ORIGINAL ARTICLE

Perspectives and Practices of Gynecologist's about Prenatal Oral Health and Association Between Periodontal Disease and Adverse Birth Outcomes

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OBJECTIVE: Prenatal oral health has garnered growing attention due to its potential impact on maternal and fetal well-being. Thus, this study seeks to investigate gynecologists' perspectives and practices related to prenatal oral health care while concurrently examining the association between periodontal disease and adverse birth outcomes, shedding light on the comprehensive significance of oral health during pregnancy and its potential implications for maternal-fetal health.
METHODOLOGY: A quantitative cross-sectional study based on questionnaire was performed targeting consultant gynecologists in all district hospitals of city Karachi. The responses were computed by SPSS. Descriptive statistics with frequencies were computed and Chi-square was used to find out the associations between different variables.
RESULTS: Half of the gynecologists (55%) reported that they never asked nor documented their patient's last dental visit before commencing prenatal care. About 38% stated that they sometimes referred their patients to dental practitioners. Approximately 27% of the gynecologists admitted to not knowing the association between periodontal diseases and adverse birth outcomes. Statistically significant associations were observed between work experience and knowledge about gingivitis in pregnancy (p-value 0.012) as well as periodontitis with adverse birth outcomes (p-value 0.019).
CONCLUSION: Health professionals appeared to lack caution when it came to the oral health of their patients, despite possessing a good understanding of the oral-systemic connection during pregnancy. Prenatal care providers should consider developing inter professional relationships and promptly referring their patients for dental assessments.
KEYWORDS: Prenatal care, Oral Health in Pregnancy, Periodontal diseases, Adverse outcomes of pregnancy, Awareness about oral health
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INTRODUCTION

Pregnancy is a complex phase of systemic and local changes throughout the body. The alterations in physiology and compensation by the body of pregnant women is observed in every organ or systems including the oral cavity.[1] Much of the changes in the oral cavity are a result of high level of progesterone and estrogen which increases the synthesis of prostaglandins, which in turn generates the inflammatory response to even normal oral flora.[1,2] High level of bacteria in oral cavity predisposes mainly to gingivitis and periodontitis making it the most common oral manifestation of pregnancy.[2]

The association between periodontal diseases and adverse birth outcomes is well established.[3,4] The outcomes include preterm birth, low birth weight, pre-eclampsia, still birth, gestational diabetes and fetal growth restrictions.[3] The proportion of mentioned birth outcomes is higher in developing countries like Pakistan. Recent studies in Pakistan stipulated total prevalence of preterm birth of 21.8%, low birth weight of 21.4%[5] and incidence of still birth with rate of 44.4 per 1000 births.[6] Periodontal diseases are reported to be 7 times more likely associated with preterm delivery of low birth weight infants than mothers age, race, use of tobacco or alcohol and number of live births.[7]

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Periodontal diseases are highly prevalent in Pakistan and pregnant women are no exception. National level of periodontitis was reported to be 56.62% , according to recent systematic review.[4] Moreover, recent study on pregnant women identified 75.9% of them to have moderate periodontal diseases.[8] The reason of such high disease burden is due to lack of awareness and negligence of pregnant woman about oral care and partly due to misconceptions of dental professionals regarding treatment modalities used in pregnancy.[9] Gynecologists can play crucial role in combating the periodontal diseases by addressing the misconceptions and concerns of their patients. Amidst the misconceptions, gynecologists can make referrals and educate the pregnant patients about importance of sound oral health on general wellbeing as they're the foremost healthcare professional that encounters them.[10]

Considering the limited body of evidence in this particular field within Pakistan, our study was designed with the objective of assessing the prevailing practices among prenatal care providers when it comes to addressing the oral health of pregnant women under their care. Furthermore, we aimed to gain insights into the perspectives held by these healthcare professionals regarding the potential links between periodontal disease and adverse birth outcomes.

METHODOLOGY

This cross sectional study was conducted in Karachi, Pakistan from September 2022 till February 2023. The Ethical approval was granted by the Institutional Review Board of Dow University of Health Sciences (Ref: IRB-2450/DUHS/Approval/2022/1151). Karachi is the most populous city with an estimate of 16 million population. The city is divided into 7 districts. The purposive sampling technique was employed and gynecologists practicing in two hospitals from each district were selected randomly and approached, with preference given to public hospitals as the majority of underprivileged citizens use public health facilities. The data collection was initiated after obtaining proper consent from hospitals and consultant gynecologists over there.

