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Evaluation of Gynecologists' Knowledge and Awareness Regarding Oral Health Condition During Pregnancy in the City of Benghazi, Libya

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Abstract

Background A pregnant woman with dental issues may not see a dentist unless her gynecologist advices her to do so. Thus, gynecologists need to be aware of the impact of dental health on pregnancy and what pregnant women need to do to improve their dental health.

Aim The aim of this study is to evaluate gynecologists' awareness, understanding, and practice regarding the impacts of dental therapy during pregnancy and the influence of dental disease on pregnancy outcomes.

Methods All the data in this cross-sectional study were acquired from gynecologists in public and private hospitals in Benghazi, Libya, over a period of 6 months during 2022. A modified structured questionnaire developed by Paneer et al consisting of 20 closed-ended questions related to oral care of pregnant patients was given to the participating gynecologists. Data obtained were presented as frequencies and percentages using the SPSS statistical package.

Results Sixty gynecologists, with ages ranging from 35 to 65 years, completed the questionnaire. The majority (81%) recognized that pregnancy increases the risk of gingival inflammation, but only 60% attributed this to hormonal changes. While 45% were aware of the impact of periodontal inflammation on pregnancy outcomes, only 38.3% knew about its association with preterm birth and low birth weight. Most participants (83%) considered dental referral important, and 81.7% believed oral cavity examination should be a part of maternal health, yet only 36% actually performed it. Ninety percent of the participants reported that they advise pregnant women on oral hygiene and routine checkups. Regarding safety, only 46.7% believed radiographs to be safe during pregnancy, and 51.7% considered local anesthesia with vasoconstriction safe. However, 95% agreed that the second and third trimesters are the safest period for dental treatment.

Conclusion The results of the current study show that gynecologists are fairly knowledgeable about the link between dental health and pregnancy. There is,

Keywords
- gynecologists
- oral health awareness
- oral hygiene
- pregnancy outcomes

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however, unquestionably some miscomprehension about offering dental care to expectant mothers. Pregnant women and the medical community need access to more information, and misconceptions about suitable dental procedures during pregnancy must be addressed to improve oral health care.

ملخص المقال باللغة العربية

تقييم معرفة ووعي أطباء أمراض النساء فيما يتعلق بحالة صحة الفم أثناء الحمل في مدينة بنغازي، ليبيا.

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خلفية: لا تقوم المرأة الحامل التي تعاني من مشاكل في الأسنان برؤية طبيب الأسنان إلا إذا طلبت نصيحة طبيبها النسائي. وبالتالي، يجب على أطباء أمراض النساء أن يكونوا على دراية بتأثير صحة الأسنان على الحمل وما يجب على النساء الحوامل فعله لتحسين صحة أسنانهن.
الهدف: تقييم وعي أطباء أمراض النساء وفهمهم وممارستهم فيما يتعلق بتأثيرات علاج الأسنان أثناء الحمل وتأثير أمراض الأسنان على نتائج الحمل.
الطرق: تم الحصول على جميع البيانات في هذه الدراسة المقطعية من أطباء أمراض النساء في المستشفيات العامة والقطاع الخاص في بنغازي - ليبيا على مدى ستة أشهر خلال عام 2022. تم استعمال استبيان معدّل أنشأه بانير وآخرون. (2019) يتكون من 20 سؤالًا مغلقًا يتعلق بالعناية بالفم للمرضى الحوامل وتم تعبئة الاستبيان من قبل أطباء أمراض النساء المشاركين. تم تقديم البيانات التي تم الحصول عليها كتكرارات ونسب مئوية باستخدام الحزمة الإحصائية.SPSS
النتائج: أكمل 60 طبيبًا نسائيًا الاستبيان، وتتراوح أعمارهم بين 35 إلى 65 عامًا. وتدرك الأغلبية (81%) أن الحمل يزيد من خطر التهاب اللثة، لكن 60% فقط يعزون ذلك إلى التغيرات الهرمونية. في حين أن 45% يدركون تأثير التهاب اللثة على نتائج الحمل، فإن 38.3% فقط يعرفون ارتباطه بالولادة المبكرة وانخفاض الوزن عند الولادة. يعتبر معظمهم (83٪) أن إحالة الحامل إلى طبيب الأسنان أمر مهم، ويعتقد 81.7٪ أن فحص تجويف الفم يجب أن يكون جزءًا من فحص صحة الأم، ومع ذلك فإن 36٪ فقط يقومون بذلك فعليًا. 90% ينصحون النساء الحوامل بشأن نظافة الفم والفحوصات الروتينية. فيما يتعلق بالسلامة، يعتقد 46.7% فقط أن الصور الشعاعية آمنة أثناء الحمل، و51.7% يعتبرون استعمال الأدوية القابضة للأوعية الدموية مع التخدير الموضعي آمنًا. ومع ذلك، 95% يوافقون على أن فترة الحمل الثانية والثالثة هما الأكثر أمانًا لعلاج الأسنان.
الاستنتاج: أظهرت نتائج الدراسة الحالية أن أطباء أمراض النساء لديهم معرفة جيدة بالارتباط بين صحة الأسنان والحمل. ومع ذلك، هناك بلا شك بعض سوء الفهم حول تقديم رعاية الأسنان للأمهات الحوامل. تحتاج النساء الحوامل والمجتمع الطبي إلى الوصول إلى مزيد من المعلومات، ويجب معالجة المفاهيم الخاطئة حول إجراءات طب الأسنان المناسبة أثناء الحمل لتحسين الرعاية الصحية عن طريق الفم.
الكلمات المفتاحية: أطباء أمراض النساء، التوعية بصحة الفم، نظافة الفم، نتائج الحمل

