Original Article

Denture Hygiene Knowledge, Attitudes, and Practices Toward Patient Education in Denture Care among Dental Clinicians in Benghazi City, Libya

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ABSTRACT:

Background: Denture cleaning is essential to prevent malodor, poor aesthetics and the accumulation of plaque/calculus with its deleterious effects on the mucosa. Moreover, denture and mucosal tissues of the edentulous mouth's hygiene, especially in the elderly are essential for overall health. Therefore, the present study was conducted to assess the denture hygiene knowledge and attitudes toward patient education in denture care among dentists in Benghazi, Libya.
Materials & Methods: The present questionnaire survey was conducted on 180 dentists. A self-administrated questionnaire was designed to gather the socio-demographic characteristics, assess the denture hygiene knowledge, attitudes and practices among dental clinicians. The data was entered and analyzed using the Statistical Package for Social Science (SPSS Version 20 for Windows, SPSS Inc. Chicago, IL).
Results: A total of 155 questionnaires had been returned to the researcher giving a response rate 86 %. The sample comprised of 74.8% of females and 25.2% of males. About 57.4% of participants were general dental practitioner. While 17.4% and 25.2% of them specialist (prosthodontics and non -prosthodontics). About 87.6% of dental general practitioner had aware about accumulation of oral biofilm on denture, but almost of them did not know that the oral biofilm associated with denture stomatitis. While high rates of specialists (prosthodontics 74.1% and non-prosthodontics 64.1%) had positive attitude in compared with general practitioner 48.3% (The difference was significant) about explaining denture hygiene instructions to old patients. All of prosthodontics gave patient's instruction regarding the denture cleansing methods at the time of denture delivery 64% of them used verbal medium for instruction delivery.
Conclusion: Dental general practitioner had limited knowledge and attitudes toward patient education in denture care whereas specialists had sufficient denture hygiene knowledge, attitudes and practices toward patient education in denture care.

Keywords: *Denture hygiene, denture stomatitis, knowledge, attitude and practice*.

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INTRODUCTION

Over the past few decades, the life expectancy in both developed and developing countries has increased.[1, 2] Aligned with this increase, the status of oral health of the old population also became of prime importance, as tooth loss in the elderly increases with age as does the contributing factors leading to it over time. As a result, the rates of complete loss of teeth are customarily the highest in the oldest age groups. Despite efforts
made by dentists aimed at the conservation of teeth, patients still lose their teeth owing to tumors of the jaw, trauma, dental caries, and periodontal diseases.[3] Correspondingly, the number of elderly requiring dentures has also increased. Complete dentures constitute the most common treatment option for total teeth loss in the edentulous patient. Similarly, a removable partial denture is considered one of the most common replacements of teeth for partial tooth loss.[2 ,4-6]

Dentures and mucosal tissues of the edentulous mouth's hygiene, especially in the elderly, are essential for overall health.[7] As well as, general

health of elderly gives insight into their quality of life.[8] Moreover, denture care minimizes poor denture aesthetics and staining, malodor, and plaque/calculus accumulation with deleterious effects on the mucosa.[7] Unfortunately, studies show that many patients prefer to use unclean dentures instead of keeping their dentures clean. This may be a result of the negligence of clinicians in reinforcing the methods of denture hygiene and recalling their denture patients. For patients who wear dentures cleaning is recognized as an important part of oral hygiene as they predispose denture wearers to denture stomatitis. In other words, unclean dentures lead to unwanted effects both on the oral mucosal and on the denture itself.[9]

Ideally, products for denture care should be fungicidal and bactericidal, inexpensive, nontoxic to the patient, and effective for the removal of organic/inorganic stains and deposits. Several studies have reported different methods employed by patients to clean dentures.[10, 11] These methods range from the simplest method such as brushing with toothpaste and water to the complex method including the use of tablets and chemical solutions. Given that the most common way for complete dentures cleansing is brushing, for a better outcome, the utilization of specific cleansers and brushes is of paramount importance.[10]

Denture wearers and dentists should realize that plaque accumulation on dentures hurts the oral mucosa and general health. Hence, it is the patient's responsibility to maintain oral hygiene. However, denture patients in comparison to dentists, pay less attention to the importance of plaque control. The dentist must instruct and motivate the patient and provide the methods and means for plaque control.[12] This study aimed to assess denture hygiene knowledge, attitudes, and practice toward patient education in denture care among dental practitioners and dental specialists in Benghazi, Libya.

