ORIGINAL ARTICLE

EFFECT OF SOCIOECONOMIC STATUS, EDUCATION LEVEL AND TYPE OF DENTURE ON DENTURE HYGIENE KNOWLEDGE AND PRACTICES OF DENTURE WEARERS

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ABSTRACT

The objective of this cross-sectional survey was to assess the knowledge level of complete and partial denture wearers regarding denture hygiene measures and practices, and to find any association of knowledge level with socioeconomic status, education and type of denture. Eighty five denture wearers were interviewed through a self-designed close-ended questionnaire including nine relevant questions that were to be answered as "No" or "Yes". Final score was determined numerically, ranging from 9 upto 18, which was used to devise five groups of knowledge level: extremely poor (score of 9-10), relatively poor (score of 11-12), moderate (score of 13-14), relatively good (score of 15-16), and extremely good (score of 17-18). Results showed that the knowledge grade of the study participants was non-significant for socioeconomic status (P value 0.55) but highly significant for education level (P value 0.001) and type of denture (P value 0.014). It was concluded that knowledge and practices of the patients regarding denture hygiene was related to their educational status (more literate participants had better knowledge) and also to the type of denture being worn (complete denture patients had relatively better knowledge than the partial denture patients).

Key Words: *Denture hygiene, knowledge, practices, education, type of prosthesis.*

INTRODUCTION

Complete or partial dentures have been one of the most widely used replacement prostheses for missing teeth and at times the best replacements possible.[1] They restore the esthetics as well as functional needs of the patients.[2] In order to provide long-term service, dentures need to be maintained regularly and efficiently. A good level of denture hygiene care also maintains the tissue health over a long period of time.[3] All denture patients must be properly instructed for a daily maintenance schedule including cleaning the dentures after meals and before retiring, using soft bristle brushes with or without a non-abrasive dentifrice, removing and soaking dentures prior to sleeping.[4] Patients must be asked to visit the dentist on regular intervals to judge their hygiene habits and effects on the health of oral tissues.[2]

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Existing literature shows that many denture patients have limited awareness about denture and oral hygiene procedures.[5] Patient apathy towards denture hygiene has also been reported.[6] Moreover, many a times the dentists themselves fail to instruct the patients regarding denture hygiene practices. This usually results in social and functional problems for the patients and may also reduce the serviceable life of their dentures.[7]

The objectives of the present study were to determine the level of knowledge and awareness among denture wearers of the region regarding their denture hygiene practices, and to correlate this knowledge with their socioeconomic status, education level and type of denture. This useful data will help us in better understanding the needs of our local patients and patient groups belonging to different socioeconomic backgrounds and having different levels of education. This in turn will enable us, as dental surgeons, to better educate and motivate our local patients towards maintaining a high level of denture hygiene.

METHODOLOGY

This cross-sectional survey was carried out in the Department of Prosthodontics at Nishtar Institute of Dentistry, Multan, Pakistan from 1st November 2012 to 30th March 2013 as part of an under-graduate research competition. A convenience non-probability sampling technique was used to include any number

of post-insertion complaint patients according to the following criteria: both male and female patients of 21 years of age and onwards and who had been wearing complete or partial dentures for more than 6 months. Only those patients were excluded who did not wish to be interviewed, were mentally or physically handicapped, or using anti-depression medication.

A self-designed close-ended questionnaire was devised, both in English and Urdu language, which was filled in a consented interview with the patients before addressing their presenting complaints. For data analysis purposes, different groups were devised in the study variables: three groups for socioeconomic status (fully affording, partially affording and non-affording); six groups for education level (illiterates, primary education, elementary education, matric, intermediate, and graduation or above); and two groups as per the denture type (complete denture and partial denture).

All data were recorded by two third year BDS students who were adequately trained in this matter by the primary author. All patients were asked nine questions relevant to denture hygiene habits and practices. These included questions on cleaning dentures after a meal, removing the dentures before sleeping, soaking the dentures in water, knowing to clean the dentures after every meal, hand scrubbing the dentures for cleaning, using denture cleaning brush, using denture cleansing tablets, using regular tooth paste on the dentures and using any chemicals on the dentures.

