

ORIGINAL ARTICLE

Determining the Dental Hygiene of Removable Prosthesis from the Patient's PerspectiveSaima^{*}, Muhammad Sartaj Khan, Muhammad Raza**ABSTRACT**

Objective: To evaluate the hygiene of removable dental prostheses from the patient's perspective and to assess patient knowledge about denture care and maintenance. This study would be helpful for the dentist to educate patients on cleaning their prostheses.

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the Department of Prosthodontics, Peshawar Dental College Peshawar, Pakistan from March 2023 to August 2023.

Methods: This questionnaire-based study was conducted in the Prosthodontics department. After informed consent, each patient completed a Performa. The aim of the study was to help the patient understand the importance of dentures and oral hygiene and maintenance. The patients were assured that their data would be kept confidential. The study sample consisted of 150 subjects with removable dental prostheses.

SPSS statistics version 26.0 was used to analyze the data with *Chi-square* test at $P < 0.05$. Data was calculated for categorical and numerical variables.

Results: The sample had an age range of 33-70 years (mean 50 years) and a standard deviation of 10.22 with 65% males (n=97) and 35% females. The majority of the dentures in the study had been in use for more than 1 year; 37% of subjects reported cleaning their prosthesis once a day, and 90% of the subjects (n=135) reported cleaning their dentures with toothbrushes using water. The majority (92%) of the subjects recalled the hygiene instructions given by the treating practitioners. About 65% stated that verbal instructions were given, and the majority of the subjects (78.7%) removed their dentures at night.

Conclusion: The majority of patients removed their dentures at night and used brushing techniques for stain removal. Almost two-thirds of patients remembered verbal instruction on hygiene maintenance.

Keywords: Awareness, Dental Prosthesis, Hygiene, Oral Health, Patient Education.

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Introduction

Removable partial or complete dental prostheses still satisfy quite a large number of populations around the world despite the invention of fixed partial dentures and dental implants. However, a major problem associated

with such prosthesis is the neglected denture hygiene from patient perspective.¹⁻⁵

Literature has revealed various reasons for inadequate denture hygiene maintenance, including, but not limited to, poor manual dexterity in old patients, inadequate prosthesis finishing, roughness of surfaces, lack of communicating hygiene instructions to patients and compliance issues from the patient perspective.⁶⁻⁹

Failure in achieving adequate denture hygiene can lead to the accumulation of plaque on

Department of Prosthodontics

Peshawar Dental College Peshawar, Pakistan

Correspondence:

Dr. Saima

Department of Prosthodontics

Peshawar Dental College Peshawar, Pakistan

E-mail: saima_afridi09@yahoo.com

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various surfaces of prosthesis, leading to the formation of denture plaque containing *Candida albicans* and associated *Streptococcus mutans*, which can initiate caries in teeth used as abutments or adjacent teeth in partially edentulous arches. In this regard, occlusal relationship, age of prostheses, and quality of intaglio surface of dentures are contributing factors for oral mucosal lesions.¹⁰⁻¹²

Dentures can retain more plaque and biofilm owing to the porous nature of resins and the increased surface area of prosthesis. Such unclean surfaces can lead to discoloration of used material, halitosis, and mucosal irritation, inversely affecting denture service life. Compliance with the practitioner's instructions for optimum hygiene maintenance is a prime prerequisite for prosthesis service life without complications.^{13,14}

Different prosthodontics societies around the world have recommended strictly following instructions to achieve recommended denture hygiene from the patient's perspective. Patient can avail both mechanical and chemical cleansing methods for dentures and are equally effective if carried out collectively. Cleaning dentures includes manual methods using brushes or vibrations based on using ultrasonic/sonic baths. Chemical agents are used for extra oral disinfection of prostheses. Collectively, these agents are grouped as; effervescent, bleach based, enzyme/mineral based and etc.¹⁵⁻

²⁰ The current study was initiated with an aim to assess the maintenance of denture hygiene from patient perspective. This assessment will be helpful to assess patient knowledge about denture care and maintenance.

Methods

The cross sectional study was conducted at the Department of Prosthodontics, Peshawar Dental College Peshawar, Pakistan from March 2023 to August 2023 after taking ethical approval from the Institutional Review Committee of the institute with the following IRB Number: Prime/IRB/2023-528 held on dated: 13th February 2023. The patients were

selected through a convenient sampling method who attended the department for various treatments related to their existing removable dentures. An informed consent was obtained from the study participants and the aim of the study was explained to them and was assured for the confidentiality of data. Data was collected from 150 patients and the sample was calculated through WHO software for sample size determination with a 5% margin of error and 95% confidence interval.

Inclusion Criteria: Patients of both genders with an age range from 25 to 75 years, were included. These included patients using old existing removable partial prostheses and complete dentures. Both acrylic and cast partial dentures were included.

Exclusion Criteria: Included newly made dentures and patients using dentures for maxillofacial defects.

A self-structured questionnaire was prepared to encompass various parameters of dentures, for example, age, gender, type and age of prosthesis, cleaning methods, and frequency and habits like smoking, sniffing, etc. SPSS statistics version 26.0 was used to analyze the data collected from the patient. Calculations of percentages and frequencies were calculated for categorical variables like methods of denture cleansing, gender, and age of denture. For age of patients, mean and standard deviation were computed along with standard deviation. The *chi-square* test of significance was applied for statistical analysis and kept the *P*-value 0.05 as significant.

