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Oral Hygiene in Patients Using Removable Prosthesis

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ABSTRACT

A properly designed denture is conducive to proper rehabilitation of edentulism. Regular good denture hygiene by individuals with removable partial dentures (RPDs) is an important component of oral health and in the prevention of further dental problems. These individuals should be provided with advice on the importance of denture care and be aware of this information so as to avoid problems related to the oral cavity in the future. The aim of this study was to assess the knowledge and hygiene of patients using a removable prosthesis. The study consisted of patients who wear removable prosthesis between the age of 25-50 years. Data were obtained from the DIAS and each case sheet was reviewed carefully by visual means and OHIS score was given for each individual based on visual observation. Data were obtained and tabulated. Data was exported to SPSS and output was obtained. Based on the average of OHIS score, the oral hygiene of all the patients was fair. The study concludes that the oral hygiene of all the patients wearing removable prosthesis of the sample size provided was fair. Females in this study showed better hygiene compared to men.

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INTRODUCTION

The basic idea for a prosthetic rehabilitation is either fixed or removable partial dentures on the underlying tissues. It is required that the dentist also strictly instructs the patients on how to use the prosthesis properly and clean it on a regular basis especially if it is their first time using a removable prosthesis (Zissis *et al.*, 1997). Some of the important information concerning this is, removing the prosthesis for 5-8 hours a day and storing them in a dry environment. The insertion of the Removable Partial Denture (RPD) is just the initial stage of the treatment and the patient must keep visiting the dentist for regular check-ups in case of discomfort or breakage of the denture. The natural teeth, as well as the RPD teeth, need proper cleaning methods and special brushes to maintain good oral health and hygiene. It can be emphasized that even some of the best made partial dentures during improper use can cause discomfort, denture stomatitis and other complaints. The comfort, function, and esthetics must be restored altogether while treating a completely edentulous patient or partially edentulous patients.

One of the main objectives in selecting and arranging

artificial teeth is to produce a prosthesis that defies detection. The anterior teeth are the ones primarily selected to satisfy esthetics (Jain, 2018). RPDs still play a major role in prosthetic rehabilitation owing to financial issues, patient compliance and residual height of edentulous ridges (Jyothi, 2017). If dentures are not cleaned properly, it results in microbial resistance that increases to alarming levels, leading to the development of more potent antimicrobial agents which can cause spreading bacterial infections characterized by lesions, swellings and regional lymphadenopathy (Vijayalakshmi and Ganapathy, 2016; Selvan and Ganapathy, 2016).

In some patients who are partially edentulous and have a complete veneer crown treated teeth, the marginal discrepancy severely affects the long term success (Ranganathan *et al.*, 2017; Ganapathy, 2016). Normally dentists should advise patients to use special toothpaste and gels like aloe vera toothpaste, to clean the dentures to avoid any sort of irritation or discomfort of the denture to the oral cavity (Subasree *et al.*, 2016). Repeated insertion and removal of the dentures during fabrication can cause wearing of the prosthesis (Ganapathy *et al.*, 2017). Most of the patients prefer ceramic teeth over the dentures to get an aesthetic appearance (Ashok and Suvitha, 2016). The prosthesis can be constructed from the polymethyl methacrylate, latexes, vinyl polymers and copolymers, polyurethane elastomers and silicone elastomers (Venugopalan, 2014). Sometimes retraction cords are used in gingiva before placing the partial dentures (Kannan and Venugopalan, 2018). Dentists have to look into the dental care during pregnancy of women since pregnancy causes various hormonal changes in the body that can actually increase the risk of developing gum diseases (Basha *et al.*, 2018). Masticatory forces cause fatigue to the dental luting agents, adversely affecting the retention of these cement-retained crowns (Ajay, 2017). Hence, prosthetic rehabilitation is done to regain the function, speech and aesthetics (Ashok, 2014; Duraisamy, 2019). A major consideration in designing any prosthesis has been to produce surfaces that promote desirable responses in the cells and tissues (Gupta *et al.*, 2010). The aim of this study was to assess the oral hygiene in patients using a removable prosthesis.

MATERIALS AND METHODS

The study was done under a university setting. The study was also approved by the Institutional Ethics Board. Two reviewers were involved in this study, and samples were taken from patients who checked into the clinic from June 2019 to March 2020. The total sample size was 369 patients who were subjected to the use of removable partial dentures. The case sheets were verified with the help of photos and interim notes.

To minimise sampling bias, all the data available were included and no sorting was done. Internal validity included patients undergoing removable prosthesis insertion. External validity included demographics and patient details. Data were obtained from patient management software patented by Saveetha Dental College. The data was exported from excel to SPSS software and the chi-square test was done for association.

RESULTS AND DISCUSSION

The collected data were tabulated in SPSS and descriptive statistics were obtained. Out of a total of 369 patients, 48.2% were females and 51.5% were males. Chi-square test was done between gender and OHIS score, which is tabulated and p-value of 0.315 was obtained (Table 1) and the frequency distribution of OHIS score is seen in Table 2. Correlation between age and OHIS score is shown as a graph in Figure 1. It is depicted that women show a better prevalence of oral hygiene compared to men, and the average OHIS score was 1.