Introduction

Pregnancy is a sequence of physical and hormonal changes that take place throughout the female body, including the oral cavity. During pregnancy, many changes occur in the oral tissue, predominantly gingivitis and periodontitis.[1] Due to the elevated amounts of estrogen and progesterone, which influence periodontal disease progression and wound healing, pregnant women's gingiva has a stronger inflammatory response to plaque.[2] The effect of increasing estrogen in the gingival sulcus causes the gingiva to become irritated, sensitive, and bleed easily while brushing. Furthermore, if the plaque is not eliminated, preexisting gingivitis may significantly worsen during pregnancy due to increased levels of these hormones.[3] Progesterone causes gingival capillary dilatation, which causes the clinical characteristics of gestational gingivitis.[4] Furthermore, there are also direct and indirect effects of sex hormones on oral microflora, which stimulate the growth of anaerobic gram-negative bacteria like *Prevotella* spp. and *Porphyromonas gingivalis*, which can cause gingivitis and periodontitis, as well as infections.[5] Localized gingival hyperplastic enlargement is also found in response to hormonal change; this is called a "pregnancy tumor," which is asymptomatic and regresses after childbirth.[6] Moreover, pregnant women have a higher incidence of dental caries due to several risk factors. Increased appetite, as well as the frequency of stimulating foods and dietary changes, causes an increase in acidity during pregnancy, as pH drops frequently during the day, resulting in the development of caries.[7] Morning sickness, which induces vomiting, leads to tooth erosion that might, with time, lead to development of caries. Additionally, hormonal changes cause dryness in the mouth as it decreases salivary production, leading to poor buffering and washing effects of saliva, which lead to the formation of caries.[8] Periodontitis during pregnancy raises the risk of preterm birth and low birth weight, either directly through bloodstream entry into the placental circulation or indirectly through higher amounts of anti-inflammatory mediators in the intra-amniotic fluid caused by periodontal inflammation.[7] Since periodontal disease can be prevented and treated, early intervention may help lessen the microbial challenge and enhance periodontal health. Furthermore, combining periodontal and maternal care may enhance pregnancy outcomes.[7,9]

During the period of pregnancy, women visit gynecologists on a constant schedule. Gynecologists assist their patients in maintaining and regulating their health.[9] A pregnant woman who has dental issues may not see a dentist unless her gynecologist advices her to do so. Thus, gynecologists need to understand the impact of dental health on pregnancy and what pregnant women can do to improve their dental health and avoid oral disorders that affect both the mother and the fetus.[10] Understanding the influence of hormonal fluctuation on women's periodontal health is essential for gynecologists as they assess and treat women throughout their lives and their hormonal changes.[11] This study utilized research conducted in Chennai, India,[9] to assess the knowledge, comprehension, and implementation of gynecologists regarding the effects of dental treatment during pregnancy and the impact of dental conditions on pregnancy outcomes in Benghazi, Libya.

