



**ASSESSING KNOWLEDGE, ATTITUDE AND PRACTICE AMONG GYNAECOLOGISTS FOR PERIODONTAL DISEASE PREVENTION IN GESTATIONAL DIABETES MELLITUS PATIENTS**

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**ABSTRACT**

**Background-**Gestational diabetes is "any degree of glucose intolerance with onset or first recognition during pregnancy". A woman is diagnosed with gestational diabetes when glucose intolerance continues beyond 24-28 weeks of gestation and it is associated with serious maternal and foetal complications whereas periodontal disease is a chronic inflammatory condition that induces local and host immune responses and has been evaluated as risk factor in development of GDM. (Gestational Diabetes Mellitus)

**Aim-**To assesses the knowledge, attitude and practice regarding the prevention of periodontal disease in gestational diabetes patients among gynaecologist.

**Materials and methodology-**A cross-sectional study was conducted in Bangalore city between October 2016 to January 2017. 100 gynaecologists were included in the study. A structured, close-ended questionnaire was handed over to all the gynaecologists. The study data was analysed using SPSS [Statistical Package for Social Sciences] software V.22, IBM., Corp. for Windows

**Results-**The study showed a negative correlation regarding attitude, knowledge and practice when comparison of distribution of responses was made for assessment of prevention of periodontal disease in gestational diabetes patients.

**Conclusion-**This study observes that there is a lack of knowledge and practice as well as attitude regarding periodontal disease prevention in gestational diabetes patients among practicing gynaecologists.

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**INTRODUCTION**

Pregnancy is characterized by a state of excessive hormonal variation and these physiological changes that accompany pregnancy can lead to gingivitis, periodontitis and benign lesions (pregnancy tumours). In past few years it has been noted that patients' oral health care in pregnancy is often avoided and misunderstood by physicians, dentists, and patients. Most women are ignorant about their periodontal health care during pregnancy despite evidence that poor periodontal health can adversely influence the health of a pregnant woman and her foetus and studies have also shown that if during pregnancy the expecting mother has GDM (Gestational Diabetes Mellitus) so, chances of adverse effects to be seen on foetus increases 10-12 folds more.<sup>2</sup>

During the past few years, there has been increasing interest in the periodontal health of pregnant patients. One reason is the reported association between maternal periodontal infection

during pregnancy and obstetric complications including preeclampsia and premature birth.<sup>2</sup> A second reason for interest in oral health and pregnancy is a concern for women's health as a goal in itself. Even among healthy women, the physiological changes that accompany pregnancy can lead to gingivitis, periodontitis and benign lesions (pregnancy tumours). Hormonal changes, along with modifications in diet and frequency of eating can increase the risk of developing periodontal disease. The purpose of this study is to assess the knowledge, attitude and practice regarding the prevention of periodontal disease in gestational diabetes patients among gynaecologist.

**MATERIALS AND METHODOLOGY**

A simple randomized sampling method was used to survey gynaecologists in Bangalore city. We personally visited all respondents to get the questionnaire filled. The questionnaire was structured, self-administered, close-ended questionnaire and was pre-tested based on Lickert's scale and also was analyzed qualitatively using SPSS Version 10.0. A sample size of 100 was determined by considering effect size of F test 0.25, alpha error probability of 0.05, power of the study 0.80

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In the survey, demographic information was asked from all participants along with assessment of their knowledge, attitude, practice behaviour regarding preventive care, routine and emergency treatment, and prescribing medications to pregnant patients.

Questionnaire consisted of 15 questions divided into 3 parts having 5 questions each for the gynaecologists as they are often the first health professionals to consult by expectant parents.

First part was designed with questions specifically focused about knowledge of gynaecologists i.e., to test that - are gynaecologists aware about the relationship which exists between periodontal health and overall health of pregnant females, and are they aware about the relationship or the adverse effects of GDM on health of new-born. Second part of study was designed to test attitude of gynaecologists i.e., whether they are looking in to the patients' mouth at the first visit for early signs of inflammation and it was also to test whether they consider periodontal health and its association with GDM as an important aspect of overall health or not. Finally the last part consisted of questions to assess practices followed by gynaecologists for their patients suffering from GDM and periodontitis and whether they have sufficient amenities to deal with such patient. The last part also assessed that whether the doctors are looking into patient's mouth on regular basis or only after patients complaint and referrals for periodontal screening during pregnancy.