Patients were required to answer either as "Yes" or "No" to each of the questions. All questions were so designed that the ideal answer was a "Yes" to every statement. After recording patient responses, a simple numeric calculation was used. Every "No" was given 1 point (value 1) and every "Yes" was given 2 points (value 2). Both values were added up to derive the final score of the patient, which ranged from minimum of 9 (all answers in "No") to a maximum of 18 (all answers in "Yes"). This final score was then used to categorize the knowledge grade of the patients into 5 groups: Extremely poor (score of 9 or 10); Relatively poor (score of 11 or 12); Moderate (score of 13 or 14); Relatively good (score of 15 or 16); and Extremely good (score of 17 or 18).

Data analysis was done by using the Statistical Package for Social Sciences (SPSS) version 17 software. Mean age and mean score of the study participants was computed along with the standard deviation. In order to generate correlations of the study variables, cross tabulation was done for socioeconomic status, education level and type of denture with the knowledge grade derived. Chi-square test was applied at 95% confidence interval and P value of less than 0.05 was considered as significant.

RESULTS

A total of 85 patients were included in the study, with 59 (69.4%) males and 26 (30.6%) females. The subjects ranged in age from 21 years upto 90 years, with a mean age of 52.67±16.78 years. There were 39 (45.9%) complete denture wearers and 46 (54.1%) partial denture wearers. A comparative view of the distribution of patients according to knowledge grade and socioeconomic status, education level and type of denture is presented in Tables 1, 2 and 3 respectively.

Chi-square test was used to generate the significance of the study variables. In relation to the knowledge grade of the study participants, the results were non-significant for socioeconomic status (P value 0.55) but highly significant for education level (P value 0.001) and type of denture (P value 0.014).

Interesting results were obtained in response to the individual questions asked. Table 4 summarizes these responses in relation to the knowledge grades devised for the study, which returned a highly significant association with a P value of less than 0.001.

In response to the first question, it was found that only 8 (9.4%) patients did not clean their dentures after a meal: all of them were partial denture wearers (P value 0.006), and 2 (2.4%) were illiterates while 6 (7.1%) had upto primary education only. None of the higher literacy level patients responded "No" to this question (P value 0.006). In response to the second question, only 14 (16.5%) patients did not remove their dentures before sleeping: this included 2 (2.1%) complete denture and 12 (14.1%) partial denture wearers (P value 0.009); and did not include any patient from the graduation level education although other literary groups had mixed presence in this category (P value 0.136). Third question revealed that 14 (16.5%) patients did not soak their dentures in water after removing them for the night. This included 2 (2.1%) complete denture and 12 (14.1%) partial denture wearers (P value 0.009); and mixed numbers of patients in illiterates, primary, elementary and matriculation education groups. No patient from intermediate and graduation level of education responded "No" to this question (P value 0.009).

Fourth question showed that 24 (28.2%) patients did not know they were supposed to clean their dentures after every meal. This included 6 (7.1%) complete denture and 18 (21.2%) partial denture wearers. Overall, more complete denture patients responded "Yes" to this item (P value 0.015). However, on the basis of education level groups, mixed answers were recorded from all groups (P value 0.353). Regarding the fifth question, 12 (14.1%) complete denture and 26 (30.6%) partial denture patients did not use hand scrubbing for cleaning their dentures. These 38 (44.7%) patients had mixed presence among all the education level groups devised (P value 0.219). Responses to the sixth question remained non-significant for type of denture (P value 0.759) and education level (P value 0.880).

The seventh question revealed that only 9 (10.6%) patients soaked their dentures in denture cleansing tablets as a method of denture hygiene maintenance. These included 5 (5.9%) complete denture and 4 (4.7%) partial denture wearers which was insignificant (P value of 0.538). However, quite significantly, only the upper three education level patients used these tablets (P value less than 0.001).

In response to the eighth question, it was found that only 4 (4.7%) patients knew they were not supposed to use an ordinary tooth paste for cleaning their dentures. These included 2 (2.4%) patients each from both types of denture wearers (P value 0.866); and only 1 (1.2%) patient from intermediate education and 3 (3.5%) patients from graduation level education which was highly significant (P value less than 0.001). Responses to the ninth question showed that only 7 (8.2%) patients knew they were not supposed to use any chemicals on their dentures for hygiene purposes. Among them, 5 (5.9%) wore a complete denture and 2 (2.4%) wore a partial denture (P value 0.157). However, very interestingly, this lot of patients also included 4 (4.7%) illiterates and 3 (3.5%) graduation level patients which was significant overall (P value 0.011).