The sample size was calculated by OpenEpi calculator[11] using proportion (95.4%) of gynecologists' knowledge regarding connection between oral health and pregnancy who were practicing in the private sector of United Arab Emirates[12], with 5% margin of error and 95% confidence interval, the total sample size came out to be 68 which was extended to 100 gynecologists. An adapted and modified questionnaire from previous studies[13,14] was used and reliability was calculated. The value of Cronbach's alpha attained was 0.82.

The questionnaire inquired the gynecologists about advising and referring pregnant patients to dentist during pregnancy, keeping record of last dental visit and performing oral examination, knowing the association between periodontal diseases and adverse birth outcomes prevalent in pregnancy. Lastly, the associated barriers while maintaining oral health during pregnancy were asked. The data obtained was analyzed using SPSS version 20 and p-value of less than 0.05 was taken as significant. Chi-square was used to find out the associations.

RESULTS

The majority of the gynecologists were female (99%), practicing in public practice (45%) with work experience of less than 10 years (50%) (Table 1). The practices and conducts of gynecologists in their clinics regarding oral care are displayed in Table 2. According to our results, the prenatal care providers (38%) rarely discuss oral health and rarely ask about the current oral health of pregnant patients (35%). About one half of the gynecologists (55%) had neither asked nor documented in prenatal record about dental visit of pregnant patients within past 12 months before starting prenatal care. 45% of gynecologists never performed an oral examination as a component of prenatal care. Not many gynecologists (5%) were seen to be always advising the pregnant patients about routine dental checkup, however they never advised the patients to delay dental visit until after pregnancy (57%) which indicates positive attitude towards general wellbeing of patients. The majority

Table 1: Demographics

Demographics	Frequency	Percentage
Age (in years)		
<30	**35**	**35.0**
31 - 40	**21**	**21.0**
41 - 50	**29**	**29.0**
>50	**15**	**15.0**
Gender		
Male	**1**	**1.0**
Female	**99**	**99.0**
Work experience (in years)		
<10	**50**	**50.0**
11 - 20	**29**	**29.0**
21 - 30	**19**	**19.0**
>30	**2**	**2.0**
Practice type		
Private practice	**30**	**30.0**
Public practice	**45**	**45.0**
Both	**25**	**25.0**

Table 2: Practices of gynecologists

Practices of gynecologists	Frequency	Percentage
Do you discuss oral health with your patients during routine practice?		
Always	5	5.0
Very often	11	11.0
Sometimes	30	30.0
Rarely	38	38.0
Never	16	16.0
Do you ask your patients about their current oral health?		
Always	3	3.0
Very often	9	9.0
Sometimes	32	32.0
Rarely	35	35.0
Never	21	21.0
Do you conduct an oral examination of patient's mouth as a component of prenatal care?		
Always	3	3.0
Very often	4	4.0
Sometimes	24	24.0
Rarely	24	24.0
Never	45	45.0
Do you ask and document in prenatal record that whether the patient has visited the dentist within 12 months preceding prenatal care?		
Always	2	2.0
Very often	1	1.0
Sometimes	15	15.0
Rarely	27	27.0
Never	55	55.0
Do you advise patients for routine dental checkup?		
Always	5	5.0
Very often	3	3.0
Sometimes	23	23.0
Rarely	31	31.0
Never	38	38.0
Do you advise your patients to delay dental visit to the dentist until after pregnancy?		
Always	5	5.0
Very often	2	2.0
Sometimes	15	15.0
Rarely	21	21.0
Never	57	57.0
Do you discuss with your patients the methods to prevent dental decay in their children?		
Always	2	2.0
Very often	8	8.0
Sometimes	12	12.0
Rarely	19	19.0
Never	59	59.0
Do you think that pregnant women should have an oral health screening done?		
Yes	83	83.0
No	5	5.0
I don't know	12	12.0
Do you routinely refer your patients for dental checkups?		
Always	8	8.0
Very often	8	8.0
Sometimes	38	38.0
Rarely	15	15.0
Never	31	31.0
Has any patient that you referred to a dentist been denied dental treatment?		
Yes	42	42.0
No	30	30.0
I don't know	28	28.0

of antenatal care providers (83%) agreed to the statement that oral health screening of patients should be carried out during pregnancy. Sometimes these gynecologists (38%) refer their patients to the dentist but to our utter disappointment, the dental treatments were reported to be denied by dentist most of the time (41%).

