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Awareness of Gynecologists in Kuwait Regarding Association between Periodontal Diseases and Adverse Pregnancy Outcomes

Research Article

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Abstract

Aim: This study aimed to explore the level of awareness of gynecologists practicing in Kuwait about the association between periodontal diseases with adverse pregnancy outcomes.

Materials and Methods: This was a descriptive cross-sectional study carried out among gynecologists practicing in different hospitals of Kuwait in March 2021. A self-administered online questionnaire in google form was sent to 159 participants through email requesting voluntary participation. The responses receivedwere extracted to Microsoft Excel 365 and descriptive analysis was carried out.

Results: A total of 118 responses (73 female and 45 male) were received with a response rate of 74.21%. The participants have a mean practice experience of 10.8 years, and 89.8% of them had witnessed preterm or low birth weight babies during their practice. Among them, 50.8% believed that the inflammation of the periodontal tissues can have a negative impact on the pregnancy outcome and 30.5% thought periodontal diseases to be a predisposing factor for preterm and/or low birth weight. The second trimester was considered safest for the dental procedure by 78.8% of the gynecologists and 73.7%advised pregnant women to visit a dentist. A large majority (89.8%) felt the need for additional information on periodontal diseases and their impact on pregnancy outcomes.

Conclusion: Most of the gynecologists agreed on the possible connection between oral health and pregnancy, however, many of them were not sure about its impact on adverse pregnancy outcomes. A vast majorityof the participants agreed on the need for additional information on oral health during pregnancy.

Keywords: Periodontal Disease; Pregnancy Outcome; Awareness; Oral Health.

Introduction

Pregnancy is the stage accompanied by complex changes in the physiology affecting the whole body including the oral cavity and an increase in the pregnancy hormone levels during this stage often compromises gingival and periodontal health. There is a wide variation in the prevalence of gingival and periodontal disease during pregnancy (30% to 100%)[1]. Changes in periodontal microbiology comprise of increase in the relative proportion of anaerobic bacteria in addition to the rise in Bacteroides melaninogenicus and Prevotella intermedia [2]. Microbial changes together with the effects of hormones on the immune response and microvasculature contribute to increased gingival inflammation during pregnancy. A greater degree of inflammation is observed in pregnant ladies for the presence of a similar amount of biofilm when compared to other individuals [1]. Besides, pregnant women are at risk of loose teeth, dental caries, dental erosion and benign gingival tumors [3, 4].

Poor gingival and periodontal health is often associated with adverse pregnancy outcomes like preterm birth [5], low birthweight [6], gestational diabetes [7], fetal growth restrictions [8], and pre-eclampsia [9]. These conditions are prevalent in both developed and developing countries that have an adverse impact on child mortality and morbidity along with the psychological impact on families [10]. Hence, assessment of oral and periodontal health during pregnancy could significantly reduce child and maternal mortality and morbidity. Inclusion of periodontal examination in routine antenatal checkup visits would be helpful in screening and timely intervention of any gingival or periodontal problems.

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Oral health is often compromised in pregnant women when compared to non-pregnant peers [11]. However, dental visits and care are often under-utilizedby this group who need the most [12]. Lack of knowledge, the existence of misbelief and negative attitude towards dental care during pregnancy exaggerates the problem [13]. Pregnant women visit gynecologists for regular antenatal checkups, and they are the most frequently encountered healthcare workers. Hence, they can play an important role in improving the oral health of pregnant women by recommending additional care. However, gynecologists receive limited training in oral health that may not be sufficient to understand the relationship between poor periodontal health and adverse pregnancy outcomes [14].

Studies done among gynecologists in different parts of the world revealed diverse results. A study by Hashim and Akbar in UAE revealed misconceptions with regards to providing dental treatment during pregnancy [15]. A survey in Davangree, India concluded positive attitude but poor practice in treating oral diseases during pregnancy [16]. Several studies of similar types conducted at different parts of the world revealed the need for continuing education and training in oral and periodontal health during pregnancy to improve the practice in mitigating the risk of adverse pregnancy outcomes [17-20].

There are no studies done in Kuwait so far to assess the gynecologist's knowledge on the relationship between oral health and pregnancy. Hence this study aimed to assess their awareness on the association between periodontal diseaseswithadverse pregnancy outcomes.

