



ORIGINAL ARTICLE

ORAL HEALTH STATUS IN WOMEN WITH PHYSIOLOGICAL PREGNANCY AND TOXICOSIS: A CROSS-SECTIONAL STUDY

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Abstract

Background: Pregnancy represents a unique physiological state characterized by complex neurohumoral and metabolic adaptations that inevitably influence the condition of oral tissues.**Aim:** To evaluate oral health status in women with physiological pregnancy, with particular emphasis on the relationship between early pregnancy toxicosis and oral manifestations during the first half of gestation.**Methods:** A dental examination was performed in 479 pregnant women. From this cohort, 143 women aged 18–45 years with a gestational age of 9–14 weeks were selected for the study and divided into four groups: Group 1 – women with tooth erosion and toxicosis (n=54); Group 2 – women with tooth erosion without toxicosis (n=23); Group 3 – women without tooth erosion but with toxicosis (n=38); and Group 4 – women without tooth erosion or toxicosis (n=28). The prevalence of erosive tooth wear and dental caries, oral hygiene status, gingival inflammation, and salivary pH were assessed. Tooth erosion was evaluated using the Dental Erosion Grading Scale proposed by Eccles and Jenkins (1974), caries experience was assessed according to the International Caries Detection and Assessment System (ICDAS), gingival status was evaluated using the Loe and Silness Gingival Index (1963), and dental plaque accumulation was assessed using the Green and Vermillion Oral Hygiene Index (1964).**Results:** The prevalence of tooth erosion among pregnant women was 16.0%. No statistically significant difference in mean Eccles and Jenkins erosion scores was observed between women with early pregnancy toxicosis and those without toxicosis ($p>0.05$). The combination of tooth erosion and toxicosis was associated with a significantly higher total number of carious lesions and a greater proportion of initial enamel lesions according to ICDAS criteria ($p<0.01$). Salivary pH values were significantly lower in women with erosive tooth lesions compared with those without erosive changes ($p<0.05$). Moderate-to-severe gingivitis and inadequate oral hygiene were observed in all study groups; however, no statistically significant differences were identified between groups ($p>0.05$).**Conclusion:** The findings emphasize the importance of implementing preventive dental programs for pregnant women from the earliest stages of gestation to reduce the risk of erosive tooth wear and dental caries progression, while improving oral hygiene and maintaining periodontal health during pregnancy.**Keywords:** pregnancy toxicosis, tooth erosion, dental caries, gingivitis, salivary pH

INTRODUCTION

Pregnancy represents a unique physiological state characterized by complex neurohumoral and systemic adaptations that inevitably influence the condition of oral tissues. One of the most common complications occurring during the first half of pregnancy is early toxicosis, manifested primarily by nausea and vomiting. Recurrent vomiting results in repeated and prolonged exposure of dental enamel to aggressive acidic gastric contents, which may contribute to enamel

demineralization and the development of erosive tooth lesions¹⁵.

In recent years, the problem of non-carious lesions of dental hard tissues, particularly erosive tooth wear, has gained increasing importance in dentistry. This highlights the need for further investigation of its etiology, pathogenesis, prevalence, as well as effective preventive and therapeutic strategies. Epidemiological studies conducted worldwide have demonstrated the significant influence of socio-behavioral and

environmental factors on the development of oral diseases. Pregnant women represent one of the important risk groups for the occurrence and progression of tooth erosion due to the combination of physiological changes and specific pregnancy-related risk factors^{11,19}.

Erosive tooth wear is defined as a chemical-mechanical process characterized by the progressive and cumulative loss of dental hard tissues without bacterial involvement⁸. In pregnant women, tooth erosion is considered a clinically relevant dental problem associated with the interaction of endogenous factors (hormonal alterations, pregnancy toxicosis, gastroesophageal reflux, and prolonged episodes of vomiting) and exogenous factors (dietary habits, frequent consumption of acidic fruits, and carbonated beverages). During pregnancy, these mechanisms may act simultaneously, emphasizing the importance of detailed medical history assessment for accurate diagnosis and the selection of appropriate preventive and therapeutic measures^{1,21}.

Previous studies have confirmed the relationship between erosive tooth wear and acid-induced demineralization of enamel⁵. Enamel dissolution occurs when the oral environment becomes undersaturated with respect to hydroxyapatite and fluorapatite. This process may be accelerated by exposure to acids originating from dietary sources and gastric reflux. The severity and pattern of erosive damage depend not only on the pH level but also on the chemical characteristics and type of acid involved¹⁸.

