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Association between Expecting Mothers Dental Caries Experience versus Health Status of New Born

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Abstract

Aims: Mothers play primary role in the health of their children and the oral health of the mother is a crucial part of her general health and could have an effect on the baby's health. This study aimed to determine the relationship between maternal dental caries and the health status of newborns using Apgar scores in relation to maternal dental status by using DMFT index. **Materials and Methods**: The case group included (one hundred) pregnant women with periodontal disease, while the control group included (one hundred) pregnant women without periodontal disease. In both groups, DMFT (decay, missing and filled teeth), and Apgar scores were recorded. Mann-Whitney Test and Spearman's correlation coefficient were used investigate the relationship between DMFT on one hand and an Apgar score on the other. **Results**: No significant relationship was found between Apgar scores and DMFT index scores were discovered. **Conclusions**: Within all limitations of this study, it was concluded that there was no direct relationship between the maternal dental caries and infant health status.

الخلاصة

الأهداف: تلعب الأمهات دورًا أساسيًا في صحة أطفالهن، وتعد صحة فم الأم جزءًا مهمًا من الصحة العامة للجسم ويمكن أن يكون لها تأثير على صحة الطفل. فهدف هذه الدراسة هو تحديد العلاقة بين تسوس الأسنان لدى الأمهات والحالة الصحية لحديثي الولادة باستخدام مؤشر (Apgar) وفيما يتعلق بحالة الاسنان عند الأمهات باستخدام مؤشر DMFT. **المواد وطرائق العمل**: ضمت مجموعة الحالات 100 امرأة حامل مصابة بأمراض اللثة، بينما ضمت المجموعة الضابطة 100 امرأة حامل غير مصابة بأمراض اللثة. في كلتا المجموعتين تم تسجيل مؤشر DMFT (Decay, missing and filled) ومؤشر (Apgar). وتم استخدام اختبار Mann-Whitney Test ومعامل ارتباط Spearman للتحقق من العلاقة بين مؤشر (DMFT) من ناحية ومؤشر (Apgar) من ناحية أخرى. **النتائج**: لم يتم العثور على علاقة ذات دلالة إحصائية بين درجات أبغار (Apgar) ودرجات (DMFT). **الاستنتاجات**: ضمن حدود هذه الدراسة تم استنتاج عدم وجود علاقة مباشرة بين تسوس الأسنان الأم والحالة الصحية للطفل حديث الولادة.

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INTRODUCTION

Dental caries is a multifactorial microbial disease with a complex etiology. Cariogenic microbiota that metabolizes dietary carbohydrates into acids causes prolonged periods of low pH on the biofilm surrounding the teeth, resulting in calcium loss from the teeth and carious lesions [(1)]. It's well known that tooth decay rises during pregnancy. There is no factual basis for the assumption that the fetal calcium need for intrauterine growth is met by the mother's teeth, and that tooth loss occurs during every pregnancy. Vomiting can affect oral hygiene adversely or may causes erosion on the maternal enamel layer [(2)]. During pregnancy, the quantity of some salivary cariogenic bacteria may be increase, accompanied by a drop in salivary pH and buffer effect. Changes in salivary content during late pregnancy and lactation may predispose to tooth caries and erosion for a short time [(3)] in addition to other factors like extreme interest in carbohydrate foods, pregnancy hormones (estrogen, progesterone), and Vomiting, especially during the first months of pregnancy can increase the chance of more progression of carious lesions [(4,5,6 & 7)]. The Apgar score was created by Dr. Virginia Apgar, an anesthesiologist at Columbia University, in 1952, this score is a simple technique to assess an infant shortly after birth and choose how to respond to revival. The American College of Obstetricians and the American Pediatrics Academy both support Apgar score as a valid technique of evaluation. The Neonatal Resuscitation Program's recommendations state that Apgar scores do not define the initial requirement for intervention because resuscitation must be started before the 1-minute Apgar score is assigned [(8)].

The current study aims to determine the relationship between maternal dental caries and the health status of newborns using Apgar scores in relation to maternal dental status by using DMFT index.

MATERIALS AND METHODS

This study was approved by the Research Ethics Committee board (University of Mosul, College of Dentistry, REC reference No. UoM.Dent/H.4/21).

Sample Collection

The study sample consisted of young females their ages were between 18-35 years old. Two hundred pregnant females were included in the study, one hundred pregnant females with dental caries that were diagnosed with heavy periodontal disease and were evaluated for their dental caries experience, and one hundred pregnant females without periodontal disease. All the females had no history of medical or genetic problems.

Criteria for Selection of the Sample

Inclusion and Exclusion Criteria were:

The Inclusion Criteria

1. Women between the ages of 18 and 35 who are pregnant.
2. There is no history of abortion.

3. One delivery's history.
4. Females agree to share in the study [9].

The Exclusion Criteria

1. A history of a medical condition.
2. Use of corticosteroids in the past.
3. Abortion's history.
4. The first pregnancy.
5. A history of giving birth to many children.
6. Consumption of alcoholic beverages or cigarette smoking.
7. Females refuse to share in the study[10].

Clinical Examination

Data were collected using a standardized specially designed case sheet that included maternal variables such as name, age, weight, height, body mass index before and during pregnancy, and educational level of the mother which was administered via a questionnaire by the investigator.

Clinical evaluations were carried out, and DMFT index was recorded by using of sickle shaped dental explorer and dental mirror Figure (1).