METHODOLOGY:

A descriptive, cross-sectional study was conducted on dentists who work in public and private clinics in Benghazi, Libya. In the current study, a self-administration questionnaire was adapted from questionnaires used in previous published studies.[7,11,12]. A pilot study was conducted by administering the questionnaire to a random sample of 20 participants. Modifications were subsequently made based on their feedback to ensure the questionnaire's validity. The finalized questionnaire consisted of nineteen questions covered four major areas including socio-demographic data, the knowledge, attitude and practices of dentists toward patient education in denture care.

The socio-demographic part consisted of five questions: age group, gender, work experience, and place of work, and five knowledge-related questions (plaque on denture bases, denture cleansing aids, etc.). Each of these questions had three options to choose from Yes, No, and Do not know, as well as Five attitude-related questions, such as explaining denture hygiene instructions and a recall program for denture patients. The response options included a Likert scale of (strongly agree, agree, do not know, disagree, and strongly disagree). Finally, four practice advice questions (patient instruction and medium used for instruction, etc.). Before beginning the study, ethical approval was obtained from the ethical committee in the dental college with approval number 151. One hundred – fifty five dentists agree to participate in this study after sending an e-mail and explaining the purpose of the research

Data collection extended over a period of three months during 2023. Finally, uncompleted questionnaires were excluded from this study and then data was entered into spreadsheets and analyzed using the Statistical Package for Social Science (SPSS Version 20 for Windows, SPSS Inc. Chicago, IL). Data analysis included descriptive statistics based on the percentage of answered questions. P value test was used for comparing data as appropriate. The level of significance was set at P value equal to or less than 0.5.

RESULTS:

We distributed 180 questionnaires among the dentists. A total of 155 questionnaires had been returned back to the researcher giving a response rate 86 %. The participates comprised of 74.8% of females and 25.2% of males. 66% of them were 1-5 and over 10 years of experience in work. High percentage of this sample were general dental practitioner (57.4%). Whereas 17.4% and 25.2% were specialist prosthodontics and non-prosthodontics respectively. (**Table 1, figure 1 and 2**).

Table 1: Socio-demographic characteristics

Variables		Frequency	
Age Group	21 - 30	62	40.0
	31 - 40	63	40.6
	41 - 50	23	14.8
	over 50	7	4.5
gender	male	39	25.2
	female	116	74.8
Years of work experience	1 - 5	66	42.6
	6 - 10	23	14.8
	over 10	66	42.6
Qualifications	General Dental Practitioner	89	57.4
	Specialist (prosthodontics)	27	17.4
	Specialist (not prosthodontics)	39	25.2
Work Institution	Governmental	77	49.7
	Private	78	50.3

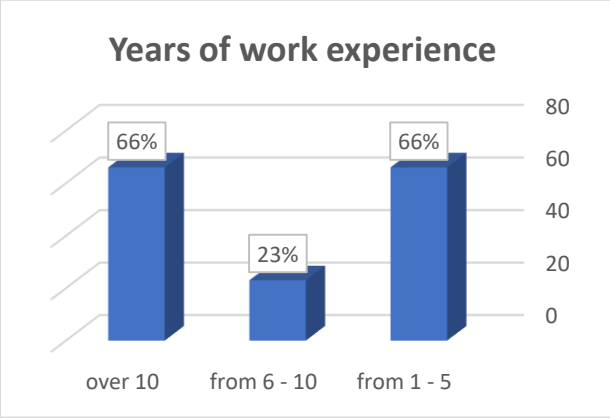

Figure 1:

Distribution of years of work experience

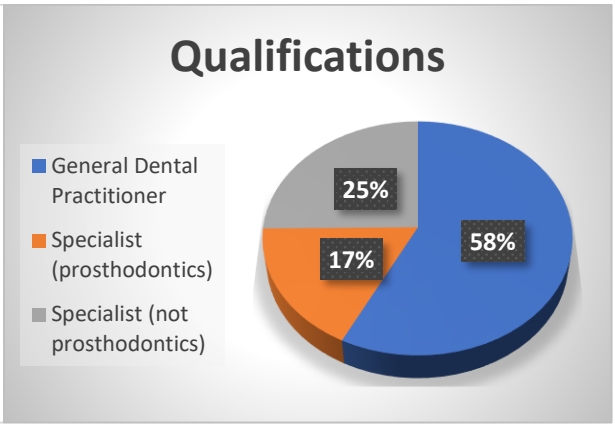

Figure 2:

Distribution of subjects according to qualification

About 87.6% of general practitioner had aware about accumulation of oral biofilm on denture, but majority of them did not know associated with denture stomatitis. While 74.1% of specialists (Prosthodontics) gave correct answer regarding this question. The group of specialists in the prosthodontics had higher awareness (85%) about the placement of denture in hypochlorite cleansing solution for a longer period damage the dentures ,while 59% and 74.2% were non prosthodontics and general practitioner (The difference was significant P value < .005). **(Table 2)**.

