

Evaluation of Knowledge, Attitude, and Practices toward Complete Denture Hygiene among Dental Interns in Saudi Arabia

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Abstract

Objective: The aim of this study was to assess the denture hygiene knowledge, attitudes and practice toward patient education in denture care among dental interns in Saudi Arabia.

Materials and Methods: A cross-sectional online survey was conducted using a questionnaire among dental interns in dental schools in Saudi Arabia. The questionnaire was divided into four parts. The data collected was analyzed using SPSS. Fisher's exact test alongside the Chi-square test was used to determine the association between the groups.

Results: A total of 316 dental interns from twenty-five dental schools in Saudi Arabia participated in this study. The study shows that the majority of the participant (93.0%, n = 294) are aware that plaque accumulate in dentures, and (81.3%, n = 257) of the participant know that the oral plaque on complete denture is associated with conditions like denture stomatitis and other systemic diseases the mean Age (\pm SD) of the participants was 24.6 (\pm 1.4) years. Only 14.6% agreed to communicate with their patient through a recall program.

Conclusion: The study concluded that despite the dental interns knowledge in denture hygiene, dental interns were lacking the optimal information in regards to denture cleaning materials. As a result, their patients were not advised properly on the optimal method of maintaining denture hygiene.

Keywords: Knowledge; Dental Intern; Denture Hygiene; Attitudes; Dental Practitioner; Questionnaire

Introduction

Quality of life and general health could improve through good oral health [1]. An essential component for good oral health for denture patient is having an effective and regular denture hygiene. Hence, it is important for the dental care teams to provide those patient proper denture hygiene instructions [2]. On daily basis, dentures must be cleaned and removed in order to get rid of all food particles and plaques which are the main reason for stains, bad breath as well as gum irritation. Plaque forms on dentures in the same way as it forms on normal teeth, thus, dentures must be cleaned regularly. At the present day, the "toothbrush" is the most popular method being used in order to accomplish oral hygiene. One of the most common methods for disturbing the development of dental plaque is tooth cleaning mechanism i.e. the use of toothbrush [3]. Dentists should have the obligation to encourage and guide patients through providing them all means and ways to control plaque where patients should take up the responsibility of maintaining the oral hygiene through a daily basis care routine [4]. Regular prevention of denture induced oral lesions is dentist and dental hygienist responsibility and it is executed through providing post-placement denture hygiene instructions to encourage and educate patients. Dental plaque acquires both hard and soft surfaces in

the oral cavity. Removable dentures are vulnerable to the accumulation of plaque thus, the maintenance of oral hygiene is an exercise for life [5]. The acrylic denture's micro-porous surfaces supply a broad range of different environments in order to sustain microorganisms that may harm the health of a physically vulnerable denture patient [4-6]. In theory, almost all products of the denture care are handled easily, effective for removal of inorganic/organic deposits and stains, bactericidal and fungicidal, nontoxic to the patient, non-deleterious to the denture materials and rather affordable. Ultimately, brushing is the most popular cleaning way for complete dentures, however, the use of certain toothbrushes and other cleaners has a high importance for great outcomes [6]. The cleanliness of denture is very important to prevent any poor aesthetics, malodor and plaque or calculus accumulation with its destructive impact on mucosa [7,11]. Lately, It has been recognized that wearing a complete denture all the time result in more accumulation of plaque when compared with only wearing it through the day time [8]. An essential treatment options in Prosthodontics is complete dentures, however, patients might be disappointed from newly made dentures, specially, if a deficiency occurred in maintaining a proper denture hygiene [9,17]. In recent studies, researches have made their primal focus on the attitude of denture's wearers and made their practices on the denture cleanness [8,12-16]. yet researchers should have been concentrating on the dentist's attitude and practices towards the education of patients during the time of denture's delivery. Unfortunately, there are not enough literatures available when searches were directed in this direction. Therefore, the main aim of this study is to assess the knowledge in denture hygiene, test dentist's practices and attitudes towards patients' education in denture care among dental interns in the kingdom of Saudi Arabia.