Pregnancy-related hormonal changes may also influence dental tissues and contribute to variations in the prevalence and severity of erosive lesions. Among young women, active erosive lesions have been reported in 43% of cases, indicating the importance of early detection and monitoring of this condition during reproductive age, including pregnancy¹⁰.

Behavioral modification remains a key component of successful prevention and requires individualized patient education, motivation, and regular dental follow-up⁷.

Current evidence indicates that pregnant women often receive insufficient dental care. Although the first national consensus statement on oral health care during pregnancy was published in 2012, emphasizing the safety and importance of regular dental care for pregnant women¹⁴, many women continue to

underestimate the importance of maintaining oral health during pregnancy. Recent studies evaluating erosive tooth wear throughout pregnancy have demonstrated an increase in prevalence from 1.5% during the first trimester to 36.4% during the third trimester, with severe enamel loss reported in 7.6% of cases³.

These findings emphasize the necessity of active educational strategies and systematic assessment of risk factors, including tooth erosion, which may significantly affect the quality of life of women during pregnancy⁴.

Despite the clear pathophysiological relationship between early toxicosis and acid-related dental tissue damage, the prevalence, severity, and clinical characteristics of tooth erosion in pregnant women with this obstetric condition remain insufficiently investigated. Most available studies primarily focus on periodontal inflammatory diseases and dental caries, while erosive tooth wear has received comparatively less attention. The influence of early toxicosis on salivary buffering capacity, oral hygiene status, and the development of clinical management strategies for pregnant women with erosive lesions require further investigation. The above-mentioned considerations highlight the medical and social importance of studying oral health conditions in women with physiological pregnancy and pregnancy-associated toxicosis. Early identification of risk factors and clinical manifestations during the first trimester may contribute to the development of evidence-based, individualized preventive approaches aimed at maintaining oral health and reducing the risk of dental diseases in pregnant women.

The aim of this study was to evaluate the oral health status of pregnant women with physiological pregnancy and early pregnancy toxicosis during the first half of gestation.

METHODS

A dental examination was conducted among 479 pregnant women at the Obstetrics and Gynecology Department Clinic of the Russian University of Medicine. From this cohort, 143 women were selected to participate in the cross-sectional study according to the following inclusion criteria:

- pregnant women aged 18–45 years;
- gestational age of 9–14 weeks;
- voluntary agreement to participate in the study and provision of written informed consent.

The following exclusion criteria were applied:

- pregnant women younger than 18 years or older than 45 years;
- gestational age less than 9 weeks or more than 14 weeks;
- decompensated somatic diseases;
- malignant neoplasms of the oral cavity;
- psychoneurological disorders interfering with participation in the study.

The presence of tooth erosion and early pregnancy toxicosis was assessed during the dental and medical examination. Early pregnancy toxicosis was diagnosed by obstetricians and gynecologists at the University Clinic according to clinical criteria corresponding to ICD-10 code O21.0 (mild hyperemesis gravidarum).

Women with a gestational age exceeding 14 weeks at the time of dental examination were excluded from the study (n=336).

All participants were informed about the objectives and procedures of the study and provided written informed consent prior to participation. The study protocol was reviewed and approved by the University Ethics Committee.

Based on the presence or absence of tooth erosion and early pregnancy toxicosis, the 143 enrolled women were divided into four study groups:

- Group 1 (n=54) – women with tooth erosion and early pregnancy toxicosis;
- Group 2 (n=23) – women with tooth erosion without early pregnancy toxicosis;
- Group 3 (n=38) – women without tooth erosion but with early pregnancy toxicosis;
- Group 4 (n=28) – women without tooth erosion or early pregnancy toxicosis.

The dental examination included assessment of erosive tooth wear using the Dental Erosion Grading Scale proposed by Eccles and Jenkins (1974). The scoring criteria were as follows: 0 – absence of erosion; 1 – erosion limited to enamel; 2 – dentin involvement affecting less than one-third of the lesion surface; 3 – dentin involvement affecting more than one-third of the lesion surface. Dental caries lesions were assessed using the International Caries Detection and Assessment System (ICDAS, 2002) according to the following criteria: 0 – sound tooth surface; 1 – first visual change in enamel visible only after air drying; 2

– distinct visual change in enamel visible without air drying; 3 – localized enamel breakdown; 4 – underlying dark shadow from dentin; 5 – distinct cavity with visible dentin; 6 – extensive distinct cavity with visible dentin.

