

## ORIGINAL ARTICLE

**Periodontal Treatment Needs of Women Across Different Trimesters of Pregnancy**MAHNOOR TARIQ<sup>1</sup>, AFEEDA SHAHBAZ<sup>2</sup>, MINAHIL ABBAS<sup>3</sup>, ASMA SHAKOOR<sup>4</sup>, HIRA BUTT<sup>5</sup>, FATIMA IRFAN<sup>6</sup><sup>1,2,3</sup>House officer, College of Dentistry, Sharif Medical and Dental College, Lahore<sup>4</sup>Associate professor, Community and Preventive Dentistry, CMH-Lahore Medical College and Institute of Dentistry, National University of Medical Sciences, Pakistan, (NUMS)<sup>5</sup>Demonstrator, Oral Pathology department, College of Dentistry, Sharif Medical and Dental College, Lahore<sup>6</sup>Demonstrator, Community and Preventive dentistry, College of Dentistry, Sharif Medical and Dental College, LahoreCorresponding author: Hira Butt, Email: [hira.ah.butt@gmail.com](mailto:hira.ah.butt@gmail.com), Cell: 0336-7160357**ABSTRACT****Objective:** To find the difference in the periodontal treatment needs of females across different trimesters of pregnancy.**Methodology:** A cross sectional comparative study was conducted among 44 pregnant visiting the gynecology department of Sharif Medical and Dental College and Raiwind Polyclinic, Lahore (community outreach program of the institute). Data was collected using the Community Periodontal Index of Treatment Needs (CPITN)**Results:** The highest percentage of females (24%) requiring no treatment (TN0) were in their third trimester. The majority of females in their second trimester (85.7%) required oral hygiene instructions and had periodontal treatment needs (TN1) and those in their first trimester (83.3%) required Scaling and prophylaxis and Oral hygiene instructions (TN 2).**Conclusion:** The highest percentage of females with healthy periodontium were in their third trimester. Periodontal pocket depth of 4-5 mm were seen the most on the clinical examination of women in their second trimester but least in third trimester. The highest percentage of females requiring no treatment (TN0) were in their third trimester. The majority of females in their second trimester required oral hygiene instructions and had periodontal treatment needs (TN1) and those in their first trimester required Scaling and prophylaxis and Oral hygiene instructions (TN 2).**Keywords:** Periodontal treatment needs, first trimester, second trimester, third trimester, Community periodontal index for treatment needs (CPITN)**INTRODUCTION**

Periodontal disease is a multi-factorial illness in which the harmony between the microbial plaque and the host reaction is disturbed(1). Ecological, physical and social factors influence or change its signs(2). A few fundamental circumstances may likewise add to the commencement and progression of gum disease or periodontitis(3). The two-sided connection between periodontal infection and pregnancy has been known for a long time. It is affirmed that an expanded frequency of gum disease might occur during pregnancy.(4)

Periodontal bacteria accumulate in the gingival crevice of the teeth in the absence of adequate oral hygiene, forming an organized structure known as "bacterial biofilm."(5) The biofilm contains a variety of virulence factors, including lipopolysaccharide (LPS), which may cause direct destruction of periodontal tissues or stimulate the host to activate a local inflammatory response aimed at eradicating the infection but may also destroy periodontal structures (6)

Since 1960, periodontal health of pregnant women has been studied. The inflammatory changes in the gingiva during pregnancy are referred to as gingivitis gravidarum, which is the most common oral manifestation associated with pregnancy and has been reported to occur anywhere from 30% to 100% though it most commonly ranges from 60% to 75%. (7)

The physiological status of pregnancy is dynamic, as shown by a number of transient changes(8). The individual's health, perceptions, and interactions with others in her environment may all be impacted by these changes as they manifest physically(9). Increased levels of estrogen and progesterone are the most significant hormonal changes in pregnancy. Estradiol levels in plasma have been reported to rise up to 30 times higher than during a reproductive cycle. Estrogen is a hormone that controls cellular proliferation, differentiation, and keratinization. However, progesterone alters the permeability of the microvasculature as well as collagen production. These hormonal changes during pregnancy tend to increase the incidence of dental diseases such as gingivitis and may even contribute to low salivary pH, leading to an increase in the incidence of dental caries.(10)

**METHODOLOGY**

A cross sectional comparative study was conducted among 44 pregnant visiting the gynecology department of Sharif Medical and

Dental College and Raiwind Polyclinic, Lahore (community outreach program of the institute) using non-probability convenient sampling technique. Sample size was calculated taking the minimum prevalence of periodontal disease to be 5% among pregnant women and keeping the level of significance at 5% with power of study 90%, the sample size obtained using an online sample size calculator was 44.

