

# Prevalence of Periodontal Diseases in Different Trimesters of Pregnancy Attending Ante-Natal Clinic

Periodontal  
Diseases in  
Different  
Trimesters of  
Pregnancy

Sobia Siddique<sup>1</sup>, Muhammad Muddassar<sup>2</sup>, Azka Haroon<sup>1</sup>, Amir Rafiq<sup>3</sup>, Maria Rabbani<sup>4</sup>  
and Tahira Jabeen<sup>5</sup>

## ABSTRACT

**Objective:** To assess the prevalence of periodontal diseases during the different trimesters of pregnancy.

**Study Design:** A cross-sectional study

**Place and Duration of Study:** This study was conducted at the Gynae / Obs OPD at HITEC-IMS Hospital, Taxila from 1<sup>st</sup> December 2022 to 31<sup>st</sup> May 2023.

**Materials and Methods:** A total of ninety pregnant females (30 = first trimester, 30= second trimester, 30= third trimester) were examined after taking informed written consent. Intra oral examination was performed to check the status of periodontium using gingival index (GI), simplified oral hygiene index (OHI-S), and community periodontal index (CPI) by dentists. Data was collected and recorded in a pre-determined proforma.

**Results:** Prevalence of 4-5 mm probing pocket depth increased between 2<sup>nd</sup> and 3<sup>rd</sup> trimesters. Gingival bleeding was found to be most prevalent in 3<sup>rd</sup> trimester. Oral hygiene score increased with gestational age. Chi square test was used to find out correlation between different trimesters with periodontal disease status. P value was found to be statistically significant.

**Conclusion:** Majority of the patients in 2<sup>nd</sup> and 3<sup>rd</sup> trimester had periodontal disease which strongly suggest that the awareness of pregnant women regarding their oral hygiene remains limited.

**Key Words:**

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## INTRODUCTION

It is well known that hormonal changes during pregnancy are associated with oral mucosal changes most of which are reversible clinically.<sup>1</sup> The explanations behind these progressions are not deep rooted. Anyway they can confound pregnancy. An expansion in progesterone levels can likewise cause a lessening in the salivary stream rate which, along with changes in the salivary components, can debilitate the resistant framework contained in saliva which, thusly, will prompt tooth rot and mucosal irritation. The expansion in progesterone may likewise deliver a reduction in the degree of plasma bicarbonate, which decreases salivary pH.

<sup>1</sup>. Department of Oral Pathology / Oral Medicine<sup>2</sup> / Prosthodontics<sup>3</sup> / Community & Preventive Dentistry<sup>4</sup> / Gynecology & Obstetrics<sup>5</sup>, Dental College HITEC-IMS, Taxila.

Correspondence: Dr. Muhammad Muddassar, Associate Professor Oral Medicine, Dental College,HITEC-IMS, Taxila, Contact No: 0321-6154903  
Email: mmuddassar.om@gmail.com

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Expanded corrosive creation in the oral cavity joined by an absence of consideration paid by pregnant ladies to oral depression cleanliness will speed up the beginning of periodontal diseases.<sup>2</sup> Of the relative multitude of changes the ones most elegantly composed about is pregnancy gingivitis and pregnancy epulis (substitute names-pregnancy tumor, epulis gravidarum, pregnancy granuloma). Different changes related with pregnancy incorporate chloasma, facial telangiectasia, sialorrhoea, tooth surface misfortune generally connected with spewing when severe (hyperemesis gravidarum) expanded portability of teeth, changes in the seriousness of oral apthae. Different perceptions are less unambiguous and might be important for the general condition of health. These incorporate mucosal changes seen with iron deficiency for example paleness. Severe mucosal/gingival dying, which could conceivably be related with Scattered Intravascular Coagulation (DIC) may happen. Information on these circumstances is significant and most times the impacts or the complexities emerging from them can be limited and overseen agreeably until labor when these circumstances might relapse. It is likewise valuable that the patient is made mindful of the transient idea of a few these circumstances and consoled accordingly.<sup>3</sup> Numerous epidemiological examinations on the prevalence of oral sores and dental health status of pregnant ladies have been directed around the world.

Be that as it may, information on the prevalence of periodontal sicknesses in the various trimesters of pregnancy is scant. Examinations that have been finished in the various trimesters are fundamentally limited to dental health status and very few factors have been considered.<sup>4</sup>Therefore, this study was undertaken to assess the prevalence of periodontal diseases during the different trimesters of pregnancy.