Based on the demographic data given by gynaecologists assessment was also done between their knowledge, practice, attitude and their years of work experience.

**Data Collection**

In survey the data was collected from 100 gynaecologists practicing in various hospitals of Bangalore city between a time periods of October 2016 to January 2017.

**Statistical Analysis**

Descriptive statistics were generated for demographic data, knowledge of main risk factors, attitude and practices of gynaecologists towards prevention of oral diseases. Statistical models were developed for One Way Analysis of Variance (ANOVA) with mean knowledge, attitude and practice scores as the dependent variables and age, gender, sector and duration of practice of gynecologist's as independent variables. Spearman's correlation coefficient was applied to compute the correlation between knowledge-Attitude, knowledge-practice and attitude-practice. The SPSS® statistical program version 21 was used to process and analyze the data. The level of significance was set at  $p \leq 0.05$ .

**RESULTS**

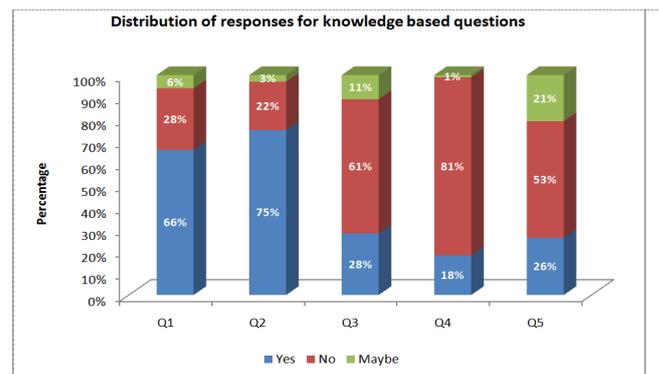
The study data was analyzed using SPSS [Statistical Package for Social Sciences] software V.22, IBM., Corp. for Windows. And there was a statistically significant difference found when comparison was made for distribution of responses given by gynaecologists. Table 1 and Graph-1 shows comparison of the distribution of responses for knowledge based questions. Based on the responses given by gynaecologists it was concluded that the gynaecologists had very limited knowledge about Gestational diabetes mellitus and its relation to periodontal disease, however most of them knew when

gestational diabetes occurs (66%) and it can lead to increased risk of diabetes mellitus in later life (75%) and but they were unaware about any maternal morbidities or any foetal abnormality which can occur because of presence of GDM along with periodontal disease (61%) and also were unaware about the inflammatory changes which occurs during GDM and periodontitis (81%) and they also stated that the clinical strategies cannot minimize the adverse impact of GDM and periodontal disease during pregnancy may reduce prevalence of maternal morbidities (53%).

**Table 1** Comparison of the distribution of responses for knowledge based questions using Chi square Goodness of Fit test

Comparison of the distribution of responses for knowledge based questions using Chi square Goodness of Fit test					
Question	Response	n	%	$\chi^2$ Value	P-Value
Q1	Yes	66	66%	55.280	<0.001*
	No	28	28%		
	Maybe	6	6%		
Q2	Yes	75	75%	83.540	<0.001*
	No	22	22%		
	Maybe	3	3%		
Q3	Yes	28	28%	38.780	<0.001*
	No	61	61%		
	Maybe	11	11%		
Q4	Yes	18	18%	106.580	<0.001*
	No	81	81%		
	Maybe	1	1%		
Q5	Yes	26	26%	17.780	<0.001*
	No	53	53%		
	Maybe	21	21%		

\* - Statistically Significant



**Graph 1** Distribution of responses for knowledge based questions showing results which were statistically significant

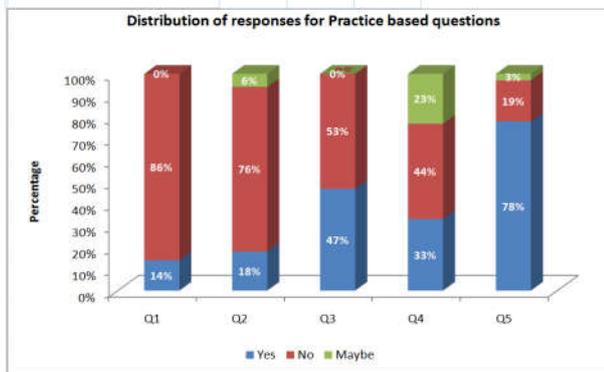
Gynaecologists stated that most of them never came across any patient having GDM and periodontal disease (86%) and they have never referred any patient with GDM to periodontist for their periodontal health examination (76%). They also stated that they never come across any patients with GDM and periodontitis who had unfortunate pregnancy outcome (53%). However, the gynaecologists were aware about not advising any surgical procedure in patients with GDM and periodontitis during 1<sup>st</sup> and 3<sup>rd</sup> trimester (44%) and they were also well aware about the medicines which can be prescribed during

pregnancy (78%), but were unaware about medications which should be prescribed during GDM with periodontitis.