The study was conducted over a period of six months from March 2019 till August 2019 after approval from the ethical committee of Sharif Medical Research Centre (SMRC). Informed consent was taken from every participant prior to data collection. The inclusion criteria was women who gave consent to be a part of the study and were in the child bearing age. Women who had any systemic illness were excluded from the study. Data was collected using the Community Periodontal Index of Treatment Needs (CPITN). The data was analyzed using SPSS version 23 and all nominal data was entered in frequencies and percentages whereas all numerical data was entered as mean with its respective standard deviation.

**RESULTS**

A cross sectional comparative study was conducted on 44 pregnant females with a mean age of 29.15±6.450 years out of 27.3% were in their first trimester, 15.9% in their second while 556.8% were in their third trimester of pregnancy.

Table 1 shows that the highest percentage of females with healthy periodontium were in their third trimester while the least were their second trimester. It was also seen that women in their second trimester also reported the maximum amount of bleeding while calculus deposition was the highest in those in their first trimester and least in second trimester. Periodontal pocket depth of 4-5 mm were seen the most on the clinical examination of women in their second trimester but least in third trimester as shown in table 2

Table 2 shows that the highest percentage of females requiring no treatment (TN0) were in their third trimester. The majority of females in their second trimester required oral hygiene instructions and had periodontal treatment needs (TN1) and those in their first trimester required Scaling and prophylaxis and Oral hygiene instructions (TN 2).

Table 1: Percent person affected in patients across different trimesters of pregnancy

Age	No of patients examined	Group	Percent person affected				
			Healthy	Bleeding	Calculus	Pocket depth 4-5 mm	Pocket depth 6mm or more
29.15±6.450 years	12	First trimester	16.7%	0%	75%	8.3%	0%
	7	Second trimester	14.3%	14.3%	57.1%	14.3%	0%
	25	Third trimester	24%	8%	64%	4%	0%

Table 3: periodontal treatment needs of patients undergoing orthodontic treatment

Age	Group	Periodontal treatment needs			
		%TN 0	% TN 1	% TN 2	%TN 3
29.15±6.450 years	First trimester	16.7%	83.3%	83.3%	0%
	Second trimester	14.3%	85.7%	71.4%	0%
	Third trimester	24%	76%	71.4%	0%

**DISCUSSION**

The anterior region of the mouth is more commonly affected, and interproximal sites are more commonly involved(11). Increased mouth breathing, particularly in the third trimester, may aggravate inflammation and be associated with pregnancy rhinitis(12). Gag reflux causes nausea and vomiting in women, and if untreated, it can lead to enamel erosion which in turn makes teeth susceptible to caries (13)

Regardless of being at an increased risk for oral infections, the take-up of oral medical care administrations among pregnant ladies has been generally low and most pregnant ladies visited dental clinics just in case of pain(14). Lack of insurance coverage or access may be factors for some women, and those with insurance coverage may receive less dental care than that is required(15). According to research, misperceived barriers and a lack of knowledge about evidence-based perinatal dental care on the part of both patients and health care providers contribute to underutilization.(16)

Pregnancy oral health care is frequently avoided and misunderstood by physicians, dentists, and patients.(17) According to some studies, prenatal oral conditions may have negative effects on the child. Periodontitis is linked to premature birth and low birth weight, and high levels of cariogenic bacteria in mothers can lead to increased dental caries in their children(18). Every pregnant woman should be screened for oral risks, counselled on proper oral hygiene, and referred to a dentist if necessary(19). Periodontal treatment, restorations, and extractions are all safe and should be done during the second trimester(20). While visits to dental centers have been low, around 86% of pregnant ladies went to antenatal at least once during their pregnancy.(21)) This demonstrate the role of medical professionals in preventing oral health problems among pregnant women by the help of early diagnosis and referral to the dentist for timely intervention of the problem.(22) This study aimed to determine the correlation of pregnancy and periodontal health and what are the treatment needs of women in different stages of pregnancy.

**CONCLUSION**

The highest percentage of females with healthy periodontium were in their third trimester while the least were their second trimester. Periodontal pocket depth of 4-5 mm were seen the most on the clinical examination of women in their second trimester but least in third trimester. The highest percentage of females requiring no treatment (TN0) were in their third trimester. The majority of females in their second trimester required oral hygiene instructions and had periodontal treatment needs (TN1) and those in their first trimester required Scaling and prophylaxis and Oral hygiene instructions (TN 2).

