

## Knowledge and Awareness Regarding Denture Staining Amount Complete Denture Wearers: A Descriptive Questionnaire Survey

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### Abstract

**Introduction:** Improper denture hygiene leads to denture staining as well as various lesions of the oral mucosa associated with wearing of removable dentures. The aim of the study is to evaluate the knowledge and awareness regarding denture staining amount complete denture wearers visiting Dental Department, Nobel Medical College and Teaching Hospital.

**Methods:** A descriptive cross-sectional study was conducted among complete denture wearers visiting Dental Department of Nobel Medical College and Teaching Hospital. A survey was conducted through a printed standard questionnaire with 15 questions delivered to the patients. Data were collected and coded, the statistical analysis was done using SPSS statistical software package. Descriptive statistics were used for data analysis.

**Results:** The study showed that about 38 % of the patients were denture wearers for 6 months to 1 year. About 97% of patients consume coffee or tea regularly. About 65% of the patients consumed aerated beverages. 52% of the patients reported alcohol consumption habits. Tobacco chewing habit was reported by 7% of the patients. 17% of the patients reported cigarette smoking habit. Almost 92.9%% of the patients cleaned their dentures using some or the other method. 64% of the patients claimed to be aware of some or the other denture cleaning techniques. About 20.2% of the patients complained of halitosis, 11% of the patients complained of oral ulcers, and approximately 68.8% of the patients suffered from oral infections.

**Conclusion:** The knowledge and awareness regarding the cleaning and staining of dentures was not adequate among study participants. Patients have habit of consuming tea, coffee, aerated drinks and alcohol which could lead to staining of the acrylic dentures. Therefore, care and hygiene of dental prosthesis including removable dentures is a life-long exercise.

**Key words:** Awareness, Complete Denture Patients, Denture staining

### Introduction

Oral health knowledge is considered to be an essential prerequisite for health-related behaviour. Although only a weak association seems to exist between knowledge

and behaviour in cross-sectional studies, nevertheless studies have shown that there is an association between knowledge and better oral health.<sup>1</sup>

Dental plaque accumulates on the hard tissues as well as soft tissues of the oral cavity.<sup>2</sup> Complete dentures are the most common treatment for total loss of teeth in a dental arch. Similarly, the most common teeth replacement for partial loss of tooth is removable partial denture.<sup>3,4</sup> Dental prosthesis including removable dentures is also unguarded against the peril of plaque accumulation; hence, oral hygiene maintenance is a life-long exercise.

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From the moment the edentulous patient is fitted with dentures, the important phase of oral and denture after-care begins. Clinical follow-up should include instructing patients on denture care, guidance regarding features of an ill-fitting denture, rebasing procedures, and the need for replacing dentures after some years. Regular oral and denture hygiene procedures play a major role in the maintenance of oral health and the long-term success of removable prosthodontic treatment.<sup>5</sup> Rehabilitative treatment is successful only when patients are highly motivated toward the correct method of use and hygiene maintenance procedures. It is reported that the quality of the denture fitting surface, occlusal relations, denture age, and hygiene are important factors contributing to the prevalence of oral mucosal lesions associated with denture use.<sup>6</sup>

The purpose of this survey was to assess knowledge and awareness regarding denture staining amount complete denture wearers.

## Methods

The study was conducted in Department of Prosthodontics, Nobel Medical College and Teaching Hospital (NMCTH), Biratnagar, Nepal after receiving the ethical clearance from the Institutional Review Committee. The study was conducted among patients wearing complete denture visiting Dental Department of Nobel Medical College from January 2022 to December 2022. Ethical clearance was obtained from the Institutional Review Committee before starting the study. (IRC-NMCTH 341/2021) The study included the patients who are physically and intellectually capable of maintaining denture cleanliness and hygiene.