The level of oral hygiene was evaluated using the Simplified Oral Hygiene Index (OHI-S) developed by Green and Vermillion (1964). Gingival inflammation was assessed using the Gingival Index (GI) proposed by Loe and Silness (1963).

The pH of mixed saliva samples was measured using diagnostic indicator strips (pH Scan, Russia). Participants were instructed to refrain from eating for 1.5–2 hours before the examination. Prior to saliva collection, they rinsed their mouth with distilled water. Three saliva samples were collected from each participant, and the mean pH value was calculated.

Statistical analyses were performed using Statistica 7.0 (StatSoft, USA) and Microsoft Excel 2016 (Microsoft Corporation, USA). For intergroup comparisons of mean oral health indicators, an independent-samples t-test (Student's t-test) was applied. Differences were considered statistically significant at $p < 0.05$, which corresponds to the conventional significance threshold used in biomedical research.

RESULTS

A dental examination of 479 pregnant women revealed erosive tooth wear in 77 women, with an overall prevalence of 16%. Tooth erosion was diagnosed in 54 (70%) women whose pregnancy was complicated by early toxicosis and in 23 (30%) women with a physiological course of pregnancy. The mean number of teeth affected by erosion was 7.82 ± 0.30 . Dental hypersensitivity was reported by 53% of pregnant women with tooth erosion, while esthetic concerns were reported by 16% of these women.

The mean Eccles and Jenkins score in pregnant women with toxicosis (Group 1) was 7.91 ± 0.41 . Erosive lesions with score 1 accounted for 5.74 ± 0.26 , while the corresponding values for score 2 and score 3 were 2.06 ± 0.20 and 0.11 ± 0.06 , respectively. The mean Eccles and Jenkins score in pregnant women without signs of toxicosis (Group 2) was 7.61 ± 0.37 . In this group, erosive lesions with score 1 accounted for 5.35 ± 0.37 , while the corresponding values for score 2 and score 3 were 2.09 ± 0.27 and 0.17 ± 0.10 , respectively (Figure 1).

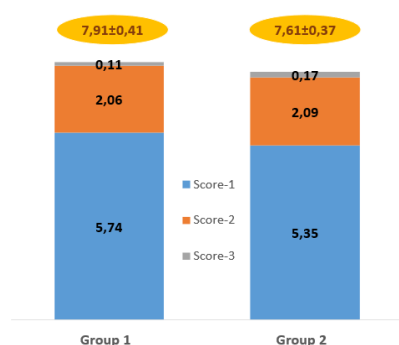


Figure 1. The distribution of erosive tooth wear severity in pregnant women according to the Dental Erosion Grading Scale (Eccles and Jenkins, 1974).

The differences in Eccles and Jenkins scores between women with early toxicosis and those without toxicosis were not statistically significant ($p > 0.05$).

The analysis of caries experience according to ICDAS criteria demonstrated a predominance of initial enamel carious lesions (codes D1 and D2) across all study groups.

The mean ICDAS value in pregnant women from Group 1 was 6.89 ± 0.35 . The mean number of initial carious lesions (D1, D2) was 3.79 ± 0.25 (55.5%); D3 and D4 lesions accounted for 1.79 ± 0.14 (26.2%), while D5 and D6 lesions accounted for 1.31 ± 0.19 (19.2%). The mean ICDAS value in Group 2 was 6.18 ± 0.44 . The number of teeth with D1 and D2 lesions was 3.26 ± 0.29 (52.8%), D3 and D4 lesions accounted for 2.09 ± 0.23 (33.9%), and D5 and D6 lesions accounted for 0.83 ± 0.18 (13.5%).

The mean ICDAS value among pregnant women without tooth erosion in Group 3 was 5.58 ± 0.33 . The proportion of initial enamel caries (D1, D2) was 48.8% (2.79 ± 0.27), D3 and D4 lesions accounted for 32.2% (1.84 ± 0.15), and D5 and D6 lesions accounted for 16.6% (0.95 ± 0.14). The mean ICDAS value in Group 4 was 6.06 ± 0.49 . The mean number of D1 and D2 lesions was 2.89 ± 0.25 (47.8%), D3 and D4 lesions accounted for 2.82 ± 0.33 (46.7%), and D5 and D6 lesions accounted for 0.35 ± 0.13 (5.8%).

