

Prevalence of Oral Mucosal lesions in Pregnant and Non-Pregnant Women in the Population of Bihar: A Case Control Study

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ABSTRACT

Background: The effects of pregnancy on the Oral Mucosa Disorder Oral Mucosa Disorder have been sporadically documented in some developed countries. Less known is the status of Oral Mucosa Disorder during pregnancy in less developed state. Bihar is no exception.

Material and method: 800 women, who were referred to treatment centres within public hospitals of Bihar, participated, by convenience sampling. 400 pregnant women (age range: 19–45 years old) were selected as the study group and the other 400 served as the control group. exclusion criteria include smokers and alcohol users, Non pregnant women who had history of pregnancy during previous year also were excluded

Result: The participants' age ranges were from 19 to 45; with the average age of 34.08 for one group; and 31.09 for the other group. Both groups had the same level of formal education. Out of 800 examined women; 136 had lesions, including 102 pregnant (23.5%); and 34 non-pregnant (7.5%) women.

Discussion: This result shows that the Oral Mucosa Disorder rate of occurrence was significantly higher among the pregnant women. Higher oral mucosal lesion prevalence in pregnant women, as compared to the non-pregnant women, indicates the importance of timely oral examination of pregnant women and subsequent treatment plans for them.

Keywords: Oral Mucosa Disorder Oral Mucosal Lesion, pregnancy-related lesion, Bihar.

INTRODUCTION

Pregnancy is a dynamic physiological state which is evidenced by several transient changes. These can develop as various physical signs and symptoms that can affect the patients' health, perceptions and interactions with others in the environment. The patients may not always understand the relevance of the adaptations of their bodies to the health of their foetuses. A gestational woman requires various levels of support throughout this time, such as medical monitoring or intervention, preventive

care and physical and emotional assistance.^{1,2} The storm of hormones which is induced during pregnancy causes changes in the mother's body, and the oral cavity is no exception. Pregnancy gingivitis is a well-recognized entity. The oral changes which are seen in pregnancy include gingivitis, gingival hyperplasia, pyogenic granuloma, and salivary changes. Increased facial pigmentation is also seen. Elevated levels of the circulating oestrogen, which cause an increased capillary permeability,

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predispose the pregnant women to gingivitis and gingival hyperplasia.³ Pregnancy gingivitis is one of the most prevalent diseases of oral cavity during the pregnancy, which is observed in about 50%–98% of pregnant women. It starts around the 2nd or 3rd month and increases in the 8th month and then declines with the reduction in synthesis of these hormones.⁴ Pregnancy tumours are one of the oral mucosal lesions, which are seen in 5% of pregnant women. Due to increased activity of oestrogen and progesterone, these lesions are more common during pregnancy. In other studies, tooth mobility⁵ and severe diffused attrition have been reported.⁶ The mechanisms by which women are susceptible to dental loss during pregnancy are believed to be due to periodontitis and hormonal changes; hygiene also plays a role. Given that most Oral Mucosal Disorders are chronic, they can affect the quality of life of those who suffer from them. Some are debilitating for the patient and some may lead to serious disorders. Other lesions like inflammatory hyperplasia tend to grow and cause prominent lesions in the oral cavity.^{4,7} These lesions may cause difficulty in swallowing, chewing, breathing, talking and oral hygiene. Additionally, different studies show that some of oral mucosal change has negative effect on pregnancy outcome and the new-born. Some studies show an association between periodontal diseases and pregnancy outcomes such as Preterm Labor and low birth weight.⁸ Treatment may prevent low birth weight.⁹ Other studies point out the transmission of the infection from mother to the new-born. Many Epidemiological and biological studies have focused on oral lesions.¹⁰

Awareness of patients about the temporary nature of some of these conditions can be psychologically and or emotionally useful to the patients. Given the existing gap in literature and the lack of specific studies on Oral Mucosal Lesion, this study reports the finding of a comparative evaluation of the prevalence of Oral Mucosa Disorder in pregnant and non-pregnant women. The findings will not only contribute to the existing body of knowledge in the field of dentistry but it can also encourage the oral health providers to follow best practices and perhaps advocate pertinent programs and policies that would ultimately serve the mothers, their unborn babies and the community at large.

