

Prevalence of Dentists Knowledge, Attitude and Recommendations about Denture Cleansers in Riyadh, Saudi Arabia

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ABSTRACT

Background and Aim: Denture cleansers have been widely used in prosthodontics for cleaning and maintaining dentures. Lack of Riyadh dentists' denture cleansers recommendations baseline data exists. The aim is to study Prevalence of Dentists' Knowledge, Attitude and Recommendations about Denture Cleansers in Riyadh, Saudi Arabia.

Methods: On IRB approval a mailed Questionnaire survey among Dentists practicing in Riyadh was conducted during June 2020. Registered Dentists practicing in Riyadh 411 were recruited by Quota sampling. Pre-tested, validated, close ended Questionnaire was developed by review of literature and expert opinion. Participants responded voluntarily to mailed questionnaire on their background and knowledge about denture hygiene and denture cleansers, attitude and recommendations about denture cleansers, Opinion and Perceived barriers in recommending denture cleansers. Data entry and analysis was done using SPSS Inc, Chicago IL) version 16.0. ANOVA test compared knowledge and attitude scores with independent variables. Significance level set ($P \leq 0.05$) at 95% CI.

Results: Total 42 Dentists with PHD (mean score 14) and 48 dentists working both as faculty in dental college and as private practitioner had fair knowledge (score 12.5) compared to 96 MDS and 273 BDS dentists reporting poor knowledge. Attitude scores were lying within agree category in all 3 groups, scores on higher side in PHD dentists (score 12.7). Majority 50% dentists recommended brushing only followed by combination of brushing and soaking in 41%. Denture cleansing tablets were recommended by dentists (40%) and in 74% of dentists with PHD. 78% of dentist's perceived lack of denture cleansers knowledge as barrier for recommendations.

Conclusion: Poor denture cleansers knowledge and lack of consensus for recommendation exist among Riyadh's dentists. This mandate evidence-based guidelines compliance and enhance denture cleansers knowledge by strengthening of dental manpower training and further by continual education besides extending market availability.

Keywords: Denture cleanser, Denture hygiene, Riyadh, Dentist, knowledge, Attitude, Recommendations.

Introduction

Effective Cleaning of dentures regularly with relevant cleaning aids and methods as a standard procedure for oral hygiene maintenance in denture wearers would help in attaining not only optimal oral health but also systemic health. Dentures predispose the wearer to denture stomatitis [1] as microorganisms including potential pathogens [2] harbored on tissue surface of the dentures act as an important cofactor in denture stomatitis pathogenesis.

Dental plaque acquires on both hard and soft surfaces in the oral cavity. Removable dentures are vulnerable to plaque accumulation similar to natural dentition and thus the maintenance of oral hygiene remains as an exercise for life [3]. The cleanliness of denture is very important to prevent occurrence of poor aesthetics, malodor and plaque or calculus accumulation with its destructive impact on mucosa in addition to increase in risk of serious systemic disease incidence [4,5]. Denture cleansers have been widely used in prosthodontics to prevent colonization of *Candida albicans* and related *Candida* species and formation of denture plaque [6]. However, daily use of denture cleansers can affect the physical and mechanical properties of denture base materials [7-12].

Although denture cleansers would be an useful adjunct to removing stain and reducing biofilm formation on the surface irregularities of dentures, Murdoch-Kinch [13] noted the occurrence of oral mucosal injury caused by denture cleansers. In addition, denture cleansers cause significant deterioration of the physical and mechanical properties of denture base materials if not used as recommended. Relatively few studies are available on the recommendations made by DHCPs, although some authors have noted the importance of recommendations, the lack of evidence and efficacy for different methods, and the likely relation to disease exist [14]. Other authors were concerned about the lack of evidence for particular treatments, while noting that more studies are needed [15]. The study on Knowledge, Attitude, and Practice toward Complete Denture Hygiene among Dental Interns in Saudi Arabia reported that despite of dental intern's knowledge in denture hygiene the optimal information regarding denture cleaning materials were lacking. As a result, their advice to the patients on the optimal method of maintaining dentures was compromised [16]. Another study among dental graduates and practitioners in Aseer province of Saudi Arabia reported the need to improve and enhance teaching as well as training about denture cleansers during the undergraduate education. Further continuing education and training to practitioners to enable them for adequate guidance on denture hygiene to their patients [17].

Often, patients reported never having been instructed by their dentists as to how to clean their dentures [18]. The quality of life, nutrition, social interactions and associated factors of denture wearers may be ill affected if appropriate denture hygiene is not maintained [19-22]. The Denture wearers would benefit greatly from a Dental professional's guidance regarding the use of denture cleansers. Geographical differences in Denture hygiene recommendations and lack of consistency among Dental health care professionals exist. Thus, regional data on this view becomes significant to provide systematic comparative data in the peer reviewed literature towards evidence-based recommendations. However, little is known about Dentists' Knowledge, Attitude and recommendations about denture cleansers in Riyadh. In order to fill the gap on this perspective a Cross sectional mailed questionnaire-based survey on Dentists' Knowledge, Attitude and recommendations about Denture Cleansers in Riyadh, Kingdom of Saudi Arabia was conducted.

