


Oral Manifestation in Pregnant Women in Sulaimaniyah City

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Abstract

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Background: Pregnancy is a physiological process during which a major hormonal change take place which leads to an imbalance in the oral environment and development of oral manifestation that can adversely affect mother's health and the health of the unborn child.

Objective: To assess the prevalence of the oral manifestation of pregnant women and to evaluate the correlation of these manifestations with the oral hygiene status.

Patients and Methods: A total of 150 pregnant women were enrolled in this study on which a meticulous intraoral examination and evaluation of oral health status using oral hygiene index simplified (OHI-S) carried out.

Results: The most involved age group was (21-25) years 38.00%. It was concluded that the most frequent oral finding was halitosis 67.33%, followed by dry mouth 59.33%, taste alteration 46%, pregnancy epulis 9.33%, candidiasis 7.33%, and ulceration 4%. In addition, pregnancy epulis and halitosis were significantly correlated with poor oral hygiene.

Conclusion: Pregnancy is associated with oral manifestations; therefore, dentists should be aware of such manifestations and provide education regarding oral health status and maintenance of good oral hygiene during pregnancy

Keywords: Pregnancy epulis, halitosis, candidiasis, dry mouth, taste alteration

Introduction

During pregnancy women may face many changes in their body and health. Some of these changes affect oral cavity either directly or indirectly [1]. This could be due to hormonal changes that happen during pregnancy and exposure to stomach acid during recurrent morning sickness cause an increase in oral acidity that may erode tooth enamel [2]. Pregnant women do, however, undergo metabolic alterations that, occasionally, significantly affect their oral metabolism. Among these include changes in hormone levels, oral bacterial strains,

immunological response, and cellular metabolism [3]. Moreover, progesterone reduces plasma bicarbonate levels, which contributes to the pH reduction. Prostaglandin production is also enhanced, which might lead to increased gingival inflammation and keratinization loss of the gingival epithelium, fibroblast proliferation, chemotaxis, and neutrophil phagocytic capability [4]. However, elevated levels of circulating estrogen, which increases capillary permeability, make pregnant women more susceptible to gingivitis and

gingival hyperplasia [2]. A number of temporary changes during pregnancy indicate that it is a dynamic physiological condition [5]. The increased needs of the mother and fetus for the development of the fetus and preparation for birth are the cause of these changes [6]. According to clinical research, gingival inflammation increases in both intensity and extent during pregnancy, and then decreases after delivery due to the hormone production decline [7]. These may manifest as a variety of physical signs and symptoms that may have an impact on the health, outlook, and social relationships of the patient. The patients might not always be aware of the significance of their body's modifications to the health of their fetuses [8]. The primary goal of dental health care during pregnancy is to create a healthy environment by controlling plaque with proper brushing, flossing, and professional prophylaxis including scaling, root planning, and polishing [9]. Gram-negative, anaerobic bacteria, which predominately develop in sub gingival areas, are the bacterial species that cause periodontal disease to begin [10]. The periodontal tissues that support teeth are destroyed as a result of the host's reaction to periodontal infections, causing chronic inflammation and resulting in clinical disease symptoms. Through improper feeding habits, mothers who do have untreated dental caries might potentially transmit cariogenic germs to their infants. 3-5. These days, it is advised that all pregnant women get a thorough dental health exam and risk assessment [11]. During this period, a pregnant woman needs varying amounts of assistance, including physical and mental support as well as medical monitoring or intervention [8].

Pregnant patients need additional care when receiving dental treatment. For instance, dentists could postpone some optional treatments so that they fall during the stages of pregnancy when the focus is on maturation rather than organ development. In other cases, dental practitioners must adjust their standard drug armory to fulfill the requirements of patients as opposed to fetal demands [2].

In addition, oral health can be affected during pregnancy because of lack of awareness regarding oral care and hygiene [12]. However, a lot of women don't have access to dental care, which makes it difficult for them to get the proper oral care throughout pregnancy [13]. Some of these problems include gingival hyperplasia, gingivitis, periodontitis and halitosis [14]. Oral health during pregnancy can affect pregnancy outcomes [15]. Early treatment during routine dental checkups can prevent certain negative effects of oral illnesses (such as tooth loss and pain) [16]. Multiple studies have shown a correlation between poor mother oral health, pregnancy outcomes, and dental health in children [17]. These may vary from preterm birth and low birth weight to an increased risk of early childhood caries [18]. Unfortunately, other than their dental hygiene care, pregnant women confront several extra obstacles to maintaining ideal oral health. Lack of information and value, bad oral health experiences, unfavorable attitudes toward oral health experts, financial problems, and negative attitudes of dental personnel toward pregnant women are some of the obstacles to accessing dental treatments [18]. It is thought that the woman loses a tooth for each child. There is no