Materials and Methods

This was a descriptive cross-sectional study conducted in March 2021 among gynecologists practicing in different cities of Kuwait. A self-administered questionnaire was sent through google form via email to gynecologistspracticing at different hospitals.Informed consent was obtained for voluntary participation and no incentives were offered for inclusion in the study. The Assistant Undersecretary for Planning and Quality Affairs, Chairman of the Standing Committee for Coordination of Medical and Health Research in the Ministry of Health of Kuwait granted approval for the conduction of this research.

A sample size of 114 was calculated assuming the confidence level of 95%, the margin of error as 5% and prevalence of 92% (Sinha et al [20] found 92% of gynecologists believing that good oral health improves fetal health). As this was an online survey, some amount of non-response was expected and considering a 72% response rate [15], the final sample size wasdetermined to be 159.

All the participants were gynecologists registered in Kuwait Medical Council and practicing at different governmental hospitals and primary clinic centers of Kuwait. The objectives and rationale of the research were explained to them before the questionnaire administration and online mode was preferred considering the COVID-19 pandemic scenario.

The questionnaire developed by Hashim and Akbar was used in this study which was already tested in gynecologists practicing in different cities of UAE [15]. The structured questionnaire consisted of 17-closed ended questions and was anonymous in design. The first few questions explored the participants' demographic features like age, gender, and years of practice. The rest questions were aimed to assess their knowledge, attitude, and practice behaviors regarding the association of the periodontal disease with adverse pregnancy outcomes.

The data obtained from the google forms were saved to Microsoft Excel 365 followed by cleaning for analysis. The demographic features and frequency of responses depicting the knowledge, attitude and practice were analyzed using descriptive statistics.

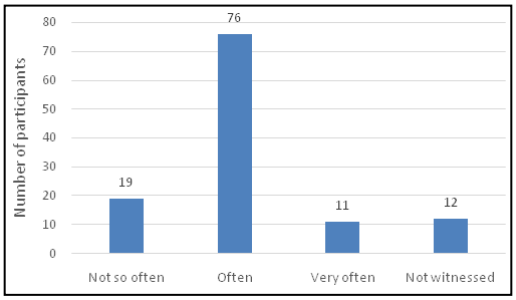
Results

A total of 118 responses were received out of 159 gynecologists approached (response rate of 74.21%). Among those who responded, 73 (61.9%) were female and 45 (38.1%) were male. Most of them belonged to the age group of 31- 40 years (Table 1). The participants have a mean practice experience of 10.8 years (range: 1 to 31 years) and 106 (89.8%) of them had witnessed preterm or low birth weight babies during their practice (Figure 1).

Table 1. Distribution of gynecologists with gender and age group.

Age group	Female	Male	Grand Total
≤ 30 years	21	22	43
31 - 40 years	35	13	48
41 - 50 years	12	9	21
> 50 years	5	1	6

Figure 1. Frequency of observation of preterm or low birth weight delivery during their practice.



During the antenatal checkup, 79 (66.9%) gynecologists observed their patients mentioning bleeding gums or tooth mobility and 82 (69.5%) agreed on the fact that pregnancy worsens gingival inflammation (Table 2). With regards to the referral to the dentist, 87 (73.7%) participants advised pregnant women to visit a dentist while 48 (40.7%) suggested delaying the dental visit till the birth of the baby. Approximately half of the gynecologists (n=60, 50.8%) believed that pregnant women can be safely given local anesthetic agents containing vasoconstrictors for dental treatments. Nearly two-thirds (n= 81, 68.6%) of the participants feltfora possible connection between periodontal health and pregnancy. Similarly, 60 (50.8%) of them believed that the inflammation of the periodontal tissues can have a negative impact on the pregnancy outcome and 36 (30.5%) thought periodontal diseases to be a predisposing factor for preterm and/or low birth weight.

The second trimester was considered safest for the dental procedure by 93 (78.8%) gynecologists (Fig.2). There was a wide variation in opinion regarding safe procedures during pregnancy (Table 3). Approximately three-fourths of the participants (n=88, 74.6%) believed that a developing baby draws calcium from the mother's teeth.

A wide range of sources was utilized by the participating gynecologists to seek information on oral health in pregnancy (Table 4). Besides, 106 (89.8%) participants felt the need for additional information on periodontal diseases and their impact on pregnancy outcomes.

