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ORIGINAL PAPER

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Assessment of Hygiene Habits in Acrylic Denture Wearers: a Cross-sectional Study

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ABSTRACT

Objectives: To assess the denture hygiene habits in a population of Lebanese denture wearers.

Materials and Methods: One hundred and thirty-two (132) patients [71 women (53.8%) and 61 men (46.2%)] wearing their acrylic dentures for more than two years were included in this study. The hygiene methods related to their dentures were evaluated and the data obtained were analyzed statistically using the IBM® SPSS® statistics 20.0 (USA) statistical package. **Results:** Regardless of the cleaning technique, the big majority of our participants [123 out of 132 (93.1%)] cleaned their dentures daily. The two mostly used denture cleaning techniques were rinsing with tap water (34.1%) and brushing with toothpaste (31.8%). Nearly half of our patients (45.5%) soaked their dentures during the night; most of them with cleansing tablets dissolved in water (28.8%). **Conclusions:** Within the limitations of our study, it was concluded that in a sample of Lebanese population surveyed about denture hygiene habits, the daily frequency of denture cleaning is satisfactory, but the techniques and products used were self-estimated and, consequently, not sufficient.

Keywords: denture hygiene; habits; Lebanese; population.

1. INTRODUCTION

Acrylic dentures represent the common treatment for total and, in some cases, partial loss of teeth (1, 2).

Many species of microorganisms found in biofilm adherent to the base material of dentures, usually presenting micro-fissures and cracks or having the roughness of the surface increased, can lead to many mucosal/oral diseases installation when conditions are favorable (3, 4).

In this respect, efficient daily cleaning of dentures is essential to maintain a good oral health.

The effectiveness of a number of denture-cleaning techniques have been clinically assessed

and reported in the literature: among others the denture mechanical brushing, immersion in effervescent tablets or antiseptics and the microwave sterilization (5-7).

Many studies have been conducted to evaluate the behaviors and hygiene habits of denture wearers in different populations (1, 2, 8-11); the aim of this study was to investigate them in a Lebanese sample.

2. MATERIAL AND METHODS

This cross-sectional survey was conducted among a sample of Lebanese denture-wearers attending the departments of Oral Diagnosis and Removable Prosthodontics at the Faculty of Dental Medicine, Lebanese University, Beirut, Lebanon, between October 2015 and April 2017.

The study design was approved by the Institutional Scientific Review Board and the patients were informed about the project and their consent was obtained.

One hundred and thirty-two patients [71 women (53.8%) and 61 men (46.2%)] wearing acrylic dentures for more than two years were included and invited to participate to a survey by filling a questionnaire about their dentures' cleaning habits.

The questionnaire collected information like patients' age and sex, dentures' age and hygiene practices (frequency and techniques of cleaning) (Figure 1).

Statistical analysis

Frequency and percent distribution of the denture hygiene practices were generated for the overall sample and the females and males' subgroups separately. Associations between gender and the outcome parameters were evaluated with the chi-square test.

Data were processed through the Statistical Package for Social Sciences (SPSS®, version 20.0, IBM®, Armonk, NY). Statistical significance was set at 0.05.

QUESTIONNAIRE

Name.....

Gender.....

Date of birth.....

Denture age.....

How many times do you clean your denture/day.....

How do you clean your denture

a) With water only

b) Brushing with water only

c) Brushing with water and toothpaste

d) Brushing with water and soap

e) Night immersion with water

f) Night immersion with antiseptics

g) Night immersion with water and tablets

h) other Specify.....

Figure 1. Questionnaire for collecting data in our sample

3. RESULTS

The patients' average age was 62.54 ± 10.54 years, ranging from 30 to 80 years. The majority of the patients cleaned their dentures one time per day (29.5 %), directly followed by two times (27.3 %) and three times per day (26.5 %). Fewer patients cleaned their dentures either more than three times a day (9.8 %) or less than once per day (6.8 %).

Variable	N	%
Gender		
Males	61	46.2
Females	71	53.8
Denture cleaning frequency		
Rarely	9	6.8
1 time /day	39	29.5
2 times /day	36	27.3
3 times/day	35	26.5
More than 3 times/day	13	9.8
Denture night cleaning technique		
Never	72	54.5
Immersion with water	21	15.9
Immersion with water and tablets	38	28.8
Immersion with other product	1	0.8
Denture day cleaning technique		
Never	27	20.5
Brushing with toothpaste	42	31.8
Brushing with water	14	10.6
Brushing with soap	4	3
Rinsing with tap water	45	34.1

Table 1. Frequency and percent distribution of gender and denture hygiene practices in the overall sample (N = 132)

Twenty-seven out of 132 patients never cleaned their dentures during the day. Rinsing with tap water only was the most common day cleaning technique (34.1%), followed by brushing with toothpaste (31.8%), then brushing with water (10.6 %). Only 3% of the patients reported brushing their dentures with soap.

More than half of the patients (54.5%) do not clean their dentures during the night. Immersion with water and tablets was reported by 28.8% of the patients while 15.9% immersed their dentures with water only. One female patient stated that she uses another product (water and sodium bicarbonate) to immerse her denture during the night.

None of the assessed denture hygiene practices exhibited gender dimorphism.

The same pattern of denture cleaning practices of the overall sample was found for the males and females' subsamples, except that more males reported brushing their dentures three times (31.15%) than two times per day (26.23%). The day and night cleaning techniques also followed the same pattern of the overall sample.