The analysis of differences between groups demonstrated that pregnant women in Group 1 had a significantly higher total number of carious lesions, as well as a significantly higher number of initial enamel lesions (D1, D2), compared with Groups 3 and 4 ($p < 0.01$). The number of dentin cavities (D5, D6) in pregnant women in Group 4 was significantly lower

than that observed in pregnant women from Groups 1 ($p < 0.001$), 2 ($p < 0.01$), and 3 ($p < 0.01$) (Figure 2).

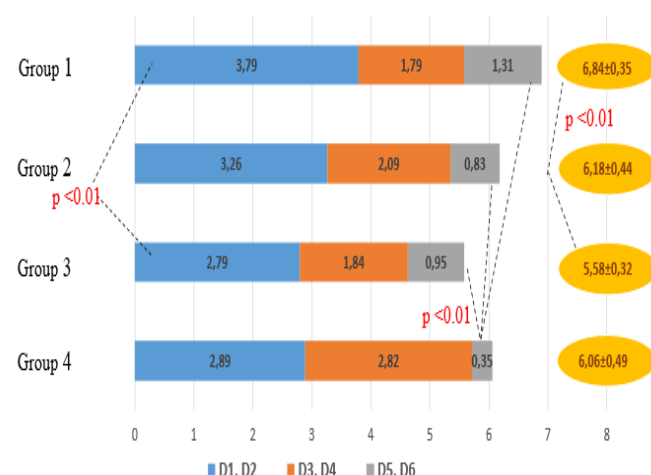


Figure 2. Caries experience in pregnant women according to ICDAS criteria

Dental examinations revealed substantial dental plaque accumulation among all examined pregnant women. Oral Hygiene Index (OHI-S) values did not differ significantly between the study groups. The mean OHI-S value was 1.76 ± 0.10 in Group 1, 1.72 ± 0.16 in Group 2, 1.75 ± 0.13 in Group 3, and 1.94 ± 0.18 in Group 4 ($p > 0.05$) (Figure 3).

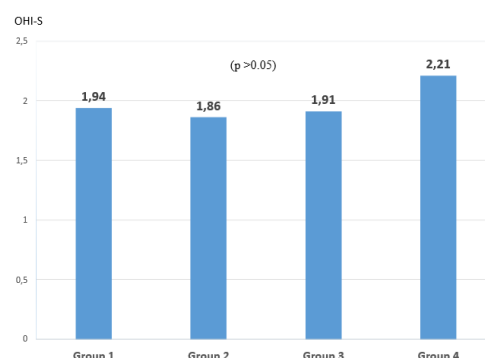


Figure 3. Oral Hygiene Index (Green and Vermillion, 1964) values in pregnant women.

Periodontal tissue examination in pregnant women revealed signs of gingival inflammation, including marginal gingival hyperemia, swelling of the gingival papillae, and bleeding on probing, indicating impaired periodontal status during the first half of gestation.

The mean Gingival Index (GI) value was 1.95 ± 0.19 in Group 1, 1.86 ± 0.13 in Group 2, and 1.91 ± 0.12 in Group 3, corresponding to moderate gingivitis. In Group 4, the

mean GI value was higher (2.21 ± 0.12), corresponding to severe gingivitis. No statistically significant differences in GI values were observed among the study groups ($p > 0.05$) (Figure 4).

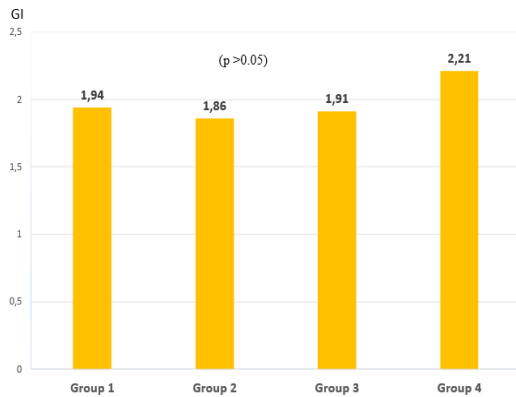


Figure 4. Gingival Index (Loe and Silness, 1963) values in pregnant women

Analysis of mixed saliva samples from pregnant women demonstrated a shift in salivary pH toward the acidic range, with an overall mean value of 6.27 ± 0.05 .