Table 2: Dentists knowledge towards denture hygiene instructions

Variables		General Practitioner (%)	Specialist (prosthodontics) (%)	Specialist (not prosthodontics) (%)	P Value
dentures accumulate plaque/biofilms	incorrect Correct	11 (12.4) 78 (87.6)	1 (3.7) 26 (96.3)	1 (2.6) 38 (97.4)	0.115
Association between oral biofilm and denture stomatitis	incorrect Correct	75 (84.3) 14 (15.7)	7 (25.9) 20 (74.1)	5 (12.8) 34 (87.2)	0.345
advisable for regular toothpaste in denture cleansing	incorrect Correct	52 (58.4) 37 (41.6)	10 (37.0) 17 (63.0)	24 (61.5) 15 (38.5)	0.100
The cleaning of tissue bearing side on the denture effects on it's retention in the mouth	incorrect Correct	48 (53.9) 41 (46.1)	10 (37.0) 17 (63.0)	14 (35.9) 25 (64.1)	0.095
The placement of denture in hypochlorite cleansing solution for a longer period damages the dentures	incorrect Correct	23 (25.8) 66 (74.2)	4 (14.8) 23 (85.2)	16 (41.0) 23 (59.0)	0.0054**

High rates of specialists (prosthodontics 74.1% and non-prosthodontics 64.1%) had positive attitude in compared with general practitioner 48.3% about explaining denture hygiene instructions to old patients (The difference was significant). A well as, the questions regarding the recall program for complete denture patients, the specialists had the significance highest percentages. 59.3% of general practitioners and 56.3% of specialists were positive attitude with the fact that denture adhesives (if used) need not be cleaned completely and reapplied again daily. (**Table 3**).

Table 3: Dentists attitude towards denture hygiene instructions

Variables		General Practitioner (%)	Specialist (prosthodontics) (%)	Specialist (not prosthodontics) (%)	P Value
Explaining denture hygiene instructions to old patients	Negative Positive	46 (51.7) 43 (48.3)	7 (25.9) 20 (74.1)	14 (35.9) 25 (64.1)	0.034**
If not provide denture hygiene instructions, as the patient decline to follow	Negative Positive	44 (49.4) 45 (50.6)	6 (22.2) 21 (77.8)	15 (38.5) 24 (61.5)	0.038**
A recall program for complete denture patients is not importance	Negative Positive	36 (40.4) 53 (59.6)	4 (14.8) 23 (85.2)	6 (15.4) 33 (84.6)	0.003**
Patient education regarding the impact of denture hygiene on systemic health is not important	Negative Positive	23 (25.8) 66 (74.2)	1 (3.7) 26 (96.3)	3 (7.7) 36 (92.3)	0.005**
If used denture adhesives do not need to clean completely and reapplied again daily	Negative Positive	39 (43.8) 50 (56.2)	11 (40.7) 16 (59.3)	18 (46.2) 21 (53.8)	

All of prosthodontics gave patient's instruction regarding the denture cleansing methods at the time of denture delivery. While 64% of this group used verbal medium and just 3.7% of them used practical demonstration for instructions delivery. All of specialists educated patients about the relationship between denture hygiene and systemic health. While, 37 % of advice patient used brushing with water only to clean their denture. (**Table 4**).