**MATERIALS AND METHODS**

This cross-sectional study was conducted at Gynae/Obs OPD at HITEC-IMS Hospital, Taxila from 1<sup>st</sup> December 2022 to 31<sup>st</sup> May 2023. All the pregnant women reporting to gynae OPD of HITEC-IMS Hospital, Taxila. Data was collected through Convenient sampling technique

**Inclusion Criterion:**

- The selection criteria were comprised female of 20-40 years old, non-smokers in any trimester of their pregnancy who was free from systemic disease in all ages, has not taken drugs which could potentially affect the condition of the oral cavity and was willing to be research subjects.

**Exclusion Criteria:**

- Those not willing to participate in the study
- Contributory medical history of pathological conditions
- History of drug therapy
- Smoking and tobacco chewing habits

**Sample Size:** N=90 pregnant women (30 = first trimester, 30= second trimester, 30= third trimester)

**Procedure for Data Collection:** Written consent was taken from the subjects after that thorough examination of oral cavity was done by the dental surgeon.

**Data Collection Tool:**

- Consent form
- Thorough oral examination done by the dentist
- For gingival and periodontal health following indices were used:
  1. Gingival index (GI)
  2. Simplified oral hygiene index (OHI-S)
  3. Community periodontal index (CPI)

**Statistical Analysis:** The data obtained were systematically tabulated and subjected to statistical analysis. Statistical correlation among all the parameters within the first, second and third trimester groups was determined by using Pearson’s coefficient

correlation. Chi-square test was used to determine differences in the prevalence of periodontal diseases between the first, second and third trimester groups. Data was entered and assessed using SPSS version 26.

**Ethical Consideration:** No potential risk and benefit were given to the participants. Written consent form was taken from each participant. Confidentiality of the participants was maintained. Results were not conveyed to the participant.

**RESULTS**

Data was collected from 90 pregnant women, which divided into (30 = first trimester, 30= second trimester, 30= third trimester). The results of the CPITN (Community Periodontal Index of Treatment Needs) cross-tabulation with trimesters of pregnancy show that during the 1st trimester, 30 out of 30 patients had no periodontal pocket depth (PPD), indicating good periodontal health. In the 2nd trimester, 17 patients had no PPD, while 13 patients had a PPD of 4-5mm, suggesting some mild periodontal issues. However, during the 3rd trimester, the number of patients with no PPD reduced to 7, and 23 patients had a PPD of 4-5mm, indicating a higher prevalence of periodontal problems in the later stages of pregnancy. These findings suggest a potential association between pregnancy trimesters and periodontal health, warranting further investigation and appropriate dental care during pregnancy (Table 1).

**Table No. 1: Correlation between all three trimesters of pregnancy and pocket depth**

Trimesters of pregnancy * CPITN Cross tabulation				
Count		CPITN		Total
		No PPD	PPD 4-5mm	
Trimesters of pregnancy	1st trimester	30	0	30
	2nd trimester	17	13	30
	3rd trimester	7	23	30
Total		54	36	90

CHI SQUARE TEST SIGNIFICANCE VALUE: <0.001

Prevalence of 4-5 mm probing pocket depth increased between 2<sup>nd</sup> and 3<sup>rd</sup> trimesters.

**Table No. 2: Correlation between all three trimesters of pregnancy and bleeding on probing**

Trimesters of pregnancy * CPITN BOP Cross tabulation				
Count		CPITN BOP		Total
		No bleeding on probing	Bleeding on probing	
Trimesters of pregnancy	1st trimester	18	12	30
	2nd trimester	12	18	30
	3rd trimester	2	28	30
Total		32	58	90

CHI SQUARE TEST SIGNIFICANCE VALUE: <0.001

Gingival bleeding was found to be most prevalent in 3<sup>rd</sup> trimester. However, in the 2<sup>nd</sup> and 3<sup>rd</sup> trimesters, the number of patients with no bleeding on probing decreased to 12 and 2, respectively, indicating a higher prevalence of bleeding gums in later stages of

pregnancy. This suggests that pregnancy may be associated with an increased risk of gum bleeding, necessitating regular dental monitoring and appropriate oral care during pregnancy to maintain periodontal health.

