DECODEING THE PERIODONTAL STATUS IN FEMALES OF PREMENOPAUSAL AND POSTMENOPAUSAL AGE HAVING CHRONIC PERIODONTITIS

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ABSTRACT

Introduction: Inflammation of the supporting periodontal tissues is termed Periodontitis. Various risk factors are seen associated with periodontal diseases including changes in female hormones like menopause and osteoporosis leading to periodontal breakdown. Hence, the present study was conducted to assess periodontal status in females of premenopausal and postmenopausal age.

Materials and Methods: The present study included 40 females within the age range of 40 to 60 years that were divided into two groups of 20 subjects each where Group I subject has females of premenopausal age and Group II of postmenopausal age. Intraoral examination was done and clinical parameters were recorded along with radiologic examination. Statistical analysis was done and results were formed.

Results: The mean scores for gingival index, plaque index, clinical attachment loss, and probing depth were significantly higher in postmenopausal females compared to females of premenopausal age with p-0.01.

Conclusion: The present study concludes that more susceptibility to periodontitis was seen in postmenopausal females focusing on diagnosis and detection of periodontal disease in these females. Regular intraoral examination, hormone replacement therapies, and good oral hygiene can reduce the effect of hormone fluctuation in females.

Keywords: Chronic periodontitis, Estrogen, hormonal replacement therapy, postmenopausal, premenopausal females.

INTRODUCTION

Inflammation of the supporting periodontal tissues is termed Periodontitis. Various risk factors are seen associated with periodontal diseases including changes in female hormones like menopause and osteoporosis leading to periodontal breakdown. Periodontitis leads to gingival inflammation progressing to the periodontal ligament and to bone subsequently leading to bone loss.1
Periodontitis had multifactorial etiologic factors associated with it including pathogenic bacteria like AA (Aggregatibacter actinomycetemcomitans) and P. gingivalis being a primary gram-negative etiologic agent. Various risk factors are being associated with periodontal disease, of which, female hormone changes including menopause which leads to osteoporosis and periodontal breakdown in females. Concerning the alveolar bone structure stability, the effect of menopause on periodontal status has gained immense popularity among researchers. Therefore, the present study was conducted to assess periodontal status in females of premenopausal and postmenopausal age.

MATERIALS AND METHODS
The present study was conducted to assess periodontal status in females of premenopausal and postmenopausal age. The study was conducted the study population was comprised of the subjects visiting the Outpatient Department of the Institute. The study included a total of 40 subjects from both genders within the age range of 40-60 years. After explaining the detailed study design, informed consent was taken from all the study subjects. After the final inclusion of the study subjects, detailed demographics and history were recorded for all the subjects. The subjects were then divided into two groups of 20 subjects each based on their menstrual history.

The two study groups had 20 subjects each where Group I had females of premenopausal age with or without periodontitis and Group II had postmenopausal females with or without periodontitis. Concerning periodontitis, the criteria used in the present study were subjects having attachment loss of 3mm or more and pocket depth of 4 mm or more, and remaining 15 or more teeth. Also, subjects with no history of systemic disease were included. The exclusion criteria for the study were pregnant females or planning pregnancies, smokers, and subjects on steroid therapy were excluded from the study.

The clinical parameters assessed in the present study were Plaque Index by Silness and Loe(1964), the gingival bleeding index by Ainamo and Bay (1975), clinical attachment loss (CAL), and probing pocket depth. All measurements were done by a single expert in the field. The parameters were assessed at four sites at each tooth using a UNC 15 periodontal probe.

The collected data were subjected to the statistical evaluation using SPSS software version 21 (Chicago, IL, USA) and one-way ANOVA and t-test for results formulation. The data were expressed in percentage and number, and mean and standard deviation. The level of significance was kept at p<0.05.

