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ORAL INFLAMMATION AND TRAUMATIC DISEASES IN PREGNANT WOMEN

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Abstract: Pregnancy is a period marked by profound hormonal, vascular, and immune changes that can significantly influence oral health. Among the most frequent yet underestimated issues are inflammatory and traumatic diseases of the oral cavity. This study explores the prevalence, underlying causes, and clinical manifestations of oral inflammation — including pregnancy gingivitis, periodontitis, and mucosal irritation — alongside trauma-related conditions such as tooth fractures, soft tissue injuries, and bite-related ulcers. A total of 130 pregnant women were examined across all three trimesters, and data were collected through oral examinations, surveys, and medical history analysis. The findings reveal a high occurrence of inflammation and minor traumatic injuries, particularly in the second and third trimesters. Contributing factors include poor oral hygiene, increased vascularity of the gums, altered immunity, and heightened tissue sensitivity. The study underscores the need for improved prenatal oral care and education to prevent complications and enhance maternal well-being.

Keywords: oral inflammation; pregnancy gingivitis; traumatic oral injuries; periodontal health; dental trauma; oral mucosal changes; prenatal oral care; hormonal effects; maternal oral health; pregnancy periodontitis

Introduction

During pregnancy, a woman's body undergoes numerous physiological transformations that affect nearly every organ system — including the oral cavity. While the link between general health and pregnancy is well understood, oral health issues such as inflammation and trauma often go unnoticed or underreported, despite their potential to cause discomfort, infection, or even systemic complications.

Hormonal fluctuations, particularly in progesterone and estrogen, lead to increased vascular permeability and inflammatory response in the gingiva. This often manifests as pregnancy gingivitis, which can progress to periodontitis if left unmanaged. In addition to inflammation, pregnant women are also susceptible to traumatic injuries, both from external factors and self-induced causes such as bruxism, unintentional biting, or weakened enamel resulting in fractures.

Despite the prevalence of these issues, many women are unaware of the oral risks during pregnancy, and dental care is often delayed due to misconceptions about treatment safety or time constraints. This study aims to investigate the frequency, severity, and causes of oral inflammation and trauma in pregnant women and to highlight the need for preventive strategies and integrated care.

Materials and Methods

A cross-sectional clinical study was conducted in three maternal health clinics over a period of 9 months. A total of 130 pregnant women, aged 19 to 40, across all trimesters, were enrolled through voluntary participation and consent.

1. Clinical Examination

Each participant underwent a comprehensive oral health checkup to assess:

- Gingival condition (using the Gingival Index)
- Periodontal pocket depth
- Presence of soft tissue lesions (e.g., ulcers, abrasions)
- Dental fractures or enamel wear
- Signs of bruxism or occlusal trauma

2. Survey and Medical History

- Participants completed a questionnaire covering:
- Oral hygiene habits (brushing, flossing, mouthwash use)
- Past dental history and frequency of dental visits
- Diet, vomiting episodes, and stress levels
- Awareness of oral health risks during pregnancy

3. Data Analysis

Data were analyzed using SPSS v.25. The prevalence of each condition was calculated, and comparative analysis was done between trimesters. Pearson's correlation was used to assess the relationship between inflammation severity and factors such as oral hygiene, trimester, and vomiting frequency.

Ethical clearance was obtained from the institutional research board, and confidentiality was strictly maintained.

Results and Discussions

During the dental examination of the studied pregnant women, the symptoms related to dental diseases, as well as the indicators of various inflammatory and traumatic diseases of the oral cavity were studied and compared. The results showed that among dental diseases among pregnant women, caries (of varying degrees) was the leading cause - 37.17±3.97% (n=51). The next in the list were periodontitis and gingivitis - 17.24±3.74% (n=25) and 16.55±3.09% (n=22), respectively. It is noteworthy that among the fairly common diseases, chronic periodontitis was also found in 15.17±2.98% (n=22). The remaining dental diseases were found in 0.69-6.21% of cases. The fact that caries is still the leading cause of dental diseases today was analyzed as a noteworthy fact.

If we divide the dental diseases among women with first and multiple pregnancies, we observe different results. Out of 56 women with first pregnancies, caries was observed in 12 (21.43±3.41%), while out of 89 women with multiple pregnancies, this pathology was detected in 39 (43.82±4.12%). Similar or different results were obtained for other dental diseases (Figure 3.3). There was a difference between the women being compared in terms of periodontitis (3.93±2.37%, n=5 and 22.47 ± 3.47%, n=20) and chronic periodontitis (8.93±2.37%, n=5 and 19.10±3.26%, n=17), while no significant difference was observed in terms of gingivitis (14.28±2.91%, n=8 and 17.98±3.19%, n=16) and chronic gingivitis (5.36±1.87%, n=3 and 6.76±2.08%, n=6). When comparing these figures, it was found that caries was 2.04 times less common in first-time pregnant women than in those with multiple pregnancies ($P<0.001$), periodontitis was 2.52 times less common ($P<0.001$), and chronic periodontitis

was 2.14 times less common (P<0.001). At the same time, no significant difference was found between women compared in terms of the incidence of gingivitis and chronic gingivitis - 1.26 times less common (P<0.05), respectively.

