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Questionnaire on mouth and dental health during pregnancy: myths and facts

Didem Ekiz[1], Ali Ekiz[2], Burak Özköse[3], Muzaffer Emir Dinçol[1], Rüstem Kemal Sübay[1], İbrahim Polat[2]

[1]*Department of Endodontics, Faculty of Dentistry, İstanbul University, İstanbul, Turkey*
[2]*Perinatology Clinic, Kanuni Sultan Süleyman Training and Research Hospital, İstanbul; Turkey*
[3]*Gynecology and Obstetrics Clinic, Kanuni Sultan Süleyman Training and Research Hospital, İstanbul, Turkey*

Abstract

Objective: The aim of the study is to assess the opinions of gynecologists and obstetrics in Turkey about oral hygiene, odontotherapy, periodontal diseases and their perinatal impacts during pregnancy.

Methods: A questionnaire consisting of 20 closed-ended questions was prepared for gynecologists and obstetricians, and 217 gynecologists and obstetricians from various hospitals in Turkey who accepted to participate in the questionnaire were included in the study. The questionnaire was applied in a standard way to the participants and the names of some participants were not revealed upon their requests.

Results: According to the data obtained from the study, 90.8% of the participants believed that the pregnancy increased gingival inflammation. Similarly, a large number of physicians (79.3%) stated that there was a relationship between prenatal outcomes and oral and dental health. Most of the participants believed that dental scaling (86.6%), dental extraction (81.6%), filling (82.6%) and periapical radiography (80.2%) practices are safe, and the rates of trust in root canal treatment and panoramic radiography were 64.5% and 53.5%, respectively. While 73.3% of the participants recommended dental check-up before pregnancy to their patients who were planning pregnancy, 36.1% of the participants recommended dental check-up to their pregnant patients in the first prenatal visit.

Conclusion: Gynecologists and obstetricians should have more confidence that both diagnostic and therapeutical procedures in the dentistry are safe during pregnancy, and should inform the patients they follow up properly. It should be kept in mind that having a good oral health before pregnancy and also to maintain it during the pregnancy will have a positive impact on gestational outcomes.

Keywords: Pregnancy, oral hygiene, periodontal disease, dental treatment, gestational outcomes.

Özet: Gebelikte ağız ve diş sağlığı konusunda doğru ve yanlış bildiklerimiz: Anket çalışması

Amaç: Çalışmanın amacı Türkiye'deki Kadın Hastalıkları ve Doğum uzmanlarının gebelikte ağız hijyeni, diş tedavileri, periodontal hastalık ve perinatal etkileri üzerine görüşlerini değerlendirmektir.

Yöntem: Kadın Hastalıkları ve Doğum uzmanları için hazırlanmış 20 kapalı uçlu sorudan oluşan bir anket çalışması düzenlendi ve Türkiye'deki çeşitli hastanelerden çalışmaya katılmayı kabul eden 217 Kadın Hastalıkları ve Doğum uzmanı ankete dahil edildi. Katılımcılara anket formu standart olarak uygulandı ve gönüllüler istemedikleri takdirde isim belirtmediler.

Bulgular: Çalışmadan elde edilen verilere göre katılımcıların %90.8'i gebeliğin gingival inflamasyonu arttırdığını düşünüyordu. Benzer olarak katılan hekimler büyük oranda (%79.3) ağız ve diş sağlığı ile prenatal sonuçlar arasında ilişki olduğunu bildirdiler. Çalışmaya katılan hekimlerin büyük çoğunluğu diş taşı temizliği, diş çekimi, dolgu ve tek diş radyografi (periapikal radyografi) uygulamalarının sırasıyla %86.6, %81.6, %82.6 ve 80.2 oranlarında güvenli olduğunu düşünürken, kanal tedavisine ve panoramik radyografi uygulamasına olan güven ise sırasıyla %64.5 ve %53.5 oranında kaldı. Katılımcıların %73.3'ü gebelik planlayan hastalarına gebelik öncesi diş hekimi muayenesi önerirken, gebe hastalarına ilk prenatal vizitte diş hekimi muayenesi öneren katılımcı oranı %36.1 olarak saptandı.

