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### RESEARCH ARTICLE

#### “A QUESTIONNAIRE BASED SURVEY TO ASSESS EDENTULOUS PATIENT’S KNOWLEDGE ABOUT DENTURE HYGIENE.”

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#### Abstract

**Aims & Background:** The aim of the study is to assess the knowledge of edentulous patients on denture hygiene.

**Materials and Methods:** Total 100 patients wearing full dentures were selected in this survey after considering inclusion and exclusion criteria. This study was conducted using exploratory questionnaire technique. Total 16 questions were selected and verified by dental professionals and subject experts (Prosthodontists). These 16 questions were based on maintaining denture hygiene. Statistical analysis was carried out after collecting all the data.

**Results:** After evaluation of 100 individuals, the majority of patients wore denture during day for longer time. Most of them were utilised to store their denture in a plastic box filled with water. The majority of patients were cleansing their dentures using water and brush more than once every day. Survey revealed decreased frequency of cleaning and increased intake of tea/coffee/tobacco can cause denture staining. According to survey knowledge of patients regarding denture hygiene was lacking due to improper instructions given by dentist or dental hygienist. Result showed significant correlation between frequency of cleaning and oral disease related to denture, which signify that improper cleaning can cause fungal growth and other oral disease related to denture.

**Conclusion:** This survey revealed that patients cleaned their dentures mechanically but improperly explained by dentist or dental hygienist. As a dentist we should encourage and provide proper knowledge to the patient regarding different cleansing and storage technique. The dentist must take regular follow up.

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#### Introduction:-

The life expectancy in both developing and developed countries has increased over the past few decades. The number of individuals requiring dentures has increased with the aging population.<sup>[1]</sup>

According to the WHO definition, a person who is edentulous is deemed to be handicapped.<sup>[2]</sup> One of the main purposes of the rehabilitation of edentulous patients is to enhance their health by achieving functionality. This can be fulfilled with complete dentures. Therefore, correct use and care of prosthesis are of great importance to patients

for aesthetic and functional reasons and also for the health of the supporting oral tissues and appropriate protection of the prosthesis itself.<sup>[3]</sup>

The maintaining of proper denture hygiene is important for prevention of denture stomatitis.<sup>[4]</sup> For the maintenance of healthy supporting tissues proper routine cleaning of the tissue surface of a denture is essential.<sup>[5]</sup> Moreover, removal of denture during night is very effective in reducing counts of candida species and thus risk of denture stomatitis.<sup>[6]</sup> To be effective, a denture cleaner must be capable of removing plaque from not only the polished surfaces of the prosthesis but, more importantly, the unpolished tissue surface.<sup>[5]</sup>

Using a specific questionnaire, the purpose of this study is to assess the knowledge of edentulous patients on denture hygiene, the age of dentures, and whether the patients have been instructed on how to clean their dentures.

### Methods:-

1. Total 100 patients that reported to department of prosthodontics, crown and bridge of AMC dental college and hospital were included.
2. Patient already wearing upper and lower complete denture were included in study.
3. Patient wearing removable partial denture, fixed dental prosthesis and patients who were not physically and intellectually able to maintain denture hygiene were excluded.
4. The exploratory questionnaire technique was validated by dental professionals and subject experts (prosthodontist) before its application. (figure 1& 2)
5. 16 questions regarding denture hygiene maintenance from questionnaire were explained to patient in his/her own language and data was collected.
6. Informed consent was taken from the patients which will be available in English, Hindi, and Gujarati languages.
7. Data was collected manually and compiled into excel sheet. Analysis was done using appropriate statistical software.
8. Descriptive and inferential statistical analysis was carried out in this study.

1. How long have you been wearing denture?  
 a. <1 year  
 b. 1-5 years  
 c. 5-10 years  
 d. >10 years

2. For how much time do you wear your denture?  
 a. Day & night  
 b. During eating  
 c. Day time only

3. Where do you put your denture when it is out of your mouth?  
 a. Wrapped in cloth  
 b. Steel box  
 c. Plastic box

4. Did anyone explain about how to clean your denture?  
 a. Yes  
 b. No

5. If yes, then who?  
 a. Dentist  
 b. Pharmacist  
 c. Relative

6. Do you drink coffee or tea while wearing denture?  
 Yes  
 No

7. Do you consume aerated drinks while wearing denture?  
 a. Yes  
 b. No

8. Do you have any of the following habits?  
 a. Alcohol consumption  
 b. Cigarette smoking  
 c. Tobacco chewing  
 d. Areca nut chewing  
 e. Paan masala chewing  
 f. None of the above

9. At what intervals do you clean your denture?  
 a. Once daily  
 b. More than once daily  
 c. After every meal  
 d. Once a week

Figure 1:- Questionnaire (question 1-9).