Materials and Methods

Across-sectional study involving dental interns graduated from private and governmental dental colleges in the Kingdom of Saudi Arabia and it is based on a structured close-ended questionnaire. We adapted a questionnaire previously published (Suresan V, Mantri S, Deogade S, Sumathi K, Panday P, Galav A., *et al.* Denture hygiene knowledge, attitudes, and practices toward patient education in denture care among dental practitioners of Jabalpur city, Madhya Pradesh, India. *J Indian Prosthodont Soc* 2016;16:30-5) [1], this questionnaire has been reviewed, modified and validated. Our sample size was calculated using a web site called raosoft, 5% was used as a margin of error with a confidence level of 95%. The population size of dental interns in the private and governmental dental school in Saudi Arabia was obtained by contacting all the dental schools in the country. The questionnaire's validity was examined through a selection of 20 random interns and 10 of which were from governmental dental college (5 male and 5 female) where the remaining 10 are from private dental college (5 male and 5 female). The interns were asked on the clarity of the questions and how long the questions were. The results of the questionnaire was assessed for its validity, content validity ratio and content validity index by both a statistician and prosthodontics.

These were online questionnaire distributed electronically using a link generated by google format. Information was collected on the respondents to provide demographic information including: gender, age, name of dental school. and the year of graduation. The questionnaire containing 20 closed ended questions which was designed in to three parts. Part one: Five questions related to knowledge associated with denture hygiene maintenance and each of these questions had three options to choose from: Yes, no and do not know. Part two: also, five questions related to the attitudes towards denture hygiene instruction delivery to their patients and the options for attitude were based on 3-point Likert scale (agree, do not know, disagree). Part three: Denture hygiene practice recommendations. The survey was distributed electronically using the following methods: Twitter, Inc. is based in san Francisco, California and WhatsApp Menlo park, California, united states. and target sample size was achieved within 30 days. The estimated time to complete the questionnaire 10 minutes.

The informed consent that was given to the interns was clear and it indicated the purpose of the study as well as it gave the right for participants to withdraw at any time with no commitment towards the study and its team. All information collected are on the basis of anonymity and with high level of confidentiality of participants.

The Institutional Review Board approved the study in Riyadh Elm University (RC/IRB/2018/1096). The data collected was entered into Statistical Package for the Social Sciences (SPSS), Version 22 for Windows. A descriptive analysis was preformed and was followed by inferential statistics. Mean, standard deviation, frequency. and percentages were calculated for both quantitative and qualitative sets

of data. The Fisher’s exact test was used alongside the Chi-square test. A p value of ≤ 0.05 was considered as statistically significant. The data presented in tables and figures generated in Microsoft Excel and Word applications.

Results

Of the total 316 participants, 56% (n = 177) were females and 44% (n = 139) were males. The mean age (\pm SD) of the participants was 24.6 (\pm 1.4) years old. Dental interns from twenty-five dental schools participated in this study. Approximately equal proportion of participants graduated in the year 2017 (50.6%, n = 160) and 2018 (49.4%, n = 156) respectively.

According to (93.0%, n = 294) the majority of the participants reported that dentures accumulate plaque. and (81.3%, n = 257) oral plaque on complete denture is associated with conditions like denture stomatitis and other systemic diseases. Under half of the participants (45.6%, n = 144) reported that a regular toothpaste is advisable for denture cleansing. Just over one third (34.2%, n = 108) reported that cleaning the tissue bearing side (fitting surface) of the denture affect its retention in the mouth. Fifty six percent (n = 177) reported that placing denture in hypochlorite cleansing solution for a longer period damages the dentures, and forty-four percent of the participant gave a negative answer (n = 139) (Table 1).

| Questions | | Frequency (Percent) |
|--|------------|---------------------|
| Do dentures accumulate plaque? | Yes | 294 (93.0) |
| | No | 16 (5.1) |
| | Don't know | 6 (9.1) |
| Dose oral plaque on complete denture associated with conditions like denture stomatitis and other systemic diseases? | Yes | 257 (81.3) |
| | No | 38 (12.0) |
| | Don't know | 21 (6.6) |
| Is regular toothpaste advisable for denture cleansing? | Yes | 144 (45.6) |
| | No | 143 (45.3) |
| | Don't know | 29 (9.2) |
| Does cleaning the tissue bearing side (fitting surface) of the denture affect its retention in the mouth? | Yes | 108 (34.2) |
| | No | 182 (57.6) |
| | Don't know | 26 (8.2) |
| Does placement of denture in hypochlorite cleansing solution for a longer period damage the dentures? | Yes | 177 (56.0) |
| | No | 59 (18.7) |
| | Don't know | 80 (25.3) |

Table 1: Dentists’ knowledge associated with denture hygiene maintenance.