Sonuç: Diş hekimliğinde hem tanısal işlemlerin hem de tedavi girişimlerinin gebelikte güvenli olduğu konusunda Kadın Hastalıkları ve Doğum uzmanları daha fazla güvene sahip olmalı ve takip ettikleri hastaları doğru bilgilendirmelidirler. İyi bir ağız sağlığının gebelikten önce sağlanmasının ve gebelikte de sürdürülebilmesinin, gebelik sonuçlarına olumlu etki yapacağı akılda tutulmalıdır.

Anahtar sözcükler: Gebelik, ağız hijyeni, periodontal hastalık, diş tedavisi, gebelik sonuçları.

Correspondence: Ali Ekiz, MD. Kanuni Sultan Süleyman Eğitim ve Araştırma Hastanesi, Perinatoloji Kliniği, İstanbul, Turkey. e-mail: draekiz@gmail.com

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Introduction

Complex physiological and hormonal changes occur during pregnancy which is a unique period in the life of women. Estrogen and progesterone hormones increasing during pregnancy cause the increase of gingival vascularization and the suppression of immune response. Many physiological changes occur during the adaptation of body to the pregnancy. In terms of the oral changes, it is seen that salivation and pH level do not change during pregnancy.[1] It was also shown that some microorganism species (Prevotella) increase in the mouth.[2] These increasing microorganisms increase the possibility of gingival bleeding and cause gingival inflammation to worsen; however, there is no finding to assert that pregnancy cause or accelerate tooth decay.[1,3]

During pregnancy, various diseases and lesions may occur in the mouth. Benign gingival lesions which are also known as pyogenic granuloma or gestational epulis are seen in approximately 5% of the pregnancies.[4] Ptyalism is a rare complication characterized by nausea and loss of saliva in a significant amount such as 1–2 l/day. In the gestational gingivitis, gingivae are hyperectemic and become very sensitive to bleed even during tooth brushing. Gestational gingivitis typically recovers during postpartum period.[5] Gestational gingivitis and periodontitis are the most common oral diseases observed during pregnancy.[6]

There are some studies reporting that the presence of maternal periodontitis is a risk factor for preterm labor and low birth weight.[7,8] In this sense, both dentists and obstetricians should have current knowledge on oral hygiene, oral diseases and treatments during standard prenatal care of pregnant women and they also should show the ultimate attention.

In this study, we aimed to assess the opinions of obstetricians through a questionnaire on oral hygiene, oral treatments and their impacts on perinatal outcomes in frequently encountered cases during daily practices of dentistry.

Methods

A total of 217 volunteer gynecologists and obstetricians from various hospitals in Turkey were included in this cross-sectional questionnaire study. The questionnaire including 20 closed-ended questions were applied to the participants as a standard and names of some participants were not revealed upon their requests.

In the first part, there were questions evaluating the demographic information of the physicians including name (optional), age, sex, expertise period, the institution they work and their expertise field. In the second part, the questions "*Do you believe that pregnancy increases the possibility of gingival inflammation?*", "*Do you believe that there is a relationship between oral and dental health and perinatal outcomes?*" and "*Do you believe that periodontal diseases can cause preterm labor and/or deliveries with low birth weight?*" were asked to the physicians.

In the third part, the question "*Among dental scaling, dental extraction, filling, root canal treatment, periapical radiography and panoramic radiography, which one(s) do you believe to be safe during pregnancy?*" was asked. The fourth and last part included following questions:

- *"Do you recommend dental check-up before pregnancy to your patients who were planning pregnancy?"*
- *"Do you recommend dental check-up to your pregnant patients in the first prenatal visit?"*
- *"Do you recommend your pregnant patients to postpone their dental check-up to postpartum period?"*
- *"Do you believe that it is safe to use local anesthetics including vasoconstrictor during pregnancy?"*
- *"Which trimester do you believe is the safest period for dental treatments during pregnancy?"*

The participants were informed about the aim and the content of the study first, and then they were included in the study on a volunteer basis. The study was initiated with the decision of the ethics committee of the related hospital (no. 9322, dated 2015/2).

