

Gingival Health Status among Pregnant Women in Urban and Rural Areas in Al-Karkh-Baghdad

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ABSTRACT

Background: Pregnancy is a stressful disorder that causes significant changes in metabolic and physiological functions extent. Pregnancy may aggravate inflammatory response of the gingiva to plaque. The impact of systemic circumstances on the host's cellular and immunologic activities appear to be the cause of this altered response, while microbial plaque remains the key causative component. Even in the presence of minimal quantities of plaque, the incidence and severity of gingival inflammation can increase during pregnancy, which is an example of an altered host response due to systematic influences. Increased estrogen and progesterone levels in pregnant women during the third trimester have been linked to increased gingivitis severity by replacing nutritional demands for particular oral bacteria and promoting their proliferation.

Materials and methods: comparative cross sectional study, all women participating in this study were attending the primary health care centers in Baghdad city in AL-Karkh sector, they were with the age ranged from (15-44) years old. The first group consists of all pregnant women attendance seeking dental treatment in urban areas, the second group consists of all pregnant women attendance seeking dental treatment in rural areas. Oral examination and the oral assessment were done according to the World Health Organization WHO (2013). Gingival condition conducted according to Loe and Silness (1963).

Results: The mean value of the gingival index was found to be statistically non-significant differences between pregnant women in urban and rural areas.

Conclusion: The gingivitis was slightly higher in urban than rural pregnant women, but the mild score was reported to be the most common.

Key words: Pregnant women, Urban, Rural, Gingivitis

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INTRODUCTION

Pregnancy is a stressful disorder that causes significant changes in metabolic and physiological functions extent [1]. As a result, the most significant physiological and hormonal changes in a woman's life occur during pregnancy [2] and one of the focus areas for these changes is the oral cavity [3]. Hormonal changes caused by fluctuations in estrogen and progesterone levels in the body during pregnancy make women more susceptible to oral infections and gum disorders, which impact not only expecting mothers but also their developing babies [4,5]. Periodontal disease is one of the two major dental diseases that have a high prevalence rate in human

populations around the world. Furthermore, it encompasses a series of conditions that are thought to be common in kids, teenagers, and adults. Other factors, such as genetic, neoplastic, traumatic, metabolic and developmental factors, may also contribute to the development of these diseases [6]. There are two types of periodontal diseases: Destructive and nondestructive. Gingival diseases induced by dental plaque: These disorders may emerge on a periodontium with no attachment loss or with stable and not progressive attachment loss as a result of an interaction between the microorganisms present in the dental plaque biofilm and the inflammatory host response, a classic experiment indicating that the poor oral hygiene regularly leads to the emergence of gingivitis within two to three weeks in healthy persons has clearly revealed a cause and effect relationship between microbial plaque and gingivitis. Non-plaque induced gingival lesions is another type of gingivitis: Plaque induced gingivitis is more common than oral symptoms of systemic conditions that cause lesions in

periodontal tissues. This category primarily includes gingival lesions that are autoimmune or idiopathic in origin [7]. Pregnancy may aggravate inflammatory response of the gingiva to plaque. The impact of systemic circumstances on the host's cellular and immunologic activities appear to be the cause of this altered response, while microbial plaque remains the key causative component. Even in the presence of minimal quantities of plaque, the incidence and severity of gingival inflammation can increase during pregnancy, which is an example of an altered host response due to systematic influences. Increased estrogen and progesterone levels in pregnant women during the third trimester have been linked to increased gingivitis severity by replacing nutritional demands for particular oral bacteria and promoting their proliferation. Prevotella intermediate, a kind of prevotella, is one species that has been linked to gingivitis during pregnancy. Gingivitis was present in 40% of pregnancies [8-11]. Good gingiva, on the other hand, is said to be unaffected by pregnancy, and is just a response to increased plaque and gingivitis [12]. Many studies have shown that during the second trimester of pregnancy, prevotella inter media sub-gingival development increases, possibly causing increased inflammation. Other studies, on the other hand, have shown that the seriousness of the condition gradually worsens until the 36th week of pregnancy, with gingival condition recovers spontaneously after labor [13]. More Iraqi studies found the gingival indices were higher in pregnant women than in non-pregnant women [14-22].

MATERIALS AND METHODS

Before starting the study, approval was achieved from ethical committee at university of Baghdad, college of dentistry. Verbal consents were obtained from all pregnant women. The present research was carried out between 13th of April and the 8th of September (2021). In this comparative cross sectional study, all women participating in this study were attending the primary health care centers in Baghdad city in AL-Karkh sector, They were with the age ranged from (15-44) years old. The first group consists of all pregnant women attendance seeking dental treatment in urban areas, the second group consists of all pregnant women attendance seeking dental treatment in rural areas. Exclusion criteria include women with systemic diseases, smokers and that receiving any multivitamins, calcium and vitamin D3 supplements. As any questionnaire format, routine questions about personal name, age and trimester are

required to take from the pregnant women. Oral examination and the oral assessment were done according to the World Health Organization (WHO) [23]. The Gingival Index (GI) criteria were used for the assessment of gingival condition conducted according to Loe and Silness [24]. This is screening only six index teeth that will be used to represent the whole dentition. For pregnant women, these teeth were the upper right six and two, upper left four, lower left six and two, lower right four. The index teeth were scored on all 4 surfaces (buccal, mesial, lingual and distal).

RESULTS

The sample of present study consists of 140 pregnant women; their ages range (15-44). Most of the interviewed pregnant women (74.3%) aged (15-29) and (25.7%) aged (30-44) with mean age (24.96 ± 0.540) year. They were divided into two groups: First group which consisted of 77 pregnant women in urban area and second group which consisted of 63 pregnant women in rural area. Totally the percentage of pregnant women in urban area was higher than that in the rural area. According to the trimesters: Higher percentage was found in the second trimester, followed by the third, and then the first. The distribution of pregnant women by age, area and trimesters is shown in Figure 1.