Materials and Methods

On obtaining approval of study protocol from the Institutional Review Board of Riyadh Elm University [IRB No: 'SRS/2020/16/220/217'] a Cross-Sectional mailed Questionnaire based survey was conducted during June 2020 among Registered Dentists practicing in Riyadh-KSA. Based on the Pilot study results the sample size of 400 participants was calculated. Quota sampling method was employed for adequate representation of sampling units. Registered Dentists either working as faculty in dental college, private dental practice, or both and in Government

setting were included and were contacted through mail. Study subject's voluntary participation and confidentiality were ensured. The online questionnaire was distributed electronically using a link generated by google doc format. The questionnaire items for the present study were adapted from previous reported studies through review of literature and expert opinion. The study subjects background and knowledge about denture hygiene and denture cleansers, Attitude/ Guidance/ Opinion and Perceived barriers towards denture cleansers were assessed by means of a pretested validated structured close ended questionnaire. This validated questionnaire was subjected to modification after pilot testing and estimated time to complete the questionnaire was 15 minutes. The close ended questionnaire was divided into 7 sections assessing components of the study objectives. Section 1 assessed Dentists' background information related to their Age, Gender, Education Qualification of dentists BDS/MDS/PHD, total years of dental practice in years, Occupation setting whether affiliated as Faculty in Dental College/ Private practice/both/ Government, and for specialization in Maxillofacial Prosthodontics. Section 2 assessed Dentists' Knowledge about denture hygiene maintenance having 3 questions with three options to choose from: Yes, No and Don't know. Section 3 assessed Knowledge about denture cleansers having 12 questions: 6 questions about knowledge, 2 questions about clinical practice and 4 questions about education. Each question had 3 options Yes, very much/ Yes, but only a little and No for 6 questions on knowledge, options three or more/ less than three or None for 2 questions on clinical practice and options Yes, often/ Yes, occasionally and No for 4 questions on education. Section 4 with 7 questions assessed Dentists' Attitude about denture cleansers having the options for their attitude based on 3-point Likert scale (Agree, Don't know, Disagree). Mean and standard deviation of scores were calculated (maximum score of 24 for knowledge and 14 for attitude). Participants' Knowledge were interpreted as Good, Fair and Poor those scoring >70% (score 17-24) were interpreted as having good knowledge, fair knowledge between 50-70% (score 12-16.9) and poor knowledge scoring <50% (score 0-11.9). Similarly, Participants' attitude was interpreted as agree, neutral and disagree those scoring >70% (score 9.8-14) were interpreted as agree, neutral between 50-70% (score 7-9.7) and disagree scoring <50% (score 0-6.9). Section 5 with 6 questions assessed Dentists' Guidance for denture cleansers comprising time of instruction on binary scale Yes/No, ticking the relevant option for medium of instruction and form of denture cleansers recommended, denture cleansing methods and their frequency. In Section 6: 7 questions assessed Dentists' Perceived Barriers about denture cleansers guidance on 5 point Likert scale with values for the options starting with "definitely yes" at 1 point and "definitely yes" at 5 having neutral response. 1 question in section 7 on Dentists' Suggestion about enhancing denture cleanser guidance into their practice had options from Yes, very much; Yes, but little and No.

Data management and statistical methods:

Data was entered and analyzed using Statistical Package for Social Sciences (SPSS), version 16.0 (SPSS Inc, Chicago IL). A Descriptive analysis of data was followed by Inferential statistics. A p value of ≤ 0.05 at 95% CI was considered as statistically significant. The scores for Knowledge and Attitude were converted to means and compared with independent variable academic qualification of dentists as BDS/MDS/PHD and occupation setting as faculty in dental college/ private practitioner/ both as academician and private practitioner/ government practitioner through ANOVA.

Results

Table 1 shows description of 411 study participants 67% (n=274) were males and 33% (n=137) were females. Mean age of the participants was 34 years (SD=48.3). Of the 411 participants 37%, 9%, 33% and 21% were from North, South, East and West of Riyadh geographical zones. Among 411 dentists 66% (n=273) were BDS, 23% (n=96) were MDS and 10% (n=42) were PHD qualified. 18% were working as faculty in dental college, 50% as private practitioners, 12% both working as faculty in dental college and private practice and 20% as Government practitioners. 16% were maxillofacial prosthodontists. Total mean age of dental practice was 10 years (SD=47.9). Table 2 majority (91%) of the participants knew that dentures accumulate plaque and (84%) had knowledge that oral plaque on complete denture is associated with conditions like denture stomatitis and other systemic diseases. (52%)

had knowledge that cleaning the tissue bearing side (fitting surface) of the denture does not affect its retention in the mouth.

Table 3 shows the denture cleansers knowledge questionnaire items and the percentage distributions of the responses. For the question "Have you ever heard of denture cleansers?", 17% of dentists answered "No", whereas almost 42% answered "Yes, very much". For the question "Do you know the composition of the denture cleansers?", 13% of dentists answered "Yes, very much", whereas 53% dentists answered "No". For the question "Do you know what the function of a denture cleanser is?", 23% of dentists answered "Yes, very much", whereas 43% dentists answered "No". For the question "Do you know of any disadvantages of denture cleansers?", 11% of dentists answered "Yes, very much", whereas 24% of dentists answered "Yes, but only a little". For the question "How many imported brands of denture cleanser do you know?", 55% of dentists answered "None", 8% knew 3 or more imported brands. For the question "How many domestic brands of denture cleanser do you know?", 7% of dentists answered "Three or more" and 49% knew "Less than three", whereas 44% of dentists answered "None". For the questions "Have you ever been taught about denture cleansers?", 54% of dentists answered "No". For the questions "Have you ever seen denture cleansers in books or lecture meetings?", 47% of dentists answered "No" and 45% had occasionally seen. For the question "Have you ever seen any TV commercials about denture cleansers?", 72% of dentists answered "No". For the question "Do you know any alternatives to denture cleansers?", 26% reported that they knew very much and 37% of dentists knew only a little and 37% answered "No". For the question "Have you ever seen denture cleansers in the clinic?", 22% reported that they had occasionally seen and 66% of dentists answered "No". For the question "Do you think the use of Denture Cleanser is more effective than a clinical intervention?" 66% answered "No" whereas 8% answered as Yes, very much.

