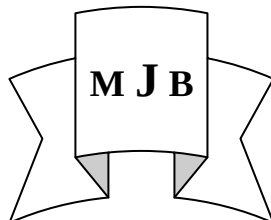


Prevalence and Severity of Dental Caries, Periodontal Diseases and Dental Erosion among (20 – 40) Years Old Pregnant Women in Hilla city, Babylon governorate-Iraq

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Abstract

This study was performed in HILLA City in Maternal and Child Health Care Centers. A total random sample of 100 adults pregnant women between 20-40 years old was examined.

In this study the prevalence of dental caries was found to be 74% while the prevalence of periodontal diseases was 82%, and the prevalence of dental erosion was 12%.

Dental caries was recorded by application of decayed missing filled surfaces DMFS index, while periodontal health status were recorded by CPITN index and dental erosion was recorded as present or not present of tooth wear.

Results showed that a higher caries prevalence 49.21% was recorded in pregnant women in second trimesters, while the lowest was recorded 18.57% in third trimesters. Statistically this study shows that there was highly significant association between DMFS scores and trimesters.

While in the periodontal diseases a higher prevalence of gingivitis among pregnant women was 57% and the higher prevalence of periodontitis was 25% in all trimester. Statistically, no association was found between scores of periodontal disease with trimesters.

The study also reveals that the higher percentage of dental erosion (24.0) were located in the third trimester. Statistically, dental erosion was found to be significantly associated with period of pregnancy (trimester).

From all these findings, we concluded that pregnant women do have dental and periodontal problems and may require preventive programs directed for improvement of oral health.

نسبة انتشار وحدة تسوس الأسنان، أمراض اللثة وتآكل الأسنان الحمضي لدى النساء

الحوامل بين سن (٢٠-٤٠) سنة في مدينة الحلة - محافظة بابل / العراق

الخلاصة

أجريت هذه الدراسة في مراكز الرعاية الصحية الأولية للام والطفل في مدينة الحلة -محافظة بابل لعينة من النساء الحوامل تقدر ب ١٠٠ أمراه حامل تتراوح اعمارهم ما بين ٢٠-٤٠ سنة .

الهدف من هذه الدراسة هو تحديد نسبة انتشار تسوس الاسنان، امراض اللثة و تآكل الاسنان الحمضي لدى النساء الحوامل وعلاقتها بفترة الحمل (اشهر الحمل) .

اظهرت النتائج ان نسبة انتشار الاصابه العينييه الكلبيه لتسوس الاسنان لدى النساء الحوامل كانت ٧٤% بينما كانت نسبة انتشار امراض اللثة ٨٤% وكانت نسبة انتشار تآكل الاسنان ١٢% .

اظهرت النتائج ان اعلى نسبة لتسوس الاسنان كانت ٤٩,٢١% لدى النساء الحوامل في الفتره الثانيه للحمل (الاشهر الثلاثه الثانيه) . بينما كانت اقل تسبه هي ١٨,٥٧% والتي سجلت في الفتره الاخيريه (الاشهر الثلاثه الاخيريه) ، وان هناك علاقه معنويه عاليه بين تسوس سطوح الاسنان وفترة الحمل ($p < 0.001$) .

اظهرت النتائج ان اعلى نسبة انتشار لالتهاب اللثة بين النساء الحوامل كانت ٥٧% ، واعلى نسبة انتشار لالتهاب انسجه ما حول السن كانت ٢٥%، ولا توجد علاقه معنويه بين امراض اللثة وفترة الحمل ($P > 0.5$) . كما اظهرت النتائج ان هناك علاقه معنويه عاليه بين تآكل الاسنان الحمضي وفترة الحمل ($p < 0.05$) .

واخيراً ان النساء الحوامل في المنطقه لديهن مشاكل صحيه في الاسنان واللثة فيما يجدر به ايجاد برامج وقائيه لزيادة الوعي بصحة الفم والاسنان لدى النساء الحوامل .