Discussion

This was an online survey conducted to assess the current level of awareness of gynecologists practicing in Kuwait regarding the association between periodontal diseases and adverse pregnancy outcomes. Gynecologists are the prime clinicians who take care

Table 2. Response to various questions by the participants.

Questions	Yes	No
	n (%)	n (%)
Do you agree that pregnancy increases the likelihood of gingival inflammation?	82 (69.5%)	36 (30.5%)
Have your patients ever mentioned any bleeding gums or tooth mobility during the period of pregnancy?	79 (66.9%)	39 (33.1%)
Do you advise pregnant women to visit the dentist?	87 (73.7%)	31 (26.3%)
Do you advice pregnant women to delay dental visit until after pregnancy?	48 (40.7%)	70 (59.3%)
Do you believe it is safe to use the regular local anesthetic solutions containing vasoconstrictors for pregnant patients?	60 (50.8%)	58 (49.2%)
Do you think that there is a possible connection between the health of the teeth and gum and pregnancy?	81 (68.6%)	37 (31.4%)
Do you believe that gingival/periodontal inflammation can affect the outcome of pregnancy?	60 (50.8%)	58 (49.2%)
Do you think periodontal disease can lead to preterm and/or low birth weight?	36 (30.5%)	82 (69.5%)
Do you believe that calcium from the mother's teeth will be drawn by the developing baby?	88 (74.6%)	30 (25.4%)
Do you feel that you need additional information about periodontal disease and its impact on pregnancy outcomes	106 (89.8%)	12 (10.2%)

Figure 2. Safe trimester for dental procedure as perceived by the gynecologists.

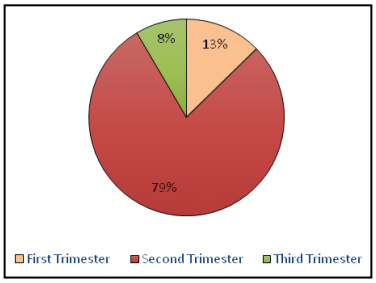


Table 3. Safe dental procedures during pregnancy as perceived by gynecologists.

Dental Procedures	Number of participants who consider safe
Intra-oral/ Extra-oral radiographs	25
Fillings/ Crowns	70
Extraction	49
Routine Cleaning	97
Periodontal Treatment	45

Table 4. Sources of information on oral health in pregnancy.

Source of information	Number of participants
Book, magazine or pamphlet	55
Television or internet	54
Clinical experience	91
Medical Journal	75
Others:	
Pregnancy care	1
Experienced friends	1
Fellow Obstetrician and gynecologists	1

of pregnant women for a considerable duration of time and their role is important in improving their overall health. Their awareness of gingival/periodontal problems and their association with adverse pregnancy outcomes improves oral health as well as reduces the risk of adverse pregnancy outcomes. The majority of the participants hadan idea about the need for periodontal care, but the association between oral and pregnancy health was not found as expected.

The response rate in this study was 74.21%, which is comparable to a similar survey on gynecologists done by Hashim and Akbar (72%)[15], however,Paneer et al [21] reported a 100% response rate. Meeting the participant in person for the questionnaire might yield a higher response rate than the online questionnaire as busy clinicians may not have time to fill up the form orsimply ignore the online forms. Due to the widespread pandemic of COVID-19, an online mode was adopted to comply with the new normal.

In our study, 82 (69.5%) agreed on the fact that gingival inflammation is aggravated in pregnancy and 79 (66.5%) have noticed some kind of periodontal problems in pregnant during their clinical practice. In a similar study at Bhimavaram, India, 63.3% of the clinicians were aware of the hormonal changes in pregnancy and their effect on periodontal tissues. This reflects the background knowledge about the mechanism of gingival and periodontal inflammation in pregnant women. In a study by Patil et al [19], gynecologists practicing at medical institutions were found to have a greater knowledge of oral health as compared to the peers in private practice. However, no such differences were evaluated as most of the participants in this study belonged to government institutions.