Table 4 shows study participants attitude about denture cleansers. 98% of dentists agreed that it is essential to provide patients with denture instructions. 95% agreed for recall program to check annually for evaluation of dentures and oral tissues. 88% agreed that patient education on role of denture cleansers in denture hygiene as important. 65% agreed that dentures must be cleaned by combination method of brushing and soaking in immersion cleansers 32% did not know. 46% agreed that hypochlorite must not be on dentures with metal components and 60% did not know that placement of dentures in hypochlorite solution for more than 10 minutes damage the dentures. 35% dentists agreed that long term and frequent use of cleansing tablets or solutions may be harmful to denture surfaces and reduce its longevity.

In Table 5 ANOVA test showed significant difference in knowledge and attitude scores within and between BDS/MDS/PHD qualified Dentists $P < 0.001$. Dentists with PHD had fair knowledge (mean score =14) better than MDS (mean score=9.3) and BDS (mean score =6) reporting poor knowledge. No significant difference in attitude scores between dentists with MDS (12.1) and PHD (12.7) were reported compared to BDS (11.1) scores in each group lying within agree category. In table 6 ANOVA test showed significant difference $P < 0.001$ in knowledge and attitude scores within and between 4 study groups working either as faculty in dental college/ private practitioner/ both as faculty in dental college and private practitioner/ government practitioner. Study group working both as faculty in dental college and as private practitioner had fair knowledge (score 12.5) compared to other groups reporting poor knowledge working either as faculty in dental college (score 10.4), as private practitioner (score 6.1) and as government practitioner (5.9). Attitude scores in all the 4 groups were lying within agree category, dentists working as faculty in dental college and as private practitioner had scores on higher side (12.2) compared to other 3 groups.

Figure 1 Majority 49% of dentists gave combination of verbal & practical demonstration medium of instruction for denture cleansing to the denture wearers followed by 32.5% who gave verbal medium of instruction alone. Table 7 shows comparison between recommendation for Denture Cleansing products and methods with education qualification of dentists. All of the 411 dentists recommended variety of denture cleansing products categorized under 4 primary groups according to the methods of their use. The most recommended denture cleansing method by 207(50.3%) dentists was brushing only followed by combination of brushing and soaking 170(41.3%), soaking only by 31(7.5%) dentists and other methods (0.7%). The most preferred product recommended by 164(40%) of dentists

was Denture cleansing tablets either by combination method of brushing and soaking in denture cleansing tablets among 154 (37.4%) of dentists or by soaking the dentures into commercial cleansing tablet solely among 10(2.4%) of dentists. The second most recommended product was toothpaste with brush recommended by 145 (35.2%) of dentists. The least advised method among 31(7.5%) of dentists was soaking the dentures alone either in denture cleansing tablets(2.4%)/ liquid denture cleanser(1.7%)/ mouthwash(1.2%). Combination method of brushing and soaking in denture cleansing tablets was recommended by 61.9 of Dentists having PHD, 57% having MDS and 26.7% with BDS qualification. Brushing with toothpaste was recommended by 41% Dentists having BDS and 31% having MDS. Table 8 Over 14.5%of the Participants reported that they recommend denture cleaning brush and majority 69% recommend regular toothbrush for denture cleansing while 16% did not recommend any brush. Table 9 Majority 54 % of dentists recommended denture cleansing once daily followed by 30 % of dentists twice daily. 47 % of dentists with PHD recommended twice daily cleansing of dentures, 23.9 % of MDS dentists recommended denture cleansing after every meal similar to PHD dentists. 58.6% of dentists with BDS recommended once daily denture cleansing.

Figure 2 shows that 34% of dentists always recommended denture cleansers based on composition, quality or price and 33 % of dentists reported as sometimes.

Table 10 Majority (78%) of the study group perceived lack of knowledge and skills about denture cleansers as barrier besides lack of interest and lack of time among 34% and 26% as barrier for denture cleanser recommendation. Lack of resources (printed materials, pamphlets, brochures, etc) for educating about denture hygiene, Fear that patients may not come back as it might alienate them and find expensive option for denture maintenance and lack of interest or poor attitude among patients for denture cleansers were reported as perceived barriers for denture cleanser recommendation among 77%, 68% and 71% of study group. Figure 3 Majority of dentists suggested for enhancing denture cleanser knowledge and recommendation in their practice 67.5% as very much and 26 % as little and 6% as none.