**Table 2** Comparison of the distribution of responses for Practice based questions using Chi square Goodness of Fit test

Comparison of the distribution of responses for Practice based questions using Chi square Goodness of Fit test					
Question	Response	n	%	$\chi^2$ Value	P-Value
Q1	Yes	14	14%	51.480	<0.001*
	No	86	86%		
	Maybe	0	0%		
Q2	Yes	18	18%	84.080	<0.001*
	No	76	76%		
	Maybe	6	6%		
Q3	Yes	47	47%	0.360	<0.001*
	No	53	53%		
	Maybe	0	0%		
Q4	Yes	33	33%	6.620	0.04*
	No	44	44%		
	Maybe	23	23%		
Q5	Yes	78	78%	93.620	<0.001*
	No	19	19%		
	Maybe	3	3%		

\* - Statistically Significant



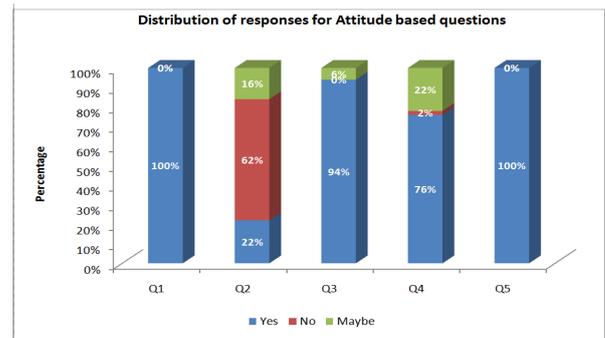
**Graph 2** Distribution of responses for Practice Based Questions

Gynaecologists exhibited positive attitude towards prevention of oral diseases. All of them considered oral health as an important parameter while assessing the pregnant patients and patients having GDM (100%). But most of them stated that if any patient reports to their clinic with GDM, they will mostly not ask them about any oral health problem specially periodontitis (62%). All of the gynaecologists were willing to attend any programme related to GDM and periodontitis (94%). They were willing to refer such patients having GDM to dental practitioners (76%) and also were quite enthusiastic about educating all the pregnant patients regarding their periodontal health (100%).

**Table 3** Comparison of the distribution of responses for Attitude based questions using Chi square Goodness of Fit test

Comparison of the distribution of responses for Attitude based questions using Chi square Goodness of Fit test					
Question	Response	n	%	$\chi^2$ Value	P-Value
Q1	Yes	100	100%	..	..
	No	0	0%		
	Maybe	0	0%		
Q2	Yes	22	22%	..	..
	No	62	62%		
	Maybe	16	16%		
Q3	Yes	94	94%	37.520	<0.001*
	No	0	0%		
	Maybe	6	6%		
Q4	Yes	76	76%	77.440	0.04*
	No	2	2%		
	Maybe	22	22%		
Q5	Yes	100	100%	87.920	<0.001*
	No	0	0%		
	Maybe	0	0%		

\* - Statistically Significant

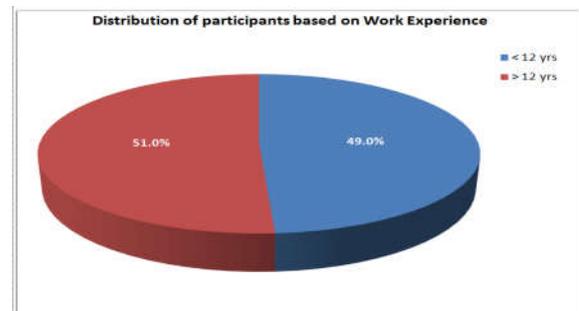


**Graph 3** Distribution of responses for Attitude based questions.

However, when a comparison was made about knowledge, attitude and practice of gynaecologists and their work experience the results showed that there is no effect of work experience on knowledge, attitude and practise of gynaecologists and all of them showed almost similar response despite years of work experience.

