

ASSOCIATION OF ORAL HYGIENE PRACTICES AND PERIODONTAL HEALTH IN FEMALES WITH RESPECT TO THE TRIMESTER OF PREGNANCY

Original Research

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ABSTRACT

Background: Periodontal health is significantly associated and impacted by pregnancy. It has been reported previously that periodontal health of women is influenced differently as the pregnancy progresses. Oral hygiene maintenance can have an influence on the extent and nature of influence of pregnancy on the periodontal health. The deterioration of oral health as a result of hormonal shifts that ensues during pregnancy can be slowed, reversed and even avoided by maintaining meticulous oral hygiene.

Objective: To find the association between oral hygiene practices and periodontal health in females with respect to the trimester of pregnancy.

Methods: A cross-sectional comparative study was conducted on 44 pregnant females in Sharif Medical and Dental College, Lahore. Ethical approval was obtained, and data was collected using a specialized proforma for recording demographic information and oral hygiene practices. CPTIN was used for assessing the periodontal health.

Results: A non-significant association between frequency of brushing and periodontal health of women was seen in their first trimester ($p=0.455$) and third trimester ($p=0.447$) while the association between frequency of brushing and periodontal health of women in their second trimester was significant ($p=0.029$).

Conclusion: Oral hygiene maintenance had a significant impact on the periodontal health of pregnant women. Those who maintained good oral hygiene practices and brushed their teeth twice daily had a healthier periodontium and lower calculus deposition. Women in their second trimester who brushed twice daily had more periodontal pockets as compared to those who brushed once. In the first and third trimester no periodontal pockets were seen in females who maintained good oral hygiene practices and brushed twice daily.

Keywords: Gingivitis, Oral hygiene, Periodontal health, Pregnancy, Trimester, Women's health

INTRODUCTION

Hormonal shifts and imbalances have varying oral implications through all three trimesters(1). These hormonal issues determine the extent and severity of periodontal problems(2). Elevated levels of Estrogen and Progesterone in the blood during the first trimester lead to sensitivity and bleeding gums which is a result of enhanced blood flow to the gums(3). Gums usually appear swollen and there is occasional bleeding during the first trimester(4). Nausea and vomiting in the first trimester create an acidic environment in the mouth(4). Although the hormones stabilize in the second trimester but tend to experience cravings for unhealthy food that have a sugar content and are generally acidic in nature which tends to worsen the general oral and periodontal health(5). Owing to the continuing hormonal fluctuations, the gum health of the women tends to worsen if appropriate oral care is not taken(6). An occasional intra-oral finding in the third trimester is the Pyogenic granuloma(7). This is a benign enlargement of the gingival tissue that is prone to bleeding(7). Oral hygiene practices tend to play a major role in the development of periodontal problems in pregnancy(8). Maintenance of good oral hygiene during ensures halting the process of periodontal health deterioration(9). It has been reported that during the first trimester tend to ignore their oral hygiene due to exhaustion(10). This coupled with the acidic environment created in the mouth due to vomiting leads to development of dental caries coupled with worsening of the periodontal health(11). Oral hygiene practices tend to improve in the second trimester and women are better able to keep up with a good oral hygiene maintenance routine(12). During the third trimester owing to the immense physical discomfort and inability to move about uninhibited, oral hygiene maintenance becomes a challenge for women(13).

It is of utmost importance for pregnant females to address issues of gingivitis or periodontitis immediately(14). Regular visits to the dentist become extremely essential for women during pregnancy(15). Regular tooth brushing using a soft brush is very important as using a hard bristled brush will enhance already present injuries to the gum(16). Inter-dental cleaning using a dental floss becomes even more important(17). Use of fluoridated tooth paste is highly recommended by dentists throughout the term to keep the risk of dental caries at its lowest(18). Maintenance of a good periodontal health is essential specially during pregnancy as literature reports adverse systematic complication like pre-mature birth, gestational diabetes and low birth weight to be linked with periodontitis(19). This study will shed light upon the various pathological oral changes that ensue in pregnant females. The aim of this study was to find the association between oral hygiene practices and periodontal health in females with respect to the trimester of pregnancy.

METHODS

A cross sectional comparative study was conducted in the Gynecology department of Sharif Medical and Dental College and Raiwind Polyclinic, Lahore on 44 pregnant women from March 2019 to August 2019. Informed consent was taken from patients prior to data collection. Ethical approval was obtained from the ethical committee of Sharif Medical Research Centre (SMRC) (NO. No. SMDC/SMRC/85-2019). Keeping the precision level of significance 5% (20), study power 90 and the prevalence of periodontitis among pregnant women 5%, the sample size was calculated to be 44. Data was collected through intra-oral examination using Community periodontal index for treatment needs (CPITN). Information on oral hygiene practices and demographic data was collected using a specialized proforma. Pregnant women who gave consent were included in the study. Women who had any systemic illness or those who were on any medication that exacerbates periodontal diseases were excluded from the study. SPSS 23 was used for statistical analyses. Fisher exact test was used for finding the association between periodontal health of females with their oral hygiene practices across the trimesters of pregnancy. $p \leq 0.05$ was considered significant.