The mean salivary pH value in pregnant women with tooth erosion was 6.08 ± 0.05 in Group 1 and 6.30 ± 0.09 in Group 2 ($p > 0.05$). Among pregnant women without erosive lesions, salivary pH values were significantly higher, reaching 6.82 ± 0.07 in Group 3 and 6.87 ± 0.09 in Group 4 ($p < 0.01$) (Figure 5)

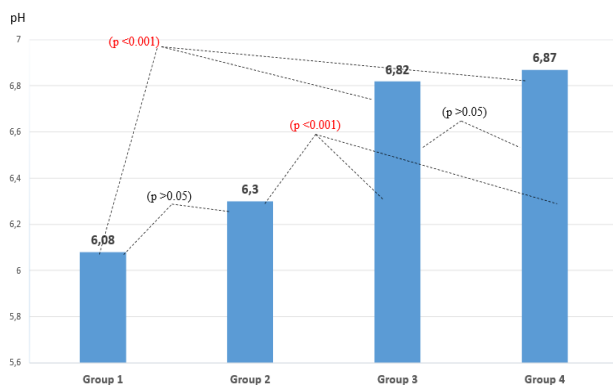


Figure 5. Salivary pH values in pregnant women

The lowest mixed salivary pH value (5.62 ± 0.06) was observed in pregnant women with tooth erosion who reported vomiting as a symptom of early toxicosis. Among women reporting sour eructation and nausea, the mean salivary pH value was 6.08 ± 0.04 , while in women with a physiological course of pregnancy, it was 6.47 ± 0.08 ($p < 0.001$).

A similar tendency was observed among pregnant women with early toxicosis without tooth erosion; however, salivary pH values under the same clinical symptoms were significantly higher (6.13 ± 0.14 , 6.59 ± 0.08 , and 7.02 ± 0.05 , respectively; $p < 0.001$).

DISCUSSION

The present study investigated oral health status in women with physiological pregnancy and those with early pregnancy toxicosis, with particular emphasis on erosive tooth wear, dental caries, oral hygiene status, gingival inflammation, and salivary pH. The findings revealed several clinically relevant associations between symptoms of early toxicosis and pathological changes in dental hard tissues and periodontal tissues.

Prevalence and severity of tooth erosion

The prevalence of tooth erosion in the examined cohort was 16%, which is consistent with previously reported data from European populations. Jaeggi and Lussi [10] demonstrated that the prevalence of erosive tooth wear varies considerably (from 5% to 80%) depending on age, geographical region, and diagnostic criteria. The prevalence observed in our study falls within the lower range of previously reported values, which may be explained by the relatively young age of participants and the absence of severe systemic comorbidities.

The mean Eccles and Jenkins scores did not differ significantly between women with early pregnancy toxicosis (Group 1: 7.91 ± 0.41) and those without toxicosis (Group 2: 7.61 ± 0.37 ; $p > 0.05$). These findings suggest that although early pregnancy toxicosis is a recognized risk factor for erosive tooth wear^{2,13}, the severity of existing erosive lesions may be influenced more strongly by chronic pre-existing factors, such as dietary habits, oral health behavior, and baseline salivary buffering capacity, rather than by the acute episodes of vomiting and gastric acid exposure occurring during the first half of gestation.

The findings indicate that the combination of pregnancy toxicosis and dietary habits may have a greater influence on the progression of erosive tooth wear in pregnant women.

This interpretation is supported by the observation that score-1 lesions (enamel-only involvement) predominated in both groups, accounting for approximately 70–73% of erosive defects, whereas score-3 lesions (dentin involvement affecting more than

one-third of the lesion surface) were uncommon (<2%). Such a distribution suggests that erosive tooth wear in most pregnant women is identified at an early stage, emphasizing the importance of timely preventive measures.

A recent prospective observational study highlighted that hormonal fluctuations during pregnancy, particularly increased progesterone and estrogen levels, may play an important role in maintaining stomatognathic health, while the frequency of vomiting itself was not identified as an independent significant factor. This observation is consistent with our findings that the severity of erosive lesions did not differ significantly between women with and without toxicosis, suggesting that chronic hormonal and behavioral factors may have a greater influence than short-term vomiting episodes ¹⁷.

