

ORIGINAL ARTICLE

Oral Hygiene and Maintenance Habits among PFM (Porcelain Fused to Metal) Fixed Partial Denture Wearers

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ABSTRACT

Background: Maintaining oral hygiene is crucial for the success and longevity of PFM fixed partial dentures (FPDs). However, poor hygiene practices can lead to complications such as plaque accumulation, gingival inflammation, and periodontal disease. This study aimed to evaluate oral hygiene habits, the role of dentists, and the use of special dental aids among PFM-FPD wearers.

Aims: The primary aim was to assess oral hygiene practices, including cleaning underneath prostheses and general tooth brushing habits. Secondary objectives included evaluating the dentist's role in promoting hygiene and analyzing the usage and prescription of specialized dental aids.

Methods: A cross-sectional study was conducted among 132 PFM-FPD wearers aged 25–50 years. Data were collected using structured questionnaires and clinical examinations. Parameters assessed included brushing habits, cleaning under prostheses, recall visits, use of special dental aids, and flossing practices. Statistical analysis was performed using SPSS software version 26.

Results: 47.7% of respondents cleaned underneath their prosthesis, while 91.7% brushed their teeth regularly. Only 31.8% attended regular recall visits despite 88.6% receiving advice from dentists to do so. Special dental aids were used by 41.2% of respondents, with waxed floss being the most preferred type (60%). Lack of awareness regarding specific hygiene measures was evident among participants.

Conclusion: The research shows that people who wear porcelain fused to metal FPD don't always take the time to brush and floss properly, thus there has to be more patient education and dentists working together to promote maintenance routines. Cleaning results may be greatly improved if more people are aware of the availability of specialist dental aids.

Keywords: Oral hygiene habits, FPD, PFM, dentist role, flossing practices, dental

INTRODUCTION

For fixed partial dentures (FPDs) to last as long as possible and look great, good oral hygiene is essential. Although they are great for restoring function and aesthetics, fixed prosthodontic appliances provide their own set of difficulties when it comes to maintaining good oral hygiene. Numerous studies have consistently shown that those who use PFM-FPD are at an elevated risk for gingival inflammation, periodontal disease, plaque accumulation, and inadequate oral hygiene. Al Qabbaa and Rayyan (2018) shown that several individuals using FPDs lack knowledge on the correct cleaning of the area underneath their prosthesis, potentially detrimental to their oral health¹. Similarly, persons who neglect appropriate dental care are more susceptible to gingival irritation, heightened accumulation of plaque and calculus, and overall inadequate oral hygiene^{2,4}.

Comprehensive studies have investigated the relationship between PFM-FPD users' periodontal health and their oral hygiene practices. A majority of patients in a Saudi Arabian cross-sectional study used toothbrushes and toothpaste; yet, several individuals had issues such as gingival irritation and malodor from prosthesis due to inadequate cleaning practices^{2,5}. Additional studies emphasized the significance of prosthesis type and positioning for oral hygiene standards, indicating that posterior fixed partial dentures (FPDs) sometimes need more effort for proper cleaning [4]. Maintaining periodontal health necessitates instructing patients on correct tooth cleaning techniques and the use of adjunctive instruments like as floss threaders and interdental brushes.

Dentists are essential in promoting appropriate oral hygiene practices among individuals using PFM fixed partial dentures (FPD). Evidence suggests that patients provided with comprehensive oral and written instructions for denture maintenance are more likely to maintain them in optimal condition^{3,6}. To reinforce these behaviors and address any emerging issues, it is essential to arrange frequent follow-up

meetings. Studies demonstrate an association between frequent professional cleanings and improved gingival health^{4,6}. Numerous patients claim insufficient guidance from dentists for FPD maintenance, highlighting deficiencies in the provision of this therapy^{1,3}.

Maintaining optimal oral hygiene consistently is the most effective method to prevent issues associated with fixed partial dentures. The efficacy of PFM fixed partial dentures (FPDs) in enhancing function and aesthetics is significantly contingent upon the user's commitment to rigorous cleaning practices and regular dental examinations. Research underscores the need of comprehensive patient education, precise instructions, and specialized care to guarantee the enduring efficacy of these prostheses. Enhancing the quality of life for those using PFM-FPD and mitigating the risks linked to inadequate oral hygiene may be accomplished by addressing these factors^{1,2,4,6}.