**Table 4** Distribution of participants based on Work Experience.

Distribution of participants based on Work Experience		
Work Experience	n	%
< 12 yrs	49	49.0%
> 12 yrs	51	51.0%



**Graph 4** Distribution of participants based on Work Experience

## DISCUSSION

The level of obstetricians' awareness regarding the potential association between oral health and pregnancy outcomes may be drawn from our survey. As we know that the physical factors like hormonal and immunologic changes during the pregnancy increases susceptibility to oral infections including periodontal disease. Of all the periodontal changes, the ones most well written about is pregnancy gingivitis and pregnancy epulis (alternate names - pregnancy tumour, epulisgravidarum, pregnancy granuloma).<sup>3</sup> Epidemiological studies show the prevalence of pregnancy gingivitis ranging from 35% to 100%.<sup>4</sup> Adverse pregnancy outcomes include premature labour, low birth weight rarely leading to miscarriage.<sup>2,5</sup> Evidence of how periodontal disease affects birth outcomes and pregnant women's health still is not completely established.

It has been demonstrated that the induction of high levels of prostaglandins by periodontal infection would disrupts the hormonal homeostasis.<sup>1</sup> The results of our study are in accordance with the previous study by Zanata et al. who evaluated oral health care among Brazilian gynaecologists and observed that their knowledge is limited and it is not consistent with established guidelines. Similarly, Rocha et al. concluded that obstetricians were aware of the association between gingival inflammation and adverse obstetric outcomes but their attitudes were not in agreement with apparent knowledge of periodontal diseases and its possible impacts. The results of study showed that gynaecologists' agreed that oral screening should be the part of prenatal care, and rarely they refer the pregnant patients to dental care. The previous studies demonstrate that periodontal care is only indicated in the presence of patient's complaint. This can be attributed to difficulties such as high cost and difficult access to the treatment; cultural beliefs that dental care would pose risk to the baby and thus impair the search for care.<sup>1</sup> Appropriate dental care and prevention during pregnancy may reduce poor prenatal outcomes and decrease infant caries. The oral lesions, such as gingivitis and pregnancy tumors are benign and require only reassurance and monitoring. Periodontal procedures such as diagnostic procedure, periodontal treatment are safe and are best performed during the second trimester when the organogenesis is complete.<sup>9, 10</sup> Emergency periodontal care can be performed at any gestational age. The third trimester presents the additional problems of positional discomfort and the risk of vena cava compression. These conditions can be resolved by positioning the woman on the left side to move the uterus off the vena cava and placing a pillow under the patient's right hip.<sup>11</sup> The limitations of our study include-small sample size and unavailability of gynaecologists due to busy schedule/indifference to dental treatment. (Before FDA classifies drugs)- In our study it was seen that gynaecologists were unaware about appropriate use of FDA classified analgesic and antibiotics during pregnancy for treatment of periodontal disease.

The FDA classifies drugs into four categories (AD) of safety for use during pregnancy.<sup>11</sup> The majority of drugs belong to category C or B. Paracetamol is classified under Category B (No evidence of risk in humans; animal studies show risk but human findings do not; or animal findings are negative and no adequate human studies have been performed), Ibuprofen in B, D (Positive evidence of risk; investigational or post-marketing data show risk to fetus; however, potential benefits may outweigh risks (as with some anticonvulsive medications), hence it should be avoided in first and third trimester and used only for 24-72 hours. Aspirin is categorized under group C (Human studies are lacking and animal studies are either lacking or test positive for fetal risk; however, potential benefits may justify the risk). For the antibiotics usually prescribed by the dental professionals, Penicillin is Category B, Doxycycline and Metronidazole are under risk category D. Metronidazole should be used with caution in firsttrimester. To increase the awareness of the importance of prenatal oral health care services during pregnancy we proposed the constructive team comprised of gynaecologists and periodontal practitioner.

## CONCLUSION AND CLINICAL IMPLICATION

Within the limitation of study it can be said that this study observes that there is a lack of knowledge and practice as well as attitude regarding periodontal disease prevention in gestational diabetes patients among practicing gynaecologists. Maternal health care professionals need to acquire specific knowledge about effect of periodontal health on overall health of foetus and expecting mother and thus gynaecologists can play a vital role in promoting good oral health by connecting pregnant woman to the source of periodontal care and similarly, periodontal health professionals need pregnancy specific education to provide appropriate preventive and curative care to pregnant patient.

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