All questionnaire forms received from the participants were coded and analyzed in the electronic environment. The responses obtained were evaluated by descriptive statistics (frequency, percentage, and mean±standard deviation). The difference among the groups was assessed by chi-square test at $p<0.05$ significance level.

Results

A majority of 217 gynecologists and obstetricians who participated in the study were between 31- and 40-year-old (56.3%), working at the training and research hospital of the ministry of health (62.2%) and had a professional expertise between 0 and 10 years (65%). Thirteen participants had sub-branch expertise on

Perinatology and 6 of them had sub-branch expertise on Gynecological Oncology. A majority of the participants were in the age group of 31–40 (56.3%) and 50.7% of the participants were women. Male-female ratio among the participants was similar. Those who accepted to participate in the study answered all the questions in the questionnaire. The demographic characteristics of the participants are shown in the **Table 1**.

In the second part of the questionnaire, participants were asked questions assessing the relationship between perinatal outcomes and oral health and diseases. According to the data obtained from the study, 90.8% of the participants believed that the pregnancy increased gingival inflammation. Similarly, a large number of physicians (79.3%) stated that there was a relationship between prenatal outcomes and oral and dental health. For the question if the presence of periodontal diseases could be a risk factor for preterm labor and/or delivery with low birth weight, 78.8% of the participants replied that it could be risk factor.

The third part of the questionnaire includes questions about the reliability of diagnosis and treatment methods used frequently in the daily dentistry practices in terms of pregnancy. Most of the participants believed that dental scaling (86.6%), dental extraction (81.6%), filling (82.6%) and periapical radiography (80.2%) practices are safe, the rates of trust in root canal treatment and panoramic radiography were 64.5% and 53.5%, respectively (**Fig. 1**). The difference between these two groups was statistically significant ($p<0.001$, chi-square test).

In the fourth and last part of the questionnaire, the participants were asked questions about their recommendations on dental check-ups during pregnancy, on local anesthetics and on the safest trimester for procedures. While 73.3% of the participants recommended dental check-up before pregnancy to their patients who were planning pregnancy, 36.1% of the participants recommended dental check-up to their pregnant patients in the first prenatal visit. Almost all of the participants (90.3%) agreed that dental check-up should not be postponed during pregnancy. The results of the study showed that the participants had suspicions on the reliability of using local anesthetics including vasoconstrictor during pregnancy. Only 65% of the participants thought that they are safe. Finally, 68.7% of the participants stated that the second trimester is safer for dental treatments during pregnancy while 23% of them considered third trimester is safer. The questions and the analysis of responses for the fourth part of the questionnaire are shown in **Table 2**.

Table 1. The demographic data of the physicians who participated in the study.

	Frequency	Percentage (%)
Age (year)		
≤30	30	13.8
31–40	122	56.3
41–50	42	19.3
≥51	23	10.6
Sex		
Male	107	49.3
Female	110	50.7
Institution		
Private Hospital	15	6.9
State Hospital	46	21.2
University Hospital	21	9.7
Training and Research Hospital	135	62.2
Expertise (year)		
0–10	141	65.0
10–20	38	17.5
20–30	33	15.2
>30	5	2.3

The participants were regrouped according to their sex (male: 105; female: 109) and the responses were reanalyzed. While 87.6% (92/105) of the male physicians replied negatively to the question for postponing dental check-up to the postpartum period, 95.4% (104/109) of the female physicians replied negatively to the same question, and this difference was found to be statistically significant ($p<0.05$). No significant difference was found among the responses for other questions.

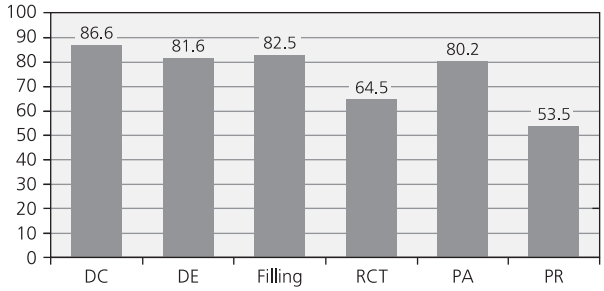

Fig. 1. Opinions of the participants on the reliability of most common daily practices of dentistry (**DC:** dental scaling; **DE:** dental extraction; **PA:** periapical radiography; **PR:** panoramic radiography, **RCT:** root canal treatment).