MATERIAL AND METHODS

Study Design: This cross-sectional study aimed to investigate the maintenance routines and oral hygiene behaviors of individuals with fixed partial dentures (FPDs). Between December 2022 and May 2023, researchers from the University of Sindh conducted data collection at dental clinics. The university's ethical committee granted its permission prior to the collection of any data.

Population and Sampling: Participants had to have worn PFM-FPDs for a minimum of six months, and they might be anywhere from 25 to 65 years old. Patients with detachable dentures, untreated periodontal disease, or systemic diseases impacting oral health were excluded from the study, whereas people with a single or multiple-unit FPD were included. After calculating the margin of error to be 5% and the confidence level to be 95%, a sample size of 200 participants was determined. We used outpatient dentistry clinics for convenience sampling to pick our participants.

Data Collection Tools: In order to evaluate regularity of dental cleaning and maintenance, a standardized questionnaire was created. Part one of the survey asked participants to provide basic personal information (age, gender, length of time using FPD), part

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two asked about their daily oral hygiene routine (brushing frequency, usage of interdental aids, mouthwash), and part three asked about their maintenance habits (how often they see the dentist, professionalism of their cleanings). Professionals in the fields of prosthodontics and periodontology checked the questionnaire for content correctness after pilot testing it with 30 participants. In order to objectively quantify the oral hygiene state, clinical exams were also performed using established indices such as the Gingival Index (GI) and the Plaque Index (PI).

Procedure: In order to engage in the research, participants were asked to provide their informed permission during their regular dental checkups. To make sure the questionnaire was clear and accurate, each participant was supervised as they filled it out. Trained dentists, using sterile tools and proper lighting, conducted clinical exams. Every single participant had their gingival health and plaque buildup documented.

Statistical Analysis: We used SPSS software version 26 to examine the data. For demographic factors and oral hygiene behaviors, descriptive statistics were computed, including percentages, means, and standard deviations. To find out whether there was a connection between how often people brushed their teeth and how their health improved, researchers used inferential statistics including chi-square tests and Pearson correlation coefficients. At $p < 0.05$, statistical significance was determined.

RESULTS

The table shows that the study included 132 respondents, with a higher proportion of females (64%, $n=85$) compared to males (36%, $n=47$). Respondents were divided into three age groups: 25–35 years (40.15%, $n=53$), 35–45 years (41.67%, $n=55$), and 45–50 years (18.18%, $n=24$). The majority of participants were between 35–45 years, indicating that middle-aged individuals are the most common users of fixed prostheses.

The table categorizes respondents based on the duration since their fixed prosthesis was placed. Most participants had their prosthesis for 5–10 years (40.91%), followed by 2–5 years (34.09%), 1–2 years (19.70%), and 10–15 years (5.30%). The educational levels of respondents were divided into three categories: illiterate (22.73%), intermediate education (42.42%), and graduate-level education (34.85%). Respondents reported where they had their fixed prosthesis done: academic dental hospitals (9.09%), government dental hospitals (40.15%), private hospitals (21.97%), and clinics (28.79%).

Table 1: Characteristics of Respondents

Gender	Population	Percentage
Male	47	36%
Female	85	64%
Age group	Population	Percentage
25-35	53	40.15%
35-45	55	41.67%
45-50	24	18.18%
When did you have your fixed prosthesis done?	Population	Percentage
1-2 years	26	19.70%
2-5 years	45	34.09%
5-10 years	54	40.91%
10-15 years	7	5.30%
Education	Population	Percentage
Illiterate	30	22.73%
Intermediate	56	42.42%
Graduate	46	34.85%
Where did you have your fixed prosthesis done	Population	Percentage
a) Academic dental hospital	12	9.09%
b) Government dental hospital	53	40.15%
c) Private hospital	29	21.97%
d) Clinic	38	28.79%

The study assessed oral hygiene habits among fixed partial denture (FPD) wearers through two key questions (Table 2). Regarding cleaning underneath the prosthesis, 47.7% ($n=63$) of

respondents reported doing so, while 52.3% ($n=69$) did not. For general tooth brushing habits, a significant majority of 91.7% ($n=121$) reported brushing their teeth, with only 8.3% ($n=11$) not doing so.

