Frequency of gingivitis in pregnancy in patients reporting to Bacha Khan Dental College, Mardan

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Abstract

Background: The objective of this study was to determine the frequency of gingivitis in pregnant females reporting to Bach Khan Dental College, Mardan.

Methods: This cross-sectional descriptive study was conducted on 70 pregnant women by using non-probability consecutive sampling technique. Pregnant females with age range of 20 to 45 years, having adequate oral hygiene, no systemic disease affecting gingival health and Pakistani nationals were included in the study. Age, trimester of pregnancy, employment, brushing habit and presence of gingivitis were recorded. Loe and Silness gingival index was used to record the various grades of gingivitis (normal gingiva, mild, moderate, and severe gingivitis). Descriptive statistics were computed. Comparison was done for the presence of gingivitis by age, employment, brushing habits, and trimester using Chi-Square test. $P \leq 0.05$ was considered significant.

Results: The mean age of the study was 28.44 years (SD, 5.65 years). The gingivitis was present in 40 (57.1%) participants. Of total 22 (31.4%) were government employees. Most common pattern of brushing teeth was 'twice a day' ($n=28$, 40%) and most common trimester of pregnancy was third ($n=28$, 40%). Most of the pregnant female belonged to age group 26 to 30 years ($n=28$, 40%) and 20 to 25 years ($n=21$, 30%). Most common form of gingivitis was severe ($n=25$, 35.71%) followed by moderate ($n=13$, 18.57%). In pregnant females the effect of brushing pattern, employment, trimesters and age on gingivitis was not statistically significant ($P > 0.05$).

Conclusion: The frequency of gingivitis in pregnancy is quite high in our study. The dental practitioners should be vigilant and advise the plaque control and prompt treatment of gingivitis to pregnant females to prevent progression to periodontitis.

Keywords: Pregnancy; gingivitis; pregnant women; pregnancy associated gingivitis; gingival index

Introduction

The gingiva, cementum, periodontal membrane, and alveolar bone are components of the periodontium surrounding the tooth. The gingival part

of periodontium covers the alveolar process and surrounds the cervical area of the tooth.⁽¹⁾ The healthy gingiva in general have coral pink colour and is dependent on the vascular supply, thickness of tissue, amount of keratinized

epithelium, and melanin pigments.(2) Gingivitis is reversible inflammation of tooth supporting tissue caused by plaque in oral cavity. There is no loss of attachment apparatus in the gingivitis.(3)

Due to hormonal changes in pregnancy, the risk of gingivitis increases.(4-6) In pregnant women, the rise in progesterone level is 10 times more than in women without pregnancy,(7) a circumstance that promotes the specific pathogenic microbial growth involved in gingivitis. During pregnancy there are changes in immune system leading to alteration in host reaction to bacterial plaque and aggravating gingivitis.(2) It is established that gingivitis in pregnant women is dependent on, but not related to, the amount of plaque present. And it is also documented proper oral hygiene in pregnant females can partly counteract hormonal effect.(3)

According to earlier studies the gingivitis prevalence ranges from 30% to 100% during pregnancy.(8) While some cross-sectional studies reported that the frequency of gingivitis in pregnancy was 86.2% in Thailand population, 89% in Ghana, and 47% in Brazilian population.(9-11) Another cross sectional study conducted in Nigeria reported that the prevalence of gingivitis in pregnant women was 85.2%.

To our knowledge no research has been conducted in Mardan population on frequency of gingivitis in pregnant women. There is a large variation in prevalence of pregnancy associated gingivitis in previous studies depending on population. Our results can be different from other studies due to ethnic, genetic and environmental factors. This study will aid the clinicians to give due attention to manage the pregnancy associated gingivitis and intercept its progression to irreversible condition called periodontitis.

The objective of this study was to determine the frequency of gingivitis in pregnant females reporting to Bach Khan Dental College, Mardan.

Methodology

This cross-sectional descriptive study was conducted on 70 pregnant women presenting to

Bacha Khan Dental College, Mardan by using non-probability consecutive sampling technique from January 2019 to October 2019. Hospital ethical approval was obtained prior to conducting this research. After explaining in detail about the aim of study to each participant and a written consent was taken.

Pregnant females with age range of 20 to 45 years, having adequate oral hygiene (no major plaque and calculus deposits), no systemic disease affecting gingival health and Pakistani national were included in the study. A pre-structured pro forma was used to collect data from participants like age, trimester of pregnancy, employment (yes or no), brushing habit and gingival status. After detailed history, an examination was carried out under artificial light source using mouth mirror and periodontal explorer. Gingival status was checked by a periodontal specialist having two-year experience in Periodontology. The presence or absence of gingivitis was recorded. Gingivitis was diagnosed on clinical basis by bleeding on probing, swelling and change in color of gingiva. Loe and Silness gingival index (GI) was used to record the various grade of gingivitis as follows; grade 0 = normal gingiva; grade 1 = mild inflammation (slight change in colour and mild edema but no bleeding on probing) ; grade 2 = moderate inflammation (erythema, edema and bleeding on probing); grade 3 = severe inflammation (marked redness and edema, ulceration with spontaneous bleeding).(12) The scores of GI from each of the four surfaces (distal, mesial, facial and lingual) of the tooth were averaged. Then mean score for each participant was obtained by dividing number of teeth examined on total GI score.

Data analysis was done in SPSS 20. The calculation of frequencies and percentages was done for qualitative variables like presence of gingivitis, grade of gingivitis and trimester of pregnancy. Mean and standard deviation was computed for continuous variables like age. Comparison was done for the presence of gingivitis by age, employment, brushing habits, and trimester using Chi-Square test. $P \leq 0.05$ was considered significant.