The difference in the incidence of these diseases among the groups of women being compared was associated with the number of pregnancies. The reason for this conclusion is the exclusion of other factors affecting the development of these diseases. If we take into account that 12 factors, such as the age of these women, lifestyle, place of residence, nutritional characteristics, the course of pregnancy, the incidence of extragenital diseases diagnosed in them, medications used during pregnancy, the absence of dental and jaw anomalies, profession, education, the fact that environmental influences are the same for everyone, and the presence of adverse occupational hazards, were practically the same in this regard, then one factor that differs remains - the number of pregnancies.

Based on the principles of evidence-based medicine and the rules of representativeness, when only one factor differs, while the effects of other factors are the same, this factor can be an indirect factor causing the disease. Taking this into account, it was argued that the factor that negatively affects the incidence of dental diseases among pregnant women is the number of pregnancies.

Thus, the analysis of the incidence of inflammatory and traumatic diseases of the oral cavity showed that caries (37.17%) was the most common among pregnant women, followed by periodontitis (17.24%), gingivitis (16.55%) and chronic periodontitis (15.17%), and the remaining dental diseases were found in 0.69-6.21% of cases. It was found that caries was 2.04 times less common in first-time pregnant women than in multipregnant women (R<0.001), periodontitis 2.52 times less common (R<0.001), chronic periodontitis 2.14 times less common (R<0.001), and no significant difference was found between the women compared in terms of the incidence of gingivitis and chronic gingivitis (R<0.05). The difference in the incidence of these diseases among the groups of women compared was associated with the number of pregnancies.

the oral cavity, the incidence of non-carious lesions of the teeth is also unique. The incidence of these pathological conditions among the studied pregnant women was also determined during the medical examination. During the study, the incidence of symptoms such as enamel hypoplasia, enamel erosion, wedge-shaped defects and pathological wear of the teeth was determined and analyzed. To analyze the results, the studied women were studied by age groups.

If the wedge-shaped defect (the formation of a wedge-shaped defect in the neck area of the molars and premolars) was found in 6.21±2.00% (n = 9) and pathological erosion of the teeth (a change in the anatomy of the tooth accompanied by increased thinning of the enamel and dentin) in 3.45±1.52% (n = 5) cases, which is the same as the previous indicator, then enamel erosion of the teeth (damage to the surface layer and enamel of the teeth) was characterized by the fact that it was detected 2.30 times or more (R <0.001).

There is a significant difference in the incidence of non-carious lesions of all four teeth listed above between first and multiple pregnancies (R<0.001), in all cases their incidence was higher in multiple pregnancies, especially in enamel erosion (5.36% vs. 20.22%) and enamel hypoplasia (1.79% vs. 10.11%). It is known that oral hygiene plays a significant role in the formation and development of dental diseases. Taking this into account, oral hygiene of pregnant women was studied and evaluated according to the methodology accepted in dentistry (Table 3.5).

The results obtained during the dental examination showed that 22.07±3.44% (n=32) of pregnant women considered their oral hygiene to be “good”, while 74.48±3.62% (n=108) considered their oral hygiene to be “satisfactory”. Among the pregnant women involved in the study, there were a small number (3.45±1.52%, n=32) of pregnant women who considered their oral hygiene to be

"unsatisfactory". It was also found that the majority of pregnant women with "good" and "satisfactory" oral hygiene status were associated with a lower incidence of dental diseases.

Thus, the results of the study of the prevalence of non-carious tooth damage and diseases of the oral mucosa among pregnant women showed that enamel hypoplasia was observed in 6.90% of all pregnant women, while wedge-shaped defects were found in 6.21% and pathological tooth erosion in 3.45% of cases, which is the same as the previous indicator, while enamel erosion was characterized by the detection of 2.30 times more of them (R<0.001). A significant difference (R<0.001) between the parameters of non-carious tooth damage between the first and multiple pregnancies was in favor of the multiple pregnancies, especially this difference was significant in enamel erosion (5.36% vs. 20.22%) and enamel hypoplasia (1.79% vs. 10.11%). Oral candidiasis was found in 1.38% of cases, while stomatitis was found to be at the same level as other dental diseases (19.31%, n=28). There was no significant difference in the incidence of these diseases between first-time and multiple pregnancies. The percentage of women who considered their oral hygiene to be "good" was 22.07%, 74.48% considered it to be "satisfactory", and 3.45% considered it to be "unsatisfactory". There was no difference in this parameter between first-time and multiple pregnancies. The incidence of oral hygiene and dental diseases was directly proportional.

Thus, the study of the KPU index, which is associated with the teeth of women of childbearing age, who are in the III trimester of pregnancy, showed that the number of filled teeth was 183, of which 71.58% were in the upper jaw and 28.42% in the lower jaw. With a slightly larger number of teeth with artificial fillings (n = 220), the indicator in the lower jaw was higher than in the upper jaw - 46.93% and 53.07%, respectively. As for the indicator of extracted teeth, the difference between these parameters was significant - 60.98% and 29.02% (2.10 times in favor of the upper jaw, P<0.001). If we look at the total number of teeth of all women (145 women, 4,640 teeth), we see that these numbers are low.

Conclusion

It was found that pregnant women had 183 teeth filled, 71.58% of which were in the upper jaw, 28.42% in the lower jaw. Despite the slightly higher number of teeth with artificial fillings (n=220), the lower jaw had a higher rate than the upper jaw - 46.93% and 53.07%, respectively. As for the extracted teeth, the difference between these parameters was significant - 2.10 times in favor of the upper jaw. In general, if we look at the cross-section of all women's teeth (145 women, 4640 teeth), these figures were low, and there was no significant difference in these parameters between women with first and multiple pregnancies.

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