Assessment Of Periodontal Health Among Prosthetic And Non Prosthetic Wearers

Research Article

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Abstract

Introduction: Plaque is the main aetiological agent in the initiation and progression of chronic inflammatory periodontal disease. Various studies have shown that dental prosthesis can cause more retention of plaque leading to periodontal destruction.
Aim: The aim of the study was to assess the periodontal health among prosthetic and non-prosthetic wearers.
Materials And Methods: The present cross-sectional study was carried out between December 2020 - February 2021 among the out patients who reported to the Department of Periodontics, Saveetha Dental College and Hospitals, Chennai. A total of 100 adults were enrolled and were categorised based on the prosthesis as follows: Non prosthetic wearers (Group A - 50), prosthetic wearers which includes FPD (Group B - 25) and RPD (Group C - 25). Plaque index and Russell's periodontal index were recorded for all the three groups and then compared. The data was analyzed using Statistical Package for Social Sciences (SPSS Software, Version 23.0). Descriptive and inferential statistics were done for data summarization and presentation.
Result: RPD wearers (12%) were found to have poor plaque index scores as compared to FPD wearers (4.50%). Terminal periodontal disease was more prevalent among RPD wearers (4%). The differences between the groups were found to be statistically significant with the p value of 0.00 (p<0.05).
Conclusion: The present study suggests a higher prevalence of periodontal disease among prosthetic wearers when compared with non-prosthetic wearers. Therefore, maintenance of oral hygiene is mandatory among prosthetic wearers to maintain periodontal health.

Keywords: Russell's Periodontal Index; Dental Prosthesis; Oral Health; Periodontal Disease; Innovative.

Introduction

Dental problems are a major public health concern in India and around the world [1]. Oral health is recognised by the World Health Organization (WHO) as an important component of overall health [2]. The repercussions of widespread poor oral health, such as caries and periodontal disease, have a negative impact on an individual's general health and well-being [3].

Gingivitis and periodontitis are the most frequent oral illnesses. Gingivitis is a gum disease characterised by inflammation of the gums, which appear red and swollen and bleed easily during teeth brushing or a dental check-up [4]. Gingivitis is a mild inflammatory illness that is frequently asymptomatic, therefore it goes unnoticed. Plaque is the primary cause of gingivitis, although there are other exacerbating variables such as smoking, stress, genetic factors, systemic disorders, and hormone imbalances [5-12]. Periodontitis develops if gingivitis is not treated, and symptoms include increased pocket depth, recession, furcation involvement, mobility, and bone loss [13-21].

The Periodontal Index application, which evaluates the condition of periodontal health in terms of gingival bleeding, periodontal calculus, and pocket, was suggested by the WHO to examine the periodontal status of populations [22]. The periodontal index is a commonly used tool for determining the prevalence of periodontal disease and treatment completion in communities, and it

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allows for international comparisons [23].

Millions of microorganisms live in the oral cavity [24]. If adequate dental hygiene is not maintained, the germs can cause a variety of oral and systemic disorders. Microorganisms thrive in removable and fixed partial dentures [25]. It is difficult for them to maintain adequate dental hygiene. It can cause gingivitis and periodontitis [26]. Bacterial overgrowth is a hallmark of periodontal disorders. Periodontal diseases, caries risk, and the amount of stress on natural teeth are all influenced by dental prosthesis. Numerous research have demonstrated that once dental prosthesis are placed, gingival and periodontal conditions deteriorate [27] and also it can cause more retention of plaque leading to periodontal destruction.

Our team has extensive knowledge and research experience that has translated into high quality publications [28-47]. The aim of the study was to assess the periodontal health among prosthetic and non-prosthetic wearers.

Materials and Methods

The present cross-sectional study was carried out among the out patients who reported to the Department of Periodontics, Saveetha Dental College and Hospitals, Chennai. This study was conducted between December 2020 - February 2021. The ethical approval of the current study was obtained from the Institutional ethical board and a written consent was obtained from all the study participants.