scientific evidence to support this claim [19]. Pregnant gingivitis can irritate the gums enough to make brushing and basic dental treatment painful, so accelerating tooth deterioration. Most people with this dental decay are not impacted. Maintaining oral health during pregnancy may be accomplished by early screening and referral of pregnant women to oral health care practitioners for treatment to enhance the well-being of the mother and, in turn, the fetus. Nevertheless, good dental hygiene may help avoid or reduce the severity of the inflammatory mouth changes caused by hormones [19]. An excellent time to change women's health behaviors is during pregnancy, when they are more likely to be motivated to do so for the sake of the growing fetus [20]. As [21] stated that Numerous women were reported to be anxious about getting dental treatment, and many of them had put off getting it done due to being pregnancy.

Some of the physiologic changes and oral diseases related to pregnancy have been addressed in this study, along with how these variations may impact the patient's dental treatment

Patients and Methods

This survey study was designed to determine the oral manifestation in pregnant women. The sample comprised of 150 pregnant women, all chosen from maternity hospital and Rozhalat Health center in Sulaimaniyah city. Data collection was carried out from December 2021 to May 2022. The study was reviewed and approved by the Ethics Committee of the Kurdistan Board for Medical Specialties. Permission

was taken from the hospital and written informed consent was taken from each patient. Demographic data (age, occupation) and intra oral examination for sign and symptoms (candida, ulcer, pregnancy epulis, taste alteration, dry mouth, halitosis, etc.) were all carried out using dental examination instruments (dental mirror, prob, tweezer, cotton rolls and portable headlight). We also checked the patient general medical condition but only little of them had systemic disease like diabetes mellitus hypertension all mentioned in patients work sheets. Following WHO criteria, the oral hygiene of each subject was determined using the oral hygiene index-simplified (OHI-S).

Statistical Analysis

Data were tabulated in excel sheets. The statistical study was performed by the SPSS software package (version 16.0). Tables illustrated frequency distribution, percentages, and relations of studied parameters. The relation between age, sex, duration, size, density, location, and symptoms were examined by the Chi-square test and Spearman's correlation. Statistical significance was defined as p-value < 0.05.

Results

I-Demographic features of the sample: This sample included 150 cases, all females. The most involved age group is (21-25) years 38.00%, followed by age group (26-30) years 26.00%, and the least involved age group is (41-45) years which is 0.6%. Majority of patients were housewives which accounted for 97.33% and minority were student which accounted for 0.67% only. As shown in Table (1) and Figure (1).

Table (1): the demographic features of the sample

Occupation		
Occupation	Frequency	Percent
employer	3	2.00%
H.W	146	97.33%
student	1	0.67%
Total	150	100.00%

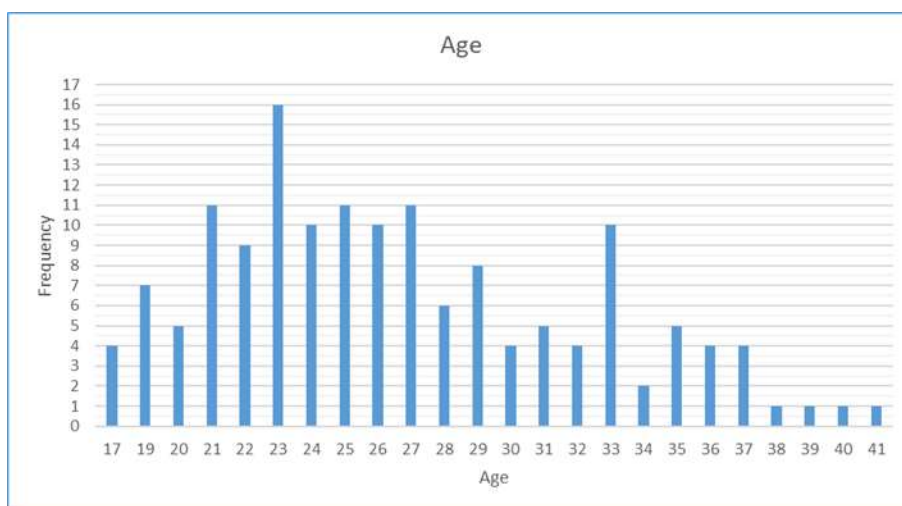


Figure (1): Age frequency of the participants

II- Frequency of the oral findings: The result shows that the most frequent oral symptom among the participants was halitosis which accounted for 67.33% followed by dry mouth 59.33% and taste alteration 46%. However, the least frequent

oral findings were ulcer, candidiasis, and pregnancy epulis which accounted for only 4%, 7.33%, and 9.33% respectively, while oral hygiene was measured as good 49.33%, fair 32%, and poor oral hygiene 18.67%. Details are shown in Table (2).