Methods

This was a cross-sectional study including 64 gynecologists working in public and private hospitals in Benghazi city over a period of 6 months in 2022. We used a structured questionnaire designed by Paneer et al.[9] First, experts familiar with the subjects assessed the questions to ensure their effectiveness in addressing the subject of the study. Participants were asked to complete a pilot version of the questionnaire, and notes were gathered to assess the effectiveness of each item. These precautions were taken to ensure that the questionnaire utilized in the study was reliable, constitutional, and accurately gathered the information required for the investigation. The final survey version consisting of 20 closed-ended questions (►**Table 1**) was given to the participating gynecologists.

The questionnaire included questions designed to assess the gynecologists' knowledge and practice regarding pregnant patients' dental care. The approached gynecologists were given information about the nature and goal of the investigation, and they verbally agreed to participate in the current study. The questions were instantly answered and turned over to the investigator. All the data were collected for statistical analysis. The study proposal was approved by the Libyan International Medical University Ethics Committee.

Table 1 Surveyed questionnaire results by participant gynecologist

Questions	Yes		No	
	n	Percentage	*n*	Percentage
1. Do you agree pregnancy increases the likelihood of gingival inflammation?	49	81.7	11	18.3
2. Do you know about oral manifestations caused by hormonal changes that are specifically related to pregnancy?	36	60	24	40
3. Have your patients reported with bleeding gums, small swelling, and tooth mobility during pregnancy?	38	63.3	22	36.7
4. Do you believe that gingival periodontal inflammation can affect the outcome of pregnancy?	27	45	33	55
5. Do you think periodontal disease can lead to preterm birth/low birth weight?	23	38.3	37	61.7
6. Do you think dental referral is important for your patients?	50	83.3	10	16.7
7. Do you feel examination of the oral cavity should be an integral part of maternal health?	49	81.7	11	18.3
8. Do you advise patients to visit dentist during pregnancy?	55	91.7	5	8.3
9. Do you advise pregnant women to delay dental visit after pregnancy?	18	30	42	70
10. Have you ever advised pregnant women to maintain good oral hygiene and routine dental checkup done?	54	90	6	10
11. Do you check the oral cavity of expectant mothers?	22	36.7	38	63.3
12. Do you advise patients to quit tobacco/alcohol?	42	70	18	30
13. Do you advise your patients to use fluoridated toothpaste?	38	63.3	22	36.7
14. Do you believe it is safe to use local anesthetic solutions containing vasoconstrictor for pregnant patients?	31	51.7	29	48.3
15. Do you agree that dental radiograph is safe during pregnancy?	28	46.7	32	53.3
16. Do you advise major/minor surgery during pregnancy?	41	68.3	19	31.7
17. Which trimester you think is safe for dental treatment? First	21	35	39	65
18. Which trimester you think is safe for dental treatment? Second and third	39	65	21	35
19. Do you think updating yourself with latest technology related to dentistry will benefit you?	43	71.7	17	28.3
20. Do you think attending conferences on oral health is useful?	51	85	9	15

Statistical Analysis

All collected surveys were coded and analyzed. The descriptive statistics were performed using the SPSS statistical package, and the results were presented for each question including the number and proportion of respondents.

Results

A total of 60 out of 64 gynecologists completed the questionnaire. The results are presented in ►**Table 1**. The participants were 35 to 65 years old.

The majority (81.7%) of the participants agreed that pregnancy increases the risk of gingival inflammation, but only 60% knew that these oral manifestations were caused by hormonal changes during pregnancy. Sixty-three percent reported witnessing gum bleeding, swollen gums, and tooth mobility during pregnancy. Only 45% of the participants believed that gingival periodontal inflammation can affect the outcome of the pregnancy and only 38% thought that periodontal diseases can lead to low preterm birth weight.