A self-administered questionnaire was given to the patients to collect the data which included questions relating to denture hygiene awareness and maintenance. Prior to data collection informed consent was taken from all the subjects. The results were analysed based

on the collective response of each question among the 90 patients. After data was collected and descriptive statistics using frequency distribution and percentage were used for data analysis.

## Results

About 38 % of the patients were denture wearers for 6 months to 1 year. Approximately 26% of the patients had used dentures for less than 6 months. About 20% of the patients had been wearing dentures for 1 to 5 years and approximately 16% of the patients were complete denture wearers for more than 5 years. About 97% of patients consume coffee or tea regularly. Of the patients consuming tea or coffee, approximately 5.5% of the patients consumed tea or coffee more than 5 times a day. About 22.5% of patients consumed tea or coffee 3 to 5 times a day. Around 72% of the patients consumed tea or coffee only twice a day. About 65% of the patients consumed aerated beverages. Of the patients consuming aerated beverages, approximately 7% of patients consumed aerated beverages daily. About 32.5% of the patients consumed aerated beverages more than once a week and around 60.5% of the patients consumed aerated beverages occasionally. Almost 52% of the patients reported alcohol consumption habits. Tobacco chewing habit was reported by 7% of the patients. 17% of the patients reported cigarette smoking habit. Of the patients reporting alcohol and tobacco consumption, 29.5% of the patients reported to be consuming them occasionally whereas 58.5% of the patients reported consuming them frequently and 12% of the patients reported consuming them daily. Almost 92.9% of the patients cleaned their dentures using some or the other method. Almost 31% of the patients claimed to be cleaning their dentures once daily and approximately 16% of the patients reported to be cleaning their dentures two times a day, whereas around 63% of the patients cleaned

their dentures only every alternate day .About 13.1% of the patients used detergents with water to clean their dentures, 22.1% of the patients used toothpaste to clean their dentures, and almost 40.2% of the patients used only water to rinse and clean their dentures, whereas only approximately 24.6% of the patients used appropriate denture cleaning solutions to clean their dentures . Of the total participants, 64% claimed to be aware of some or the other denture cleaning techniques, whereas 36% were not aware of any denture cleaning techniques. About 58% of the patients who cleaned their dentures soaked them overnight in salt water, and approximately 32% of the patients used appropriate denture cleaning solutions, whereas

only approximately 10% of the patients sought professional denture cleaning by a dental technician or a dentist. About 20.2% of the patients complained of halitosis (bad breath), 11% of the patients complained of oral ulcers, and approximately 68.8% of the patients suffered from oral infections. About 77.5% of the patients claimed to be aware and 22.5% of the patients were completely unaware of any association between denture hygiene maintenance and oral infections or ulcers or bad breath. About 69.8% of the patients were satisfied with their quality of denture maintenance, whereas 30.2% of the patients were unsatisfied with their denture maintenance. (Table 1)

**Table 1:** Distribution of the study population based on Knowledge and awareness regarding denture staining amount complete denture wearers oral health.

S.N.	Questions/Items	Percentage (%)
1	How long have you been wearing a denture?	
	Less than 6 months	26
	6 months–1 year	38
	1–5 years	20
	More than 5 years	16
2	Do you drink coffee or tea regularly?	
	Yes	97
	No	3
3	If yes, at what intervals do you drink?	
	2 times a day	72
	3–5 times a day	22.5
	More than 5 times a day	5.5
4	Do you consume aerated drinks?	
	Yes	65
	No	35
5	If yes, what is the frequency of consumption of said drinks?	
	Daily	7
	Frequently (more than once a week)	32.5
	Occasionally	60.5
6	Do you have any of the following habits?	
	Alcohol consumption	52
	Cigarette smoking	17
	Tobacco chewing	7
	None of the above	24