Table (2): Frequency of oral findings

Pregnancy epulis		
	Frequency	Percent
Yes	14	9.33%
No	136	90.67%
Total	150	100.00%
Ulceration		
	Frequency	Percent
Yes	6	4.00%
No	144	96.00%
Total	150	100.00%
Candidiasis		
	Frequency	Percent
Yes	11	7.33%
No	139	92.67%
Total	150	100.00%

Halitosis		
	Frequency	Percent
Yes	101	67.33%
No	49	32.67%
Total	150	100.00%
Taste Alterations		
	Frequency	Percent
Yes	69	46.00%
No	81	54.00%
Total	150	100.00%
Dry mouth?		
	Frequency	Percent
Yes	89	59.33%
No	61	40.67%
Total	150	100.00%
OHIS		
	Frequency	Percent
Good	74	49.33%
Fair	48	32.00%
Poor	28	18.67%
Total	150	100.00%

III-Correlation of pregnancy epulis with oral hygiene: According to the result the correlation of pregnancy epulis with oral hygiene is highly significant and the P-value is (0.000). As shown in Table (3).

Table (3): Correlation of pregnancy epulis with oral hygiene

Pregnancy epulis * OHI								
		OHI			Total	%	Chi Square	P-Value
		Good	Fair	Poor				
Pregnancy epulis	Yes	1	5	8	14	9.33%	17.884	<0.000*
	No	73	43	20	136	90.67%		
Total		74	48	28	150	100.00%		

IV-Correlation of ulcer with oral hygiene: Regarding oral ulcer, no significant correlation was found with oral hygiene. As shown in Table (4).

Table (4): Correlation of ulcer with oral hygiene

Ulceration * OHI Cross tabulation								
		OHI			Total	%	Chi Square	P-Value
		Good	Fair	Poor				
Ulceration	Yes	3	3	0	6	4.00%	1.800	0.531
	No	71	45	28	144	96.00%		
Total		74	48	28	150	100.00%		

V-Correlation of oral candidiasis with oral hygiene: The result reveals that oral candidiasis is not significantly correlated with oral hygiene. Details are shown in Table (5).

Table (5): Correlation of candidiasis with oral hygiene

Candidiasis * OHI Cross tabulation								
		OHI			Total	%	Chi Square	P-Value
		Good	Fair	Poor				
Candidiasis	Yes	6	3	2	11	7.33%	0.150	0.799
	No	68	45	26	139	92.67%		
Total		74	48	28	150	100.00%		

VI- Correlation of halitosis with oral hygiene: A statistically significant correlation was found between halitosis and oral hygiene and the P-value was (0.012). As shown in Table (6).

Table (6): Correlation of halitosis with oral hygiene

Halitosis * OHI Cross tabulation								
		OHI			Total	%	Chi Square	P-Value
		Good	Fair	Poor				
Halitosis	Yes	43	35	23	101	67.33%	6.335	0.012
	No	31	13	5	49	32.67%		
Total		74	48	28	150	100.00%		

VII-Correlation of altered taste with oral hygiene: According to the result, no significant correlation was found between taste alteration and oral hygiene. As demonstrated in Table (7).

Table (7): Correlation of taste alteration and oral hygiene

Taste Alterations * OHI Crosstabulation								
		OHI			Total	%	Chi Square	P-Value
		Good	Fair	Poor				
Taste Alterations	Yes	36	19	14	69	46.00%	1.185	0.859
	No	38	29	14	81	54.00%		
Total		74	48	28	150	100.00%		

VIII-Correlation of dry mouth with oral hygiene: Concerning the dry mouth, no statistically significant correlation was found with oral hygiene. As shown in Table (8).

