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Assessment Of Relationship Between Periodontal Disease And Pregnancy- A Retrospective Study

Research Article

Ashfaq Ahmed M[1], Deepika Rajendran[2*], Saravana Dinesh.S.P[3]

[1] Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai – 600 077, TN, India.
[2] Senior Lecturer, Department of Oral Medicine and Radiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162, Poonamallee High Road, Chennai - 600077, Tamil Nadu, India.
[3] Professor and Head, Department of Orthodontics and Dentofacial Orthopedics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162, Poonamallee High Road, Chennai - 600077, Tamil Nadu, India.

Abstract

Periodontal disease is one of the most common chronic disorders of infectious origin known in humans. Adverse pregnancy outcomes that have been linked to periodontal disease include preterm birth, low birthweight, miscarriage or early pregnancy loss, and pre-eclampsia. Changes and increase in sexual hormones during pregnancy affect different organs and produce an alteration of the immune system Pregnancy hormones cause changes in gingival environment by increasing plaque retention leading to pregnancy related gingivitis/periodontitis. Thus the aim of the study was to assess the relationship between periodontal disease and pregnant women. The details of the patients were obtained from patients records that are formulated in an institutional setting. Data was downloaded and imported to excel sheet. The excel sheet was imported to spss software 23 and the results were obtained in the form of graphs and tables. From the results obtained we found that out of 55 subjects, patients of age group 26- 30 years(29.09%) were more commonly affected with periodontal disease and women of age group 31-40 years(10.91%) were the least affected and the results obtained were statistically significant ($p<0.05$). 22 patients who were in the 2nd trimester (40%) were prevalent to develop periodontal disease during their gestation period and women in the 1st trimester were the least affected (5.45%) and the results obtained were statistically significant. Thus it is important to make the pregnant patients understand about the ill effects of the periodontal disease on pregnancy with various complications associated during the gestational period and maintain a good oral hygiene to prevent destruction of the periodontium.

Keywords: Hormones; Gingivitis; Pregnancy; Periodontal disease; Trimester.

Introduction

Periodontal disease is one of the most common chronic disorders of infectious origin known in humans [1]. Periodontal disease refers to destruction of supporting structures of the tooth initially commencing with gingivitis gradually progressing to extensive destruction called periodontitis [2]. Periodontal disease is initiated by overgrowth of certain bacterial species, with a majority of Gram negative, anaerobic bacteria growing in subgingival sites [3]. The host response to periodontal pathogens causes persistent inflammation and the destruction of periodontal tissues that support teeth,[4] leading to clinical manifestations of disease. There are evidence suggesting associations between periodontal disease and increased risk of systemic diseases such as atherosclerosis, myocardial infarction, stroke, diabetes mellitus, and adverse pregnancy outcomes [5]. It is essential to practice good oral hygiene habits in order to maintain optimum oral health [6]. Adverse pregnancy outcomes that have been linked to periodontal disease include preterm birth, low birthweight, miscarriage or early pregnancy loss, and pre-eclampsia [7]. A confirmation of periodontal disease as an independent risk factor for adverse pregnancy outcomes would be of great public health importance because periodontal disease is both preventable and curable. Improving periodontal health before or during pregnancy may prevent or reduce the occurrences of these adverse pregnancy outcomes and therefore reduce the maternal and perinatal morbidity and mortality [8].

***Corresponding Author**:
Deepika Rajendran,
Senior Lecturer, Department of Oral Medicine and Radiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162, Poonamallee High Road, Chennai - 600077, Tamil Nadu, India.
Tel: +91 7397176665
E-mail: deepikar.sdc@saveetha.com

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Changes and increase in sexual hormones during pregnancy affect different organs and produce an alteration of the immune system. Gingival tissues are influenced by physiological changes in serum concentrations of female sex hormones during gestation, producing some degree of gingival oedema and gingivitis. The bacterial composition is itself modified by increased progesterone levels that favour the development of Prevotella intermedia. These factors may account for the increased gingivitis during pregnancy, with characteristic interdental tumefaction or even epulis [9]. Vitamin C has anti inflammatory properties that can reduce the effects of periodontal disease and it is highly recommended for pregnant and lactating women [10]. Previously our team has a rich experience in working on various research projects across multiple disciplines [11-25].