7	If yes, what is the frequency of those habits? Daily Frequently (more than once a week) Occasionally	12 58.5 29.5
8	Do you clean your dentures? Yes No	92.9 7.1
9	At what intervals do you clean your dentures? Once daily Twice daily Every alternate day	31 16 53
10	What method do you use to clean your dentures? Denture cleaning solutions Rinsing with water Using toothpaste Using detergents	24.6 40.2 22.1 13.1
11	Are you aware of any denture cleaning techniques? Yes No	64 36
12	If yes, what techniques have you been advised? Soaking in salt water overnight Using denture cleaning solutions Professional cleaning by a dental technician	58 32 10
13	Do you suffer any of the following? Oral infections Oral mucosal ulcers Halitosis (bad breath)	68.8 11 20.2
14	Are you aware that stained dentures could be a cause for the above discomforts? Yes No	77.5 22.5
15	Are you satisfied with your denture maintenance? Yes No	69.8 30.2

## Discussion

About 38% of the patients were wearing dentures for 6 months to 1 year. Of the total participants, 97% of the patients drank tea and coffee regularly. Of them 72% of patients had a frequency of consumption of two times a day. Tea and turmeric are the most common staining foodstuffs used by the Indian population and in a day, a denture is exposed to tea without any intermediate cleaning intervals.<sup>7</sup> About 65% of patients consumed aerated drinks. Of them 60.5% consumed occasionally. The

acidic environment promoted by acid food and beverages causes the degradation of restorative and prosthodontic materials.<sup>8</sup>

Patient who had history of alcohol consumption with frequency of more than once a week constituted 52%. Nearly than half of the subjects clean their dentures once daily. Participants from the younger age group (less than 40 years) and who had been wearing dentures for 2 years maintain better frequency of cleaning. The majority of these subjects used water and brush for denture cleansing.<sup>9</sup> In the study conducted

by Sahaety al, most of the patients used to clean the dentures with water alone (47%) which is similar to our study. Patients using water with cleansing solution constituted 32% in contrast to the values reported in the studies by De Castellucci Barbosa *et al* (8%), Abelson (17.1%), and Veres *et al.* (63%).<sup>10-12</sup>

About 26% of subjects have been wearing denture for less than 6 months, 38% for 6 months to 1 year, 20% for 1 to 5 year and 16% were wearing denture for more than 5 years. There was interesting relation between cleaning frequency and the age of the denture wear. It was noticed that older dentures were cleaned more occasionally than new denture wearers. Although the most widely used method of denture cleansing seems to be the usage of soap and brush, with increasing age, a large number of geriatric patients (who form the majority of complete denture wearers) have a loss of manual dexterity and are physically challenged, hence being unable to accomplish denture cleansing effectively.<sup>7</sup>

Denture cleansing is necessary to remove extrinsic stains and soft and hard deposits from dentures. The microporous surface of an acrylic resin denture base material provides an environment that supports the growth of microorganisms that may add to further staining of dentures.

Improper denture hygiene leads to various lesions of the oral mucosa associated with wearing of removable dentures. This may represent acute or chronic reactions to microbial denture plaque, a reaction to the constituents of the denture base material, or a mechanical denture injury. The lesions constitute a heterogeneous group with regard to pathogenesis. They include denture stomatitis, angular cheilitis, traumatic ulcers, denture irritation hyperplasia, flabby ridges, and oral carcinomas.<sup>13</sup>

Over the years, various materials and techniques

classified as mechanical (soaps/pastes/powders/tablets used with/without a denture brush, sonic cleansers) and chemical (commercially available liquid cleansers like alkaline peroxides, alkaline hypochlorites, disinfecting agents, and enzymes) have been used for cleaning dentures.<sup>13</sup>

## Conclusion

The knowledge and awareness regarding the cleaning of dentures was inadequate in the study subjects. The denture cleansers used by them are the ones most commonly available in markets without knowing the most effective stain removing denture cleanser. In addition, tea, coffee, aerated drinks and alcohol are commonly used by our patients and hence its effect on the denture base acrylic resins was marked. Therefore, change of deleterious habits like drinking tea, coffee, and aerated drinks and daily use of cleaning agent can reduce denture staining.

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