The majority of the participants reported that they don’t recognize explaining denture hygiene instructions to old patients can be very time consuming (59.8%, n = 189). Most interns believe it is not essential to provide older people with hygiene instructions because they tend to not follow it (82.9%, n = 262). The majority that the recall program for complete denture patients has no importance due to denture teeth which are artificial and cannot be subjected to problems similar to natural teeth (78.5%, n = 248). Most participant do not recognize patient education regarding the impact of denture hygiene on systemic health is important (84.8%, n = 268). While 9.5% of the subject group reported they agree that patient education regarding the impact of denture hygiene on systemic health is important and denture adhesives (if used) need not be cleaned completely and reapplied again daily (50.9%, n = 161) (Figure 1).

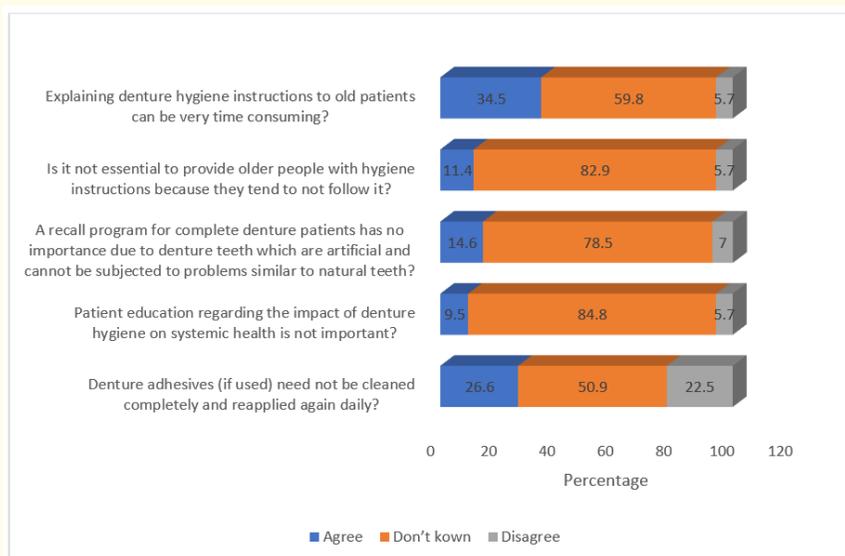


Figure 1: Dentists' attitudes towards denture hygiene instruction delivery to their patients.

The majority of the participants (91.5%, n = 289) reported that they instruct patients regarding the denture cleansing methods at the time of denture insertion. Around 40% (n = 125) use verbal medium for instruction. The majority (81.0%, n = 256) reported that they educate their patients regarding the relationship between denture hygiene, oral hygiene, oral health, and systemic health. Over (41.5%, n = 131) of the Participants in equal proportion reported that they recommend denture clean with regular toothbrush and denture cleansing brush. The majority (58.5%, n = 185) recommend cleaning the denture once daily, and (25%, n = 79) of the participant recommend cleaning the denture twice a day (Table 2). Just over 40% (n = 131) reported that they recommend denture cleaning by brushing with water only (Figure 2).

| Questions | Frequency (Percent) |
|---|---|
| Do you instruct your patients regarding the denture cleansing methods at the time of denture insertion? | Yes 289 (91.5) |
| | No 27 (8.5) |
| What kind of medium do you use for instructions? | Verbal 125 (39.6) |
| | Verbal and practical demo 90 (28.5) |
| | Practical demo 23 (7.3) |
| | Verbal and written 16 (5.1) |
| | Verbal, written, practical demo 47 (14.9) |
| | Written 9 (2.8) |
| | Written and practical demo 6 (1.9) |
| Do you educate your patients regarding the relationship between denture hygiene, oral hygiene, oral health and systemic health? | Yes 256 (81.0) |
| | No 60 (19.0) |
| Which brush do you recommend for denture cleansing? | Regular toothbrush 131 (41.5) |
| | Denture cleansing brush 131 (41.5) |
| | Don't recommend any brush 54 (17.1) |
| What is the frequency of cleaning the denture recommended by you? | Never 1 (1.9) |
| | Once in a week 22 (7.0) |
| | Once in 3-4 days 14 (4.7) |
| | Once daily 185 (58.5) |
| | Twice daily 79 (25.0) |
| | More than three times a day 9 (2.8) |

Table 2: Denture hygiene practice recommendations associated questions of respondents.