**Figure 2:** questionnaire (question 10-16)

|     |   |
|-----|---|
| 10. | How do you clean your denture?                                      |
| a.  | Using water   |
| b.  | Using water and brush   |
| c.  | Using water, toothbrush and toothpaste                              |
| d.  | Using denture cleansing agent                                       |
| 11. | Do you soak your denture in any substance for storage?              |
| a.  | Yes   |
| b.  | No  |
| 12. | If yes, then which substance do you use?                            |
| a.  | Water   |
| b.  | Water with soap   |
| c.  | Cleansing agent   |
| 13. | How do you find cleaning method of denture?                         |
| a.  | Easy  |
| b.  | Difficult   |
| 14. | If difficult, then in which part of denture do you feel difficulty? |
| a.  | Teeth surface   |
| b.  | Inner surface   |
| c.  | outer surface   |
| 15. | Which technique do you use for maintaining oral hygiene?            |
| a.  | Cleaning mouth with finger  |
| b.  | Cleaning mouth with brush   |
| c.  | Gargle  |
| 16. | Have you ever had oral disease related to denture?                  |
| a.  | Yes   |
| b.  | No  |

**Results:-**

Total 100 patients and their dentures were examined. Out of 100, there were 64 men and 36 women, whose ages ranged from 42 to 85. The findings for the various parameters taken into consideration are listed in Tables 1.

Based on the data collected, 7 patients were wearing dentures for less than 1 year. About 36 patients were wearing denture for 1 to 5 years. About 28 patients were wearing denture for 5 to 10 years and about patients were wearing 29 dentures for more than 10 years.

About 25 patients were wearing denture day and night. About 19 patients were wearing denture only during eating. About 56 patients were wearing denture during day time only

Out of 100, 16 patients were used to wrap their denture into cloth, 34 patients were using steel box and 50 patients were using plastic box to put their dentures when it is out of the mouth.

About 65 patients were explained about how to clean their dentures and about 35 patients were not explained about how to clean their dentures. From the patients who were explained about cleaning dentures, 91 were explained by dentist and 9 were explained by relatives.

When asked about consumption of tea/coffee, 96 patients were used to consume tea or coffee regularly. When asked about consumption of aerated drink, about 42 patients were consuming aerated drink. When asked about consumption of tobacco/areca nut/pan masala, about 8 patients had habit of smoking cigarettes, 11 patients had tobacco chewing habit, 2 patients had areca nut chewing habit and 7 patients had pan masala chewing habit, while 72 patients did not have any habit.

When asked about denture cleansing habit, 36 patients were cleaning their denture once daily, 40 patients cleaning their dentures more than once daily and 24 patients were cleaning their dentures after every meal. Among 100 patients, 40 patients use water to clean their dentures. About 43 patients use water and toothbrush to clean their

dentures. About 10 patients were using water, toothbrush and toothpaste to clean their dentures while 7 patients were using denture cleansing agents. About 74 patients used to soak their dentures. From the patients who were used to soak their dentures, 88 used water, 1 used water and soap and 11 used cleansing agent. About 71 patients found it easy to clean their dentures while 29 patients found it difficult to clean their dentures. From the patients who found it difficult to clean their denture, 55 patients had difficulty to clean teeth surface and 45 patients had difficulty to clean inner surface of dentures.

When asked about maintaining oral hygiene, about 27 patients were cleaning with fingers, 18 patients were cleaning with brush and 55 patients were cleaning by doing gargles.

