DENTURE HYGIENE HABITS IN COMPLETE DENTURE WEARERS AT ARMED FORCES INSTITUTE OF DENTISTRY

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ABSTRACT

Objective: To determine the denture hygiene in complete denture wearers and their relationship to age, gender, educational level and denture-wearing behavior.

Setting: This cross-sectional comparative study was conducted in Department of Prosthodontics, Armed Forces Institute of Dentistry Rawalpindi from July 2009 to February 2010.

Materials and patients: This study was conducted over 173 adults aged 55-85 years who were fitted with new or modified complete maxillary and mandibular acrylic prostheses. Denture hygiene levels were recorded by using Budtz-Jorgensen and Bertram criteria [10].

Results: The majority of participants (44.5%) reported cleaning their dentures with toothbrush and toothpaste, compared to less than 10% each who reported using sodium bicarbonate, sodium hypochlorite, or ordinary soap. Overnight denture removal found in 112 (64.73%) subjects, 109 (63.0%) immersed their dentures in water and only 3 (1.7%) immersed them in a chemical solution. Denture hygiene was rated as ''Good'' for 38 participants (21.96%), ''Fair'' for 78 (45.08%) and ''Poor'' for 57(32.94%).

Conclusions/Suggestions: The degree of denture hygiene was found to be significantly associated with gender, level of education, self-perception of halitosis, overnight removal of dentures and denture immersion habits (p<0.001). Denture related problems were more frequently among patients with poor denture hygiene; dentists should provide patients with careful instructions on denture hygiene and cleaning methods.

Keywords: Complete denture, Denture hygiene.

INTRODUCTION

While rate of total edentulism is decreasing in developed countries, the reverse is the case in the developing countries, being attributed to the prevalence of periodontal disease and caries[1]. The number of individuals requiring dentures has increased with the aging population[2].

From the moment the edentulous patient is fitted with a complete denture, the important phase of oral and denture aftercare begins. Clinical follow-up should include instructing patients on initial adjustment and aftercare; providing guidance regarding rebasing procedures; and explaining the potential need for replacing dentures after some years of use[3].

Prevention is a fundamental element of dental care and includes daily implementation of oral hygiene. This concept is valid for all patients, including complete denture wearer, whose edentulous oral cavity must be kept clean in order to avoid infection[4].

Dental plaque is an etiological factor in denture related problems i.e. stomatitis, inflammatory papillary hyperplasia, chronic candidiasis, and offensive orders, and it must be removed. Patient should be instructed to rinse their dentures and their mouths after meals whenever possible. The mucosal surfaces of the residual ridges and the dorsal surface of tongue also should be brushed daily with soft brush. This will increase the circulation and remove plaque and debris that can cause irritation of the mucous membrane or offensive orders[5].

Denture hygiene habits have been found to be poor among the elderly. This may be due to decreasing manual abilities due to advanced age[6].

However, study on Brazilian complete denture wearer, 77.5 % declared that they had been given no instructions regarding the hygiene of their dentures; only 22.9% said they had been instructed about oral hygiene, and

91.9% stated they had not been told to return for periodical review visits, 98.7% of the group brushed their dentures, 27.1% regularly immersed their dentures in chemical products and 26.3% removed their dentures overnight[7].

These factors have been studied in other populations. Whether these factors have an important bearing on our local people, who differ in social, cultural, dietary and genetic make up, has yet to be investigated. So the purpose of our study was to determine the denture hygiene levels in complete denture wearers and their relationship to age, gender, educational level and denture-wearing behavior.

PATIENTS AND METHODS

This cross sectional comparative study was conducted in Department of Prosthodontics, Armed Forces Institute of Dentistry Rawalpindi, From July 2009 to February 2010.A total of 173 adults aged 55-85 year who were fitted with complete dentures were included in the study.

Inclusion Criteria:

Patients referred/ self report to dental OPD.

Patients wearing maxillary / mandibular or both complete dentures.