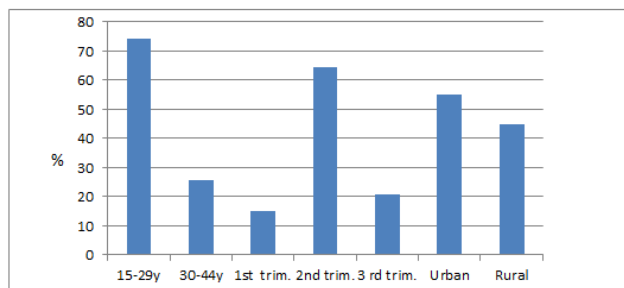


Figure 1: The distribution of pregnant women by age, area and trimesters.

Mean value of gingival index was found to be higher in urban than rural areas and the difference was statistically not significant. While in the urban and total higher mean values of gingival index were found among first trimester, in the rural observed the second trimester get the highest value although there is no significant difference (Table 1).

Table 1: Descriptive and statistical test of GI among trimester by area.

Area		1 st trimester		2 nd trimester		3 rd trimester		F	P value	Total	
		Mean	± SE	Mean	± SE	Mean	± SE			Mean	± SE
Urban	GI	1.25	0.236	0.837	0.088	0.921	0.128	2.07	0.133	0.922	0.072
Rural	GI	0.667	0.162	0.795	0.075	0.72	0.212	0.268	0.766	0.765	0.065
Total	GI	1	0.162	0.817	0.058	0.852	0.11	0.823	0.441	0.851	0.05

Mostly in all trimesters the gingival index is higher in the urban than rural and there are statistically non

significant (p>0.05) (Table 2).

Table 2: Descriptive and statistical test of GI among area by trimester.

Pregnancy		Area					
		Urban		Rural		T test	P value
		Mean	± SE	Mean	± SE		
1 st trimester	GI	1.25	0.236	0.667	0.162	1.9	0.073
2 nd trimester	GI	0.837	0.088	0.795	0.075	0.357	0.722
3 rd trimester	GI	0.921	0.128	0.72	0.212	0.863	0.396
Total	GI	0.922	0.072	0.765	0.065	1.578	0.117

The severity of gingivitis according to the age and area are as follow: The values of healthy pregnant women are equal, the mild values are higher than those moderate and severe. However, severe type was absent in the age range (30-44) and rural areas (Figure 2). Regarding to the trimester the second trimester get the highest values of healthy, mild and moderate than those other trimesters.

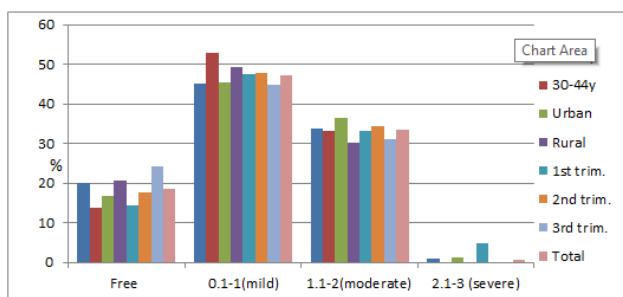


Figure 2: Distribution of GI severity among age, area and trimester.

DISCUSSION

This study looked at pregnant women's gingival health status in urban and rural areas. Oral alterations may arise as a result of physiological changes that occur during pregnancy [11,13]. Pregnancy gingivitis, benign gingival lesions, tooth mobility, erosion, dental caries and periodontitis are all linked to these alterations [25]. Regarding the personal characteristics, more than 70% of pregnant women with a mean age of under 30 years had a mean age of (24.96) years, which matched with the Gupta, et al. and Khalaf, et al. [27,28]. According to the area of residence, the highest proportion of pregnant women was found in the urban area, which conformed to Gaszynska, et al. and Nagi, et al. [29,30]. In reference to the trimester, a higher percentage was found in the second trimester. The increased secretion of gestational hormones (especially estrogen and progesterone) during pregnancy has been linked to pregnancy gingivitis is an increased inflammatory reaction of the gums to bacterial plaque [31]. The immune system, as well as the rate and patterns of collagen production in the gingiva, have been demonstrated to be affected by changes in progesterone and estrogen levels. Both of these conditions impair the body's ability to maintain and repair gingival tissues [32]. In the present study, it was found that the gingival mean value was found to be slightly greater in urban areas than

in rural areas. Although statistically non-significant and this study agreed with Siddiqui, et al. [33] and disagreed with other studies where gingivitis was higher in rural than urban pregnant women [25,34]. This may be related to the sample size where the pregnant women in the urban area higher than those in the rural area. Regarding the trimester, the present study reported that the level of gingival index value was higher in the first trimester, contrary results were reported by previous studies where the highest gingival index value was found in the second trimester [17,21,35-38] and this may be related to the dental plaque where increased plaque may be to blame for nausea and vomiting during the first trimester of pregnancy and most pregnant women indicated that teeth brushing was almost impossible, especially in the premolar and molar areas, due to pregnancy related nausea [39].

CONCLUSION

The present study concluded that the gingivitis was slightly higher in urban than rural pregnant women, but the mild score was reported to be the most common, and this may be an indication of increased awareness of pregnant women in urban and rural areas of the Baghdad governorate.

CONFLICTS OF THE INTEREST

No conflicts of the interest.

ETHICAL CLEARANCE

This study is exempt (no new materials were used).

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