Variable	Males (n = 61)	Females (n = 71)	χ ²	p
Denture cleaning frequency				
Rarely	3 (4.92)	6 (8.45)	1.672	0.808
1 time /day	17 (27.87)	22 (30.99)		
2 times /day	16 (26.23)	20 (28.17)		
3 times/day	19 (31.15)	16 (22.54)		
More than 3 times/day	6 (9.84)	7 (9.86)		
Denture night cleaning/ technique				
Never	33 (54.1)	39 (54.93)	2.05	0.589
Immersion with water	8 (13.11)	13 (18.31)		
Immersion with water and tablets	20 (32.79)	18 (25.35)		
Immersion with other product	0 (0)	1 (1.41)		
Denture day cleaning/ technique				
Never	13 (21.31)	14 (19.72)	3.369	0.51
Brushing with toothpaste	23 (37.7)	19 (26.76)		
Brushing with water	7 (11.48)	7 (9.86)		
Brushing with soap	1 (1.64)	3 (4.23)		
Rinsing with tap water	17 (27.87)	28 (39.44)		

Table 2. Distribution of denture hygiene practices by gender

4. DISCUSSION

Good denture hygiene is indispensable to avoid the negative effect of poorly kept dentures on oral health (12-14).

Denture cleaning frequency

In our study, regardless the denture cleaning technique, the majority of the participants (93.1%) cleaned their dentures at least once daily. This finding, slightly higher than that reported by Dikbas et al. (15) (79.1%) and Hoard-Reddick et al. (16) (70%), is in agreement with the reports of Peracini et al. (1) (99.06%), Nevalainen et al. (17) (96%) and de Castellucci Barbosa et al. (18) (98%).

For Apratim et al. (2) and Ozcan et al. (19), the one-time daily cleaning frequency was 44% and 45.7%, respectively.

Thirty-six point three percent (36.3%) of our patients cleaned their dentures thrice or more daily. This result, which is superior compared to the one of Dikbas et al. (15) (25%), differs from that of Peracini et al. (1) (73.58%), Pietrokovski et al. (20) (96%) and Almeida Júnior et al. (21) (77%).

Denture cleaning technique

Forty- five-point-four percent (45.4%) of our subjects used brushing (mechanical technique) to clean their dentures. Consequently, our findings seem to be consistent with the ones of Dikbas et al. (15) (40.59%) and Kulak-Ozkan et al. (12) (57.1%). However, they are lower when compared to what was reported by Ogunrinde and Opeodu et al. (14) (90.9%), Peracini et al. (1)

(100%), Patel et al. (22) (100%) and Jeganthan et al. (23) (97%).

Furthermore, higher results were found by Polyzois (9) (86%), Coelho et al. (24) (80.1%) and Marchini et al. (25) (79.7%). The high values of mechanical techniques found in most of the researches can be attributed to the fact that usually people continue using the same hygiene technique they used before losing their teeth and wearing dentures.

Thirty-one-point-eight per cent (31.8%) of our sample brushed their dentures with toothpaste, 10.6% with water and 3% with soap. These results disagree with what was reported by Patel et al. (22) where the majority (58.29%) brushed with water only, 25.13% with soap and 16.58% with toothpaste. For Peracini et al. (1), toothpaste was the most preferred denture cleaning agent (84.91%); they attributed this to its relatively affordable cost and ease of use.

According to de Castellucci Barbosa et al. (18), Ozcan et al. (19) and Veres et al. (26), 8%, 17.1% and 63%, respectively, of those interviewed brushed their dentures only with water.

In our study, the second most used denture cleaning technique was rinsing with tap water (34.1%). This result corroborates the one of Apratim et al. (2) (35.1%) but disagrees with that of Saha et al. (27) (47%). On the other hand, we have found that 45.4% of our patients soaked their dentures overnight. Cleansing tablets dissolved in water was the most utilized agent (28.8%) followed by water (15.9%). Our results disagree with those of Peracini et al. (1) and Baran and Nałçaci (28) where, among the agents used for immersion of the dentures, water was the most common with, respectively, 38.71% and 42.9%; this disagreement may be due to the instructions given to the patients by our staff at the prosthodontics department inviting them to soak their dentures in cleansing tablets.

Despite being the most effective agent in denture hygiene, antiseptics were not used for denture immersion by any of our participants. This can be related to their high cost and the unaesthetic brown stains they induce on the acrylic resin.

According to many authors, ideally, a combination between mechanical techniques and chemical soaking should be used to obtain better denture hygiene (23, 29, 30). In our study, 34 out 132 participants (25.75%) reported using combined techniques (brushing and soaking). This is in contrast with the finding of Veres et al. (26) (59%). Similarly, Hoard-Reddick et al. (16) found that using both mechanical and chemical techniques was more frequently used. Finally, our study aiming to evaluate the denture hygiene habits in a sample of Lebanese population is not without limitations. Because of the limited number of our questioned participants and the possibility of shyness to reveal the real frequency and techniques of cleaning their dentures, definite conclusions must be delayed until future studies on larger samples validate our results.

5. CONCLUSIONS

Within the limits of this study, we conclude that in our sample of Lebanese population, the knowledge about denture hygiene and its relationship with maintaining a good oral health is limited. The daily frequency of denture cleaning is satisfactory. However, the techniques and products used were self-estimated and consequently not sufficient.

• Conflict of interest: none declared.

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