Introduction

Good oral health is important across a person's lifespan [1]. Pregnancy is a particularly important time to promote oral health and healthy behavior, including education about the prevention of dental caries, periodontal diseases and dental erosion because the physiological and hormonal changes in pregnancy may affect dental and gingival health conditions [1,2].

Pregnancy and Oral Diseases:

In a women's life, there is a major physiological and hormonal changes occur is pregnancy which may lead to different oral changes [2]. The exact cause of these oral changes is still unknown but many researches linked these effects to the alteration in the quality and quantity of the saliva in response to hormonal disturbances that may include decrease in the salivary electrolytes as calcium, phosphorus and other trace elements or changes in the salivary PH, flow rate and buffer capacity and alteration in salivary immunoglobulin concentration [2,3].

The compromised functional status, physical confinement, medical condition and cognitive impairment of significant numbers of women have important implications for oral health risks and dental treatment, in addition there are a variety of economic, social, psychological and behavioral factors which place pregnant women at risk for developing oral diseases [4].

There is much controversy regarding dental caries severity in pregnant women [5,6]. Pregnant women are at a higher risk of tooth decay for several reasons, including increased acidity in the oral cavity, sugary dietary cravings and inadequate attention to oral health [5,6,7].

The link between pregnancy and periodontal inflammation has been known for many years that was characterized by erythema, edema, hyperplasia, and increased bleeding [8]. On the other hand, gingival tissue physiology may be affected by hormones alteration, it become swollen, bright red in color and bleeds easily [7]. Meta-analysis found that periodontal treatment significantly lowered preterm birth and low birth weight [9]. Other study found a significantly increased loss of periodontal tissue support in women who were delivered preterm [10]. Current researches implies that periodontal disease may alter the systemic health of the pregnant women and adversely affect the well being of the fetus by elevating the risk for low birth weight and preterm infants [8,9,11,12].

Pregnancy itself does not cause gingivitis, but it may be caused by bacterial plaque, just as in non pregnant women, no notable features occur in the gingiva during pregnancy in the absence of local factors [8,9,11]. The anterior region of the mouth is more commonly affected and interproximal sites tend to be most involved, anterior site inflammation may be exacerbated by increased mouth breathing, primarily in the third trimester which is may be associated with pregnancy rhinitis [8,12,13].

Gag reflux that make women vulnerable to nausea and vomiting, this condition if persist may lead to enamel erosion. The acid erosion of teeth may occur if pregnancy sickness (morning sickness) or esophageal reflux is severe and involve repeated vomiting of the gastric contents [14-17].

The Aim of the Study

The aims of this study were to identify:

1. The prevalence of dental caries, periodontal diseases and dental erosion among pregnant women.
2. The association between dental caries, periodontal diseases and dental erosion in relation to period of pregnancy (trimester).

Materials and Methods

The Sample:

A random sample of (100) pregnant women in different period of pregnancy with the age groups (20-40) years old were examined in Maternal and Child Health Care Centers, in different geographical area of HILLA City, Babylon governorate –Iraq. The period of examination in this study was done from the beginning of March 2012 till the end of April 2012.

Materials: The examination done by using:

1. Plane dental mirrors.
2. Dental probes.
3. Periodontal probes.
4. Cotton, gloves and masks.
5. Artificial illumination.

Method:

Data were collected from face-to-face interviews using a case sheets with information on such factors as age, name and period of pregnancy. The severity of dental caries was measured by the use of (DMFS) index and criteria according to WHO (WHO, 1987). The assessment of gingival health status and treatment need were performed by using CPITN index (Community Periodontal Index of Treatment Needs) as recommended by WHO (WHO, 1987), the full dentition was divided into six segment each sextant is considered a basic unit of examination.

CPITN Index:

O: NO periodontal disease (healthy periodontium).

- 1: Bleeding observed during or after probing.

2: Calculus or other plaque retentive factors either seen or felt during probing .

3: Pathological pocket 4 to 5 mm. in depth. gingival margin situated on black band of the probe.