Gynecologists had consensus on safety of dental x-ray (68%) and local anesthetic used with vasoconstrictor (75%). The second trimester was considered favorable for dental treatments (63%). The association between pregnancy and gingivitis was well known (83%) but antenatal care providers had dilemma about preterm birth and low birth weight outcomes of periodontal diseases (27%), so they agreed strongly to arrange awareness sessions regarding association between adverse birth outcomes and periodontal diseases

Table 3: Perspective of gynecologists
a: Safety of dental procedures and interventions
b: Periodontal disease and pregnancy
c: Barriers

Perspectives of gynecologists	Frequency	Percentage
a. *Safety of dental procedures/ interventions*		
Do you think that diagnostic dental x ray can be taken safely during pregnancy?		
Yes	68	68.0
No	21	21.0
I don't know	11	11.0
Do you think that local anesthesia with vasoconstrictor can be safely used during pregnancy?		
Yes	75	75.0
No	14	14.0
I don't know	11	11.0
Which trimester do you consider safe for dental treatments?		
First trimester	9	9.0
Second trimester	63	63.0
Third trimester	28	28.0
b. *Periodontal disease and pregnancy*		
Do you think that pregnancy increases the likelihood of gingival inflammation during pregnancy?		
Yes	83	83.0
No	10	10.0
I don't know	7	7.0
Do you think that periodontal disease can lead to preterm labor and/or low birth weight?		
Yes	46	46.0
No	27	27.0
I don't know	27	27.0
Do you think there's need for awareness program about the association between periodontal disease and adverse pregnancy outcomes for gynecologists?		
Yes	91	91.0
No	4	4.0
I don't know	5	5.0

(91%). Statistically significant associations were found between work experience and knowledge about gingivitis in pregnancy (p-value 0.012) as well as that of periodontitis with adverse birth outcomes (p-value 0.019). Other associations are also shown in Table 4 and 5. The perspective of gynecologists about barriers in maintenance of suitable oral health during pregnancy are listed in Figure 1.

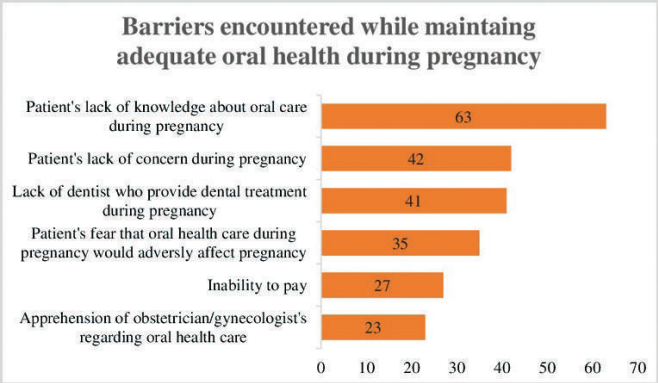
Table 4: Practices of gynecologists stratified by work experience

Practices of gynecologists	<10 years	11 - 20 years	21 - 30 years	>30 years	P-value
Do you ask your patients about their current oral health?					
Always	2	0	0	1	0.021
Very often	4	3	2	0	
Sometimes	12	12	8	0	
Rarely	19	11	4	1	
Never	13	3	5	0	
Do you advice patient for routine dental checkup?					
Always					
Very often	5	0	0	0	0.02
Sometimes	2	0	0	1	
Rarely	8	8	7	0	
Never	11	12	7	1	
	24	9	5	0	
Has any patient that you referred to a dentist been denied dental treatment?					
Yes	12	18	10	2	0.004
No	16	7	7	0	
I don't know	22	4	2	0	

Table 5: Practices of gynecologists stratified by work experience

Perspectives of gynecologists	<10 years	11 - 20 years	21 - 30 years	>30 years	p-value
a.*Safety of dental procedures/ interventions*					
Which trimester do you consider safe for dental treatments?					
First trimester	8	0	1	0	0.058
Second trimester	28	22	13	0	
Third trimester	14	7	5	2	
b.*Periodontal disease and pregnancy*					
Do you think that pregnancy increases the likelihood of gingival inflammation during pregnancy?					
Yes	36	27	19	1	0.012
No	9	1	0	0	
I don't know	5	1	0	1	
Do you think that periodontal disease can lead to preterm labor and/or low birth weight?					
Yes	14	19	12	1	0.019
No	17	5	5	0	
I don't know	19	5	2	1	

Figure 1



DISCUSSION

Pregnancy can have challenging outcomes which need timely assessment and multidisciplinary approach. The role of gynecologist towards the overall health maintenance including oral health is significant. Inter professional relationship development and timely referral is crucial for healthy prenatal time period. Moreover, to prevent unfavorable birth outcomes because of pregnancy gingivitis or periodontitis, the previously issued comprehensive guidelines about Oral health care during pregnancy should be incorporated in clinical practices by respective healthcare professionals.[15]

