

Awareness of Hygiene Practices and Satisfaction Level among Patients Wearing Fixed Dental Prosthesis: A Cross-sectional Survey

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ABSTRACT

Introduction: Fixed Partial Denture (FPD) is a very common treatment modality of prosthodontic rehabilitation. Although it restores the aesthetics and function, the maintenance of the same is of equal importance for it to function on a long term basis.

Aim: To assess the awareness of hygiene practices and satisfaction level among the patients rehabilitated with fixed dental prosthesis in suburban region of Karad, Maharashtra.

Materials and Methods: A cross-sectional clinical survey to assess the awareness of hygiene practice and satisfaction level of patients wearing FPD/crown was conducted among the patients visiting the at Outpatient Department of Prosthodontics, School of Dental Sciences, Krishna Institute of Medical Sciences "Deemed To Be University", Karad, Maharashtra.

Results: In this study 230 participants with FPD/crown were examined among which female participants contributed about 53% of the total participants and males up to 47%. 51.74% of the participants had a habit of brushing their teeth only once in a day and only 13.48% of them flossed their teeth. About 50% of the patients had problems either with food lodgement, aesthetics or pain post cementation. A total of 33.91% patients complained about the food lodgement in the region of the prosthesis. It was also evident through the survey that 60% of the patients were educated well by their dentists regarding maintenance protocols of the prosthesis.

Conclusion: Within the limitations of the study, it can be concluded that the prosthesis dislodgement and food lodgement were the most common complaints of the patients regarding fixed partial denture prosthesis. It is the responsibility of the dentist as well the patients to work together to improve the long term prognosis of the prosthesis.

Keywords: Food lodgement, Oral health, Oral hygiene practice, Rehabilitation

INTRODUCTION

While the average life span of humans is increasing owing to the improved health care facilities; missing teeth, however is still a common finding and a major concern especially in the rural areas [1-3]. With the advances in dentistry, many treatment options are available for replacement of missing teeth such as Removable Partial Denture (RPD), Fixed Partial Denture (FPD), Complete Dentures and Implant supported prosthesis depending upon the clinical situation. These treatment options depend upon the number of missing teeth, the condition of the abutment teeth, needs and wants of the patients and the financial constraints [4]. Though each treatment option has its own advantages and disadvantages, Fixed Partial Denture (FPD) is one of the most common prosthodontic treatment options chosen by the patients [1,5].

Success of the prosthodontic rehabilitation is multi-factorial in nature. Any dental treatment directly affects the satisfaction level of a patient as it deals with aesthetics and function [1,6-8]. However, the satisfaction level of patients to prosthodontic treatment depends on various factors like aesthetics, mastication, speech [1,2,9,10]. Thus, approach to treat the patient should be evaluated during the initial consultations [11]. After rehabilitation by FPD, it needs constant maintenance and regular checkups, which most of the patients neglect or ignore [7-9]. Either the dentist failing to give proper instructions about maintenance protocol or negligence by the patient to follow the instructions could lead to failure of the prosthesis [8,9]. There is ample amount of data in relation to fixed prosthesis in the literature, however; there is lack of data about the knowledge of the hygiene maintenance and satisfaction with the

fixed prosthesis in many countries [2,12-15]. Thus, the present study aimed to evaluate the awareness of hygiene practice and satisfaction level of patients wearing FPD/crown.

MATERIALS AND METHODS

A cross-sectional clinical survey to assess the awareness of hygiene practice and satisfaction level of patients wearing FPD/crown was conducted amongst the patients visiting the Outpatient Department of Prosthodontics at School of Dental Sciences, Krishna Institute of Medical Sciences "Deemed To Be University", Karad, Maharashtra. Ethical approval for carrying out the present study was obtained from Research Ethical committee of Krishna Institute of Medical Sciences; Karad (2016-2017/126). This survey was carried out for 3 months (January 2017-March 2017).

A total of 230 participants who consented for the study were examined for the study. A written consent form (Marathi and English) was handed over and explained to the participants. The consent of the willing participants was obtained in the form of signature. A convenient sample size was decided by assessing the basic information about the hygiene maintenance and practice.

Selection Criteria

Inclusion criteria

- Participants who were willing to be a part of this study.
- Patients with single crown and/or FPD without restriction of number of teeth involved that has been fabricated within 5 years.