DISCUSSION

The present survey was conducted on 85 subjects selected through convenience non-probability sampling technique. The basic aim was to assess the knowledge and practices of the patients regarding denture hygiene maintenance. For inclusion, the complete or partial denture patients had to be wearing their prostheses for at least 6 months which is considered enough time for personal habits to get developed and groomed. This is one of the reasons why the sample included only 85

TABLE 1: DISTRIBUTION OF PATIENTS ACCORDING TO KNOWLEDGE GRADE AND SOCIOECONOMIC STATUS

	Knowledge Grade					
Socioeconomic status	**Extremely poor**	**Relatively poor**	**Moderate**	**Relatively good**	**Extremely good**	**Total**
Fully affording	2 (2.4%)	4 (4.7%)	10 (11.8%)	11 (12.9%)	4 (4.7%)	31 (36.5%)
Partially affording	Nil	6 (7.1%)	16 (18.8%)	6 (7.1%)	Nil	28 (32.9%)
Non-affording	2 (2.4%)	8 (9.4%)	8 (9.4%)	8 (9.4%)	Nil	26 (30.6%)
Total	4 (4.7%)	18 (21.2%)	34 (40.0%)	25 (29.4%)	4 (4.7%)	85 (100.0%)

TABLE 2:DISTRIBUTION OF PATIENTS ACCORDING TO KNOWLEDGE GRADE AND EDUCATION LEVEL

	Knowledge Grade					
Education Level	**Extremely poor**	**Relatively poor**	**Moderate**	**Relatively good**	**Extremely good**	**Total**
Illiterate	2(2.4%)	4(4.7%)	14(16.5%)	8(9.4%)	Nil	28 (32.9%)
Primary	2(2.4%)	4(4.7%)	8(9.4%)	4(4.7%)	Nil	18 (21.2%)
Elementary	Nil	4(4.7%)	Nil	2(2.4%)	Nil	6(7.1%)
Matriculation	Nil	Nil	8(9.4%)	6(7.1%)	Nil	14 (16.5%)
Intermediate	Nil	4(4.7%)	4(4.7%)	2(2.4%)	1(1.2%)	11 (12.9%)
Graduation & above	Nil	2(2.4%)	Nil	3(3.5%)	3(3.5%)	8(9.4%)
Total	4(4.7%)	18(21.2%)	34(40.0%)	25(29.4%)	4(4.7%)	85 (100.0%)

TABLE 2:DISTRIBUTION OF PATIENTS ACCORDING TO KNOWLEDGE GRADE AND EDUCATION LEVEL

	Knowledge Grade					
Type of Denture	**Extremely poor**	**Relatively poor**	**Moderate**	**Relatively good**	**Extremely good**	**Total**
Complete	Nil	4(4.7%)	16(18.8%)	17(20.0%)	2(2.4%)	39(45.9%)
Partial	4(4.7%)	14(16.5%)	18(21.2%)	8(9.4%)	2(2.4%)	46(54.1%)
Total	4(4.7%)	18(21.2%)	34(40.0%)	25(29.4%)	4(4.7%)	85(100.0%)

TABLE 4: RESPONSES TO INDIVIDUAL QUESTIONS IN RELATION TO THE KNOWLEDGE GRADES DEVISED. Q.1 = DO YOU CLEAN YOUR DENTURE AFTER A MEAL? Q.2 = DO YOU REMOVE YOUR DENTURE BEFORE SLEEPING? Q.3 = DO YOU SOAK YOUR DENTURE IN WATER AFTER REMOVING? Q.4 = DO YOU KNOW YOU ARE SUPPOSED TO CLEAN YOUR DENTURE AFTER EVERY MEAL? Q.5 = DO YOU USE HAND SCRUBBING FOR CLEANING YOUR DENTURE? Q.6 = DO YOU USE A DENTURE CLEANING BRUSH FOR CLEANING YOUR DENTURE? Q.7 = DO YOU USE DENTURE CLEANSING TABLETS FOR SOAKING YOUR DENTURE? Q.8 = DO YOU KNOW YOU ARE NOT SUPPOSED TO USE ORDINARY TOOTH PASTE FOR DENTURE CLEANING? Q.9 = DO YOU KNOW YOU ARE NOT SUPPOSED TO APPLY ANY CHEMICALS ON YOUR DENTURE?