This study gives an insight into clinical practices and behaviors of gynecologists in Karachi city. Only 5% of gynecologists in our survey always discussed oral health with their patients in routine practices and only 3% gynecologists always asked patients about their current oral health. The findings in study of such a low proportion are similar with an Australian survey by George et al where 16.4% antenatal care providers always discussed the importance of oral health and 14.9% always asked the patients about their current oral health.[14] Further an American based study also reported that only 5.8% prenatal care providers always interview about oral health.[16] 87% obstetricians in India had their opinion that dental examination should be included in prenatal screening[17] and 87.7% gynecologists in turkey based survey confirmed that they don't perform such an examination.[18] Our survey reported similar findings where 45% gynecologists never performed oral examination during prenatal assessment. Shortage of time, lack of interest and request by patient, no proper referral system, lack of training and feeling that this is not the responsibility of obstetrician were cited as reasons of not performing an oral examination.[16,19]

Prenatal assessment and documentation are an essential component of obstetric care done on very first visit of pregnant patient yet not many obstetricians enquire about dental visit in last 12 months (55%). One of the main reason highlighted by gynecologist was that oral health is not incorporated in their history forms and lack of such guidelines by American College of Obstetrics and Gynecology.[19] Just like prenatal period, postpartum period is also known to have high chances of transmitting maternal oral flora to newborn infants which in turn increases the risk of early childhood caries.[2] Maternal counselling in this regard and methods to prevent dental caries were not observed by gynecologist in our study (59%) and an Australian based study (57.5%).[14] Proper discussion about oral health and referrals by gynecologists have been associated with increased ratio of dental visits by woman during pregnancy from 38% in 2009 to 42% in 2012.[10] Gynecologists sometimes (34.8%) refer patients to dentist[16] comparable to our findings of 38% referral sometimes. Dental problems are a prime reason to do so highlighting the lack of emphasis on preventive approach.[20]

Dental treatments are safe during pregnancy but many gynecologists (77%) reported that dental treatments were denied by dentist many times which is in accordance to our findings.[13] Gynecologists had no doubt about safety of dental x-ray, use of local anesthetic with vasoconstrictor and best trimester for dental treatments similar to previous studies.[14] Our study showed a statistically significant relation between work experience of gynecologists and their practices of asking and advising patients about oral care. However there was no correlation noted between work experience and referral practices unlike Mariano da Rocha et al[21] and Resul turabi et al[18] findings. Work experience also had statistically significant relation with knowledge about
association between adverse birth outcomes and periodontal diseases (p-0.019).

There was high demand to arrange awareness session regarding association between periodontal diseases and birth outcomes in our study (91%) as many residency programs

of obstetrics and gynecology have no component of prenatal oral health education in their curricula.[22] There is still need of policy statement and practice bulletins by American College of Obstetrics and Gynecology to emphasize about oral care during pregnancy besides consensus statement.[19,22] Proper guidelines about oral health care in prenatal practices need to be developed and implemented in all healthcare sectors of Pakistan. Promotion of oral health in prenatal visits should be done by distributing informational brochures and providing free oral screening next to gynecology clinics.

The limitations of our study include small sample size as the findings can not be generalized. Furthermore, reporting bias can be expected as we can not confirm individual clinical practices of gynecologists. More data need to be gathered from different cities to assess the variations in practices and perspectives of fellow obstetricians.

CONCLUSION

Our study indicated that the practices of gynecologists regarding oral health care are not optimal, meaning that there is room for improvement. Despite having sufficient knowledge about the potential negative consequences of periodontal diseases, gynecologists often do not effectively integrate oral health guidelines into their clinical practices. This suggests a gap between knowledge and implementation.

To address this issue, prenatal care providers, including gynecologists, should aim to develop inter professional relationships with dental professionals. Further gynecologists should educate their patients about the potential risks of poor oral health during pregnancy, such as preterm birth and low birth weight. Lastly, gynecologists should emphasize the significance of regular dental check-ups and encourage their patients to seek dental care when necessary. By incorporating oral health care into their prenatal care practices, gynecologists can contribute to the overall well-being of their patients. Collaboration between gynecologists and dental professionals is essential in promoting comprehensive care for pregnant individuals, improving oral health outcomes, and reducing the risk of adverse pregnancy outcomes associated with periodontal diseases.

CONFLICT OF INTEREST

The authors report no potential conflict of interest.

AUTHORS CONTRIBUTION

The authors confirm contribution to the paper as follows: study conception and design: Masood Hasan; data collection: Saba Tabassum, Syeda Farhat Bukhari; analysis and interpretation of results: Masood Hasan, Khansa Rafi. draft manuscript preparation: Saba Tabassum, Khansa Rafi. All authors reviewed the results and approved the final version of the manuscript.

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