Patients with an age range of 55-85 years.

Patient having acrylic prostheses with at least half-palatal coverage.

Exclusion Criteria:

Patients with acute/chronic symptoms of temporo mandibular dysfunction.

Patients with diagnosed psychological disease.

Patient wearing over denture or implant retained prostheses.

Patients using fungicides or adhesive pastes, powders or pads.

Data Collection Procedure:

A written consent of the patient will be taken after detailed explanation of research procedure. Demographic data (age, sex, level of education) of the patients were recorded on proforma.

Patients of both genders were included and detailed medical history, clinical examination were performed.

In clinical examinations, denture hygiene levels were rated according to Budtz-Jorgensen and Bertram [10] as follows:

0 = Poor (plaque and calculus covering 1/3 or more of the prosthesis)

1 = Fair (plaque and calculus covering less than 1/3 of the prosthesis)

2 = Good (no plaque or calculus).

Data Analysis Procedure:

Data had been analyzed using SPSS Version 16. Descriptive statistics were used to describe data. Chi square tests were used to identify relationships between the factors examined. Mean and S.D were calculated for age. Frequency was presented for gender and factors examined. p-values < 0.001 was considered as significant.

RESULTS

In our study, out of 173 subjects, 90 (52%) were males and 83 (47.9%) were females. The age of participants ranged from 55 to 85 years (mean age: 62.74 + 2.23 years) (+S.D).

The majority of participants (44.5%) reported cleaning their dentures with tooth brush and toothpaste, compared to less than 10% each who reported using sodium bicarbonate, sodium hypochlorite, or ordinary soap.

More than half 112(64.73%) removed their dentures overnight, 109 (63.0%) immersed their dentures in water and only 3(1.7%) immersed them in a chemical solution. Denture hygiene was rated as "Good" for 38 participants (21.96%), "Fair" for 78 (45.08%) and "Poor" for 57 (32.94%).

Relationship between denture hygiene and age, sex, education, denture wearing behavior are shown in Table 1. Significant association was found between denture hygiene and gender, level of education, self perception of halitosis, overnight denture wear removal and denture immersion (p < 0.001).

DISCUSSION

Of the denture-wearing patients, 96% said that e were kept slightly cleaner on the Complete dentures are the most common form of prosthetic rehabilitation for edentulism. In Pakistan, complete edentulism occupies an estimated 4.1% of the population aged 65 years and above, with a projected increase to 9.3% by 2030[24]. Rehabilitative treatment is only successful when patients are motivated and aware of correct prosthesis use and hygiene. Most elderly patients are not sufficiently informed about proper denture care.

The education of patient is so critical to the success of new dentures, department of Prosthodontics provide written and verbal instructions to every denture wearing patient about their new denture, about the care and cleansing, about their use, and most important, about the periodic inspections. People remember less of what they hear than of what they see.

Hoad-Reddick et al, Jagger and Harrison, Kulak-Ozhan et al, Dikbas et al showed that denture wearers find it difficult to adequately clean their dentures and many wear dirty dentures[13-16]. Our study also found a poor degree of denture hygiene (38.72%) among patients, which was in line with the findings of Baran I and Nalcai R[2], Peltola et al[17], and Unluer et al[18] as well as another study carried out in Berlin among institutionalized geriatric patients, which found poor denture hygiene in 55% of the study population[11].

Oral malodor or halitosis is the term especially used to describe the odor from the oral cavity. It may be due to poor oral hygiene or denture hygiene, local factors or due to systemic involvement[23]. In our study self reported halitosis was found in 64 (36.99%).

The maxillary dentures were kept slightly cleaner on internal and external surfaces than the mandibular dentures. Maxillary dentures are easier to grasp and have fewer curvatures than mandibular prostheses. For geriatric patients sometime afflicted with motor coordination problems, these factors are additional limitations in cleansing their dentures[12].Our study found that Oral hygiene habits become poorer among complete denture wearers with increasing age.