Figure 1 shows, Scores ranging from 0.2-2 were given for each patient based on visual assessment and the OHIS score of 1, depicting fair oral hygiene was the most common among the patients, and more in males. The X-axis denotes the gender and Y-axis denotes the count of patients. Chi-square test was done and p-value of 0.315 was obtained, which was statistically insignificant.

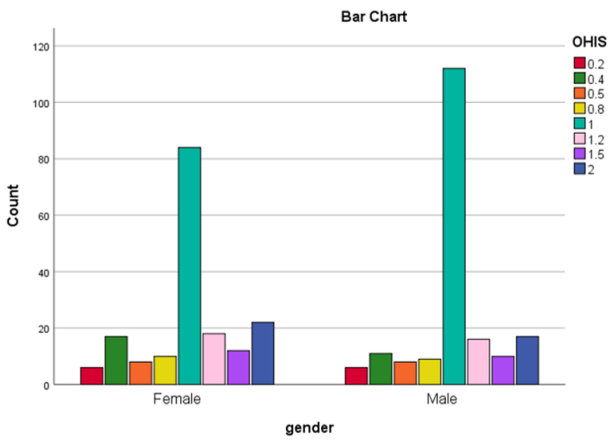

Figure 1: Graph showing the association between oral hygiene of RPD patients and OHIS scores

Table 1: The table depicts the chi-square test done to show the correlation between the age and OHIS score of the 369 patients wearing a removable prosthesis

	P Value	Significance
Age vs gender	0.315	p>0.05 (not significant)

p-value was not significant as 0.315 > 0. 05 (P >.05)

Table 2: The frequency distribution of OHIS score in patients wearing a removable prosthesis.

OHIS Score	Frequency	Percent
0.2	12	3.3
0.4	28	7.6
0.5	16	4.3
0.8	19	5.1
1	196	53.1
1.2	34	9.2
1.4	1	0.3
1.5	22	6.0
2	39	10.6
Total	369	100

Most of the patients had a score of 1, which is fair oral hygiene

One of the important aspects to ensure the right rehabilitation of edentualous patients with removable partial dentures is their proper use by patients, like cleaning and storing, proper dental check-ups and replacement of the prosthesis. Poor oral hygiene in regards to plaque contributes to inflammation, periodontitis, gingivitis and dental stomatitis. There is a correlation between function and unsatisfactory oral condition (Lee, 2009).

Microbiological studies show that patients with residual dentition using RPDs have more pathogenic microorganisms than those without the dentures (Hoad-Reddick *et al.*, 1990). The presence of opportunistic microorganisms on dentures adversely affect the overall health of the patients (Izumida, 2014). Prolonged use of the same RPD is not conducive to proper prosthetic rehabilitation.

According to the results of a review by Mac Entee, RPDs shouldn't be used for more than 5 years as they show harmful effects on tissues (MacEntee, 1985). A study showed more than 6 years use of RPD usage by 65% of patients (Çakan, 2015) and that 24% to more than 50% Brazilians used RPDs for more than 20 years (Coelho *et al.*, 2004; Çakan, 2015).

In another study, only 3.7% of patients using removable prosthesis came to the clinic for regular check-ups every 6 months. During the visit, the assessment of hygiene and surgical and corrective treatment of the RPD is done. Correction of occlusion disorders prevents fracture of RPD and further damage (McCord and Grant, 2000). Few patients after receiving RPD, only 23% visit the dentist again within 10 years of use (Lee, 2009; Izumida, 2014)

Many studies confirm that the dentists do not give proper instructions to patients about proper care of the dentures (Salerno *et al.*, 2011). The patients should clean their dentures every day with abrasive cleaning agents and once a year should get a professional cleaning done by the dentist (Salerno *et al.*, 2011). Additional use of cleaning effervescent tablets at home is conducive to better hygiene of the RPDs (Sadig, 2010).

In a study, 90% of the patients reported using special abrasives and toothpaste for cleaning the RPD (Camilleri, 2014). It is known that the use of toothpaste results in an increase in roughness of the surface of the acrylic base plate that promotes adhesion of bacterial plaque (19). Impaired flow of saliva is also an important factor and therefore difficult self-cleansing of the mouth. RPD disinfection is an important treatment (Cruz, 2011).

Not removing RPDs at night time causes inflammation of mucous membrane and storing it in wet containers promotes bacterial growth. Hence proper care must be taken (Oliveira, 2006). The use of special brushes and abrasives to clean dentures should be encouraged to ensure a better understanding of etiologic factors of oral hygiene in patients wearing a removable prosthesis.

CONCLUSION

This study concluded that oral hygiene was fair among the majority of the patients wearing a removable prosthesis. Assessment of etiologic factors should be done and special cleaning methods must be recommended to patients for optimal maintenance.

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Conflicts of Interest

The authors declare that they have no conflict of interest for this study.

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