Table (8): Correlation of dry mouth with oral hygiene

Dry mouth? * OHI Crosstabulation								
		OHI			Total	%	Chi Square	P-Value
		Good	Fair	Poor				
Dry mouth?	Yes	46	29	14	89	59.33%	1.280	0.310
	No	28	19	14	61	40.67%		
Total		74	48	28	150	100.00%		

Discussion

Many studies have been performed to explain oral manifestations that appear during pregnancy. This study shows the common oral findings in pregnant lady in our locality. The study focused on specific oral findings including halitosis, dry mouth, ulceration, candidiasis, pregnancy epulis, taste alteration and OHIS. These clinical findings vary in frequency from case to case.

According to the study result, halitosis was the most frequent finding. This can be explained by the effect of hormones and recurrent morning sickness, especially in the first trimester. In addition, a lack of proper oral hygiene and proper oral care could be a cause. According to research that was published by Supawadee Naorungroj, Jaranya Hunsrisakhun, and Supitcha Talungchit in 2018, pregnant people are more likely to get gingival irritation [22]. Estrogen and progesterone fluctuations during pregnancy may aggravate the inflammatory response to tooth plaque, causing severe gingivitis [23]. Moreover, some women find it nearly impossible to do routine self-oral hygiene care during the first trimester, especially in the premolar and molar areas, due to pregnancy-related nausea and vomiting symptoms., some women find it nearly impossible to do routine self-oral hygiene care during the first trimester, especially in the premolar and molar areas, due to pregnancy-related nausea and vomiting symptoms [22].

In our study, a relatively small percentage of the participant were having oral ulcers. The fact behind this low incidence is still unknown, but it could be due to multiple factors influencing the condition like diet,

hormones, and cellular immunity that takes cover during pregnancy.

This finding is parallel with another research done by B. Annan and K. Nuamah (2005) [24]. Regarding the relationship between oral ulcers and OHI, this research showed a lack of association between the two factors during pregnancy. Although the frequency of those having oral ulcers was low, however, none of them had poor OHI, this might explain that the cause behind oral ulcers during pregnancy is less likely to be because of poor oral hygiene index since it has other multiple factors contributing to the condition [24]. Another parameter in our study was about the incidence of oral candidiasis during pregnancy. On the basis of the data collected for this study, a small percentage of the participants were having oral candidiasis during pregnancy. This corresponds with another study published by Shaimaa, H. Zainab, D. Hugar, and A. Sultana (2021) [25]. It revealed that pregnant women were not significantly more likely to have the disease than non-pregnant women. This may be due to the change of humoral immunity alone in pregnancy and not the cell-mediated one, which may be the main action against candidiasis. In another part of our research, we tried to find a relation between oral candidiasis and the oral hygiene index to see whether there is a relation or not. The study showed an insignificant P-value, meaning that there is not quite a good relationship between the two factors. In the contrary, another research by Selma Muzurovic, Emina Babajic, Tarik Masic, Rubina Smajic, and AidaSelmanagic(2012) [26] showed a quite significant relation between the two. This is could be due to the

method of diagnosis and lack of specific tests to identify the organism in our study [25]. A taste alteration was one of the findings in the patients interviewed in the study. Nearly half of our participants had taste alterations. This may be explained by the fact that the mother's physiology undergoes several changes to promote fetal growth and development and to ensure that the baby obtains appropriate nutrients. These alterations include alterations to the endocrine system, weight gain, an increase in blood volume, and immunological tolerance. nevertheless, a number of these variables are also associated with alterations in taste perception [27]. The bulk of evidence suggesting a change in taste function during pregnancy is based on self-report, with more than 90% of pregnant women reporting some change in flavor. According to a study that was done by Duffy et al. in 1998 assessed levels of intrinsic variance in suprathreshold taste intensity evaluations in 46 females before pregnancy and throughout each trimester, as well as in 41 healthy female controls at matching periods. The control group had a higher variance in sweet and bitter preferences than the pregnant women, which the authors say may be due to variations in estrogen and progesterone levels during the menstrual cycle. Consequently, comparing pregnant women to a distinct non-pregnant control group, particularly one not adjusted for menstrual cycle timing, may cause greater variance than internal controls in a longitudinal research design [27]. However, the relationship of taste alteration with oral hygiene index was not important in this study, and the p-value was not significant. Nevertheless, pregnancy epulis