A high percentage of the participants (83%) consider dental referral important for their patients, and 81.7% thought that examination of the oral cavity should be an integral part of maternal health. However, only 36% checked the oral cavity of the expectant mothers.

About 92% of the participants would advise patients to visit the dentist during pregnancy and only 30% of the participants advised pregnant women to delay dental visits after pregnancy.

Ninety percent of the gynecologists advised pregnant women to maintain good oral hygiene and have routine dental checkups, and 70% advised patients to quit tobacco/alcohol.

Concerning the safety of radiographs, 46.7% respondents believed radiograph to be safe during pregnancy, whereas 51.7% respondents considered local anesthetic solution containing vasoconstrictor safe for pregnant patients, 68.3% advised major/minor surgery during pregnancy, and 65% thought that second and third trimesters are the safe period for dental treatment.

While 85% of the gynecologists believed that attending conferences on oral health was beneficial, 71% believed that updating themselves with the latest technology related to dentistry would have a positive impact on patient outcomes.

Discussion

The present study reflects the awareness and knowledge of gynecologists practicing in the city of Benghazi, Libya. Generally, the obtained results suggest that the gynecologists are capable of addressing different oral health issues associated with pregnancy, which is in agreement with the findings of the study by Bakhshi et al in 2019.[12] Although the gynecologists' level of knowledge in this study was fairly high, misconceptions still exist among gynecologists regarding the administration of dental procedures during pregnancy. This is critical since gynecologists' misinterpretations avert dentists from providing the most appropriate treatment for pregnant patients who are afraid of dental issues that could harm the fetus. As a result, gynecologists should clarify their preconceptions to allay their patients' unwarranted fears.

According to the current study, a large proportion of gynecologists (81.7%) agreed that pregnancy increased the risk of gingival inflammation, and nearly two-thirds (63.3%) of the surveyed gynecologists reported oral changes such as bleeding gums, tooth mobility, and swelling in their patients during pregnancy.

More than half of the gynecologists (55%) did not agree that gingival periodontal inflammation can have an adverse influence on pregnancy outcomes, in contrast to the findings in the study by Bakhshi et al.[12] Periodontal disease is believed to cause adverse outcomes in response to bacterial inflammation through a direct pathway via hematogenous dissemination and through an indirect pathway as periodontal disease induces 40 inflammatory mediators that lead to outcomes such as preterm birth, low birth weight, and perinatal mortality.[7] However, as a result of advancements in the field of medicine, pregnancy is no longer viewed as a medical problem for the provision of appropriate dental care. Instead, using necessary dental care during pregnancy will result in better pregnancy outcomes and a less stressful pregnancy period.[6]

The majority of the gynecologists in our study (90%) agreed that daily oral care routine is safe during this period and advised their patients to have regular dental checkups to prevent or reduce any oral manifestation that can occur. According to the American Dental Association (ADA),[13] the necessity of good daily oral hygiene should be emphasized to these patients as a result of these oral manifestations. Moreover, periodontal therapy is allowed when necessary to reduce pregnancy outcomes.

Although gynecologists were aware of the connection between oral health and pregnancy, their responses to questions about their knowledge of appropriate dental therapeutic procedures for pregnant women were inadequate. Nearly half of the gynecologists (48.3%) held the misconception that vasoconstrictors should not be used with local anesthetic agents during dental treatment for pregnant women. Similar results to ours were reported by Paneer et al.[9] Ideally, a vasoconstrictor should be used in concert with local anesthesia to limit absorption and toxicity while increasing analgesic effects, resulting in a longer duration of anesthesia and more efficient pain control during treatment.[14] Vasoconstrictors can be found in low concentrations in anesthetic cartilage, which reduces risk from the anesthetic agent as well as from the vasoconstrictor itself.[14]

Another misconception is regarding the question of whether it is safe to take dental radiographs of a pregnant patient. More than half of the gynecologists (53.3%) answered "No," which is consistent with the findings of Hashim and Akbar in 2014.[15] Dental radiographs are critical in the diagnosis and treatment of a wide range of dental diseases. Taking radiographs during pregnancy is safe, according to the International Atomic Energy Agency (IAEA), because the dosage from a dental X-ray examination, including cone bean computed tomography (CBCT), is between 0.009 and 0.009

mSv. Dental X-rays are now significantly safer due to advances in technology. Digital X-rays emit much lower radiation compared to previous dental film–based systems.[16]