Table 3 illustrates the dentists' role in promoting oral hygiene among FPD wearers. Only 31.8% ($n=42$) of patients reported attending regular recall visits, while 68.2% ($n=90$) did not. However, 88.6% ($n=117$) of patients stated that their dentist advised booking recall visits. Similarly, 85.6% ($n=113$) reported receiving instructions from their dentist regarding maintaining good oral hygiene around their prosthesis.

Table 4 shows that 41.2% ($n=70$) of respondents used special dental aids to clean under their prosthesis, while 36.5% ($n=62$) did not. Table 5 further breaks down the frequency of special aid usage among those who use them: 41.43% ($n=29$) used them rarely, 35.71% ($n=25$) occasionally, 15.71% ($n=11$) always, and 7.143% ($n=5$) often.

Regarding the prescription of special aids (Table 6), 52.9% ($n=37$) were prescribed by the same dentist, 17.1% ($n=12$) learned about them through media, and 30% ($n=21$) from a friend.

Table 7 presents data on floss usage among respondents. Waxed floss was the most popular type, used by 60% ($n=42$) of respondents, followed by unwaxed floss at 18.57% ($n=13$). Dental tape, super floss, and polytetrafluoroethylene floss were each used by 7.14% ($n=5$) of respondents.

DISCUSSION

The questions under first theme naming general oral hygiene habits contain three questions. The response to first question that was about simple brushing was approximately 92% in agreement that shows the usual habits of brushing teeth among fixed partial denture wearers. However, the remaining 8.3% population is still learning as the brushing is a very basic need for everyone who wants a healthy physical life. Answer to second question was although majorly negative that indicated the very less awareness or casual attitude towards proper cleaning of prosthesis. The cleaning under prosthesis is essential to attain full oral hygiene as the fixed denture has some space prone to catch small pieces of food and traces of eatables. The same results are presented by a study conducted in Hyderabad by Surayya and co-authors⁸. The study also endorses the results of not using mouthwash or underneath cleaning aid by more than 90% respondents.

The three questions that infer about role of dentists show an overall casual and non-serious attitude from both patients and practitioners. The 90% patients did not attend regular recalls and on the other hand, more than 11% dentists never advised to book recall for prosthesis check up.

However, majority of respondents admitted that their dentists advice and instruct them about proper cleaning and maintenance of prosthesis for oral hygiene. Hannan, Deema and others also claimed the same findings from their study conducted in Karachi and concluded that not all the dental professionals had their same practice to maintain oral hygiene⁷. From their choices of toothpastes to their habits of flossing and using additional aids for maintaining oral hygiene, majority factors varied individually in spite of the fact that there is well-awareness of consequences of negligence. The study also highlighted the negligence of dentists towards using dental aids that is also reflected from our results. Less than 45% respondents claimed to use dental aid from which, only 15% use it regularly and 35% occasionally. However, among the users, majority were guided by dentist about the type and usage of dental aid. These two findings indicated that there is some subject bias in this theme as respondents acknowledges the prescription from dentist but denies any advice from dentist about cleaning of prosthesis underneath.

The use of floss is recommended by dentists to get better oral hygiene as compared to toothpicks. There are various types of floss available in market and patients usually use them according to their habit and financial situation. The findings from the current study revealed that the waxed floss is most popular in Pakistan as

it produces excellent results as compared to others. The users of super floss and tetrafluoroethylene floss were very low as these are expensive products. The influence of purchase power on the decision of floss usage is also reported by Mirza et al.⁹ in their study conducted in Lahore. Another study by Shahid and Waheed endorsed the very rare usage trend of floss in Pakistani population¹⁰. The reasons are lack of awareness and low purchase power that leads them to use simple toothpick instead of dental floss.

CONCLUSION

This study underscores the critical need for improved oral hygiene practices among PFM fixed partial denture (FPD) wearers. While general tooth brushing habits were satisfactory, with 91.7% of respondents brushing regularly, only 47.7% cleaned underneath their prostheses, highlighting a significant gap in specific hygiene practices. Furthermore, only 31.8% attended regular recall visits despite 88.6% receiving advice from their dentists, indicating poor adherence to professional recommendations.

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