RESULTS

A cross sectional comparative study was conducted in a total of 44 pregnant females with a mean age of 26.86 ± 4.51 years. It was seen that 27.3% females were in their first trimester, 15.9% in their second and 56.8% in their third trimester of pregnancy.

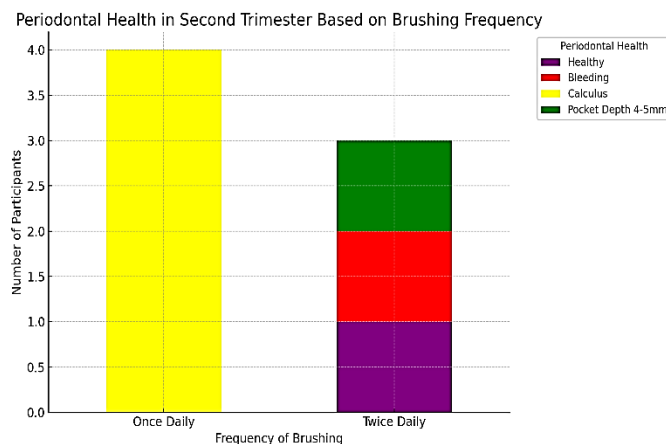
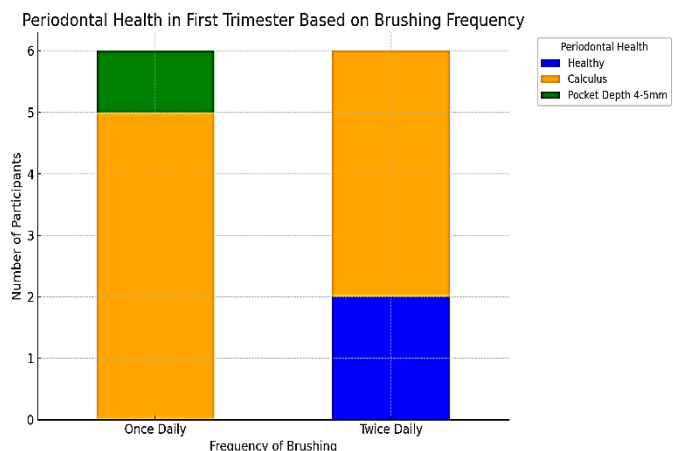


Table 1: Association between oral hygiene practices and periodontal health of women in their first trimester.

ORAL HYGIENE PRACTICE		PERIODONTAL HEALTH OF WOMEN IN THE FIRST TRIMESTER OF PREGNANCY			Total	P Value
		HEALTHY	CALCULUS	POCKET DEPTH 4-5MM		
FREQUENCY OF BRUSHING	ONCE DAILY	0 (0%)	5 (83.3%)	1 (16.7%)	6 (100%)	0.455
	TWICE DAILY	2 (33.3%)	4 (66.7%)	0 (0%)	6 (100%)	

Table 1 shows a statistically non-significant association between frequency of brushing and periodontal health of women in their first trimester ($p=0.455$). It was seen that women who brushed twice daily had a higher percentage of healthy periodontium, lower percentage of calculus and no periodontal pockets as shown in table 1.

Table 2: Association between oral hygiene practices and periodontal health of women in their second trimester.

ORAL HYGIENE PRACTICE		PERIODONTAL HEALTH OF WOMEN IN THE SECOND TRIMESTER OF PREGNANCY				Total	P value
		HEALTHY	BLEEDING	CALCULUS	POCKET DEPTH 4-5MM		
FREQUENCY OF BRUSHING	ONCE DAILY	0(0%)	0(0%)	4(100%)	0(0%)	4(100%)	0.029
	TWICE DAILY	1 (33.3%)	1 (33.3%)	0 (0%)	1 (33.3%)	3 (100%)	

Table 2 show a statistically significant association between periodontal health of females and oral hygiene practices in the second trimester of pregnancy ($p=0.029$). it was seen that women who brushed twice daily had healthier periodontium and no calculus deposition as shown in table 2.

Table 3: Association between oral hygiene practices and periodontal health of women in their third trimester.