Exclusion criteria

- Patients with dental implant prosthesis (complete/partial fixed prosthesis)
- Patients with any kind of maxillofacial prosthesis
- Patients with complete or partial removable dental prosthesis.

Data Collection

The face and content validity of the questionnaire was assessed by a panel of eight subject experts. The questionnaire consisted of validated set of 15 close-ended questions. The stability of the questionnaire was checked test-retest method. Cronbach's alpha ($C\alpha$) value for the questionnaire was found to be 0.76. The questionnaire was translated into local language Marathi and back translated into English by a bilingual expert and validated. To increase the reliability of the questionnaire a pilot study was done on 30 patients using the questionnaire. The mistakes found were rectified and the final modified questionnaire was presented to the patients of this study. The purpose of the study was explained to each and every patient in their mother tongue. The questionnaire had 15 items for assessment of hygiene practice and satisfaction level of patients with FPD. Nine questions had multiple choices to choose from and six had yes/no options. All the answers were to be marked by one investigator.

STATISTICAL ANALYSIS

Data obtained were subjected to statistical analysis using SPSS software version 23 (IBM, New York, USA). The information about descriptive statistics was obtained.

RESULTS

The mean age was found to be 50, ranging from 16-84, out of total 230 participants. The gender details of the study participants are presented in [Table/Fig-1], respectively. The results of the questionnaire are presented in [Table/Fig-2]; 62.17% patients were satisfied with their prosthesis as far as efficient mastication was concerned. However, about 50% of the participants encountered some post-operative problems like pain, or dislodgement. In about 80% of the cases there was no colour change of the prosthesis. A 50% of

| Age (in Years) | N | Mean |
|----------------|-----------|------------|
| Age | 230 | 50 (16-84) |
| Gender | Frequency | Percentage |
| Male | 107 | 46.53 |
| Female | 123 | 53.47 |
| Total | 230 | 100.0 |

[Table/Fig-1]: Age and Gender details of participants.

| Questionnaire | | | |
|--|-------------|---------|-------|
| | Frequency | Percent | |
| Question 1: When was your tooth/teeth restored? | | | |
| | 6 months | 43 | 18.7 |
| | 1 year | 62 | 26.96 |
| | 2-5 years | 81 | 35.21 |
| | >5 years | 44 | 19.13 |
| | Total | 230 | 100 |
| Question 2: Why was it restored? | | | |
| | Extraction | 30 | 13.04 |
| | Mastication | 33 | 14.35 |
| | Phonetics | 5 | 2.17 |
| | Caries | 112 | 48.7 |
| | Any other | 50 | 21.74 |
| | Total | 230 | 100 |

| | | | |
|--|-----------------------------|-----|-------|
| Question 3: Rate your comfort level on scale from 1-10 while speaking after the crown/FPD treatment was done. (10 being most uncomfortable and 1 being the most comfortable rating) | | | |
| | Uncomfortable | 6 | 2.6 |
| | Manageable | 70 | 30.43 |
| | Comfortable | 154 | 66.96 |
| | Total | 230 | 100 |
| Question 4: How satisfied are you while chewing food with your prosthesis in mouth? | | | |
| | Not satisfied | 8 | 3.84 |
| | Manageable | 79 | 34.35 |
| | Totally satisfied | 143 | 62.17 |
| | Total | 230 | 100 |
| Question 5: Grade your satisfaction level aesthetics of the prosthesis. | | | |
| | Not satisfied | 07 | 3.04 |
| | Manageable | 109 | 47.39 |
| | Totally satisfied | 114 | 49.57 |
| | Total | 230 | 100 |
| Question 6: Were there any problems after the prosthesis placement? | | | |
| | Discomfort | 35 | 15.21 |
| | Pain | 30 | 13.04 |
| | Loosening of adjacent teeth | 6 | 2.61 |
| | Dislodgement | 45 | 19.57 |
| | None of these | 114 | 49.57 |
| | Total | 230 | 100 |
| Question 7: Did you see change in colour along the margins of crown/FPD and adjacent teeth? | | | |
| | Yes | 46 | 20 |
| | No | 184 | 80 |
| | Total | 230 | 100 |
| Question 8: Does food get lodged under the crown/FPD? | | | |
| | Yes | 78 | 33.91 |
| | No | 152 | 66.09 |
| | Total | 230 | 100 |
| Question 9: Did your doctor advice you about any hygiene related tips for FPD/crown? | | | |
| | Yes | 138 | 60 |
| | No | 92 | 40 |
| | Total | 230 | 100 |
| Question 10: What do you use to clean your teeth? | | | |
| | Toothbrush and toothpaste | 223 | 96.96 |
| | Mouth wash | 3 | 1.30 |
| | Mishri | 2 | 0.87 |
| | Neem sticks | 2 | 0.87 |
| | Total | 230 | 100 |
| Question 11: How many times do you brush your teeth in a day? | | | |
| | Once | 119 | 51.74 |
| | Twice | 108 | 46.96 |
| | After every meal | 3 | 1.30 |
| | Total | 230 | 100 |
| Question 12: Do you use floss to clean your teeth/prosthesis? | | | |
| | Yes | 31 | 13.48 |
| | No | 176 | 76.52 |
| | Sometimes | 23 | 10 |
| | Total | 230 | 100 |