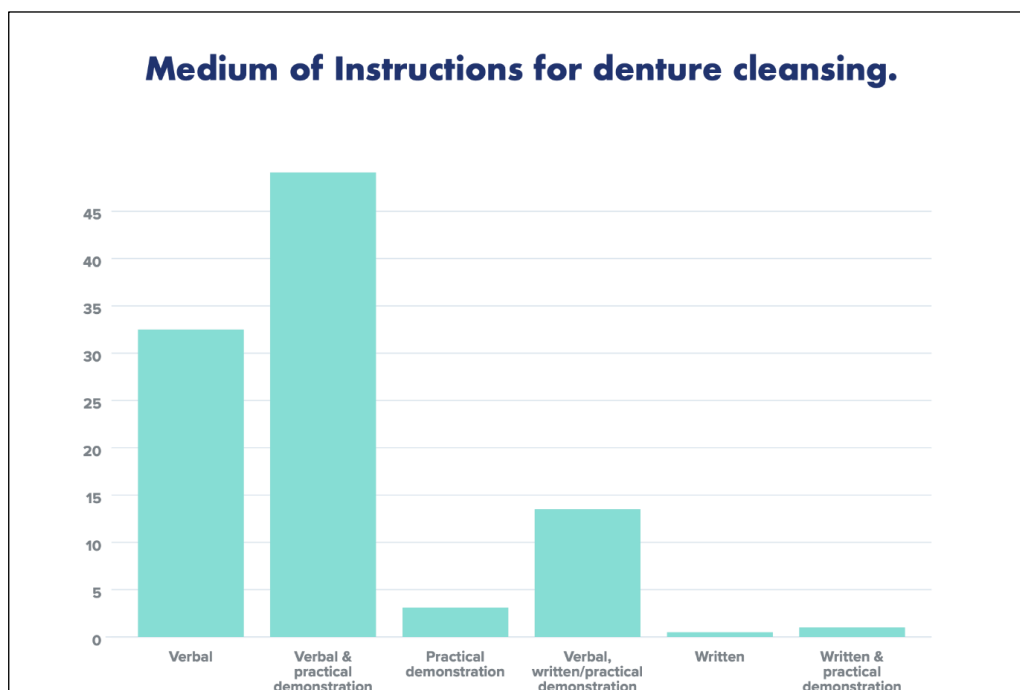


Figure 1: Distribution of Medium of Instructions for denture cleansing in study population

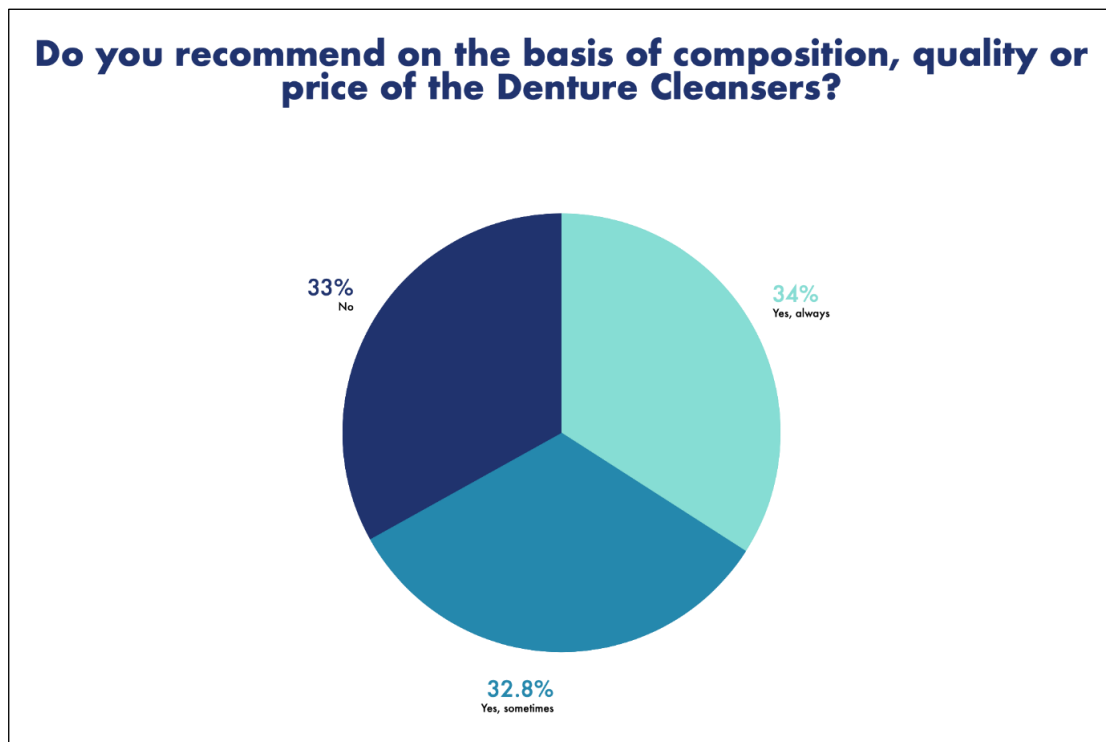


Figure 2: Do you recommend on the basis of composition, quality or price of the Denture Cleansers?