**Table No. 3: Correlation between all three trimesters of pregnancy and gingival index**

Trimesters of pregnancy* Gingival index Cross tabulation					
Count		Gingival index			Total
		Mild gingivitis (0.1-1)	Moderate gingivitis (1.1-2)	Severe (2.1-3)	
Trimesters of pregnancy	1st trimester	30	0	0	30
	2nd trimester	12	18	0	30
	3rd trimester	0	23	7	30
Total		42	41	7	90

CHI SQUARE TEST SIGNIFICANCE VALUE: <0.001

Oral hygiene score increased with gestational age. Chi square test was used to find out correlation between

different trimesters with periodontal disease status. P value was found to be statistically significant.

**Table No. 4: Correlation between all three trimesters of pregnancy and oral hygiene index**

Trimesters of pregnancy * OHI-S Cross tabulation					
Count		OHI-S			Total
		Good (0-1.2)	Fair (1.3-3)	Poor (3.1-6)	
Trimesters of pregnancy	1st trimester	25	4	1	30
	2nd trimester	12	15	3	30
	3rd trimester	0	16	14	30
Total		37	35	18	90

CHI SQUARE TEST SIGNIFICANCE VALUE: <0.001.

## DISCUSSION

The results of the study on the relationship between trimesters of pregnancy and periodontal health, as surveyed by CPITN and BOP, offer important bits of knowledge into the likely effect of pregnancy on oral health. Periodontal health is critical during pregnancy, as changes in hormonal levels can impact the oral microbiome and safe reaction, possibly prompting periodontal issues. Periodontal illnesses is one of the most well-known persistent problems of irresistible beginning known in people.<sup>5</sup> It might present as gingivitis or periodontitis. Gingivitis is the fiery state of the delicate tissues encompassing the teeth and periodontitis, the annihilation of the supporting designs of the teeth, including the periodontal tendon, bone, cementum and delicate tissues. Periodontal disease is profoundly prevalent during pregnancy.<sup>6</sup> Studies have shown that there is a connection among pregnancy and periodontal status with a changeability in the recurrence of periodontitis among pregnant ladies, going from 35% to 100 percent. The findings uncovered that during the first trimester, a significant extent of patients had good periodontal health, as demonstrated by no periodontal pocket profundity (PPD) and no draining on examining (BOP).<sup>7</sup> In any case, as pregnancy advanced into the second and third trimesters, the prevalence of periodontal issues, for example, expanded PPD and draining on testing, seemed to rise. This example proposes a potential relationship between pregnancy trimesters and periodontal health, in accordance with

previous research demonstrating hormonal impacts on oral tissues during pregnancy. A typical oral disease involves gingivitis and periodontitis. Gingivitis (gum irritation) is a gentle, early type of periodontitis (gum sickness) that happens when microscopic organisms and plaque develop in the mouth and lead to disease.<sup>8</sup> It is additionally portrayed by dying, enlarged gums, and agony, while assuming these circumstances are left untreated and progress to loss of periodontal connection and supporting bone, being periodontitis is said. The noticed expansion in BOP during the second and third trimesters could be ascribed to the elevated awareness of gingival tissues, making them more inclined to draining after testing. This is predictable with previous investigations revealing a relationship between pregnancy-related hormonal changes and gingival aggravation. Nonetheless, it is vital to take note of that this study has a few limits. The sample size is moderately little, and other bewildering factors, for example, oral cleanliness rehearses and financial status, were not considered, which might have influenced the outcomes. Moreover, this study just examined the relationship between trimesters of pregnancy and periodontal health, and further research is expected to investigate likely causal connections and the drawn-out influence on maternal and fetal health.<sup>9</sup>

## CONCLUSION

It is concluded that majority of the patients in 2<sup>nd</sup> and 3<sup>rd</sup> trimester had periodontal disease which strongly

suggest that the awareness of pregnant women regarding their oral hygiene remains limited. The findings highlight the need for comprehensive dental care during pregnancy to address potential periodontal issues and ensure the overall well-being of both mother and child. Future research should explore the underlying mechanisms behind these associations and the effectiveness of preventive measures to improve oral health outcomes during pregnancy.

#### Author's Contribution:

Concept & Design of Study: Sobia Siddique  
 Drafting: Muhammad Muddassar, Azka Haroon  
 Data Analysis: Aamir Rafiq, Maria Rabbani, Tahira Jabeen  
 Revisiting Critically: Sobia Siddique, Muhammad Muddassar  
 Final Approval of version: Sobia Siddique

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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