MATERIALS AND METHODS

In this case control study, 800 women, who were referred to treatment centres within public hospitals of Bihar, participated, by convenience sampling. 400 pregnant women (age range: 19–45 years old) were selected as the study group and the other 400 served as the control group. Exclusion criteria include smokers and alcohol users, non-pregnant women who had history of pregnancy during previous year also were excluded. After the patients signed the consent forms, a data sheet that included age, formal education, pregnancy duration and history of pregnancy and or abortion, were completed and all participants were examined by a dentist. The dentist, attending these participants, had undergone special training on diagnosis of Oral Mucosa Disorder. The dentist was also trained to take pictures from the oral mucosal lesions. The oral examination was conducted in sitting positions, with the same condition and the dentist equipped with headlight, sterile plastic mirror and periodontal probe. The case history and clinical examination of each participant was recorded in her medical file. The World Health Organization (WHO) and “Bradley” indices were used as a diagnosis index for Oral Mucosa Disorder.^{11,12}

The data obtained was systematically tabulated and subjected to statistical analysis. Statistical correlations among all the parameters was done using *t-test*, and OR were calculated. *P value* of 0.05 was considered as level of significance for this study.

RESULTS

All 800 participants; 400 pregnant and 400 non-pregnant women, were examined. The participants' age ranged from 15 to 45 years; with the average age of 34.08 for the non-pregnant; and 31.09 for pregnant women. The case- and control- groups had the same educational level. Out of 800 examined persons; 136 persons had Oral Mucosa Disorder, including 102 pregnant (23.5%); and 34 non-pregnant (7.5%) women. This result clearly shows that the Oral Mucosa Disorder rate was significantly higher among the pregnant women (OR: 3.79; 95% CI: 2.04–7.04). Observed oral Disorders are shown in Table 1.

Table 1: Oral disorders in non-pregnant and pregnant women in this study.

Oral disorder	Non-pregnant women number and %	Pregnant women number and %
Burning mouth sensation	0(0%)	20(5%)
Parulis	2(0.5%)	16(4%)
Cheek biting	2(0.5%)	14(3.5%)
Petechiae	2(0.5%)	12(3%)
Geographic tongue	4(1%)	10(2.5%)
Pregnancy tumor	0(0%)	6(1.5%)
Physiologic Pigmentation	6(1.5%)	6(1.5%)
Lichen Planus	10(2%)	4(1%)
Oral Candidiasis	2(0.5%)	4(1%)
Fissured tongue	4(1%)	4(1%)
Mucocoele	2(1%)	6(1.5%)

The most common oral disorders in pregnant women were burning mouth sensation (5%); cheek biting (3.5%), petechia (3%), and geographic lesions (2.5%). The mean age of pregnant women with oral lesion was significantly higher compared to pregnant women without the lesions ($P: 0.038$). There was no significant correlation between oral lesions in pregnant women and gestational age (OR: 1.7, 95% CI: 0.7–4.11). Gravidity in pregnant women with lesions was significantly higher compared to those without lesions, ($p: 0.007$). The prevalence of Oral Mucosal Disorder in pregnant women was higher in those with vomiting (OR: 4.102, CI: 1.79–140.1). Furthermore, the chance of Oral Mucosal Disorder in women who had the positive history of previous abortion was eight times higher than those who had not previous history of abortion. (OR: 6.6, 95% CI: 2.8–15.8).

DISCUSSION

Physiologic changes during pregnancy can occur along with the changes in oral mucosa. Due to importance of these changes, this study evaluated oral mucosa lesions in pregnant women from Bihar. Previous studies, for most the part, report on the periodontal disease behaviour in pregnant women. Given that this study involved only oral mucosa lesions, it is difficult to compare the results of this study with previously reported studies. Major finding of this study has shown that 23.5% of the pregnant women have the lesions that have a meaningful difference as compared to the control group. High level of oestrogen causes immune

suppression by inflammatory cell function inhibition. As a result, the body reaction to bacterial plaques changes leads to the increase in clinical presentation of the lesions.¹⁴ The finding of this study is similar to Sarifakioglu and Annan.^{15,3} study and in contrast to the result of Diaz-Guzman study.⁴ The cause of this difference can be due to the methodology of the study. In Diaz-Guzman study, which was a retrospective study, the control group consisted of 5537 files of non-pregnant women and only 93 pregnant women were examined. The possible higher percentage of the lesions in the control group is perhaps due to mismatching of sample volume. Based on findings of this study, the biggest mucosal change during pregnancy is a burning sensation. Since different factors cause the mouth burn, to rule out the systemic diseases like gestational diabetes, anaemia or Candidiasis, more laboratory evaluation is needed. Meanwhile, the most likely cause of burning sensation can be attributed to iron deficiency anaemia or folic acid deficiency during pregnancy. Thus, the gynaecologists' emphasis on the use of these supplements during pregnancy is very helpful in incidence reduction of this symptom. Parulis is a mucosal lesion related to chronic periapical infection. Prevalence of this lesion may lead to high rate of caries and dental infections during pregnancy. Alteration of normal flora in oral cavity, buffering and saliva PH reduction, and also changes in oral hygiene are reported as some of the causes of high incidence of parulis in this period.¹⁶