**Limitation:** A larger sample size would have helped unravel more findings.

**REFERENCES**

- 1 Maybodi FR, Haerian-Ardakani A, Vaziri F, Khabbazian A, Mohammadi-Asl S. CPITN changes during pregnancy and maternal demographic factors 'impact on periodontal health. Iranian journal of reproductive medicine. 2015 Feb;13(2):107.
- 2 Heaman M, Gupton A, Gregory D. Factors influencing pregnant women's perceptions of risk. MCN: The American Journal of Maternal/Child Nursing. 2004 Mar 1;29(2):111-6.
- 3 Flemmig TF. Periodontitis. Annals of periodontology. 1999 Dec;4(1):32-7.
- 4 Offenbacher S, Jared HL, O'reilly PG, Wells SR, Salvi GE, Lawrence HP, Socransky SS, Beck JD. Potential pathogenic mechanisms of periodontitis-associated pregnancy complications. Annals of periodontology. 1998 Jul;3(1):233-50.
- 5 Schaudinn C, Gorur A, Keller D, Sedghzadeh PP, Costerton JW. Periodontitis: an archetypical biofilm disease. The Journal of the American Dental Association. 2009 Aug 1;140(8):978-86.
- 6 Larsen T, Fiehn NE. Dental biofilm infections—an update. Apmis. 2017 Apr;125(4):376-84.
- 7 Kashetty M, Kumbhar S, Patil S, Patil P. Oral hygiene status, gingival status, periodontal status, and treatment needs among pregnant and nonpregnant women: A comparative study. Journal of Indian Society of Periodontology. 2018 Mar 1;22(2):164-70.
- 8 Morelli EL, Broadbent JM, Leichter JW, Thomson WM. Pregnancy, parity and periodontal disease. Australian dental journal. 2018 Sep;63(3):270-8.
- 9 Tettamanti L, Lauritano D, Nardone M, Gargari M, Silvestre-Rangil J, Gavoglio P, Tagliabue A. Pregnancy and periodontal disease: does exist a two-way relationship?. ORAL & implantology. 2017 Apr;10(2):112.
- 10 Gupta R, Acharya AK. Oral health status and treatment needs among pregnant women of Raichur District, India: A population based cross-sectional study. Scientifica. 2016 Jan 1;2016.
- 11 AL-Sultani HF. Prevalence and Severity of Dental Caries, Periodontal Diseases and Dental Erosion among (20–40) Years Old Pregnant Women in Hilla city, Babylon governorate-Iraq. health. 2013;5(6):7.
- 12 SO'oye E<sup>1</sup> M, Ayanbadejo P, Savage K, Oluwole A. Association between periodontal disease and pregnancy outcomes. Odontostomatologie Tropicale. 2015 Dec.
- 13 Gier RE, Janes DR. Dental management of the pregnant patient. Dental Clinics of North America. 1983 Apr 1;27(2):419-28.
- 14 Yunita Sari E, Saddki N, Yusoff A. Association between perceived oral symptoms and presence of clinically diagnosed oral diseases in a sample of pregnant women in Malaysia. International journal of environmental research and public health. 2020 Oct;17(19):7337.
- 15 ROTHWELL BR, GREGORY CE, SHELLER B. The pregnant patient: considerations in dental care. Special Care in Dentistry. 1987 May;7(3):124-9.
- 16 Dragan IF, Veglia V, Geisinger ML, Alexander DC. Dental care as a safe and essential part of a healthy pregnancy. Compendium. 2018 Feb;39(2):86-92.
- 17 Silk H, Douglass AB, Douglass JM, Silk L. Oral health during pregnancy. American family physician. 2008 Apr 15;77(8):1139-44.
- 18 Steinberg BJ, Hilton IV, Iida H, Samelson R. Oral health and dental care during pregnancy. Dental Clinics. 2013 Apr 1;57(2):195-210.
- 19 Naseem M, Khurshid Z, Khan HA, Niazi F, Zohaib S, Zafar MS. Oral health challenges in pregnant women: Recommendations for dental care professionals. The Saudi Journal for Dental Research. 2016 Jul 1;7(2):138-46.
- 20 Kloetzel MK, Huebner CE, Milgrom P. Referrals for dental care during pregnancy. Journal of midwifery & women's health. 2011 Mar;56(2):110-7.
- 21 Togoo RA, Al-Almai B, Al-Hamdi F, Huaylah SH, Althobati M, Alqarni S. Knowledge of pregnant women about pregnancy gingivitis and children oral health. European journal of dentistry. 2019 May;13(02):261-70.
- 22 Silva CC, Savian CM, Prevedello BP, Zamberlan C, Dalpian DM, Santos BZ. Access and use of dental services by pregnant women: an integrative literature review. Ciencia & saude coletiva. 2020 Mar 6;25:827-35.