ORAL HYGIENE PRACTICE		PERIODONTAL HEALTH OF WOMEN IN THE THIRD TRIMESTER OF PREGNANCY				Total	P value
		HEALTHY	BLEEDING	CALCULUS	POCKET DEPTH 4-5MM		
FREQUENCY OF BRUSHING	NEVER	1 (25%)	0 (0%)	2 (50%)	1 (25%)	4 (100%)	0.447
	ONCE DAILY	3 (20%)	1 (6.7%)	11 (73.3%)	0 (0%)	15(100%)	
	TWICE DAILY	2 (33.3%)	1 (16.7%)	3 (50%)	0 (0%)	6 (100%)	

Table 3 shows a statistically non-significant association between oral hygiene practices and periodontal health of women in their third trimester (p=0.447). It was seen that women who brushed twice daily and those who brushed once daily had healthier periodontium as compared to those never brushed. Periodontal pockets were only seen in women who never brushed their teeth as shown in table 3.

DISCUSSION

Literature reports that 70-100% women experience pregnancy gingivitis in which their gingiva is more prone to swell and bleed(21). If gingivitis is not treated it may progress periodontitis(14). If periodontitis is not addressed timely then it can lead to tooth mobility and ultimate tooth loss(22). Apart from general lifestyle modification for oral health oral hygiene practices play a vital role in deciding the ultimate status of oral and periodontal health(22). Approximately 60-80% women brush twice daily during pregnancy(23). Dental flossing has been reported by 30-40% of women(24). Pregnant women who have good oral hygiene practices and brush two times a day tend to have better overall periodontal health as compared to those who brush once or simply do not(25). It is highly recommended for pregnant women to visit every six months(26). During visits if plaque and calculus are detected then undergoing scaling and root planning is a safe treatment to undergo(27). It has been reported that the least percentage women in their first trimester usually brush twice daily followed by women in their second and then third trimester(12). Studies have revealed that periodontal health of women during pregnancy is associated with the number of times they brush their teeth(28). Women who brushed twice daily had a better periodontal health and lower CPITN scores(17). According to our study a statistically non-significant association between frequency of brushing and periodontal health of women in their first trimester (p=0.455). It was seen that women who brushed twice daily had a higher percentage of healthy periodontium (33.3%), lower percentage of calculus (66.7%) and no periodontal pockets. Owing to feelings of exhaustion and negligence in maintain oral hygiene along with hormonal fluctuations during the first trimester, the CPITN scores of women are high and their periodontal health worsens over time(4).

Due to the hormonal stability in the second trimester not only does an existing periodontal issue not flare but women feel less fatigued and are likely to maintain a regular brushing routine(29, 30). This leads to an overall lower CPITN score(30). According to our study a statistically significant association between periodontal health of females and oral hygiene practices in the second trimester of pregnancy (p=0.029). it was seen that women who brushed twice daily had healthier periodontium (33.3%) and no calculus deposition One study reported that approximately 55% women brushed their teeth thrice daily while 35% brushed twice daily(31). Another study revealed that most women brushed their teeth thrice daily but only a few (30%) flossed their teeth(32).

According to our study a statistically non-significant association between oral hygiene practices and periodontal health of women in their third trimester (p=0.447). It was seen that women who brushed twice daily and those who brushed once daily had healthier periodontium (33.3% and 20% respectively) as compared to those never brushed (25%). Periodontal pockets were only seen in women who never brushed their teeth. One study reported that majority of the women in their third trimester reported brushing their teeth three times daily(8). These women had high percentage of gingivitis but nor case of periodontitis was revealed(8). Maintenance of good oral hygiene through pregnancy is extremely essential for the health of the expectant other and the child(33). Periodontitis has been linked previously with pre-term labor and low birth weight(33). Awareness programs to educate and guide females to develop and maintain a routine of oral hygiene to prevent development of new and aggravation of old gingival and periodontal issues(13).

CONCLUSION

Oral hygiene maintenance had a significant impact on the periodontal health of pregnant women. Those who maintained good oral hygiene practices and brushed their teeth twice daily had a healthier periodontium and lower calculus deposition. Women in their second trimester who brushed twice daily had more periodontal pockets as compared to those who brushed once. In the first and third trimester no periodontal pockets were seen in females who maintained good oral hygiene practices and brushed twice daily.

Author	Contribution
Hina Rafiq Sheikh	Literature review, Manuscript write-up, and data collection
Farwa Shabir Bhatti	Manuscript write-up
Yahya Zia Ahmed Toor	Literature review, Manuscript write-up, and data collection
Asma Shakoor	Literature review, Manuscript write-up, and critical revision
Ayesha Anwar	Literature review and data collection
Zainab Sajwar	Data collection and Literature review
Hira Butt	Data collection, concept and design, Manuscript write-up, statistical analysis, critical revision, supervision, and final approval

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