A few studies have also mentioned the high incidence of DMF during pregnancy.¹⁷ However, parulis reflects the lack of tooth care and persistence of chronic oral infections during pregnancy, indicating that the patients are not aware of the importance and safety of dental care for mother and foetus. In this study, cheek biting, which refers to chronic cheek chewing and mucosal habit, was a common mucosal finding in the pregnant women. In an earlier study, Sarifakioglu, this was the most common Oral Mucosa Disorder with a significant difference observed for the control group among the pregnant women. These higher incidences can be attributed to weight gain, stress and anxiety during pregnancy. In the study undertaken, the prevalence of geographic tongue was 2.5 times more than the control group (similar finding in Diaz-Guzman and Sarifakioglu with 3%

and 5% respectively). Also, in Musyka study, 6% of the HIV negative pregnant women and 4% of the HIV positive pregnant women had this oral finding [18]. Because of being multi factorial, the relation between this finding and pregnancy is unclear. In this study, Pyogenic Granuloma, which is an old Oral Mucosa Disorder and a part of the changes during pregnancy, was more common in pregnant women, which is similar to previous studies^{3,4}. Nevertheless, in Sarifakioglu¹⁵ study, there are no reported cases of this kind of Oral Mucosa Disorder. In gingivitis, delay in metabolism of progesterone results in increasing of it in the tissue and intensify reaction to the local stimuli. Besides, high amounts of Vascular Endothelial Growth Factor (VEGF) and Fibroblast Growth Factor (FGF) in this lesion, which is responsible for vascularization are the causes of high prevalence of this finding in pregnancy.^{3,9,10,11,12} To the best of our knowledge, no empirical study has established a relation between Oral Mucosa Disorder and pregnancy condition. In this study, oral lesions prevalence and age have a meaningful correlation in pregnant women ($p = 0.038$)—accordingly the incidence of such changes increase with the age of the subjects. This finding is also similar to Oral Mucosa Disorder prevalence of the reported epidemiologic studies.^{7,22} Although there is not a significant relation between Oral Mucosa Disorder and pregnancy age in this study, most of the oral lesions are seen in the second trimester of the pregnancy. Increase in hormonal change, weight gain and nutritional needs as well as stress and anxiety in the late months of the pregnancy can be the reasons for most oral mucosal changes. Some cases of Oral Mucosa Disorder are seen in multiparous women. This might suggest that this can be attributed to increasing nutritional deficiency, lack of dental health care or rising age during the next pregnancies. To answer this question, empirical studies are needed. However, with regard to the results of this study, pregnant women with vomiting had more oral lesions (similar to Sarifakioglu study).¹⁵ Lack of oral health care can be referred to gag reflux. Furthermore, acid reflux to the mouth may cause oral mucosal changes leading to atrophy or burning of the tongue, but as mentioned further studies are needed to closely examine such as a relation. One of the limitations of this study was the lack of lesion biopsy, which in some cases, led to exclusion of the non-diagnosed subjects from the study. The biopsy

was not done because subject's consent was not obtained for this testing.

However, most epidemiological studies have this limitation due to the high sample volume. Only in some studies was a biopsy done to rule out the malignant lesions.⁷ The latter cases were referred to biopsy tests. Another limitation was that dentist should have randomly rechecked some patients' initial dental examinations for quality control and consistency; however, restrictions imposed by the involved institutions prevented this. Oral examination in some cases was done by the specialist, who was sometimes assisted by general practitioners. The later were trained prior to conducting the study.⁷ For oral diseases diagnosis, a trained GP has the ability to gather and provide appropriate data and information.⁷ This study took a similar approach. With regards to the relation between oral lesions and some medications or special disease, perhaps exclusion factors stated earlier were the reasons for the lower prevalence of Oral Mucosa Disorder in control group of this study compared to other epidemiological studies in normal population. Considering that the pregnant women were examined and oral lesion was not the cause of referring of any of the pregnant women, the result of this study may be generalized to the whole population. Finally, it is clear that oral lesions diagnosis is an important part of dental practice.

The Oral Mucosa Disorder prevalence is also a significant index for oral health evaluation in every population. Thus, in planning health care, for target groups such as pregnant women, the planners must keep the oral health needs of this population in mind. Moreover, due to a possible relationship between periodontal diseases and individual health, and a possible correlation between oral health of the mother and child, the pregnant women health centres should operate in a close cooperation with dentists. There should be a plan in place to perform oral examination and evaluate oral lesions on all pregnant women during their first visit. The pregnant women must also be educated about the importance of oral hygiene and be advised to closely observe their oral health during the pregnancy. In addition to early diagnosis and treatment of the lesions, public health-based approach program can prevent developing lesions during pregnancy. It is important to note that more prospective studies, with larger sample size

(examination before, during and post-partum) are undertaken to evaluate the oral lesions and its association with pregnancy complications during this vital period.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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