The examination was done at a chairside during the admittance to the hospital for delivery with adequate artificial light attached to the head of the investigator. The dental caries of a pregnant woman was determined by examination of each tooth in the upper and lower arches (with the exclusion of the third molars) via categories (decay, missing, and filled) DMFT index [11,12] as shown in Figure (2).

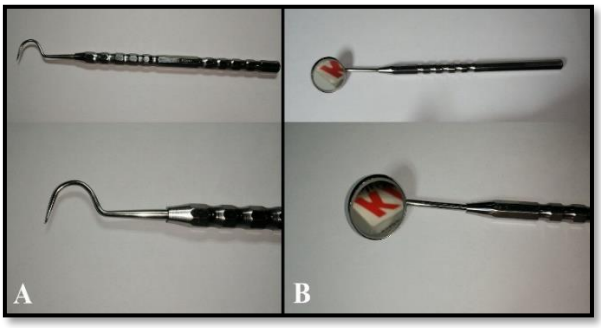

Figure (1): (A) dental probe **(B)** dental mirror.

Figure (2): Measurement of DMFT Index.

For newborns, the total number of two hundred newborns were examined for the Apgar score at 1,5 and 10 minutes after birth, the examination was done by the investigator and the supervision of the same gynecological permenant doctor, and baby's vital signs were recorded.

RESULTS

We did Spearman correlation coefficient for both groups (cases and controls) and false-positive relations began to appear in the control group due to the repeating the 0 and 1 numbers which lead to making fake relations between the variables in control group, so the control group results were not taken into consideration.

Table (1) demonstrates a comparison of mean values of the DMFT index between case and control groups by using of Mann-Whitney test. And shows that there were differences in decay and missed categories between cases and controls but shows no difference in filled category between them but the total mean shows significant difference between case (9.43 ±2.664) and control group (5.37 ±1.926).

While Table (2) shows that the relationship between Apgar score and DMFT was inverse and weak at 1 minute and then returned to a weak positive at minute-5 but not strong enough to have any relation between them while at minute-10 the relation was strong and positive.

Table 1: Comparison Between Mean Scores ± Standard Deviation for Both Groups in DMFT.

	Group	N	Mean ±Std. Deviation	Mann-Whitney Test		P-value
				Mean Rank	Test Value	
D	Case	100	4.53 ±2.761	134.360	1614.500	0.000**
	Control	100	1.26 ±1.137	66.650		
M	Case	100	1.26 ±1.041	118.030	3247.000	0.000**
	Control	100	0.64 ±0.577	82.970		
F	Case	100	3.64 ±2.312	100.930	4957.000	0.915
	Control	100	3.47 ±1.823	100.070		
DMFT	Case	100	9.43 ±2.664	139.330	1117.000	0.000**
	Control	100	5.37 ±1.926	61.670		

**Mann Whitney test. Highly Significance at P ≤0.01

Table 2: The Relationship Between Apgar Score and DMFT for cases.

Apgar	DMFT	
	Correlation Coefficient	Significance
1 min	-0.087	0.389
5 min	0.169	0.093
10 min	0.258**	**0.010**

** Correlation is Highly Significant at the P ≤0.01.

DISCUSSION

Many researches have been conducted in regard to the relationship between periodontal diseases and pregnancy problems outcomes in the last few years, although the relationship itself is still contentious and due to many traditional

beliefs, in the form of myths, also create a strong barrier to pregnant women's attaining good dental health [13,14]. Misconceptions about health practices and diseases are widely prevalent, many pregnant women stop brushing their teeth after pregnancy; many delay getting dental treatment even when they are in discomfort, and the majority of them do not wash their teeth for weeks after birth (due to old traditional thoughts, familial pressure, and fear from the effect of dental treatment on the baby) [15] and that agrees with the results of our study in the mean DMFT between the two groups showed significant differences at level of decay and filled which can be explained by more utilization of dental services and regular dental attendance but no significant difference at missing level and that could be explained as the most end result of dental treatment among pregnant females generally is the teeth extraction due to lack of interest in dental hygiene so we can say there was a significant difference between cases and controls in terms of DMFT which also agree with previous studies [16,17,18 & 19] that suggested many oral bacterial species have the ability and power to disseminate through human body and could reach to further human organs and by this step these bacteria can affect the normal functions of these organs and the uterus is one of these organs that can affected by these bacteria resulting in a variety of pregnancy outcomes like premature birth and low birth weight, but the impact on the Apgar score is uncertain.

The results of correlations between Apgar score and DMFT determined that there was no correlation between the two variables at 1 and 5 minutes but there was a highly significant at 10 minutes and this was the first study in determining this relation.

Although dental health is acknowledged as a crucial component of overall well-being in many low- and middle-income countries, oral health is still neglected because of many factors such as bad previous experience, fear of dental anesthesia, and lack of proper awareness [20].

This study's findings will allow researchers to assess the involvement of periodontal disease in unfavorable pregnancy outcomes and future research could use gingival and plaque indices to describe the severity and prevalence of periodontal disease, or examine the efficiency of community-based treatments to prevent oral disease.

CONCLUSION

Based on the findings of this study and within the all clinical limitations like limited sample size and difficulty in recruitment of the pregnant females to participate in the current study; all shreds of evidence agree with there was no direct relationship between maternal dental caries (DMFT) and infant Apgar score.

Declaration of interest

The authors declare that there are no conflicts of interest regarding the publication of this manuscript

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