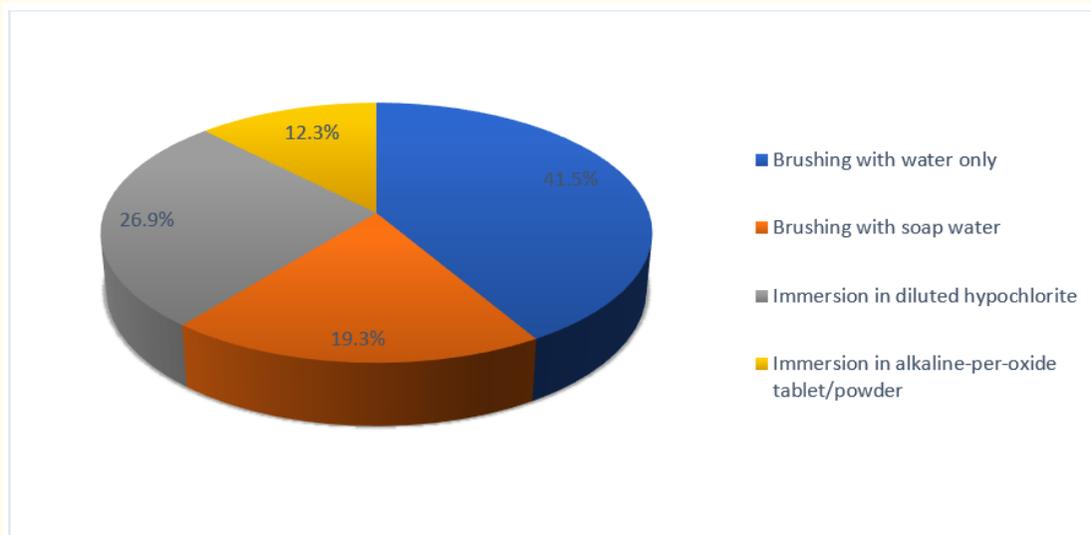


Figure 2: Various denture cleansing methods recommended.

The majority reported that they advise their patients to thoroughly rinse the dentures after soaking and brushing with denture cleansing solutions prior to reinsertion into the oral cavity (79.1%, n = 250) and to remove their dentures at night (97.5%, n = 308). Two hundred and fifty (79.1%) reported that they recall their patients for periodic denture checkup and oro-mucosal evaluation (Table 3). The majority 88.0% (n = 278) recommend their patients to immerse their dentures in plain water once removed from the oral cavity (Figure 3).

| Questions | Frequency (Percent) | |
|---|---------------------|------------|
| Do you advise your patients to thoroughly rinse the dentures after soaking and brushing with denture cleansing solutions prior to reinsertion into the oral cavity? | Yes | 250 (79.1) |
| | No | 66 (20.9) |
| Do you advise them to remove their dentures at night? | Yes | 308 (97.5) |
| | No | 8 (2.5) |
| Do you recall your patients for periodic denture checkup and oro-mucosal evaluation? | Yes | 250 (79.1) |
| | No | 66 (10.9) |

Table 3: Denture hygiene practice advice associated questions of respondents.