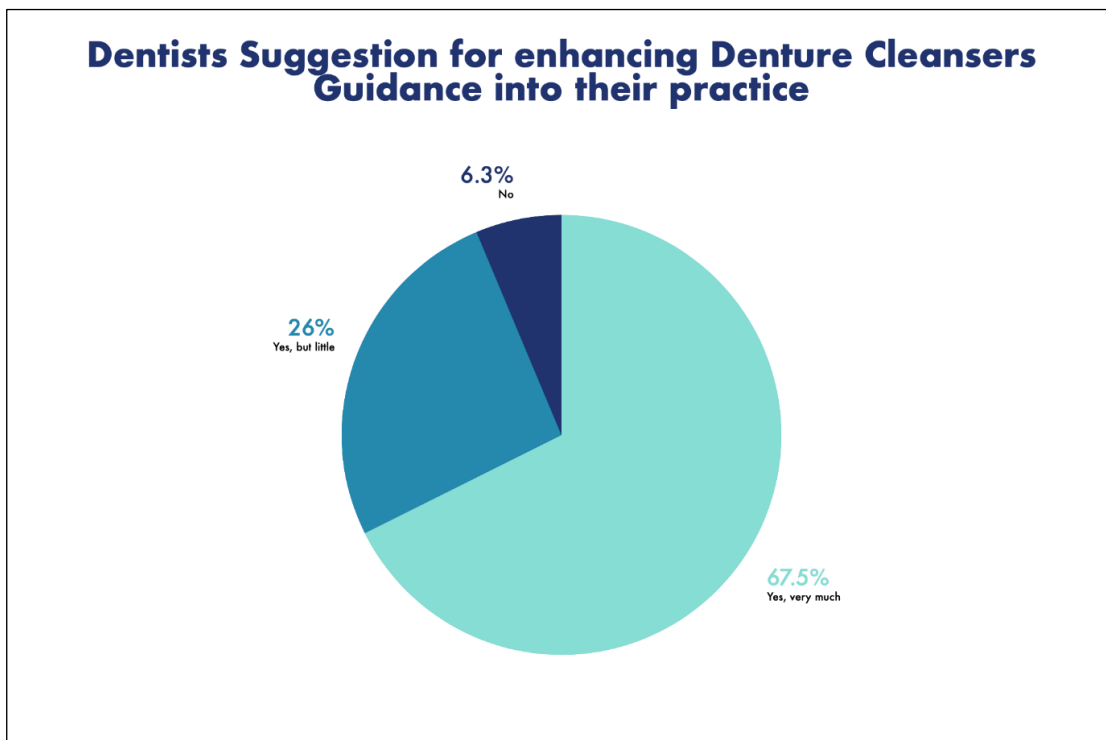


Figure 3: Dentists' Suggestion for enhancing Denture Cleansers Guidance in their practice.

Table1: Description of study participants.

| characteristics | | Frequency n | Percentage % |
|--|---------------------------|----------------|-----------------|
| Gender | Male | 274 | 67 |
| | Female | 137 | 33 |
| Address zones of Riyadh: | North | 151 | 37 |
| | South | 39 | 9 |
| | East | 135 | 33 |
| | West | 86 | 21 |
| Educational Qualification | BDS | 273 | 66.4 |
| | MDS | 96 | 23.3 |
| | PHD | 42 | 10.2 |
| Occupation setting | Faculty in dental college | 74 | 18 |
| | Private practitioner | 205 | 50 |
| | Both | 48 | 12 |
| | Govt practitioner | 84 | 20 |
| Specialized in Maxillofacial Prosthodontics & Implantology | Yes | 67 | 16 |
| | No | 344 | 84 |
| Age of dental practitioners (years) | Mean | 34.4 | |
| | SD | 48.3 | |
| Total years of dental practice (years) | Mean | 10 | |
| | SD | 47.9 | |

Table 2: Distribution of Dentist’s Knowledge about Denture Hygiene Maintenance.

| Item description | Category score | | |
|---|-----------------|----------------|------------------------|
| | 2 Yes (%) | 1 No (%) | 0 Don’t know (%) |
| Q1. Do dentures accumulate plaque? | 91 | 4 | 5 |
| Q2. Does oral plaque on complete denture is associated with conditions like denture stomatitis and other systemic diseases? | 84 | 5 | 11 |
| Q3. Does cleaning the tissue bearing side (fitting surface) of the denture affect its retention in the mouth? | 30 | 52 | 18 |

Table 3: Questionnaire items and percentage distribution of Dentists knowledge about Denture Cleansers:(12 Questions)

| Question number | Item description | Category score | | |
|-----------------|---|----------------|-------|-------|
| | | 2 (%) | 1 (%) | 0 (%) |
| 1 (A) | Have you ever heard of Denture Cleansers? | 42 | 41 | 17 |
| 2 (A) | Do you know the composition of the Denture Cleansers? | 13 | 34 | 53 |
| 3 (A) | Do you know what the function of a Denture Cleanser is? | 23 | 34 | 43 |
| 4 (A) | Do you know of any disadvantages of Denture Cleansers? | 11 | 24 | 65 |
| 5 (B) | How many imported brands of Denture Cleanser do you know? | 8 | 37 | 55 |
| 6 (B) | How many domestic brands of Denture Cleanser do you know? | 7 | 49 | 44 |
| 7 (C) | Have you ever been taught about Denture Cleansers? | 10 | 36 | 54 |
| 8 (C) | Have you ever seen Denture Cleansers in books or lecture meetings? | 8 | 45 | 47 |
| 9 (C) | Have you ever seen any TV commercials about Denture Cleansers? | 5 | 23 | 72 |
| 10 (A) | Do you know any alternatives to Denture Cleansers? | 26 | 37 | 37 |
| 11 (C) | Have you ever seen Denture Cleansers in the Clinic? | 12 | 22 | 66 |
| 12 (A) | Do you think the use of Denture Cleanser is more effective than aclinical intervention? | 8 | 26 | 66 |

A =2: Yes, very much, 1: Yes, but only a little, 0: No.

B= 2: Three or more/ 1: Less than three/ 0: None

C=2: Yes, often/1: Yes, occasionally, 0: No

Table 4: Questionnaire items and percentage distribution of Dentist’s attitude about Denture Cleansers: (7 Questions)

| Question number | Item description | Category score | | |
|-----------------|--|----------------|--------------|------------|
| | | 2 Agree | 1 Don't know | 0 Disagree |
| 1 | It is essential to provide Patients with Denture hygiene instructions. | 98.3 | 0.7 | 0.7 |
| 2 | The recall program for Denture Patients has importance and should be checked annually by the dentist for maintenance of optimum denture fit and function, for evaluation for oral lesions and bone loss, and for assessment of oral health status. | 95.4 | 4.1 | 0.2 |
| 3 | Patient education regarding the role of Denture Cleansers on Denture Hygiene is important. | 88 | 11 | 1 |
| 4 | Dentures must be cleaned by combination methods, which include both brushing and soaking in immersion cleansers. | 65 | 32 | 3 |

| | | | | |
|---|--|----|----|---|
| 5 | Denture Cleansers including hypochlorite must not be used on dentures with metal components. | 46 | 52 | 2 |
| 6 | Placement of Denture in hypochlorite cleansing solution for a longer period (>10 minutes) damage the dentures? | 38 | 60 | 2 |
| 7 | Long-term and frequent use of cleansing tablets or solutions may be harmful to denture surfaces and reduce the longevity of Denture. | 35 | 62 | 3 |

Table 5: Association between education qualification of dentists with their knowledge and attitude scores.