Dental caries and its association with tooth erosion and pregnancy toxicosis

A key finding of this study was that pregnant women in Group 1 (tooth erosion and early pregnancy toxicosis) had a significantly higher total number of carious lesions compared with women in Groups 3 and 4 ($p < 0.01$). The number of initial enamel carious lesions (ICDAS codes D1 and D2) was also significantly higher in Group 1. These findings support the hypothesis that acid-induced enamel demineralization caused by gastric reflux and vomiting may create favorable conditions for the development and progression of cariogenic processes.

Although erosive tooth wear and dental caries have different etiological mechanisms, with erosion being primarily a chemical process and caries being associated with bacterial activity, repeated exposure to gastric acids may weaken the enamel surface and increase its susceptibility to subsequent bacterial acid challenges ^{5,16}.

The lowest prevalence of dentin cavities (D5, D6) was observed in Group 4 (women without tooth erosion or toxicosis), which was expected due to the absence of both major risk factors. However, Group 3 (women with toxicosis without tooth erosion) demonstrated an intermediate pattern. In this group, initial carious lesions (D1, D2) accounted for 48.8%, while dentin cavities (D5, D6) accounted for 16.6%.

These findings suggest that early pregnancy toxicosis alone, even in the absence of clinically detectable

erosive tooth wear, may contribute to the progression of dental caries, possibly through alterations in salivary pH and reduced buffering capacity.

Oral hygiene and periodontal status

Among pregnant women from all study groups, Gingival Index (GI) values ranged from 1.86 to 2.21, with no statistically significant differences between groups. These findings are consistent with the well-established increase in gingival inflammation during pregnancy, which is associated with elevated levels of progesterone and estrogen. These hormonal changes may increase vascular permeability and enhance the inflammatory response of gingival tissues to dental plaque accumulation.

The absence of significant differences between women with and without early pregnancy toxicosis indicates that toxicosis itself does not appear to substantially increase gingival inflammation beyond the effects of pregnancy-related hormonal changes.

Oral hygiene status, assessed using the OHI-S index, demonstrated insufficient plaque control across all study groups, with values ranging from 1.72 to 1.94. Inadequate oral hygiene likely contributed to the increased prevalence of dental caries and the pronounced gingival inflammatory changes observed among the examined pregnant women. Interestingly, Group 4 (women with physiological pregnancy without erosion or toxicosis) demonstrated the highest OHI-S value (1.94 ± 0.18) and the highest GI value (2.21 ± 0.12).

This finding may be explained by the possibility that women with an apparently uncomplicated pregnancy and without noticeable dental symptoms may underestimate their oral health risks and therefore demonstrate lower motivation toward preventive oral care.

Salivary pH and pregnancy toxicosis

The most pronounced differences between the study groups were observed in salivary pH values. Pregnant women with tooth erosion (Groups 1 and 2) demonstrated significantly lower salivary pH values (6.08–6.30) compared with women without erosive lesions (6.82–6.87) ($p < 0.05$). These findings are consistent with the established role of reduced salivary pH in the demineralization process associated with erosive tooth wear ²¹.

Among women with early pregnancy toxikosis, the severity of clinical symptoms demonstrated an inverse association with salivary pH values. The lowest pH value (5.62 ± 0.06) was observed in women with tooth erosion who experienced vomiting, followed by women with sour eructation and nausea (6.08 ± 0.04), while the highest pH value (6.47 ± 0.08) was observed in women with a physiological course of pregnancy.

A similar gradient was observed among women with toxikosis without tooth erosion; however, the absolute pH values were significantly higher at each symptom level ($p < 0.001$). These findings indicate that symptoms associated with early toxikosis may contribute to a reduction in salivary pH, while the presence of established erosive lesions is associated with an even more acidic oral environment, possibly due to the combined effects of reduced buffering capacity and continuous acid-mediated enamel demineralization.

Our findings are consistent with a large recent study demonstrating a significant gradual decrease in unstimulated salivary pH from the first to the third trimester of pregnancy, reflecting a shift toward a more acidic oral environment compared with non-pregnant controls²⁰. Lussi et al. emphasized the importance of salivary pH and buffering capacity in the pathogenesis of erosive tooth wear, which is directly supported by the observations of the present study¹³.

Bartlett et al. reported an association between dietary habits and erosive tooth wear in adults; however, our findings extend previous knowledge by demonstrating that pregnancy-specific factors, particularly symptoms of early toxikosis, may influence salivary pH changes during gestation².

