A study by Tepper et al.\cite{22} suggested that the strongest argument against implant therapy was thought to be high costs by 76% of the interviewees; the complexity of treatment by 34% and 15% of the patients found the amount of time required reaching full functionality bothersome. A study by Palmqvist et al.\cite{23} demonstrated that patients could be deterred more by the financial conditions than by the process of implant therapy itself.

The present study provided important insights into the various types of assistance and dental awareness camps that might be designed and implemented to benefit the individuals in the local population to improve patient’s perception. Moreover, an appreciation for the perceptions, attitudes, and knowledge of patients toward the replacement of teeth would prepare a prosthodontist more completely to provide a satisfying prosthesis. Apart from this, dental awareness camps should be organized more frequently in this region to educate the individuals about benefits of implants above other treatment modalities.

**Conclusion**

Dentists are the main source of information regarding various treatment modalities toward the replacement of teeth, thus indicating the importance of the clinician/dental hospital personnel in spreading awareness among the local population. During assessing awareness about fixed prosthesis, removable prosthesis, and implant-supported prosthesis as a treatment modality, people preferred fixed prosthesis over removable prosthesis, because they believed that fixed prosthesis is

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### Table 3: Assessing attitude of patients regarding prosthodontics treatment according to their gender

| Questions                                                                 | Options                                      | Male, n (%)    | Female, n (%) | P     |
|---------------------------------------------------------------------------|----------------------------------------------|----------------|---------------|-------|
| (1) I believe in regular visits for dental check up                        | Agree                                        | 288 (85.7)     | 164 (88.2)    | 0.145 |
|                                                                           | Disagree                                     | 14 (4.2)       | 2 (1.1)       |       |
|                                                                           | Neither agree nor disagree                    | 34 (10.1)      | 20 (10.8)     |       |
| (2) I think I need to replace missing tooth or teeth?                      | Agree                                        | 278 (82.7)     | 174 (93.5)    | 0.12  |
|                                                                           | Disagree                                     | 34 (10.1)      | 6 (3.2)       |       |
|                                                                           | Neither agree nor disagree                    | 24 (7.1)       | 6 (3.2)       |       |
| (3) I think replacement of missing teeth improves appearance?              | Agree                                        | 282 (83.9)     | 166 (89.2)    | 0.161 |
|                                                                           | Disagree                                     | 34 (10.1)      | 10 (5.4)      |       |
|                                                                           | Neither agree nor disagree                    | 20 (6)         | 10 (5.4)      |       |
| (4) I think replacement of missing teeth helps in eating?                  | Agree                                        | 290 (86.3)     | 164 (88.2)    | 0.826 |
|                                                                           | Disagree                                     | 16 (4.8)       | 8 (4.3)       |       |
|                                                                           | Neither agree nor disagree                    | 30 (8.9)       | 14 (7.5)      |       |
| (5) I would like to replace my missing teeth even if it is expensive?      | Agree                                        | 266 (79.2)     | 142 (76.3)    | 0.000** |
|                                                                           | Disagree                                     | 34 (10.1)      | 6 (3.2)       |       |
|                                                                           | Neither agree nor disagree                    | 36 (10.7)      | 38 (24)       |       |
| (6) I believe removable prosthesis makes me feel less socialize with my friends | Agree                                        | 174 (51.8)     | 72 (38.7)     | 0.002** |
|                                                                           | Disagree                                     | 62 (18.5)      | 58 (31.2)     |       |
|                                                                           | Neither agree nor disagree                    | 100 (29.8)     | 56 (30.1)     |       |
| (7) I think fixed prosthesis is better than removable prosthesis?         | Agree                                        | 214 (63.7)     | 116 (62.4)    | 0.944 |
|                                                                           | Disagree                                     | 22 (6.5)       | 12 (6.5)      |       |
|                                                                           | Neither agree nor disagree                    | 100 (29.8)     | 58 (31.2)     |       |
| (8) In fixed prosthesis treatment options I want implant-supported prosthesis because it is best option than others? | Agree                                        | 134 (39.9)     | 74 (39.8)     | 0.054* |
|                                                                           | Disagree                                     | 34 (10.1)      | 8 (4.3)       |       |
|                                                                           | Neither agree nor disagree                    | 168 (50)       | 104 (55.9)    |       |
| (9) I want implant-supported bridge but I am afraid about the surgical procedure? | Agree                                        | 120 (35.7)     | 62 (23.3)     | 0.135 |
|                                                                           | Disagree                                     | 50 (14.9)      | 18 (9.7)      |       |
|                                                                           | Neither agree nor disagree                    | 166 (49.4)     | 106 (57)      |       |
| (10) I want implant-supported bridge but I think it is more expensive than other treatment options? | Agree                                        | 124 (36.9)     | 74 (39.8)     | 0.063 |
|                                                                           | Disagree                                     | 44 (13.1)      | 12 (6.5)      |       |
|                                                                           | Neither agree nor disagree                    | 168 (50)       | 100 (53.8)    |       |

*P<0.05; significant; **P<0.001; highly significant
more comfortable and convenient. The implant was quite an unpopular treatment option in this region because of the lack of awareness in this region. More patient education programs and camps should be organized to increase awareness and motivation of the local population about their oral health and various treatment modalities available to them toward the replacement of teeth.

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**Conflicts of interest**
There are no conflicts of interest.

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