A total of 100 adults were included in this investigation. The study participants were categorised based on the prosthesis as follows : Non prosthetic wearers (Group A), prosthetic wearers which includes FPD(Group B) and RPD (Group C). Plaque index (Silness and Loe, 1964) and Russell's periodontal index (Russell AL, 1956) were recorded for all the three groups and then compared. Plaque index scoring: excellent - 0; good - 1; fair - 2; poor - 3. Russell's periodontal index scoring: simple gingivitis - 0; beginning of periodontal disease - 1; established periodontal disease - 2; Terminal periodontal disease - 3.

The data was analyzed using Statistical Package for Social Sciences (SPSS Software, Version 23.0). Descriptive and inferential statistics were done for data summarization and presentation.

Results

In the present study, a total of 100 patients were assessed. Of them 50 were non prosthetic wearers and 50 were prosthetic wearers which includes FPD and RPD (Figure 1).

Plaque index was recorded for prosthetic and non-prosthetic wearers. Among non-prosthetic wearers, only 9% of the patients had excellent plaque index and 15% had good plaque index and 21% had fair plaque index and the remaining 5% had poor plaque index. Among FPD wearers, none of them had an excellent and good plaque index. 20% of the patients who were wearing FPD had a fair plaque index and the rest 4% had a poor plaque index. Among RPD wearers, none of them had an excellent and good plaque index. Only 12% of the patients had a fair and poor plaque index. Majority of the RPD wearers were found to have poor plaque index followed by FPD wearers and non-prosthetic wearers. The differences between the groups were found to be statistically significant with the p value of 0.00 (p<0.05). (Figure 2).

Also, Russell's periodontal index was recorded for prosthetic and non-prosthetic wearers. Among non-prosthetic wearers, only 24 % of the patients had simple gingivitis and 12% had the beginning of periodontal disease and 10% had established periodontal disease and the remaining 3% had terminal periodontal disease. Among FPD wearers, only25% had simple gingivitis. Among RPD wearers, only 2% had simple gingivitis and 12% had the beginning of periodontal disease and 7% had established periodontal disease and the remaining 4 % had terminal periodontal index. Majority of the RPD wearers were found to have terminal periodontal disease. The differences between the groups were found to be statistically significant with the p value of 0.00 (p<0.05). (Figure 3).

Discussion

The present study was done to assess and compare the periodontal health between prosthetic and non-prosthetic wearers.

In the present study, the majority of the RPD wearers were found to have poor plaque index followed by FPD wearers and non-prosthetic wearers. A study conducted by Dolan *et al.,* compared patients with removable partial dentures, patients with no prosthesis, or patients with fixed partial dentures with their periodontal health [48]. It was observed that RPD wearers had a poorer

Figure 1. Bar graph depicts the distribution of prosthetic and non-prosthetic wearers. The X axis denotes the prosthetic and non-prosthetic wearers and the Y axis denotes the number of subjects. 100 were non - prosthetic wearers (violet) and the rest 100 were prosthetic wearers of which 50 participants were those wearing fixed partial dentures (brown) and the other 50 participants were those wearing removable partial dentures (red).
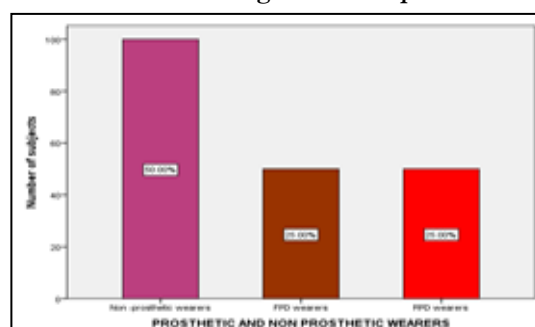
Figure 2. Bar graph explains the association between plaque index and type of prosthesis. The X axis denotes the prosthetic and non-prosthetic wearers and the Y axis represents the number of subjects with excellent (blue), good (green), fair (brown) and poor (violet) index scores. Excellent plaque index score was commonly found among non-prosthetic wearers (9%) and poor plaque index score was commonly found among RPD wearers (14%). The differences between the groups were found to be statistically significant with the p value of 0.00 (p<0.05).
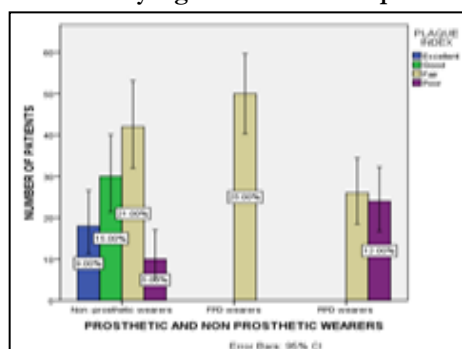