Clinical and preventive implications

Unlike previous studies that have primarily focused on periodontal diseases during pregnancy, the present study highlights the importance of non-carious dental hard tissue lesions as an additional oral health concern in this population.

The findings have several important practical implications for dental care in pregnant women. First, the high prevalence of early-stage erosive lesions (score-1) indicates that screening for tooth erosion should be incorporated into routine dental examinations during the first trimester of pregnancy, particularly among women reporting vomiting or symptoms of gastric acid reflux.

Second, the increased risk of dental caries observed in women with both tooth erosion and early pregnancy toxikosis suggests that these patients may benefit from intensified preventive strategies, including topical fluoride applications, remineralizing agents, and individualized dietary counseling⁹.

The presence of inadequate oral hygiene and gingival inflammation across all study groups emphasizes the need for oral health education, professional teeth cleaning, and effective plaque control as essential components of prenatal healthcare. Furthermore, salivary pH assessment may represent a simple and non-invasive approach for identifying pregnant women at increased risk of erosive tooth wear and dental caries.

Limitations of the study

The cross-sectional design of the study allows the identification of associations between early pregnancy toxikosis symptoms and oral health status; however, the findings are limited to the first trimester of gestation. Nevertheless, this initial assessment was necessary to obtain baseline data for the development and implementation of a preventive program for the examined pregnant women.

Longitudinal follow-up was not included in the present stage of the study; however, it will be presented as the second part of the larger research project during the evaluation of the implemented prevention program.

A detailed dietary assessment, including the evaluation of acidogenic food and beverage consumption and other important potential confounding risk factors, was not included in this manuscript. However, these factors were assessed and will be presented as part of the broader research project¹².

Salivary flow rate measurements were not performed in this study; only salivary pH values were evaluated.

Despite the single-center design, this study provides clinically relevant observations and emphasizes the need for future prospective multicenter investigations using standardized diagnostic and methodological protocols.

Prospective cohort studies and preventive intervention trials

The present article represents the first stage of a larger

study aimed at comparing oral health status among women with physiological pregnancy and those experiencing early pregnancy toxicosis.

In addition to clinical dental examinations, a questionnaire survey was conducted among pregnant women using a modified version of the WHO (2013) Oral Health Questionnaire for Adults. Based on the obtained data, correlation analysis was performed to identify the most relevant risk factors, including dietary characteristics and oral health-related behaviors, influencing the severity of erosive tooth lesions.

All pregnant women diagnosed with tooth erosion were subsequently included in a preventive program consisting of oral health education, professional plaque removal, dietary recommendations, and topical application of remineralizing agents. Follow-up visits were scheduled at different gestational stages according to individual risk assessment.

Monitoring continued throughout pregnancy and the postpartum period, with the final evaluation of oral health status planned 9 months after initiation of the preventive program.

CONCLUSION

Tooth erosion was identified in women with both early pregnancy toxicosis and physiological pregnancy. The severity of erosive tooth wear did not differ significantly between pregnant women with early toxicosis and those without toxicosis.

The combination of early pregnancy toxicosis and dietary factors, including increased consumption of acidic foods and beverages, may contribute to a higher rate of progression and greater severity of erosive tooth wear among pregnant women. Pregnant women with both toxicosis and tooth erosion demonstrated a significantly higher total number of carious lesions and a greater proportion of initial enamel lesions.

The presence of toxicosis symptoms was associated with a shift in salivary pH toward the acidic range, with significantly lower salivary pH values observed in pregnant women with tooth erosion compared with women without erosive lesions but with similar toxicosis symptoms.

Signs of gingival inflammation were observed among all study participants, indicating the presence of pregnancy-associated periodontal changes.

The findings of this study emphasize the importance of implementing preventive oral health programs for pregnant women from the earliest stages of gestation to prevent or reduce the progression of erosive tooth wear and dental caries, while improving oral hygiene and maintaining periodontal health.

DECLARATIONS

Competing Interests

The author declare no conflict of interest.

Funding

No external funding was received for this study.

Ethical Approval

The study was reviewed and approved by University Ethical Committee and in accordance with those of the World Medical Association and the Helsinki Declaration.

Consent for publication

Patients were informed verbally and in writing about the study and gave written informed consent.

Availability of data and materials

Not availability

Clinical trial number

Not applicable

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