ANOVA Test

| | | Sum of Squares | df | Mean Square | F | Sig | |
|-----------------|----------------|----------------|-----|-------------|-------|------|---|
| Total knowledge | Between Groups | 2659.539 | 2 | 1329.770 | 45.12 | .000 | S |
| | Within Groups | 12023.006 | 408 | 29.468 | | | |
| | Total | 14682.545 | 410 | | | | |
| Total attitude | Between Groups | 138.582 | 2 | 69.291 | 19.45 | .000 | S |
| | Within Groups | 1453.506 | 408 | 3.563 | | | |
| | Total | 1592.088 | 410 | | | | |

Table 6: Association between occupation setting of dentists with their knowledge and attitude scores.

ANOVA Test

| | | Sum of Squares | df | Mean Square | F | Sig | |
|-----------------|----------------|----------------|-----|-------------|--------|------|---|
| Total knowledge | Between Groups | 2420.487 | 3 | 806.829 | 26.780 | .000 | S |
| | Within Groups | 12262.058 | 407 | 30.128 | | | |
| | Total | 14682.545 | 410 | | | | |
| Total attitude | Between Groups | 37.996 | 3 | 12.665 | 3.317 | .020 | S |
| | Within Groups | 1554.092 | 407 | 3.818 | | | |
| | Total | 1592.088 | 410 | | | | |

Table 7: Comparison between recommendation for Denture Cleansing products and methods with education qualification of dentists.

| Denture cleansing products and cleaning methods. | Education qualification of Dentists | | | | | | Total | |
|--|-------------------------------------|--------|------|--------|------|-------|-------|------|
| | BDS | | MDS | | PHD | | N | % |
| | n=273 | (%) | n=96 | (%) | n=42 | (%) | | |
| BRUSHING ONLY 207(50.3%) | | | | | | | | |
| 1.Brushing with regular toothpaste. | 113 | (41.3) | 30 | (31.2) | 2 | (4.7) | 145 | 35.2 |
| 2.Brushing with plain fresh water only. | 37 | (13.5) | - | - | - | - | 37 | 9 |
| 3. Brushing with Soap | 23 | (8.4) | 1 | (1) | | | 24 | 5.8 |
| 4. Denture paste and brushing | - | - | - | - | 1 | (2.3) | 1 | 0.4 |
| SOAKING ONLY | | | | | | | | |

| | | | | | | | | |
|--|----|--------|----|--------|----|--------|-----|------|
| 31(7.5 %) | | | | | | | | |
| 1.Soaking only in denture cleansing tablets | 1 | | 5 | (5.2) | 4 | (9.5) | 10 | 2.4 |
| 2.Soaking in liquid denture cleanser | 6 | (2.1) | - | - | 1 | (2.3) | 7 | 1.7 |
| 3.Soaking in Dishwash detergent | 2 | (0.7) | - | - | - | - | 2 | 0.4 |
| 4.Soaking in mouthwash | 2 | | 2 | (2) | 1 | (2.3) | 5 | 1.2 |
| 5.Soaking in vinegar | 2 | (0.7) | 1 | (1) | | | 3 | 0.7 |
| 6.Soaking in salt water | 4 | (1.8) | - | - | - | - | 4 | 0.9 |
| COMBINATION | | | | | | | | |
| 170 (41.3 %) | | | | | | | | |
| 1.Brushing and soaking in denture cleansing tablets. | 73 | (26.7) | 55 | (57.2) | 26 | (61.9) | 154 | 37.4 |
| 2.Brushing and soaking in mouthwash | 8 | | 2 | (2) | 6 | (14.2) | 16 | 4.0 |
| OTHER METHODS | 2 | (0.7) | - | - | 1 | (2.3) | 3 | 0.7 |
| MULTIPLE METHODS (12%) | 28 | 7 | 16 | 4 | 6 | 1.4 | 50 | 12 |

Table 8: Recommendation on type of brush for denture cleansing in study group

| Type of brush for denture cleansing | Frequency | percentage |
|-------------------------------------|-----------|------------|
| Denture cleansing brush | 60 | 14.5 |
| Regular tooth brush | 285 | 69.3 |
| Don't recommend any brush | 66 | 16.0 |

Table 9: Distribution of denture cleansing frequency with education qualification of dentists

| Frequency of denture cleansing | BDS | MDS | PHD |
|--------------------------------|------------|-----------|-----------|
| | 273 | 96 | 42 |
| Once daily | 225 (54.7) | 160(58.6) | 43(44.7) |
| Twice daily | 125 (30.4) | 75 (27.4) | 30(31.2) |
| After every meal | 61 (14.8) | 28 (10.2) | 23(23.95) |
| | | | 10 (23.8) |

Table 10: Distribution of Perceived Barriers by Dentist's for Denture cleansers recommendation.

| Perceived Barriers by Dentist's for Denture cleansers recommendation | Definitely Yes n (%) | Yes n (%) | Neutral n (%) | No n (%) | Definitely No n (%) |
|--|----------------------|-----------|---------------|----------|---------------------|
| 1.Lack of knowledge and skills about denture cleansers | 221 (53.7) | 99(24) | 65(15.8) | 19(4.6) | 7(1.7) |
| Lack of interest | 41 (9.9) | 97(23.6) | 99(24) | 33(8) | 141(34.3) |
| 2.Lack of time | 23(5.5) | 85(20.6) | 118(28.7) | 36(8.7) | 149(36.5) |

| | | | | | |
|---|-----------|-----------|-----------|---------|---------|
| 3.Lack of resources (printed materials, pamphlets, brochures, etc) for educating about denture hygiene. | 205(49.8) | 110(26.7) | 75(18.2) | 13(3.1) | 8(1.9) |
| 4.Lack of Availability of commercially available denture cleansersin pharmacy. | 76(18.4) | 99(24) | 188(45.7) | 16(3.8) | 32(7.7) |
| 5.Fear that patients may not come back as it might alienate them and find expensive option for denture maintenance. | 171(41.6) | 110(26.7) | 84(20.4) | 34(8.2) | 12(2.9) |
| 6.Lack of interest or poor attitude among patients for denture cleansers. | 177(43) | 114(27.7) | 76(18.4) | 25(6) | 19(4.6) |