Pietrokovski et al[12] conducted study on 249 complete denture wearers, of all the patients, 96 % claimed that they clean their dentures at least twice day or more times a day. They use either a tooth (denture) brush or a laundary brush supplemented with a cleansing agent (tooth paste, mouth wash, denture effervescent, denture cleansing solution, mild detergent, running water). We found brushing either with or without toothpaste were the most frequent method used to clean dentures (86.7%).

Barbosa et al[19] observed that 78% of the subjects, with an average age of 67.3 years, had used the same complete denture for over 5 years. 64% slept with their prostheses and 44% removed them from the mouth only for cleaning. None of the patients interviewed knew anything about brushes designed specifically for complete dentures. We found that 35.83% subjects did not remove their denture while sleeping and only more than 4% denture wearers knew about denture brushes (brushes specifically designed for complete dentures).

Nevalainen et al[20] found that among complete denture wearers, 88% reported cleaning their oral mucosa also, as part of their oral hygiene routine. Our study found that more than half (64.73%) of denture wearer remove their dentures for mouth and denture cleaning.

Collis and Stafford[21] stated that patients were less critical of standards of denture hygiene than clinician. Denture hygiene should be addressed in oral health education programs. Patient should be given both verbal and written denture hygiene and wearing instructions in simple and regional language. We found significant association between denture hygiene and education, and denture immersion habits (p < 0.001).

CONCLUSIONS

The degree of denture hygiene was found to be significantly associated with gender, level

of education, self-perception of halitosis, overnight removal of dentures and denture immersion p< 0.001). Brushing was found to be the most frequent method used to clean dentures. Denture related problems were more frequently among patients with poor denture hygiene.

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Table: Distribution of denture hygiene levels, by age, gender, education, self reported halitosis, denture wearing and hygiene habits. n (%)

Characteristics	Denture hygiene			Total	p-value
	Poor	Fair	Good		
Age groups (years)					
55-65	23 (23.71)	46 (47.42)	28 (28.86)	97 (56.06)	<0.612
66 +	34 (44.73)	32 (42.1)	10 (13.15)	76 (43.93)	
Gender					
Male	48 (53.33)	34 (37.77)	8 (8.88)	90 (52.02)	<0.001
Female	23 (27.71)	39 (46.98)	21 (25.3)	83 (47.97)	
Education					
Illiterate	78 (69.64)	23 (20.53)	11 (9.82)	112 (64.73)	
Primary school	14 (40.0)	12 (34.28)	9 (25.71)	35 (20.23)	<0.001
Secondary school	3 (11.53)	8 (30.76)	15 (57.69)	26 (15.02)	
Self reported halitosis					
Absent	11 (10.09)	56 (51.37)	42 (38.53)	109 (63.0)	<0.001
Present	33 (51.56)	22 (34.37)	9 (14.06)	64 (36.99)	
Brushing habits					
Tooth brush	07 (9..58)	25 (34.24)	40 (54.79)	73 (42.19)	
Tooth brush + paste	09 (11.68)	15 (19.48)	55 (71.42)	77 (44.50)	
Denture brush	0 (0)	3 (42.85)	4 (57.14)	7 (4.04)	<0.256
Chemicals	4 (30.76)	3 (23.07)	6 (46.15)	13 (7.51)	
Others	1 (33.33)	2 (66.66)	0 (0)	3 (1.73)	
Overnight removal					
Removed	19 (16.96)	29 (29.89)	64 (57.14)	112 (64.73)	<0.001
Not removed	38 (62.29)	18 (29.5)	5 (8.19)	61 (35.83)	
Denture immersion					
Water	33 (30.27)	52 (47.70)	24 (22.01)	109 (63.0)	
Chemical	1 (33.33)	2 (66.66)	0 (0)	3 (1.73)	<0.001
Others (not removed)	38 (62.29)	18 (29.5)	5 (8.19)	61 (35.26)	