Thus the aim of the study was to assess the relationship between periodontal disease and pregnant women.

Materials And Methods

A single centre retrospective study was done in an institutional setting. The ethical approval was received from the institutional ethical committee. The study involved selected pregnant patients data who reported to the clinic for dental treatment. The necessary approvals in gaining the data were obtained from the institutional ethical committee (SDC/SIHEC/2020/DIASDATA/0619-0320).

Selection of Subjects

All patients who are pregnant and reported to the clinic from the time period of June 2019 to April 2020 were selected for the study (N=55). All available data were taken into consideration and there was no sorting process.

Data collection

The patients details were retrieved from the institution's patient record management software(Dental information archiving software) Data regarding patients age, gender, medical condition, Pregnancy trimester and periodontal condition were taken into consideration for this study. Cross verification was done with the help of photographs and radiographs. The data was manually verified, tabulated and sorted.

Inclusion criteria

All patients who were pregnant were taken into account.

Exclusion criteria

Patients' records that were incomplete were removed from the study and repetitive entries were also removed. Factors such as Patients with medical history, Patients on medications, Previous history of periodontal disease, Loss of tooth due to caries were also excluded from the study.

Statistical analysis

The tabulation of data was analysed using SPSS software (IBM SPSS Statistics version 23.0) The method of statistical analysis that was used in this study was Chi square test to compare two proportions. The analysis was done for age, Pregnancy trimester, Periodontal disease in this study.

Results And Discussion

It was observed from our study that among the 55 patients, 35 patients (63.64%) had periodontal disease and 20 patients(36.36%) had healthy gingiva (Figure 1). Among the 55 patients, there were 7 patients(12.73%) in the 1st trimester and 29 patients(52.73%) in the 2nd trimester and 19 patients(34.55%) in the 3rd trimester. Majority of the patients were in the 2nd trimester(figure 2).

Among 55 patients, 3 patients(5.45%) in 1st trimester had periodontal disease and 22 patients(40%) in the 2nd trimester had periodontal disease and 10 patients(18.18%) in the 3rd trimester had periodontal disease. Women in the 2nd trimester were more prevalent to have periodontal disease than other stages of pregnancy. P value: 0.024 ($p<0.05$) hence statistically significant proving the association between pregnancy trimester and periodontal disease (Figure 3).

Among the 55 pregnant women, 23 patients belong to age group of 18-25 years in which 13 patients(23.64%) had periodontal disease and out of 22 patients in age group of 26-30 years, 16 patients(29.09%) were affected with periodontal disease and out of 10 patients in age group of 31-40 years, 6 pregnant women had periodontal disease. Patients of age group 26-30 year were more

Figure 1. Bar graph represents total number of pregnant patients with presence/absence of periodontal disease. X axis represents presence/absence of periodontal disease and Y axis represents total number of pregnant patients. Among 55 patients, 35 patients(63.64%) had periodontal disease.

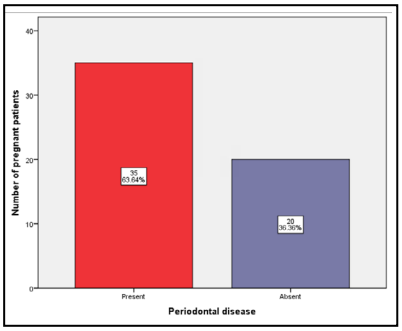


Figure 2. Bar Graph shows number of pregnant patients based on pregnancy trimester. X axis represents the pregnancy trimester and Y axis represents the total number of pregnant patients. Among 55 patients, Majority of the patients belong to the 2nd trimester stage(52.73%).