This study revealed that 73.7% of gynecologists advised pregnant ladies to seek dental care. This is lower when compared to gynecologists at UAE (85.2%) [15], Davangere (93.9%)[16] and higher compared to Bhubaneswar (62%)[22], Hubli-Dharwad (28%)[20]. The variation in the referral for dental care can be attributed to the presence of barriers at a different level, such as lack of knowledge and awareness about the importance of oral health, insufficient training to screen oral problems, high cost of dental treatment, poor socioeconomic status of the patients, etc [23]. In the UK, the National Health Service provides free dental treatment to pregnant and breastfeeding mothers for up to 1 year and thus referral is strongly recommended by the antenatal care providers [24]. Although the dental treatment in Kuwait is free for its citizens and nominal fees are charged for foreigners, this service seems underutilized in pregnancy.

Besides, poor awareness about the relationship between periodontal health and outcome of pregnancy was found. Although 81 (68.6%) participants thought about the possible relation between oral health and pregnancy, only 60 (50.8%) believed that gingival/periodontal inflammation can impact the pregnancy outcome. Further, only 36 (30.5%) agreed periodontal disease as a contributing factor for preterm or low birth weight. In a similar study at UAE, although 95.4% of the gynecologists believed in the association between oral health and pregnancy, only 75.9% agreed on its impact on pregnancy outcome [15]. The opinion of gynecologists regarding the association between periodontal disease and birth outcome varied worldwide (38% to 74%) [20-22, 25, 26]. Despite having some idea about the importance of oral health in pregnancy, most of them were not aware of the direct association between periodontal health and adverse pregnancy outcomes. Most of the gynecologists may not have received any education on the importance of oral health and this is reflected by the fact that 89.8% of the participants of this study agreed on the need for additional information on oral health during pregnancy. In a large survey conducted in the USA, 57% of gynecologists admitted the lack of ability to recognize the symptoms ofgingival/periodontal diseases and they further highlighted the insufficiency of training in screening oral health problems [27].

In Kuwait, oral examination in not included in the overall antenatal examination and hence the screening of the gingival/periodontal disease is upon the discretion of the clinician. The absence of strict guidelines on oral health assessment is the major hurdle for the improvement of oral health. In 2013, a joint team of the European Federation of Periodontology and American Academy of Periodontology prepared a consensus report that suggestedincludingan oral health history in the general history, oral examination in the regular checkup and referral to a dentist when any sign of gingival inflammation appears in a pregnant female[28].Steps to provide preventive oral health during the antenatal visit have been taken in UK [24], USA [29] and Australia [30, 31] through various approaches.

There exists a misconception regarding dental treatment during pregnancy. Almost three-fourths of the participants (88, 74.6%) believed that the developing fetus draws calcium from the mother. Similarly, only 60 (50.8%) of the participants agreed on the safety of the use of the regular local anesthetic solutions containing vasoconstrictors for pregnant patients. In a similar study at Chennai [21], 74% of gynecologists did not support the safety of

local anesthesia with vasoconstrictor. Routine cleaning was considered safe by 97 participants whereas only 25 considered x-ray safe during pregnancy. In fact, most of the preventive, diagnostic, and restorative dental procedures are considered safe for a pregnant woman [32].

Nevertheless, this study had some limitations such as convenient sampling was done to achieve the desired target, gynecologists from 5 hospitals and primary care centers in4 cities were only included.With a certain percentage of non-response, the awareness level of those who did not respond might be considerably different from those who responded to the online questionnaire. Continuing educationprogrammes and training should be introduced to all involved in providing anti-natal care to improve the knowledge on oral health followed by a similar kind of survey to assess the impact of additional training on the level of awareness and practice implementation.

Conclusion

Most of the gynecologists (68.6%) agreed on the possible connection between oral health and pregnancy, however, many of them were not sure about its impact on adverse pregnancy outcomes. A vast majority (89.8%) of the participants agreed on the need of additional information on oral health during pregnancy.

Declaration

Ethics approval and consent to participate: This protocol for this study was approved by Assistant Undersecretary for Planning and Quality Affairs, Chairman of the Standing Committee for Coordination of Medical and Health Research in the Ministry of Health of Kuwait. Informed consent was obtained from all the participants prior to the enrollment.

Consent for publication: No personal identifiable data are present in the manuscript.

Availability of data and materials: The dataset supporting the conclusions of this article is availablefrom the corresponding author on reasonable request.

Authors' contributions: MMA conceptualized the study, ATA contributed to the study design; MMA and ATA collected the data; MMA did the data analysis; MMA and ATA interpreted the results; MMA prepared the draft; ATA finalized the manuscript; MMA and ATA reviewed and approved the final manuscript.

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