Discussion

It was shown that the number of some oral microorganisms increases with the impact of steroid hormones increasing during pregnancy.[2,7] Due to these increasing microorganisms, the tendency of gingiva to bleed increases and may cause severe inflammation even on low plaque levels. Considering the responses of the participants, it is seen that almost all of them (90.8%) stated the increase of gingival inflammation during pregnancy. In the studies carried out on this matter, it was reported that the presence of maternal periodontitis is a risk factor for preterm labor and low birth weight, and therefore perinatal outcomes may be worsened.[8,9] Since preterm labor and the complications developing secondary to preterm labor are among the leading factors responsible for newborn morbidity and mortality, this matter is of vital importance. Also, periodontal diseases in various forms were found in about 40% of pregnant women.[10] There are also other studies not asserting that the presence of periodontal diseases increases poor perinatal outcomes.[11,12] In the study of Agueda et al. it was reported that the relationship between periodontal diseases and perinatal outcomes is controversial.[13]

In the literature review of Shah et al., it was concluded that periodontal disease treatment during pregnancy improved perinatal outcomes in terms of preterm labor and delivery with low birth weight.[14] On the contrary, Michalowicz et al. reported that the rates of preterm labor, low birth weight and growth retardation did not change with periodontal treatment.[15] Although it is not fully clarified in the current literature, the presence of periodontal disease is considered as a risk factor for preterm labor and low birth weight, but it is also thought that the treatment carried out during pregnancy do not affect the outcomes significantly. According to the analysis of the questions on this matter, 79.3% of the participants believe that there is a relationship between perinatal outcomes and oral and dental health while almost same rate of the participants (78.8%) believe that it may be associated with preterm labor and/or low birth weight. Although the relationship between periodontal disease and perinatal outcomes is controversial, regular oral care and dental check-up should be recommended all women who are pregnant and planning to be pregnant.

In the third part of the study, the participants were asked to respond to the questions for the reliability of diagnosis and treatment methods frequently used in daily dentistry practice. As it is understood that a majority of the participants agree as a result of the analysis of the results, dental scaling, dental extraction and filling procedures can be carried out safely during pregnancy.[3] However, the concerns of physicians about the reliability of root canal treatment were reflected to the questionnaire results significantly. Almost one third (35.5%) of the participants reported that the root canal treatment during pregnancy is not safe. On the basis of these results, it was concluded that the female obstetricians should update their knowledge on root canal treatment.

Similarly, the concerns of physicians about panoramic radiography were found out from the questionnaire results. It was shown in the studies carried out on radiation exposure during pregnancy that there was no increase in the congenital anomalies in pregnant women who were exposed to X-ray exposure less than the dose of 5–10 cGy (1 Gy = 100 cGy).[16,17] Dental radiographic procedures covering entire mouth provides 0.0008 cGy

Table 2. The questions asked to the participants in the fourth part of the questionnaire and the analysis of the responses.

Questions and responses	Number	Rate (%)
Do you recommend dental check-up before pregnancy to your patients who were planning pregnancy?		
Yes	**159**	**73.3**
No	58	26.7
Unanswered	0	0
Do you recommend dental check-up to your pregnant patients in the first prenatal visit?		
Yes	79	36.4
No	**137**	**63.1**
Unanswered	1	0.5
Do you recommend your pregnant patients to postpone their dental check-up to postpartum period?		
Yes	18	8.3
No	**196**	**90.3**
Unanswered	3	1.4
Do you believe that it is safe to use local anesthetics including vasoconstrictor during pregnancy?		
Yes	**141**	**65.0**
No	73	33.6
Unanswered	3	1.4
Which trimester(s) during pregnancy is/are the safest period for dental treatments?		
First trimester	7	3.2
Second trimester	**149**	**68.7**
Third trimester	50	23.0
Second and third trimesters	9	4.1
First, second and third trimesters	2	0.9

radiation exposure.[16] In periapical and panoramic radiographies, radiation exposure is one third of the exposure provided in full mouth radiographies.[18] Diagnostic radiographies are significant examinations for the diagnosis and treatment of dental conditions and they are considered to be safe during pregnancy.[4,19–22]