| Question 13: Do you visit your dentist to check the condition of FPD/crown and for cleaning the same? | | | |
|---|----------------|-----|-------|
| | Yes | 68 | 29.57 |
| | No | 162 | 70.43 |
| | Total | 230 | 100 |
| Question 14: If yes, how often do you visit your dentist? | | | |
| | 6 months | 47 | 20.43 |
| | Yearly | 55 | 23.91 |
| | More than that | 36 | 15.66 |
| | Never | 92 | 40 |
| | Total | 230 | 100 |
| Question 15: Do you know there are different devices to clean area beneath the prosthesis? | | | |
| | Yes | 53 | 23.04 |
| | No | 177 | 77 |
| | Total | 230 | 100 |

[Table/Fig-2]: Frequency distribution of various questions.

the study population were fully satisfied with the aesthetics of the prosthesis. A 66% of the people did not have any food lodgement under the prosthesis. In about 60% of the cases the treating dentists had advised the oral hygiene maintenance instructions to their patients. A 97% of the participants said they used tooth brush and paste to clean their teeth, 52% of participants brushed their teeth only once and only 1.30% cleaned their teeth after every meal. A 40% of the participants said they never visited their dentists after the treatment unless they had some problem and 77% of the participants had no idea about other cleaning devices.

DISCUSSION

Many treatment options are available for replacement of missing teeth such as removable partial dentures, fixed partial dentures or dental implant supported prostheses. Like any other treatment modality in Prosthodontics, FPD too has some advantages and disadvantages, however; fixed partial denture is the most preferred treatment option amongst all the available options [1,5,16,17]. The reasons being patients' demand for fixed treatment option, simple procedure with few appointments, less overall treatment duration, less treatment cost as compared to implant supported prosthesis and proven success rate over a long period of time [18,19]. Like any other treatment modality, it needs regular maintenance and checkups for longevity of the FPD [1]. However, either due to patients' negligence or lack of fulfilment of dentist's responsibilities in the patient about hygiene tips, there can be high chances of failure of prosthesis [1].

The focus of the present study was to assess the level of awareness about the maintenance of the FPD and patient satisfaction regarding the prosthesis. As stated by Anderson in 1998, "To check the efficacy of FPD treatment, it is crucial to consider the operator's as well as receiver's appraisal", so efficacy of fixed prosthesis is noted according to the masticatory function, aesthetics and shelf life [1]. A 67% of the present study participants accepted that the prosthesis was comfortable while speaking and around 62% were happy with the masticatory functioning of the prosthesis. Over 97% patients were satisfied with the esthetics of the prosthesis and only 2% were unsatisfied. Also, 80% patients confirmed that they had not noticed any colour change in the prosthesis. Thus, reviewing these findings it can be said that the patients were satisfied in terms of aesthetics, phonetics and mastication. According to a study done by Tan K et al., 100% participants were happy with this treatment modality in terms of phonetics and 96% were satisfied with mastication [14].