Results

The mean age of 70 pregnant females was 28.44 years (SD, 5.65 years) with range from 20 to 40 years. The gingivitis was present in 40 (57.1%) participants. Of total sample 22 (31.4%) were doing some sort of government employment and rest were house wives. Most common pattern of brushing teeth among these pregnant women was 'twice a day' (n=28, 40%) followed by 'once a day' (n=27, 38.6%) and 'less frequent' (n=15, 21.4%). The most common trimester of pregnancy was third (n=28, 40%) followed second (n=25, 35.7%) and least was first (n=17, 24.3%). Most of the pregnant female belonged to age group 26 to 30 years (n=28, 40%) and 20 to 25 years (n=21, 30%). The details are shown in **Table 1**. Most common form of gingivitis was severe (n=25, 35.71%) followed by moderate (n=13, 18.57%) and least was mild gingivitis (n=2, 2.86%). (**Fig 1**)

In pregnant females the effect of brushing pattern, employment, trimesters and age on gingivitis was not statistically significant ($P>0.05$). The detailed statistics are shown in **Table 2**.

Table 1: Frequency of gingivitis, employment, brushing habit, trimester and age groups

		Frequency	Percent
Gingivitis	Present	40	57.1
	Absent	30	42.9
	Total	70	100.0
Employment	Yes	22	31.4
	No	48	68.6
	Total	70	100.0
Brushing habit	Less frequent	15	21.4
	Once a day	27	38.6
	Twice a day	28	40.0
	Total	70	100.0
Trimester	1 st	17	24.3
	2 nd	25	35.7
	3 rd	28	40.0
	Total	70	100.0

Age Groups	20-25	21	30.0
	26-30	28	40.0
	31-35	10	14.3
	36-40	11	15.7
	Total	70	100.0

Fig 1: Frequency of various grades of gingivitis

Table 2: Comparison of gingivitis among brushing habits, employment, trimester and age groups

		Gingivitis			P- value*	
		Present		Absent		
		n	%	n	%	
Brushing habit	Less frequent	8	53.3	7	46.7	.877
	Once a day	15	55.6	12	44.4	
	Twice a day	17	60.7	11	39.3	
Employ ment	Yes	11	50.0	11	50.0	.414
	No	29	60.4	19	39.6	
Trimeste r	1 st	6	35.3	11	64.7	.097
	3 rd	17	60.7	11	39.3	
	2 nd	17	68.0	8	32.0	
Age Groups (years)	20-25	14	66.7	7	33.3	.069
	26-30	14	50.0	14	50.0	
	31-35	3	30.0	7	70.0	
	36-40	9	81.8	2	18.2	

*Chi-square test; $P<0.05$ was significant level

Discussion

This study was carried out to know the frequency of gingivitis in pregnant females. Our results showed that there was 57.1% gingivitis in pregnant females. The effect of brushing pattern, employment, trimesters and age on pregnancy associated gingivitis was not statistically significant ($P>0.05$).

For this study we selected participants with satisfactory oral hygiene having no obvious plaque and calculus deposits. The presence bad oral hygiene can itself be an etiologic factor for gingivitis so we excluded the cases with poor oral hygiene.(13) This was done to control confounder in this study.

In our study the frequency of gingivitis was 57.1% in pregnant women. Previous studies reported variable rate of gingivitis in pregnancy. Published literature have shown that the prevalence rates of gingivitis during pregnancy range between 30% and 100%.(14,15) The prevalence of gingivitis in pregnancy was reported 85.2% in Nigerian population⁽¹⁶⁾ and 86.2% in Thailand population (11). The variability in findings can be attributed to genetic, hormonal and oral hygiene habit variation. In our study we selected pregnant females with adequate oral hygiene and most of our participants brushed their teeth more than two times per day. Due to these reasons the frequency of gingivitis may be less in our study. Another study conducted in Nepal reported that the frequency of gingivitis was 40% in pregnancy. The oral hygiene was good in their study and most of participants brushed their after every meal. (17) These results are near to our findings. Another study conducted on Pregnant women in India reported that gingivitis was more prevalent among pregnant than non-pregnant women. they reported 71.9% gingivitis in pregnant women.(18)

Our findings showed that most common pattern of brushing teeth among these pregnant women was twice a day followed by once a day and less frequent. The fact the all the participants were brushing their teeth may be due the fact that we included in our study only pregnant females with adequate oral hygiene. Al-Rayyan et al.(16) researched on large sample of pregnant females ($n=580$) in Jordon population and reported that most common pattern of brushing was less effective. The variation can be attributed to sample size difference and awareness among participants. Another study conducted in Karachi showed that most common (65.6%) pattern of brushing was once a day among pregnant women.(19)

Our results showed that most common form of gingivitis was severe followed by moderate and least was mild gingivitis. A study conducted in Nigeria on prevalence of gingivitis in pregnant women showed that most common pattern of gingivitis was mild and least was severe gingivitis.(2) The difference in results can be due to genetic and hormonal difference of our population from Nigerian population.

Current study found that there was no significant effect of brushing pattern, employment, trimesters and age on gingivitis in pregnancy. Similar results were found by Al-Rayyan et al.(16)

Conclusion

The frequency of gingivitis in pregnancy is quite high in our study. The dental practitioners should be vigilant and advise the plaque control and prompt treatment of gingivitis to pregnant females to prevent progression to periodontitis.

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