**Table-1:-** Result showing distribution of patients based on their responses to question 1-16.

|    | Question  | Choices of answer                      | No. of patients |
|----|---|--|-----------------|
| 1  | How long have you been wearing denture?                     | <1 year                                | 7               |
|    |   | 1-5 years                              | 36              |
|    |   | 5-10 years                             | 28              |
|    |   | >10 years                              | 29              |
| 2  | For how much time do you wear your denture?                 | Day & night                            | 25              |
|    |   | During eating                          | 19              |
|    |   | Day time only                          | 56              |
| 3  | Where do you put your denture when it is out of your mouth? | Wrapped in cloth                       | 16              |
|    |   | Steel box                              | 34              |
|    |   | Plastic box                            | 50              |
| 4  | Did anyone explain about how to clean your denture?         | Yes                                    | 65              |
|    |   | No                                     | 35              |
| 5  | If yes, then who?   | Dentist                                | 59              |
|    |   | Pharmacist                             | 0               |
|    |   | Relatives                              | 6               |
| 6  | Do you drink coffee or tea while wearing denture?           | Yes                                    | 96              |
|    |   | No                                     | 4               |
| 7  | Do you consume aerated drinks while wearing denture?        | Yes                                    | 42              |
|    |   | No                                     | 58              |
| 8  | Do you have any of the following habits?                    | Alcohol consumption                    | 0               |
|    |   | Cigarette smoking                      | 8               |
|    |   | Tobacco chewing                        | 11              |
|    |   | Areca nut chewing                      | 2               |
|    |   | Paan masala chewing                    | 7               |
|    |   | None of the above                      | 72              |
| 9  | At what intervals do you clean your denture?                | Once daily                             | 36              |
|    |   | More than once daily                   | 40              |
|    |   | After every meal                       | 24              |
|    |   | Once a week                            | 0               |
| 10 | How do you clean your denture?                              | Using water                            | 40              |
|    |   | Using water and brush                  | 43              |
|    |   | Using water, toothbrush and toothpaste | 10              |
|    |   | Using denture cleaning agent           | 7               |
| 11 | Do you soak your denture in any substance for storage?      | Yes                                    | 74              |
|    |   | No                                     | 26              |
| 12 | If yes, then which substance do you use?                    | Water                                  | 65              |
|    |   | Water with soap                        | 1               |
|    |   | Cleansing agent                        | 8               |
| 13 | How do you find cleaning method of denture?                 | Easy                                   | 71              |
|    |   | Difficult                              | 29              |
| 14 | If difficult, then in which part                            | Teeth surface                          | 16              |

|    |  |                            |    |
|----|--|----------------------------|----|
|    | of denture do you feel difficulty?                       | Inner surface              | 13 |
|    |  | Outer surface              | 0  |
| 15 | Which technique do you use for maintaining oral hygiene? | Cleaning mouth with finger | 27 |
|    |  | Cleaning mouth with brush  | 18 |
|    |  | Gargle                     | 55 |
| 16 | Have you ever had oral disease related to denture?       | Yes                        | 14 |
|    |  | No                         | 86 |

### Discussion:-

Survey revealed the 100 edentulous patients' knowledge and awareness regarding denture hygiene. Based on the responses of patients on question 1 result showed that, total 57% patients had not replaced their dentures for more than 5 years. According to Hoad-Reddick et al, the more newly fabricated dentures did not have any supple deposits, however the older dentures had an 8.3% level. It has been established that there is a significant correlation between the cleanliness level and the age of the denture.<sup>[8]</sup>

Question 2 result showed that 25% of patients were wearing denture during daytime. Compagnoni et al showed that overnight denture wear produced immediate alterations on *Candida sp.* growth.<sup>[7]</sup> Grant et al. stated that dentures should not be worn overnight or should be removed for a certain number of hours per day to allow the supporting tissues to recover from the trauma of physical contact.<sup>[9]</sup>

According the question 3 result, still there were 16% who used to wrap their denture into cloth. If denture dries out completely acrylic resin of denture can become brittle and will easily crack or split. Dry denture often causes irritation and trauma to the oral mucosa. Over the period dimensional changes occur which causes compromised retention and stability of denture.<sup>[10]</sup>

Analysis of question 4 revealed 65% of patients were instructed about how to clean their dentures, whereas still 35% of patients were reported never having been advised by dentist or dental hygienist. From those 65% of patients, in accordance with the percentagewise distribution of question 5 there were 6% of patients who were instructed by their relatives, which can be misleading. It is the moral and ethical duty of the dentist to inform and instruct denture wearers on proper denture hygiene.<sup>[11]</sup>