Table 4: Dentist practices towards denture hygiene instructions

		General Practitioner (%)	Specialist (prosthodontics) (%)	Specialist (not prosthodontics) (%)	P - Value
Give patient's instruction regarding the denture cleansing methods at the time of denture delivery	No Yes	5 (5.6) 84 (94.4)	0 (0.0) 27 (100.0)	1 (2.6) 38 (97.4)	0.369
kind of medium used for instructions delivery	Verbal Written Practical demo	44 (49.4) 9 (10.1) 36 (40.4)	18 (66.7) 8 (29.6) 1 (3.7)	22 (56.4) 6 (15.4) 11 (28.2)	0.003**
Patient's education about the relationship between denture hygiene and systemic health	No Yes	12 (13.5) 77 (86.5)	0 (0.0) 27 (100.0)	7 (17.9) 32 (82.1)	0.079
The denture cleansing methods is recommeded	Immersion in alkaline per oxide	8 (9.0)	1 (3.7)	2 (5.1)	0.009*
	Immersion in sodium hypochlorite	20 (22.5)	3 (11.1)	5 (12.8)	
	Immersion in mouthwash solution	24 (27.0)	4 (14.8)	10 (25.6)	
	Brushing with toothpaste	11 (12.4)	6 (22.2)	9 (23.1)	
	Brushing with soap water &	6 (6.7)	10 (37.0)	9 (23.1)	
	Brushing with water only	20 (22.5)	3 (11.1)	4 (10.3)	

DISCUSSION

Cleansing of dentures are essential for the maintenance of oral soft tissue health and successful use of removable dentures. Elderly patients, particularly those who are in a compromised state, are not able to maintain good denture hygiene due to some physical and/or mental handicap.[13] However, the maintenance of denture hygiene is neglected in not just compromised geriatric patients but also with normal healthy denture wearers.[14] This can be attributed to a definite lack of motivation, basic knowledge or simply carelessness and neglect. As well as, Poor denture hygiene is a seemingly common problem encountered by dentists' with their numerous complete denture patients. Therefore, it is very important for dentists' to educate their patients regarding daily denture cleansing regimen to prevent undesirable problems.[11,15]

On 155 of dentist completed a comprehensive questionnaire. Majority of the subjects with a bachelor degree (general dental practitioner) did not aware the association between oral biofilms on complete denture with conditions like denture stomatitis and other serious systemic diseases. While, the results of Indian' research [11] found that 25 (18%) replied "no" and 22 (15%) replied "don't know. This may be due to lack of their information about dentures problems. Therefore, it is necessary to ensure that the dentists ' awareness and essential that they apply this knowledge to train and instruct their patients about the importance of denture hygiene maintenance and also to recall them at regular intervals to ensure that the hygiene is maintained.

Denture cleanliness is essential to prevent malodor, poor aesthetics and the accumulation of plaque/calculus with its deleterious effects on the mucosa.[13] Therefore, education and motivation of the denture wearers on proper denture hygiene is responsibility of dental clinicians. In this study, less than half of general practitioner and almost of specialists agreement that explaining denture hygiene instructions to old patients .This rate is in the same line with dental practitioner in study of Sharma A et al,.[16] But the percentages of specialists is higher in our research in a comparable with another study conducted in Sao Paulo, Brazil[17] it was discovered that 51.89% of the practitioners did not give any instructions to their patients about denture cleansing after delivery of dentures. In addition, many of researches reported that the majority of denture wearers do not pay necessary attention toward the cleanliness and their hygiene of their dentures. This may be due to the denture wearers negligence as well as dentists' who give insufficient instructions to their patients about denture cleansing methods.

Patient should be learned new practices by doing to understand it. As the famous Chinese proverb goes – I hear and I forget, I see and I remember, I do and I understand' It, is absolutely essential to ensure that the patients are trained to an acceptable level of competency to maintenance of denture hygiene.[11] In this research, when asked about the medium of instructions used to provide denture cleansing information; less than half of the subjects provided a practical demonstration. On other hands, only 14% of the subjects in Indian[11] provided a practical demonstration.

The combination of brushing and soaking method is recommended as the effective way for cleaning dentures.[13,18,19] In the present survey, almost of dentist instruct their patients regarding the denture cleansing methods at the time of denture delivery . About third of specialists advised their patients to brush their dentures using water only .In same line, other studies[20-21] the most preferred cleansing regimen by the patients was brushing only. However, research of Suresan V et al.,[11] reported that 37% of the dentists' advised their patients to brush their dentures using soap water . Therefore, the results of the present study revealed that dental professionals must update their knowledge of denture cleansing strategies continuously in order to maximize the services offered to their denture patients and must not avoid spending time for instructing them.

CONCLUSION AND RECOMMENDATION:

In the present study, it is concluded that almost most of general dental practitioner had limited awareness and attitudes toward patient education in denture care whereas specialist had sufficient denture hygiene knowledge, attitudes toward patient education in denture care among dentists. Strongly recommended that the knowledge about post denture delivery instructions in the undergraduate curriculum should be stressed and improvement.

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