was one of the important aspects of our study. Pregnancy epulis is gingival hyperplasia leading to the formation of a benign tumor that happens during pregnancy and may subside by itself after labor, but if not related, it may need removal by a dentist. It may occur due to the presence of debris left on the teeth and gingiva. In our study, we found that pregnancy epulis is greatly related to the oral hygiene index with a highly significant p-value [28]. This finding is similar to research that was done by Rabinerson et al. in 2002, which explained that the cause of pregnancy epulis is inadequate dental hygiene causing persistent gingivitis, as well as high gingival levels of active progesterone, whose mechanism of action remains undefined [29]. In addition, according to a study that was published in African Journal of Oral Health Sciences [30], Among the 320 pregnant women seen for antenatal care, thirty-five were referred to the dental clinic, of whom eight were diagnosed with pregnancy epulis. Gestational steroid fluctuations, in conjunction with the presence of irritants such as calculus, might aggravate the inflammatory response, resulting in the formation of those proliferative lesions. Their oral examinations revealed a modest buildup of calculi. Due to the rise in estrogen and progesterone levels, an excessive gingival response may have contributed to the formation of the tumor [2]. Another parameter in our study is dry mouth, which more than half of the individuals presented with. Dry mouth in pregnancy can be explained by many factors. One of which is that during pregnancy, the body's need for water intake increases, and pregnant women should drink more water than before. Another

reason for that could be gestational diabetes, which happens in some women and causes dry mouth. Moreover, hormonal changes in terms of estrogen and progesterone are playing a great role as well. Lastly, an increase in the risk of candidiasis during pregnancy could be a cause of having dry mouth. According to the American Dental Association, the hormonal changes that occur during pregnancy may cause xerostomia, often known as a lack of saliva [31].

Conclusions

Pregnancy is a physiological process that happens to a woman's body. During this process, numerous changes take place, which adversely affect the oral cavity. Therefore, lack of awareness regarding oral care and hygiene increases the chance of infection, resulting in an increased prevalence of oral symptoms such as gingivitis, gingival hyperplasia, altered taste sensation, and oral ulceration. In addition to poor oral hygiene, during the first trimester of pregnancy, a recurrent morning sickness resulting from hormonal change can cause halitosis and dry mouth. Moreover, this lack of salivary flow increases the risk of oral candidiasis. Hence, providing oral health education for pregnant women and maintaining good oral hygiene is extremely important during pregnancy.

Recommendations

I recommend to increase awareness for better oral hygiene because as we can see patient with good oral hygiene have better gingiva and dentition despite hormonal Changes in the contrary patient with bad oral hygiene have diseased gingiva and dentition.

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Ethical clearance: Ethical approval was obtained from the College of Medicine / University of Diyala ethical committee for this study.

Conflict of interest: Nil

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ظهور علامات الفم عند الحوامل في مدينة السليمانية

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الملخص

خلفية الدراسة: الحمل هو العملية الفسلجية التي تحدث اثناءها تغيرات هامة في الهرمونات التي بدورها تؤدي الى عدم التوازن في بيئة الفم والتطورات غي مظهر الفم الذي بإمكانه التأثير السلبي على صحة الأم وصحة الطفل في رحم الأم. **اهداف الدراسة:** لتقدير السيطرة على مظهر الفم عند الحوامل وتقييم ترابط العلاقة بين هذا المظهر و حالة الفم الصحية. **المرضى والطرائق:** تم ادراج مجموع (١٥٠) من النساء الحوامل في هذا البحث الاتي أجريت لهم فحوصات دقيقة لتقييم حالة الفم الصحية باستخدام(OHI-S).

النتائج: معظم المشمولين و بنسبة(٣٨%) كانت اعمارهم تتراوح بين(٢٥-٢١) عاماً تبين ان اكثرية الحالات كانت:رائحة الفم الكريهة بنسبة(٦٧-٣٣%)و تتبعها حالات جفاف الفم بنسبة (٥٩-٣٣%) تغير حاسة التذوق بنسبة(٤٦%) حالات أورام الحمل بنسبة (٩,٣٣)؛الفطريات بنسبة (٧,٣٣) وتقرحات الفم بنسبة (٤).إضافة الى ذلك حالات أورام الحمل و رائحة الفم الكريهة ارتبطت و بصورة جلية بعدم صحة الفم.

الاستنتاجات: تصاحب الحمل مجموعة من مظاهر الفم لذلك يستوجب الإنتباه الشديد من قبل أطباء الأسنان و تزويد الوعي الصحي المتعلق بحالة صحة الفم وادامة صحة الفم أثناء الحمل.

الكلمات المفتاحية: أورام الحمل، رائحة الفم الكريهة ، فطريات الفم ، جفاف الفم ، تغير حاسة التذوق

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تاريخ قبول البحث: ١١ ايلول ٢٠٢٢

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