4: Pathological pocket 6mm or more in depth . black band of the probe not visible.

Treatment Need Index:

0: No need for care.

1 : Improve the personal oral hygiene of the individual.

2: Professional cleaning of the teeth and removal of plaque retentive factors, root planning.

3: Complex treatment (deep scaling, root planning and complex surgical procedures.

The assessment of dental erosion were performed as present or not present of tooth wear.

Statistical Analysis:

Data were analyzed using the Statistical Package for Social Science (SPSS), software version 14.0 on personal computer. The collected data was grouped and placed in table and the statistical analysis was done by Chi-square.

P- values equal to or less than 0.05 were regarded as statistically significant and P-values of less than 0.01 were regarded as highly significant, while P-value of more than 0.05 were considered as not significant.

Results

The Sample:

The total sample consist of 100 pregnant women with an age ranged from 20 to 40 years in different trimesters. The number of pregnant women according to their trimesters is summarized in Table (1).

Table 1 Number of pregnant women according to their trimesters.

TRIMESTER	No.	%
1 st	34	34%
2 nd	41	41%
3 rd	25	25%
TOTAL	100	100%

Caries experience:

In this study the prevalence of dental caries was found to be 74% which mean that caries free pregnant women was 26%.

Statistically this study shows that their was highly significant association between DMFS scores and trimesters, ($X^2 = 68.65$, $df = 4$, $p < 0.001$).

Table (2) illustrates number and percentage of DS, MS, FS, and DMFS in

relation to trimester of pregnant women. the results showed that the percentage of decayed surface (DS) was higher in the second trimester, while it was lowest in the third trimester. Pregnant women had also highest missed surface (MS) number in the second trimester and lowest in the third trimester. And so on pregnant women had also highest filled surface (FS) number in the second trimester and lowest in the third trimester.

Table 2 Distribution of pregnant women according to the DMFS scores by trimesters.

TRIMESTER	DS		MS		FS		DMFS
	No.	%	No.	%	No.	%	No.
1 st	260	48.68%	145	27.15%	129	24.15%	534
2 nd	291	35.66%	364	44.60%	161	19.73%	816
3 rd	154	50.0%	70	22.72%	84	27.27%	308
TOTAL	705		579		374		1658

Prevalence of Periodontal diseases:

The prevalence of periodontal diseases was found to be 82%. **Table (3)** illustrates the number and percentage of scores of periodontal diseases according to CPITN index in relation to pregnant trimesters. Results shows that a higher prevalence of gingivitis among pregnant

women was 57% in all trimester, while a higher prevalence of periodontitis among pregnant women was 25% in all trimester.

Statistically, no association was found between scores of periodontal disease with trimesters ($P > 0.5$).

Table 3 Distribution of pregnant women with periodontal diseases according to the CPI scores by trimesters.

Trimester	0		1		2		3		4		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
1 st	8	23.5%	6	17.6%	12	35.3%	4	11.8%	4	11.8%	34
2 nd	5	12.2%	7	17.1%	17	41.5%	5	12.2%	7	17.1%	41
3 rd	5	20.0%	4	16.0%	11	44.0%	4	16.0%	1	4.0%	25
Total	18		17		40		13		12		100

Table (4) shows that a higher prevalence (52%) of pregnant women need professional cleaning and or root planning.

Statistically, no association was found between type of treatment need and period of pregnancy (trimesters) ($P>0.5$).

Table 4 scores of the treatment need of periodontal diseases (number and percentage) in relation to pregnant trimesters.

Trimester	0		1		2		3		Total
	No.	%	No.	%	No.	%	No.	%	
1 st	8	23.5%	6	17.6%	16	47.1%	4	11.8%	34
2 nd	5	12.2%	7	17.1%	21	51.2%	8	19.5%	41
3 rd	5	20.0%	4	16.0%	15	60.0%	1	4.0%	25
Total	18		17		52		13		100

Dental Erosion Status:

Table(5) reveals that the higher percentage of dental erosion (24.0) were located in the third trimester.