Based on question 6, 96% of patients were drinking tea or coffee while wearing denture, while question 7 result analysis revealed 42% of patients were consuming aerated drinks and result of question 8 showed 8% of patients had tobacco chewing habit, 8% of patients had cigarettes smoking habit, 7% had paan masala chewing habit and 2% had areca nut chewing habit. According to a study done in the past aerated drink, tea and coffee decrease the impact and flexural strength of the denture and eventually causing fracture of the denture. Aerated drinks are more deleterious than other substances.<sup>[10]</sup> Coffee affected the color stability of dentures more than tea.<sup>[12]</sup>

According to question 9 most patients cleaned their denture once daily (36%) or more than once daily (40%) and 24% patients cleaned their dentures after every meal. This result is in contrast to Peracini et al<sup>[13]</sup>, Dikbas et al<sup>[14]</sup> result.

Following the result of question 10, most of the patients (43%) were using water and toothbrush or 40% patients were using only water. Only few of the patients were using toothpaste (10%) or denture cleansing agents (7%) as an aid, which is in agreement with studies done by Polyzois et al<sup>[15]</sup> and Peracini et al.<sup>[13]</sup> As stated by question 11, study also evaluated denture soaking habits of patients where 74% were used to sock their denture from which in accordance with question 12 result, 65% were using water, 8% were using cleansing agent and 1% were using water with soap. Budtz-Jørgensen et al reported that brushing with tap water or toothpaste is effective method when used meticulously in removing discoloration and plaque from denture surface. However, if arduously and injudiciously used it may cause damage to denture base resin.<sup>[5]</sup>

Data analysis of question 13, revealed that about 29% of patients found it difficult to clean their dentures and from which in accordance question 14 result, 55% patients had difficulty to clean teeth surface and 45% patients had difficulty to clean inner surface of dentures. Similar results were found by Peracini et al.<sup>[13]</sup> Duyck et al<sup>[16]</sup> and

Paranhos et al <sup>[17]</sup> in their study. They also discovered the denture base's inner surface to have the largest biofilm build-up leading to formation of calcified deposits formation due to difficulty in cleaning. <sup>[7]</sup>

According to question 15 when patients were asked about how they maintain oral hygiene, result was similar with the Peracini et al study. <sup>[13]</sup>

Study also evaluated correlation between frequency of cleaning denture and occurrence of oral disease. Result showed higher significance (P value: 0.001) exist between them. Among 36 patients who clean their denture once daily 25 patients did not have any kind of oral disease related to denture while 11 had oral disease. Among 40 patients who clean their denture more than once daily 36 patients did not have any oral disease related to denture while 4 had oral disease. Similar result found in patients 24 who clean their denture after every meal, only one of them had oral disease related to denture. (Table 2)

**Table 2:-** Comparative analysis of question 9 and 11 with question 16.

| Question   | ever had oral disease related to denture? |          | P value |
|--|---|----------|---------|
|  | Yes(n=14)                                 | No(n=86) |         |
| At what intervals do you clean your denture?           |   |          |         |
| Once daily   | 11  | 25       | 0.001   |
| More than once daily                                   | 2   | 38       |         |
| After every meal                                       | 1   | 23       |         |
| Do you soak your denture in any substance for storage? |   |          |         |
| Yes  | 11  | 63       | 0.674   |
| No   | 3   | 23       |         |

### Conclusion:-

Prosthesis placement is helped by a positive doctor-patient connection from the start of therapy since effective communication is only possible when the doctor is aware of the patient's needs. The professional should give vocal and written instructions from the start of the treatment.

After the insertion of dentures, the dentist should provide a denture hygiene kit that includes a denture box, a toothbrush for cleaning dentures, dentifrices, and a denture cleaning tablet.

Denture should be taken out for eight hours i.e. mainly during sleeping every twenty-four hours to enable the tissues to recover. This survey revealed that patients cleaned their dentures mechanically. As a dentist we should encourage the patient to clean their dentures mechanically and chemically. The patient should be familiar with safe storage techniques.

The patient must follow the dentist's recommendations for maintaining denture cleanliness, and the dentist must follow up with the patient frequently to monitor progress and provide maintenance assistance.

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