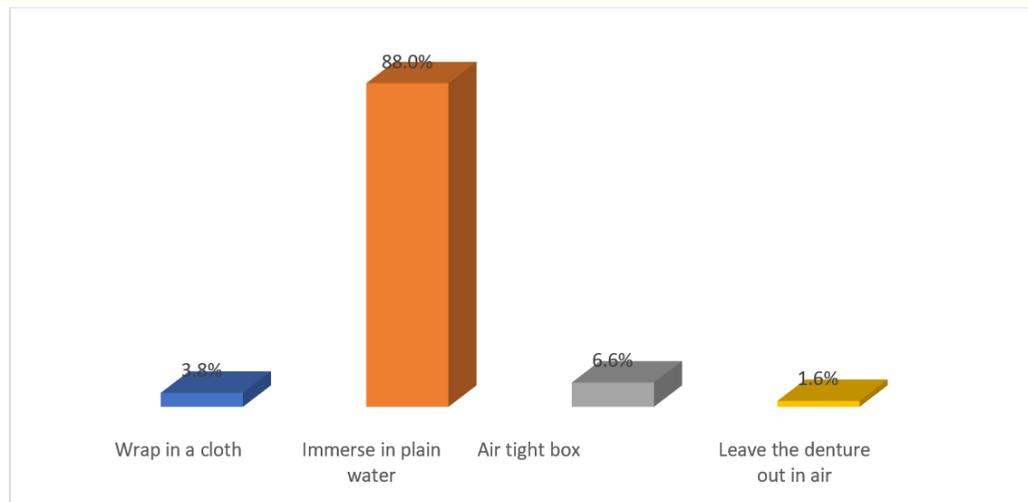


Figure 3: Various storage methods of dentures recommended.

Additionally (6.6%) recommend their patients to keep their dentures in Air tight box, while (3.8%) wrap in a cloth, hence (1.6%) leave the denture out in air.

Males were more likely to agree than females that a recall program for complete denture patients has no importance due to denture teeth which are artificial and cannot be subjected to problems similar to natural teeth ($p < 0.05$). Furthermore, males were more likely to recommend cleaning the denture by brushing with only water and females were more likely to recommend immersion in alkaline peroxide tablet/powder as a denture cleaning method ($p < 0.05$). Moreover, this association was found to be statistically significant.

Discussion

The knowledge of the dentists plays a vital role in the maintenance of denture hygiene. It is very important that the dentists have ample knowledge of denture hygiene and apply this knowledge to train and instruct their patients on the significance of denture hygiene maintenance. Moreover, it is also necessary to recall their patients on regular intervals to ensure that the hygiene is maintained. The present study aimed to assess the denture hygiene knowledge, attitude and practice toward patient education in denture care among dental interns in Saudi Arabia.

In the current study, the majority of the participants reported that dentures accumulate plaque and oral plaque on complete denture is associated with conditions like denture stomatitis and other systemic diseases. It has been reported that failure to perform daily efficient oral hygiene to maintain periodontal health will lead to plaque accumulation [7]. Cleaning the tissue bearing side (fitting surface) of the denture does not affect its retention in the mouth and this was reported by most of the participants. This finding was comparable with Dr. Suresan V., *et al* [1].

The majority of the participants in the present study were not aware that a recall program for complete denture patients has no importance due to denture teeth that are artificial and cannot be subjected to problems similar to natural teeth. Moreover, the participants were unaware that patient education regarding the impact of denture hygiene on systemic health is not important. There findings were not in agreement with Dr. Suresan V., *et al.* study which reported that the majority disagree with the importance of recall program and patient education [1]. However, the majority reported that they recall their patients for periodic denture checkup and oro-mucosal evaluation.

The majority of the participants (91.5%) in this study instructed their patients regarding denture cleansing methods at the time of denture delivery. This was similar to a Dr. Suresan V., *et al.* study which reported (96%) [1]. On the contrary, Dr. Mylonas P study reported that only 48.1% of the practitioners gave instructions to their patients about denture cleansing after delivery of dentures [3]. Furthermore, a study on denture wearers reported that 82.9% have never been instructed by their dentists [9]. Most of the participants reported using only verbal medium of instructions to provide denture cleansing information which was in comparison to a Dr. Mylonas P study [3].

In the present survey, 41.5% of the dental interns advised their patients to brush their dentures using water only. Moreover, in Dr. Srinivasan M., *et al.* and Christensen LB., *et al.* studies the most preferred cleansing regimen by the patients was brushing only [10,11]. Additionally in this study, 26.9% of the dental interns recommended the use of hypochlorite solution for denture cleansing. However, the use of hypochlorite solutions in denture cleansing with metal component causes corrosion or tarnish of the metal [6]. The results of the current study revealed that dental interns need to update their knowledge of denture cleansing methods to improve the services offered to their patients.

Conclusion

The study concluded that despite the dental interns knowledge in denture hygiene, they lack the optimal information in relation to denture cleaning materials. As a result, their patients were not advised properly on the optimal method of maintaining denture hygiene. This need more attention from the educators to strengthening the skill of their graduates in order to improve the dental services.

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Conflict of Interest

All authors listed have contributed sufficiently to the study to be included as authors, To the best of our knowledge, no conflict of interest, financial or other, exists.

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