Statistically, dental erosion was found to be significantly associated with period of pregnancy (trimester) ($X^2= 5.38$, $df= 2$, $P<0.05$).

Table 5 Distribution of pregnant women according to dental erosion by trimesters.

Trimester	Dental erosion				Total
	Present		Absent		
	No.	%	No.	%	
1 st	4	11.76	30	88.23	34
2 nd	2	4.87	39	95.12	41
3 rd	6	24.0	19	76.0	25
Total	12		88		100

Discussion

Dental Caries:

This study was done to assess and investigate the prevalence and severity of dental caries, periodontal diseases and dental erosion among pregnant women in relation to period of pregnancy (trimesters).

The present study revealed increased rates of caries in which the prevalence of dental caries was found to be 74% which mean that caries free pregnant women was 26% Statistically this study shows that their was highly significant between DMFS scores and trimesters ($X^2=68.65$, $df=4$, $p<0.001$).

In this study the mean DMFS was found to be 16.58 and this was higher than the result of Rdnai et al in 2005 which was (12.15) [18]. The result of this study is near to the result of other study in Chiang Mai Thailand among pregnant women which showed that the prevalence of dental caries was 74% [19].

The explanation for these findings may be due to an altered immune response or be related to stress and anxiety during pregnancy, resulting in inadequate attention to oral hygiene and contributing to the deterioration in a woman's oral condition. Furthermore, hormonal imbalances have long been reported to be associated with changes in oral health during pregnancy and increased gastric acid which caused sieve concepts that cause demineralization of tooth and laid to caries [7,20].

Periodontal Diseases:

The results of the this study shows that the prevalence of periodontal diseases was found to be 82%. This prevalence is lower than 86% which is the prevalence of periodontal diseases in Thailand [19].

Statistically, no association was found between scores of periodontal disease with trimesters ($P>0.5$). Results shows that the prevalence of gingivitis among pregnant women was 57%, while prevalence of periodontitis was found to be 25%.

To explain theses results it may be due to the fact that; an increase in the rate of both estrogen metabolism by the gingiva and in the synthesis of prostaglandins were found to contribute to the gingival changes observed during pregnancy [21]. On the other hand, alterations in progesterone and estrogen levels have been shown to affect the immune system and both the rate and pattern of collagen production in the gingiva. Both of these conditions reduce the body's ability to repair and maintain gingival tissues [22]. Furthermore, most of the pregnant women in this current study had poor oral hygiene, as well as an inadequate knowledge and practice of dental health care which supported by the fact that hygiene and dental health care behavior correlated with the risks of gingivitis [1]. These finding apposite to the results of other studies in which high standards of oral hygiene during pregnancy was found [23,24].

Dental Errosion:

This study reveals that the higher percentage of dental erosion (24.0) were located in the third trimester of pregnant women, this may by explained by the fact that may by due to its accumulative effect of dental erosion.

Statistically, dental erosion was found to be significantly associated with period of pregnancy (trimester) ($X^2=5.38$, $df=2$, $P<0.05$). The explanation for this may be due to experience morning sickness and gastric reflux at greater risk of dental erosion due to the regular exposure of the teeth to stomach acids [15,25].

Conclusions

1. Dental caries and periodontal disease were more prevalent among pregnant women.
2. In this study high percentages of pregnant women had dental caries 74%. While higher percentages was found with the periodontal diseases among pregnant women 82%.

3. The slightly increased prevalence of dental erosion (24%) reveals the actual risk of this disease in the future in our society.
4. Dental caries and dental erosion was found to be highly associated with period of trimesters, while periodontal disease was not associated.
5. Most of the pregnant women in Hilla city were completely unaware of the importance of dental health care.
6. Many of pregnant women believe that dental caries readily occur because of an extensive loss of calcium during pregnancy and childhood.
7. The attitude and knowledge regarding preventive and treatment of these oral diseases was not impressive.
8. The unavailability of equipments facilities in primary health centers in Babylon governorate

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