Results

The sample had an age range of 33-70 years (mean= 50 years) and standard deviation of 10.22, as given in table-1. Figure.1 shows the responses of patients recorded for different variables. It shows that majority of patients (95%) removed their dentures at nighttime, while the rest did not remove their dentures. The patient was asked how many times they cleaned their removable denture daily, 56 subjects (37%) reported cleaning their

Table-1: Statistics for gender and age of patients

	Males	Females	Ratio	
Gender	n= 97(65%)	n= 53 (35%)	1.8	
Age (years)	Minimum age	Maximum age	Mean	Standard Deviation
	33	75	50	±10.22

Table-2: Age of dentures during examination

Category	Percentage (number)
1-3 months	3% (4.5)
3-6 months	7% (10.5)
6-9 months	5% (7.5)
9-12 months	17% (25.5)
More than 12 months	68% (102)

prosthesis only once a day, 45 (30%) subjects cleaned their prosthesis twice daily, 37 (24.7%) subjects cleaned their prosthesis once in 3-4 days and a strong relation was found between frequency of cleaning the prosthesis and gender ($P=0.064$).

Quite a large number of patients (90%, $n=135$) were reported to clean their dentures with tooth brushes using water, 11 (7.3%) cleaning under tap water, and a minimal number by soaking 1 (0.7%). Large numbers of patients (94%) revealed that during denture insertion, denture hygiene instructions were given by the treating

practitioners, which were remembered by 92% of patients, and 65% stated that verbal instruction was given.

Discussion

Denture hygiene is as important as natural teeth hygiene. This study consisted of information gathered from different patients regarding their attitude toward denture hygiene and maintenance. In this regard, most of the patients were found to be knowledgeable about denture care, while in some aspects, they were below the benchmark.

Removal of dentures before going to bed is necessary for the health of soft tissues. The present study reports that 3.3% slept with their prosthesis in their mouth at night.

Mushtaq et al. reported in their study that 29% of subjects went to bed with denture in the mouth. Similar finding was found in the study of Shankar (13%), and Chaulagain (19%).^{1,2,15} These observations suggest a variable but comparable results with our study. The difference being in population size and setting of the study.

When patients were asked about the number of times they clean their prostheses, 37% of patients reported that they do it once a day. Our finding is less when compared with the study of Pacharne A et al. who reported that 58% subjects were cleaning their prosthesis at least once a day.⁶ It can be assumed from our findings that the majority of patients did not maintain a

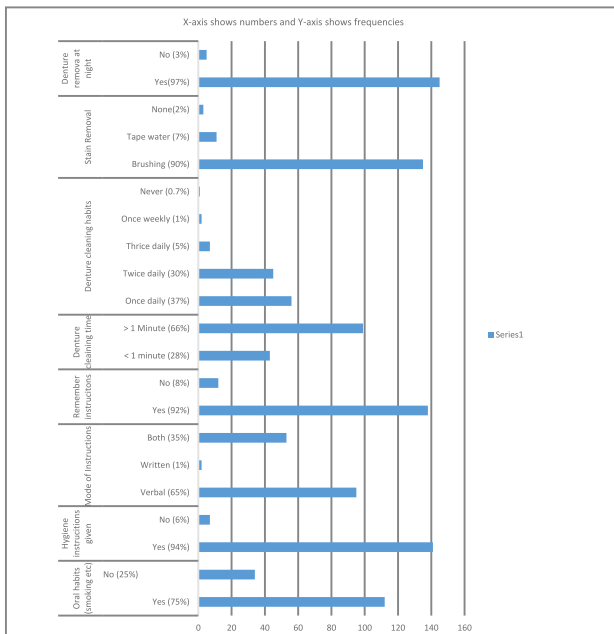


Fig.1: Responses of patients for dental hygiene of removable Prosthesis (frequency and percentages)

Denture cleaning regime on a daily basis. It also shows low awareness and compliance with instruction. Our study observed that a commonly used cleaning method was toothbrush (90%), while in the study of Konstantopoulou, K et al. used plain tap water with mild soap by 14.67, while 7.3% subjects also used toothbrush under a tape water, which is similar to the results of earlier studies.^{3,4,14,21,22}

When asked about instructions given by the dentist or dental staff, it was found in the current study that only oral instructions were given to almost 2/3rd (63%) of patients, and this finding is similar to Mylonas P.²⁰

This finding is slightly more than the value (54.10%) observed by Can Kaya ZT, et al. The study by Hoadreddick et al. had shown a much better percentage than this, i.e., 86.3%, which were given verbal instructions about the cleansing of a dentures and oral cavity.^{5,12,20}

At the time of prosthesis insertion dentist should instruct patient regarding good oral hygiene and denture hygiene. Patient should rinse their mouth and denture after every meal. Denture should be clean with brush and soap because brushing remove plaque and soaking do not so.

Conclusion

The majority of patients were removing their dentures at night. It was also found that the most commonly used tool for stain removal is brushing. The majority of patients follow verbal instruction given by the dentist for denture hygiene. Patients should be informed about the harmful effects of abrasive materials in certain toothpastes that can potentially wear the surface of acrylic resin. For the success of new denture, patient should be informed about the denture care.

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Authors Contribution

SA: Study designing, data collection, interpretation, manuscript writing and proofreading

MSK: Idea conception, data analysis, results and interpretation

MR: Idea conception, data analysis, results and interpretation