In the present study about 15% had discomfort, 13% had pain, and 2.6% of the participants complained about loosening of adjacent teeth and 19.57% of them had dislodgement of the prosthesis. Also, it was found that about 34% patients faced food lodgement

under their prosthesis, which might lead to secondary caries and periodontal breakdown [1]. Pawar S summarised the reasons for food impaction as poor pontic design, improper margins and improper tight contacts with adjacent tooth which are operator errors or negligent outcomes [16], therefore the responsibility rests on the shoulders of the treating dentists to perform the quality check of the prosthesis before cementation. Shillingburg HT et al., quoted that "the long term success of any prosthesis depends upon the quality of the patient's oral hygiene [19], home care instructions and use of appropriate cleaning aids (e.g., Dental floss, interproximal proxa brushes)." About 60% of the study participants reciprocated positively stating that their treating dentists had educated them about prosthesis maintenance. Though the study found almost 97% patients cleaned their teeth with toothbrush & tooth paste, more than 50% patients brushed their teeth only once a day in the morning. This indicates lack of awareness of the patients about brushing their teeth atleast twice a day as per the ADA recommendations. According to ADA brushing twice daily and flossing once a day is two critical behaviours to help prevent the risk of all oral infections and so for healthy mouth [20]. About 23% of the present study participants were aware of the adjunct cleaning aids in comparison to a study done by Tan K et al., where 56% of the participants were aware of the adjunct aids [14]. When asked whether they use dental floss for maintenance of their teeth or prosthesis; only 13% patients agreed to using dental floss regularly. Various interdental cleaning aids are recommended and used to aid toothbrushes in plaque control. These include dental floss, interdental brushes, wooden interdental aids, and oral irrigators [21,22]. Marchesan JT et al., in a recent study concluded that use of interdental cleaning devices help in promoting good oral health. Their study observed that interdental cleaning was associated with less periodontal disease and less coronal or interproximal caries [23]. These findings were in agreement with Crocombe LA et al., who found that regular interdental cleaning was associated with less plaque, calculus, and gingivitis [24].

Rosenstiel SF et al., emphasised the importance of regular follow-up visits after the FPD for long term success of the prosthesis [18]. He advised follow-up visit within 7 to 10 days after the cementation. In this appointment the dentist should look for any remaining excess cement if remained overlooked at the cementation visit and also check the occlusion. Thereafter, the patients with cast restorations should be recalled every 6 months to check for any recurrent caries or periodontal status [18]. But in contrast, in the present study more than 70% patients accepted that they had not visited their dentist to get the condition of FPD/crown checked and cleaned. While around 20% patients visited the dentist for regular dental check-up.

Schwartz NL et al., in their study found that the mean life span for FPD was 10.3 years, with secondary caries accounting for the largest number of failures [25]. Another similar study concluded that mean life span for FPD was 8.3 years and caries affected 24.3% of the units observed requiring replacement [26]. Goodacre CJ et al., in their review mentioned eight complications related to FPD and those were: caries, need for endodontic treatment, loss of retention, periodontal disease, aesthetics, tooth fracture, prosthesis fracture & aesthetic veneer fracture [27]. In the present study, 50% patients faced post-operative problems like pain, dislodgement similar to study conducted by Pawar S where 45% patients faced some post-operative problem [16]. Shwartz NL et al., and Randow K et al., reported caries as the leading culprit in failures of FPD (36% and 18.3%) [25,28]. Similarly, it was noted by Goodacre CJ et al., that for a single crown the frequent problems faced were requirement of endodontic treatment, porcelain veneer fracture and loss of retention [27]. In the present study, post-operative pain was reported by 13% of the participants. According to Pawar S et al., causes for post-operative pain can be due to pulp stimulation, excessive tooth reduction to the extent of light pulp exposure [16].

The survey is beneficial in terms of providing knowledge as to where the quality care is lacking for a long term success of the prosthesis. Such surveys are the need of the hour for the quality check of a dental prosthesis so that the time, energy and resources are utilised and delivered for ultimate success of the prosthesis.

Limitation(s)

Only the prostheses fabricated and cemented in the last 5 years were included in the study which is a relatively short period to measure the success of any fixed prosthesis.

CONCLUSION(S)

The present study concluded that dislodgement of the prosthesis was a major post-operative complication followed by food lodgement. Patients were unaware about the regular dental and prosthesis maintenance protocols except for tooth brushing. Hence, it is the utmost responsibility of the dental professionals to educate and motivate the patients about the home care protocol for the maintenance of the prosthesis for a long term success. The patients should also follow the instructions given by the dentists and visit their dentists for follow-ups.

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