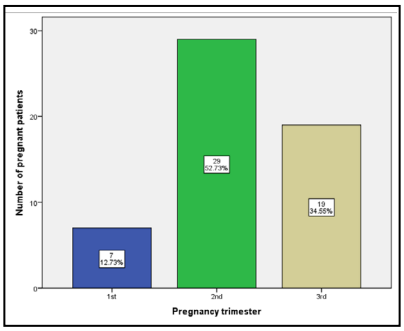


Figure 3. Bar Graph shows the association between the pregnancy trimester with presence/absence of periodontal disease. X axis represents the presence or absence of periodontal disease and Y axis represents the total number of pregnant patients. Among 55 patients, higher prevalence of periodontal disease was found among pregnant patients in the second trimester stage(40%) than other stages. P value=0.024 (p<0.05) hence statistically significant.

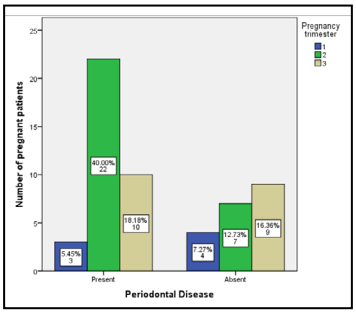
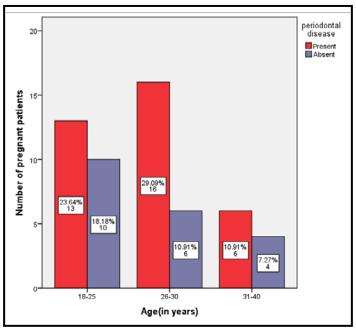


Figure 4. Bar Graph shows the association between age groups and presence/absence of periodontal disease. X axis represents the age and Y axis represents the total number of pregnant patients. Higher prevalence of periodontal disease was seen in pregnant patients of age group 26-30 years(29.09%) than other age groups. p value = 0.041 (p<0.05), hence statistically significant.



affected with periodontal disease than other age groups and the results obtained are statistically significant p value:0.041 (p<0.05) proving the association between age group and periodontal disease (Figure 4).

A clinical study conducted by neil et al proves the presence of chronic gingivitis during pregnancy confirmed in a group of 24 pregnant patients when observed at the 14th and 30th weeks of pregnancy. On in vitro examination, a depression in the maternal t cell response was observed and indicates the important factor responsible for the altered responsiveness of gingival tissues [9].

A Study conducted by figuero et al produced experimental gingivitis in a group of pregnant women, allowing the accumulation of plaque and observing that the plaque index was highly similar among the different phases. The author concluded that the gingivitis in the pregnant woman was due in part to physiological vascular phenomena induced by increased estrogen and progesterone levels and in part to bacterial plaque [26].

Another study conducted by Gonzalez et al says that the periodontal status of pregnant women who already have some periodontal symptoms worsens with the progression of their pregnancy, reflected in the gingival bleeding and periodontal depth findings [27]. Our institution is passionate about high quality evidence based research and has excelled in various fields [28-38].

The limitations of the study were that inadequate sample size and the study was unicentered and predominantly included the south indian population.

Further studies about pregnancy and periodontal outcomes will help to prevent the difficulties faced by women during pregnancy, it is significant to understand the importance of pregnancy related oral issues and proper training should be given and health programmes should be conducted to educate the women to maintain their oral hygiene in order to avoid pregnancy complications.

Conclusion

Within the limits of this study of association of periodontal disease and pregnant women, women who were in the 2nd trimester were more prevalent to have association with periodontal disease than other stages of pregnancy and pregnant women of age group 26-30 years had more association with periodontal disease than other age groups. There is a significant relationship between periodontal disease and pregnant women. Thus it is important for the dentists to advise the pregnant patients to maintain their oral hygiene to avoid unnecessary complications and also provide proper oral hygiene instructions during the course of their pregnancy period.

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