Discussion

The removable dentures fit should not be considered the final stage of treatment outcome, but the beginning of a promising long-term relationship between patient and dentist to maintain the health of oral tissues. Denture hygiene maintenance by cleansing and disinfecting of dentures are essential for attaining oral soft tissue health and prevention of oral and systemic diseases occurrence as a sequelae of neglected denture hygiene. Therefore, it is very important for dentists to educate their patients regarding daily denture cleansing regimen to prevent undesirable circumstances. This is where the dentist’s knowledge, attitude and recommendation for denture cleansers plays a crucial role for optimal treatment outcome in their patients. The present study result variables on denture cleansers are compared for similarities and differences with previous reported studies conducted in Saudi Arabia as well as other countries on this perspective.

In the current study, 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. 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 comparable with Suresan V., et al [23]

The present study results showed favorable knowledge in contrast with Hong etal study [24] where more than 76% of Chinese dentists and more than 62% of dentists in Indonesia said that they had heard only a little about denture cleansers and that they knew only a little of the function of denture cleansers. 65% answered that they did not know of any disadvantages of denture cleansers compared to 76% of dentists in China and more than 61% of Indonesian dentists It is important for dentists to be familiar with the disadvantages of denture cleansers especially the risk of deterioration of the physical and mechanical properties of denture base materials and oral mucosal injury caused by inappropriate use of denture cleansers. The composition of denture cleansers was not known among 53% of study subjects better than Saurabh et al study reported among 83 % of dental graduates and Dentists in Aseer province. Regarding knowledge about any imported brand of denture cleansers 55 % of Riyadh Dentists did not knew comparatively better than Hong et al. reported among 67.4 % of Japanese, 88.5 % of Chinese and 68.3 % of Indonesian dentists. The knowledge of commercial form of denture cleansers their composition, types of denture cleansers with different combinations and for different prostheses, availability of different brands in the market both domestic/ imported and options to select influence the dentist’s recommendation of denture cleansers for their patients.

Nearly 49 % of Riyadh’s Dentists knew less than 3 and 7 % knew more than 3 of any domestic brands of denture cleanser better than dentists in China and Indonesia but less than 83.7% of Japanese dentists In China and Indonesia, there are practically no domestic manufacturers of denture cleansers, and are mainly imported. This may be why so many dentists in China and Indonesia did not know of any domestic brands. Turkish Dentists in IdilDikbas, etal study knew more than 3 brands of denture cleansers and 6 popular brands were

advised by them to denture wearers [25].

Over 54 % of Riyadh's Dentists responded that they had never been taught about denture cleansers better than 61% of dentists in China and Indonesia. In Saurabhetal study significant percentage (31%) of dental graduates and practitioners in Aseer province of Saudi Arabia reported that in their curriculum very little knowledge was imparted about denture cleansers. Just 16% mentioned good detailed knowledge was obtained during their education. Information about denture cleansers often comes from textbooks and lectures besides business promotional of denture cleansers in television. 47 % study subjects had never seen denture cleansers in books or lecture meetings and 72% had never seen Denture cleansers TV commercials compared to 80% and 100% of Chinese dentists. 66% of Riyadh's dentists stated that they had never seen denture cleansers in the clinic as compared to 69% of Chinese and 54% of Indonesian dentists. This reflects various environmental differences among various countries which could affect their knowledge and use of denture cleansers.

The attitude of the 98% participants was favorable and agreed to provide patients with denture hygiene instructions found to be better than 94 % of Turkish dentists after delivery of dentures [25]. Majority 95% of Riyadh's Dentists agreed that recall program for Denture Patients has importance and should be checked annually by the dentist for maintenance of optimum denture fit and function, for evaluation for oral lesions and bone loss, and for assessment of oral health status. Only 61 % of the dentist in Aseer province reported to constantly recall their patients for inspection of the dentures and assessment of denture hygiene and 31 % recalled patients sometimes and the rest 8 % never called their patients again. In an Indian study 56% of Dentists always recalled their patients for checking the dentures as per their desired satisfaction. However, only 39 % revealed that patients are called back sometimes and the rest 5 % never called their patients again [26]. Study among dental interns in Riyadh underestimated the importance of recall program for complete denture patients that denture teeth are artificial teeth and could not be subjected to problems similar to natural dentition. 65% of study subjects agreed that Dentures must be cleaned by combination methods, which include both brushing and soaking in immersion cleansers and 32% did not know which is found to be inferior compared to 78% of Turkish dentists recommending combination methods [27]. Dentists should have detailed understanding about the adverse effect of denture cleansers and special precautions to be followed to prevent deterioration of the physical and mechanical properties of denture base materials and associated oro-mucosal injury due to their irrational usage. More than 50 % of dentists did not know that Denture Cleansers including hypochlorite must not be used on dentures with metal components found to be inferior as compared to 75 % of Turkish dentists having favorable knowledge. Dentures should not be soaked in sodium hypochlorite bleach, or in products containing sodium hypochlorite, for periods that exceed 10 min. Placement of dentures in sodium hypochlorite solutions for periods longer than 10 min may damage dentures and only 38 % agreed for this practice [27]. Long-term and frequent use of cleansing tablets or solutions may be harmful to denture surfaces and reduce the longevity of Denture, few of study subjects 35% agreed compared to 55% belief of Turkish dentists. The present study results show difference in knowledge and attitude of study population favorable towards those with PHD and MDS compared to BDS reflecting deficits in training BDS students on this view and underutilization of opportunities to upgrade their skills after BDS. This could be compared with dentist population in Aseer province where in postgraduate and specialist (MDS) had promising attitude towards patient instructions and recall compared to the respondents who were doing internship and graduation (BDS degree). Pasricha N study on North Indian dentists did not show difference in denture cleansers knowledge where in respondents with BDS degree and MDS students had much awareness in majority followed by minimal in both groups.