The radiation dose in the radiographies used in dentistry is quite lower than the dose which is potentially harmful. FDA does not recommend making any change in the radiography use due to the pregnancy.[22,23] In the daily standard practice, the abdominal region and the neck of pregnant woman can be protected during procedure. American College of Obstetricians and Gynecologists (ACOG) reports that the diagnosis and treatment procedures including radiographies used for oral and dental pathologies and local anesthetics (with or without epinephrine) are safe to use during pregnancy.[4] It was seen in the questionnaire results that almost half of the participants (46.5%) do not trust panoramic radiography and 19.8% of them do not trust periapical radiography, where this distrust is wrong. By increasing the knowledge of physicians on these matters, the concerns of patients can be resolved in daily practice and the procedures can be carried out more easily.

In the analysis of our questionnaire data, it was seen that 73.3% of the participants recommend their patients to have a dental check-up before pregnancy, only 36.1% of them recommended dental check-up during the first prenatal visit during pregnancy. Among the reasons for recommending dental check-up during first prenatal visit at such a low rate can be considered that the physicians do not have sufficient knowledge on this matter, have no chance due to the busy schedule or consider it as unimportant. In the 2013 statement of ACOG committee,[4] it was stated that regular dental care is the key for good oral health and well-being. Since female obstetricians are those admitted most frequently among general healthcare professions, it is believed that this is a unique opportunity throughout the life of women to highlight the significance of good oral hygiene and dental care. ACOG recommends dental check-up regularly and at first prenatal visit.[4]

The concern among physicians against local anesthetics is also another significant point of the study. Forty-five percent of the participants are against the use of local anesthetics during pregnancy. This rate inconsistent with scientific facts is remarkable. Use of local anesthetics at appropriate amounts and with proper techniques is safe during pregnancy.[4,21] According to FDA, the pregnancy category of local anesthetics (lidocaine %2, prilocaine) used by dentists during daily practices is B. The pregnancy category of mepivacaine %3, bupivacaine and articaine is C.[24] These local anesthetics can be combined with vasoconstrictor agents. The pregnancy category of epinephrine used as a vasoconstrictor is B. Adding epinephrine to local anesthetics has the potential to decrease uteroplacental blood flow theoretically in case of intravascular injection.[21] On the other hand, epinephrine in 1/100,000 concentration used dentistry is safe at the effective lowest dose with the proper technique.[21,25]

Traditionally, dental treatments are avoided during first trimester; however, there is no sufficient evidence on this matter.[26] It should be remembered that any emergency dental treatment can be carried out regardless of the trimester.[27] Wasylko et al. reported that the most ideal period for dental treatments is the beginning of the second trimester (14–20 weeks).[28] According to the results of our study consistent with the literature, a majority of the participants (68.7%) reported that the most ideal period for treatments which cannot be postponed is the second trimester. Based on these data, all elective treatments planned to perform during pregnancy should be postponed to postpartum period.[21]

Conclusion

Oral health is a significant part of general health and its significance increases during pregnancy. Routine checks for oral health should be maintained during pregnancy as before the pregnancy. The patients who do not have dental check-ups or have them irregularly should be directed to a dentist at the first prenatal visit. While postponing elective dental treatments to postpartum period, emergency dental treatments can be safely carried out during pregnancy. Although we did not have a wide population, the questionnaire results show that female obstetricians should update and improve their knowledge about oral and dental health. The patients should be informed that both diagnostic and treatment procedures are safe during pregnancy, and dentists and obstetricians should work on this matter in concordance with each other. It should be remembered that a good oral health may improve general health and affects gestational outcomes positively as well.

Conflicts of Interest: No conflicts declared.

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