Additionally, the majority (68.3%) participants did advise major/minor surgery during pregnancy, which they may believe has no harmful effect on the mother and the fetus, which is contrary to the experience by Acharya et al.[10] Only if necessary to alleviate pain and infection during pregnancy is oral surgery to be considered. These operations involve tooth extractions, incisions, and dental infection drainage. However, any surgery that is necessary but not urgent can be postponed to the second trimester or after giving birth.[11]

Moreover, according to our survey, the majority of gynecologists presume that both the second and third trimesters of pregnancy are the safest for dental treatment, in contrast to the findings of a study by Tarannum et al in 2022.[17] Although the entire body changes during pregnancy, dental therapy and procedures must be changed to protect the mother and the fetus. Therefore, it is consistently demonstrated that dental treatment can be performed safely throughout any of the three trimesters of pregnancy. The second trimester is considered the safest period because at this stage organogenesis is complete and the risk to the fetus is generally low and morning sickness, which interferes with the procedures, is reduced. Similarly, the fetus has not grown to an uncomfortably large size, necessitating a good chair position in the third trimester to avoid postural hypotension.[8]

While 81.7% of the gynecologists in our study believe that an oral cavity examination should be a part of maternal health care, only 36.7% of them actually conduct oral cavity checks on their pregnant patients. This differs from a 2019 study by Paneer et al, who also supported the inclusion of oral cavity examination in maternal health care, but reported that the majority of gynecologists in their study did perform oral checkups on their patients.[9] Consistent with the findings of Shah et al in 2013, the majority of gynecologists in our study advise their patients to quit tobacco and alcohol consumption during pregnancy.[18] According to the American College of Obstetricians and Gynecologists (ACOG), women should not use tobacco or alcohol during pregnancy because nicotine in cigarettes may permanently damage a fetus' organs and narrow the blood vessels, causing less oxygen and fewer nutrients to reach the fetus. Smoking during pregnancy increases the risk of preterm birth, low birth weight, and other defects.[19]

Moreover, when it comes to dental visits, 90% of our gynecologists advise patients to visit the dentist during pregnancy, and 70% do not advice postponing the visit until after giving birth. Besides that, 83.3% of them assume that referring patients to a dentist is important for their patients. These findings are similar to the those of the study by Hoerler et al.[20] Additionally, a large percentage of gynecologists surveyed are interested in updating their knowledge of the latest dental techniques and information that will help them manage their patients properly. They also agree that attending oral health conferences is beneficial in improving their knowledge of dental issues that their patients may have.

Limitations of the Study

A potential limitation of this investigation is that we used convenience sampling, which did not cover the entire population, and the sample size is too small to reach definitive conclusions. Furthermore, the responses that were gathered did not necessarily reflect the actual thoughts of the participating gynecologists due to bias on their part. It is also possible that some doctors misinterpreted the questions that were asked. Furthermore, the specific oral health conditions of the pregnant women who visited these gynecologists could not be examined and were totally reliant on the memory of the participating gynecologists. This study, on the other hand, may give baseline data for future continuing education programs offered to gynecologists in Benghazi.

Conclusion

Although our study showed that gynecologists are generally aware of oral health issues during pregnancy, misconceptions still exist about certain dental facts. This can affect the treatment of pregnant patients and their fears about potential harm to the fetus. Gynecologists need to address these misconceptions to alleviate unnecessary patient concerns. Based on these results, we should establish appropriate educational resources and workshops to inform gynecologists about the link between oral health and pregnancy outcomes as well as between pregnancy and oral health care. We can begin by distributing educational materials to all gynecologists in the public and private sectors. When gynecologists are aware of the connection between periodontal disease and adverse pregnancy outcomes, they will inform their patients and, if any cases are found, refer them to a dentist.

Ethical Approval

The ethical committee of Faculty of Dentistry, Libyan International Medical University, approved the study.

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Conflict of Interest

None declared.

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