Figure 3. Bar graph explains the association between Rusells periodontal index and type of prosthesis. The X axis denotes the prosthetic and non-prosthetic wearers and the Y axis represents the number of subjects with simple gingivitis (blue), beginning of periodontal disease (green), established periodontal disease (brown), Terminal periodontal disease (violet). Simple gingivitis was commonly found among FPD wearers (25%). Terminal periodontal disease was commonly found among RPD wearers (4%). The differences between the groups were found to be statistically significant with the p value of 0.00 (p<0.05).
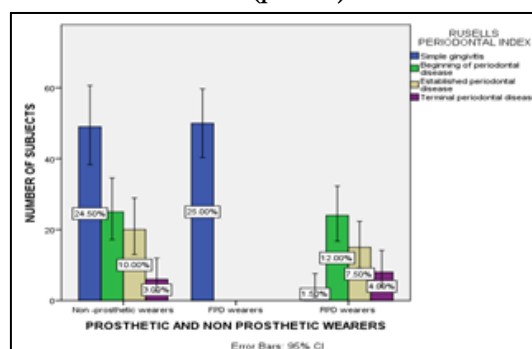
plaque index score than FPD wearers. This might be due to the clasps and gingival covering of the RPD which encourages deposits to stick to the teeth around the prosthesis, leading to a higher rate of plaque and calculus deposition in RPD wearers than in FPD wearers [49].

Similarly, another study by Krajicek *et al.,* compared the prosthetic and non-prosthetic wearers of rural and urban areas of a Brazilian city and compared the oral health condition of the patients present in these regions, including the main oral diseases such as dental decay and periodontal disease [50]. The authors observed that the patients who were wearing RPD in rural residents had a poorer plaque index score than urban residents. The results observed in the present study are in agreement with the previous studies.

Also in the present study, the majority of the RPD wearers were found to have terminal periodontal disease. Nevin *et al.,* assessed the periodontal condition among RPD wearers and FPD wearers and showed that periodontal disease was more commonly found among RPD wearers than FPD wearers [51]. In a study conducted by Yusof *et al.,* before the prosthetic treatment all patients were given oral hygiene motivation and instruction as well as periodontal therapy where indicated. Study participants were given carefully planned and designed RPD. Mild changes were found, but without periodontal damage [52]. The authors concluded that only minor changes in periodontal status were recorded in the

patients treated with FPD or RPDs, because the periodontal condition was checked before placing the dentures and oral hygiene instructions were also during recall visits.

Shetty *et al.,* compared the periodontal condition among the dental prosthetic and non-prosthetic wearers in an adult rural population and found that patients wearing removable partial dentures showed increased prevalence of periodontal pocket depth and attachment loss irrespective of the age group and gender [53]. The results obtained in the present study are in agreement with the previous studies.

Conclusion

The present study suggests a higher prevalence of periodontal disease among prosthetic wearers when compared with non-prosthetic wearers.

Acknowledgement

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