Fair Knowledge and attitude scores on higher side among study group working both as faculty in dental college and as private practitioner compared to other groups reporting poor knowledge working either as faculty in dental college or as private practitioner or as government practitioner. This shows association between factors affecting their occupation setting related to denture cleansers knowledge and attitude. The importance of both good denture hygiene as well as oral hygiene needs to be stressed to all denture wearing patients so as to reduce the likelihood of denture related pathology. Patient education remains one of the best tools to help prevent the onset of diseases that can occur

due to poor denture hygiene. It is vital to ensure that the patients are trained to an acceptable level of competency of denture hygiene maintenance through effective medium of instruction. Majority 49% of study participants gave verbal and practical demonstration found to be effective. 70% of Indian Dental practitioners in Jabalpur used verbal medium of instruction and only 20 % provided practical demonstration. Mylonas P, et al study recommended that in the clinical notes there should be a sentence that highlights denture hygiene instructions (DHI) have been explained and demonstrated to the patient, in a manner analogous to the way oral hygiene instruction written down as OHI [28]. The methods of denture cleaning can be categorized into three sections chemical, mechanical and combination of both. As described in the literature the combination method of brushing and soaking is most effective in maintaining the hygiene of the dentures [29].

Combination of brushing and soaking was recommended by 41% of study group found to less than survey report of dentists recommending combination method among 87% of Aseer province dentists, 78% of Turkish dentists and 84% of north Indian dentists. Combination method of brushing and soaking in denture cleansing tablets was recommended by 61.9 of Dentists having PHD, 57% having MDS and 26.7% with BDS qualification contrasting Pasricha N study reporting no difference in method of cleaning between BDS and MDS qualified Dentists. Brushing only was the common recommended method in 50% of study group in contrast to 11% of Aseer province dentists, 10% of Turkish dentists and 14.5% of north Indian dentists. Brushing with toothpaste was recommended by 41% Dentists having BDS and 31% having MDS. However, in some studies the most preferred cleansing regimen by the patients was brushing only [30] reflecting noncompliance to the dentist's recommendation. Axe AS [31] survey on Dental Health Care Practitioners including dentists and hygienists in developed (Japan, USA, Italy) and developing (Brazil, India) countries reported that more than 10% of DHCPs did not give primary recommendation on denture cleaning. Denture tablets were more commonly recommended on average less than 50% in developed countries (43%) as primary recommendation whereas toothpaste (30%), soap and water (20%) and only 14 % of DHCP recommended denture tablets in developing countries. The most preferred product recommended by 164(40%) of dentists was Denture cleansing tablets and toothpaste by (35%) of dentists in the present study. On average, more than 2 methods were recommended by DHCPs, with the primary recommendation showing a broad spread, with no method gaining more than 50% of dentist recommendations. The antimicrobial action of cleansing tablets is typically based on the generation of hydrogen peroxide, peracetic acid, and a range of oxygen radicals in addition surfactants aid in denture cleaning but do not typically contain abrasive agents. Toothpastes are also widely used being convenient and relatively inexpensive designed to clean tooth surfaces but abrasives in them cause scratching of denture acrylic resin [32,33] which may subsequently increase risk to microbial colonization. In contrast, although some household products (bleach, some hand soaps, dishwashing liquids) make antimicrobial claims, these claims are based more on intended usage patterns (bathroom, toilet, hand washing). The proportions primarily recommending denture cleansers like mouthwash, salt water, baking soda, vinegar, and dishwashing liquids were relatively low comparable with present study recommended by 24% of dentists.

Conclusions

This study highlights the uneven distribution of prevailing gap in denture cleansers knowledge, attitude and recommendations among Riyadh dentists. Majority of Dentists with PHD reporting Fair knowledge and attitude scores on higher side were compliant to recommend combination method of brushing and soaking dentures in denture cleansing tablets. A wide range of products and routines were recommended by Riyadh's dentists for cleaning dentures. The standard denture cleansing method of brushing and soaking in denture cleansing tablets was reported among 41% of study population and least 14.5% recommended denture cleaning brush. Majority of the study group perceived lack of knowledge and skills about denture cleansers and lack of patient education resources (printed materials, pamphlets, brochures, etc) as barriers for denture cleanser recommendation. Riyadh's dentists poor knowledge scores coincide with their suggestion for enhancing denture cleanser knowledge. This recommends interventions to enhance their knowledge by strengthening dental manpower training on denture cleansers and further by continual education to revive and upgrade knowledge besides extending market availability of denture cleansers.

The present study provides data on lack of consensus in denture cleanser recommendations of Riyadh's dentists necessitating guidance from professional organizations based on evidence-based research. This study is not devoid of questionnaire-based research limitations. Generalizability of results remains questionable as it was conducted among dental practitioners in an urban area of KSA. This recommends further denture cleansers research on wider sampling frame including larger sample of dental manpower comprising of dentists and dental auxiliaries considering denture wearers compliance to denture hygiene recommendations.

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