RESULTS
The present study was conducted to assess periodontal status in females of premenopausal and postmenopausal age. The study included a total of 40 subjects from both genders within the age range of 40-60 years. The 40 study subjects were then divided into two groups of 20 subjects each based on their menstrual history. The mean age of the Group I study subjects was 42.43±2.02 years and for Group II females was 54.31±3.43 years. The difference in the mean age of the two groups of the study subjects was statistically significant between the two groups with p<0.0001 as shown in Table 1.
On assessing the clinical parameters, it was seen that clinical attachment loss in Group I and Group II study subjects was 1.55±0.47 and 1.55±0.47 respectively. This difference was statistically significant with p<0.0001. The gingival index was significantly higher in Group II females of postmenopausal age compared to Group I premenopausal females with respective values of 1.76±0.42 and 0.96±0.46 respectively with p<0.0001. Similar results were seen for the Plaque Index where the values were significantly higher in postmenopausal females with the value of 1.92±0.48 compared to premenopausal females having the value of 0.94±0.38 with the p-value of <0.0001. The probing depth in premenopausal females of Group I was 1.54±0.46 and in the postmenopausal females of Group II was 4.34±1.36. This difference was statistically significant with p<0.0001. Also, the values of the calculus index were higher in postmenopausal females (0.76±0.36) compared to premenopausal females (0.27±0.34). This difference was statistically significant with p<0.0001 as shown in Table 2.

DISCUSSION

The present study was conducted to assess periodontal status in females of premenopausal and postmenopausal age. The study included a total of 40 subjects from both genders within the age range of 40-60 years. The 40 study subjects were then divided into two groups of 20 subjects each based on their menstrual history. The mean age of the Group I study subjects was 42.43±2.02 years and for Group II females was 54.31±3.43 years. The difference in the mean age of the two groups of the study subjects was statistically significant between the two groups with p<0.0001. Menopausal age in females is usually between 44 to 89 years of age secondary to compromised function of ovarian follicles.

Menopause affects the whole body in females including the oral cavity. Menopause also causes osteoporosis secondary to estrogen deficiency owing to decreased bone mineral density leading to alveolar bone loss and periodontal disease progression. Menopause leads to decreased levels of estrogen in the periodontium reducing its inflammatory defects leading to periodontitis as suggested by Mascarenhas P et al in 2003 and Riggs in 2000.

The results of the present study have shown that clinical attachment loss in Group I and Group II study subjects was 1.55±0.47 and 1.55±0.47 respectively. This difference was statistically significant with p<0.0001. The gingival index was significantly higher in Group II females of postmenopausal age compared to Group I premenopausal females with respective values of 1.76±0.42 and 0.96±0.46 respectively with p<0.0001. Similar results were seen for the Plaque Index where the values were significantly higher in postmenopausal females with the value of 1.92±0.48 compared to premenopausal females having the value of 0.94±0.38 with the p-value of <0.0001. These results were in agreement with the studies of Yıldırım TT in 2011 and Singh M et al in 2018 where more values of Gingival Index, plaque index, and probing depth was seen in postmenopausal females in comparison to premenopausal females.

The probing depth in postmenopausal females of Group I was 1.54±0.46 and in the postmenopausal females of Group II was 4.34±1.36. This difference was statistically significant with p<0.0001. Also, the values of the calculus index were higher in postmenopausal females (0.76±0.36) compared to premenopausal females (0.27±0.34). This
difference was statistically significant with p<0.0001. These results were consistent with the studies of Dutt P et al\textsuperscript{7} in 2013 and Malvika S et al\textsuperscript{8} in 2018 where authors have suggested more probing depth and calculus index scores in postmenopausal females compared to premenopausal females. Similar results were found by Thakur RK et al\textsuperscript{9} and Singh A et al\textsuperscript{10} in their study on Indian female population.

**CONCLUSION**

Within its limitations, the present study concludes that sex hormones can change local etiologic factors for periodontal disease like plaque and calculus and manage periodontal disease response in females. Hence, the results of the present study focus on special attention that should be given to oral and periodontal disease in postmenopausal females. However, the present study had a few limitations including small sample size, cross-section nature, and geographical area biases. Hence, more longitudinal studies with larger sample size and longer monitoring period will help reach a definitive conclusion.

**REFERENCES**


**Tables**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number (n)</th>
<th>Mean±S.D</th>
<th>p-value</th>
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<tr>
<td>Group II</td>
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<td>54.31±3.43</td>
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Table 1: Comparison of the mean age in two groups of the study subjects

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<td></td>
<td>Group II</td>
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<tr>
<td></td>
<td>Group II</td>
<td>20</td>
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<td></td>
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<tr>
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<td>20</td>
<td>0.94±0.38</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Group II</td>
<td>20</td>
<td>1.92±0.48</td>
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<tr>
<td>Probing Depth</td>
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<td>1.54±0.46</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Group II</td>
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<td>4.34±1.36</td>
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</tr>
<tr>
<td>Calculus Index</td>
<td>Group I</td>
<td>20</td>
<td>0.27±0.34</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Group II</td>
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Table 2: Clinical parameters in two groups of the study subjects