		Knowledge Grade					
Question	**Response**	**Extremely poor**	**Relatively poor**	**Moderate**	**Relatively good**	**Extremely good**	**Total**
Q. 1	Yes	Nil	14(16.5%)	34(40.0%)	25(29.4%)	4(4.7%)	77(90.6%)
	No	4(4.7%)	4(4.7%)	Nil (%)	Nil (%)	Nil (%)	8(9.4%)
Q. 2	Yes	Nil	10(11.8%)	32(37.6%)	25(29.4%)	4(4.7%)	71(83.5%)
	No	4(4.7%)	8(9.4%)	2(2.4%)	Nil	Nil	14(16.5%)
Q. 3	Yes	Nil	10(11.8%)	32(37.6%)	25(29.4%)	4(4.7%)	71(83.5%)
	No	4(4.7%)	8(9.4%)	2(2.4%)	Nil	Nil	14(16.5%)
Q. 4	Yes	Nil	6(7.1%)	26(30.6%)	25(29.4%)	4(4.7%)	61(71.8%)
	No	4(4.7%)	12(14.1%)	8(9.4%)	Nil (%)	Nil (%)	24(28.2%)
Q. 5	Yes	Nil	2(2.4%)	18(21.2%)	23(27.1%)	4(4.7%)	47(55.3%)
	No	4(4.7%)	16(18.8%)	16(18.8%)	2(2.4%)	Nil (%)	38(44.7%)
Q. 6	Yes	Nil	6(7.1%)	18(21.2%)	25(29.4%)	4(4.7%)	53(62.4%)
	No	4(4.7%)	12(14.1%)	16(18.8%)	Nil	Nil	32(37.6%)
Q. 7	Yes	Nil	Nil	Nil	5(5.9%)	4(4.7%)	9(10.6%)
	No	4(4.7%)	18(21.2%)	34(40.0%)	20(23.5%)	Nil (%)	76(89.4%)
Q. 8	Yes	Nil	Nil	Nil	Nil	4(4.7%)	4(4.7%)
	No	4(4.7%)	18(21.2%)	34(40.0%)	25(29.4%)	Nil	81(95.3%)
Q. 9	Yes	Nil	Nil	Nil	4(4.7%)	3(3.5%)	7(8.2%)
	No	4(4.7%)	18(21.2%)	34(40.0%)	21(24.7%)	1(1.2%)	78(91.8%)

patients in spite of the fact that a large number of patients routinely head to the department for treatment purposes.

Study data were collected through patient interviews conducted by two undergraduate students of third year BDS who were properly trained by the primary author. All information was gathered on a self-designed close-ended questionnaire comprising nine relevant questions, which were translated into Urdu language for better understanding by the patients. All questions were supposed to be answered as either "Yes" or "No" which was done to simplify the responses of the patients. All questions were structured so that the best answer was a "Yes" for all the items. This was done to standardize the results and outcome of the study.

Patient responses were used to numerically calculate their final scores, which in turn was used to devise the 5 knowledge grades (from extremely poor to extremely good) used in the present study. All questions were especially structured so that response to every item should have been a "Yes" which was done to simply the calculation of the final score which was used as an indicator of the knowledge grade. Higher the final score, higher was the knowledge grade and vice versa.

Interestingly enough, out of the 85 patients, only 4 (4.7%) male patients demonstrated the "Extremely good" knowledge grade. All of these belonged to the fully affording socioeconomic group and had intermediate to graduation level of education which was a significant finding. On the other extreme, overall, 4 (4.7%) patients also demonstrated the "Extremely poor" knowledge grade with two males and two females in this category; two fully affording and two non-affording; two were illiterates and two had primary level of education only which was a significant finding. All of these four patients were partial denture wearers which was a significant finding as well.

From the results of the present study, it was assumed that probably the knowledge grade of the study population was related to different demographic variables, some of which were included, namely education level, socioeconomic status and denture type. However, variables such as age, gender, social standing, occupation, marital status, general health, place of residence may also have some influence on the denture hygiene

awareness of the patients for which future studies can be focused on these and possibly other variables of regional importance. In future, more such surveys may be conducted at other centers as well to better understand the effect of different demographic and regional variables on the knowledge grade of patients regarding denture hygiene maintenance. This way important data can become available to our local clinicians, which may help towards providing better education to the denture wearers which in turn would increase the overall comfort and longevity of the removable prostheses.

Research work by Barreiro et al[7] revealed that patients did not receive proper guidance and orientation towards denture hygiene maintenance. A study from Brazil found that almost 64% patients slept with complete dentures in the mouth and none of the 150 patients interviewed knew anything about a brush designed for denture cleaning. Overall it was concluded that patients had limited awareness about denture and oral hygiene maintenance5. In the present study, only 14% of the sample did not remove their prostheses before retiring to the bed. This amount of difference in the values could have been due to the relatively smaller sample size of the present study or it could have been due to other demographic and regional factors not included in this study.

Peracini et al[2] found that almost 58% of the patients slept with their dentures in the mouth, 100% used mechanical brushing while about 52% reported that their dentist did not instruct them about denture and oral hygiene maintenance. Differences with the present study may suggest that patients in this part of the world are not adequately educated towards denture hygiene and more time must be spent in developing guidelines for all denture wearers towards maintaining their denture and oral hygiene. Access to latest denture care products may also be limited to many of the patients interviewed since the department receives majority share of its patients from among the masses.

In their work, Dikbas and colleagues[8] found that more than 40% of the denture patients used brushing with toothpaste as the primary method of denture cleaning, and as much as 82% patients claimed of not receiving any instructions from their dentists for denture hygiene maintenance. Whether the patient received instructions from dentist was a point not asked for in the present study, which was basically aimed at finding out the very basic information the patients had about their denture hygiene maintenance. The source of this information was never investigated. This might be a good area for future research work by fellow colleagues or students.

Apratim et al[9] and Saha et al[10] have associated poor condition of complete dentures with irregular hygiene maintenance practices by the patients. Both these studies have emphasized on the dentists for providing proper hygiene instructions to their denture patients. Milward and colleagues[11] found a lack of knowledge related to partial denture hygiene as almost 60% of the subjects had less than the appropriate level of denture cleanliness. They also recommended towards improving the level of awareness among all members of the dental team in addition to providing proper information transfer to the patients and periodic reinforcement of the important hygiene measures.

Overall results of the present study revealed a significant association of knowledge grade regarding denture hygiene maintenance with patient's education level and type of denture. However, the role of these factors and possibly many others needs to be investigated further in order to determine more accurately the educational and training needs of our local and regional patients towards their denture maintenance regimen.

CONCLUSIONS

Within the limitations of the present study, the following conclusions can be drawn:

1. Denture hygiene knowledge and practices are better among more literate patients.
2. Denture hygiene knowledge and practices are better among complete denture patients as compared to partial denture patients.
3. Denture hygiene awareness might not be related to the socioeconomic status of the patients.

REFERENCES

1. Wendt DC. How to promote and maintain good oral health in spite of wearing dentures. J Prosthet Dent. 1985; 53: 805-07.
2. Peracini A, Andrade IM, Paranhos Hde F, Silva CH, de Souza RF. Behaviors and hygiene habits of complete denture wearers. Braz Dent J. 2010; 21: 247-52.
3. Goiato MC, Filho HG, Dos Santos DM, Barao VA, Junior AC. Insertion and follow-up of complete dentures: a literature review. Gerodontology. 2011; 28: 197-204.
4. Initial placement, adjustment and servicing of the removable partial denture. In: Carr AB, Brown DT, editors. McCracken's Removable Partial Prosthodontics. St. Louis, Missouri: Elsevier Mosby; 2011. p. 289-98.
5. de Castellucci Barbosa L, Ferreira MR, de Carvalho Calabrich CF, Viana AC, de Lemos MC, Lauria RA. Edentulous patients' knowledge of dental hygiene and care of prostheses. Gerodontology. 2008; 25: 99-106.
6. Collis JJ, Stafford GD. A survey of denture hygiene in patients attending Cardiff Dental Hospital. Eur J Prosthodont Restor Dent. 1994; 3: 67-71.
7. Barreiro DM, Scheid PA, May LG, Unfer B, Braun KO. Evaluation of procedures employed for the maintenance of removable dentures in elderly individuals. Oral Health Prev Dent. 2009; 7: 243-9.
8. Dikbas I, Koksal T, Calikkocaoglu S. Investigation of the cleanliness of dentures in a university hospital. Int J Prosthodont. 2006; 19: 294-98.
9. Apratim A, Shah SS, Sinha M, Agrawal M, Chhaparia N, Abubakkar A. Denture hygiene habits among elderly patients wearing complete dentures. J Contemp Dent Pract. 2013; 14: 1161-64.
10. Saha A, Dutta S, Varghese RK, Kharsan V, Agrawal A. A survey assessing modes of maintaining denture hygiene among elderly patients. J Int Soc Prev Community Dent. 2014; 4: 145-48.
11. Milward P, Katechia D, Morgan MZ. Knowledge of removable partial denture wearers on denture hygiene. Br Dent J. 2013; 215(10): E20.