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"Knowledge and attitude among gynaecologist regarding oral health and association between periodontal disease and adverse pregnancy outcomes in Pune"

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Abstract:

Background- There is little information about the knowledge and attitudes of gynaecologist regarding oral care. The different phases of female life like puberty, menstrual cycle, pregnancy and menopause specifically influence oral and periodontal health in women.

Objective – To assess the knowledge and attitude of gynaecologist regarding preterm low birth weight cases and periodontal disease among pregnant woman.

Material and methods – About 200 gynecologists participated in study. The study is a cross sectional questionnaire based study on knowledge and attitude regarding periodontal disease and adverse pregnancy outcome among gynecologist.

Results – The results showed that around 68.5%(n-137) of the participants responded that they didn't regard periodontal disease as a risk factor for systemic diseases/ conditions and 90.5% (n- 181) of participants did not even regarded preterm low birth weight deliveries as risk factor for periodontal disease. And 62.5% (n-125) of the gynaecologist agreed regarding upgrading their knowledge for periodontal changes during pregnancy and associated risk factors.

Conclusion- The overall knowledge and attitude of gynaecologist regarding association of risk factors of periodontal disease among pregnant female and referral to dentist is moderate. A positive attitude among gynaecologist regarding upgrading their knowledge was also seen.

Key words– Pregnant women, periodontal disease, gynaecologist, pregnancy outcome, preterm low birth weight deliveries.

Introduction -

During pregnancy there is an increase in the hormones estrogen and progesterone levels. Increased hormonal levels during puberty also affect gingival tissues and the subgingival micro flora [1]. These hormones have been found to affect periodontal disease progress and wound

healing.[2] Both these hormones lead to increased gingival vascularization and decreased immune response.[3] Moreover, studies [4] reveal that during pregnancy, there is increase in few types of microorganisms (i.e*Provetella*species) which tend to utilize the steroidal hormones of pregnancy for their growth. These microorganisms increase the tendency of the gingival bleeding and worsen gingival oral health during pregnancy. Oral health problems with pregnancy primarily includes gingivitis, pregnancy granuloma, and periodontitis.[5] Even during menopause, when hormonal levels decline, women experience changes in the oral mucosa, which may result in burning sensations, altered taste perception, dryness of the mouth, or menopausal gingivostomatitis. [6]

Several clinical and experimental studies have concluded that subclinical infections in pregnant women are likely the most frequent cause of low births weight [7,8]. In a large prospective study of more than 1300 pregnant female subjects with generalized periodontitis had a 5 fold increased risk of preterm birth before 35 weeks and 7 fold increased risk of delivery before 32 weeks of gestation compared with women without periodontitis.[9] An estimate for the risk of having a preterm and/or LBW infants in mothers with periodontal disease was seen as 2.83 compared to mothers without periodontal disease. [10]

Research suggests that the bacteria that cause inflammation in the gums can actually get into the bloodstream and target the fetus, potentially leading to pre-term low-birth-weight babies (PLBW). One possible mechanism begins with endotoxins resulting from gram-negative bacterial infections (such as periodontal disease). These endotoxins stimulate the production of cytokines and prostaglandins (IL-1β, IL-6, and TNF-α) and in appropriate quantities stimulate labor, and proinflammatory mediators may cross the placenta barrier and cause fetal toxicity resulting in preterm delivery and low-birth-weight babies. [11]

Gynaecologists play an important role in the welfare of the mother during pregnancy. They are the first-line healthcare professionals to come in contact with pregnant women. [12] Research clearly demonstrates that puberty, menstrual cycle, pregnancy, oral contraception use, and menopause affect gingival tissue. [6] Their awareness regarding association between periodontal disease and adverse pregnancy outcomes is extremely important in recognizing modifiable periodontal disease risk factors associated with pregnancy. Also, incorporation of the periodontal care into gynaecologic management may improve pregnancy outcomes, and early intervention may reduce microbiologic load on oral tissues during pregnancy. [12]

Aim:

The aim of the study was to assess the knowledge and attitude of gynaecologist regarding preterm low birth weight cases and periodontal disease among pregnant woman.The objectives were to assess knowledge and attitudeamong gynaecologist regarding preterm low birth weight cases and periodontal disease in pregnant woman and to correlate knowledge and attitude of gynaecologist regarding preterm low birth weight cases and periodontal disease among pregnant woman.

Materials and Methods:

The study is a cross sectional questionnaire based study conducted among gynaecologist in Pune city. The necessary permission and ethical clearance was obtained from the Sinhgad Dental College and hospital, Pune, regarding the conduct of the study. A total of 200 participants (Gynaecologists) in and around Pune district were included in the study.

Inclusion criteria consisted of participants who were MBBS-MD (Gynecologist) and were willing to give written informed consent to fill up the questionnaire. Those who were not willing to give written informed consent to fill up the questionnaire and participants who were not into clinical practice were excluded.

The study participants weregiven a questionnaire form to fill containing questions based on their knowledge and attitude towards the periodontal health among pregnant female. The questionnairewas send through email and what's app usingonline google forms.A questionnaire consisting of 10 questions (5 questions were based on the knowledge and 5 questions were based on the attitude of gynaecologist towards oral health and

association between periodontal disease and adverse pregnancy outcome among pregnant females). The questionnaire was self-administered (i.e. questionnaire individually answered) by participants in the presence of the investigator. The first part of questionnaire contains 5 questions based on knowledge of gynaecologist about the periodontal health and related changes in pregnant females. The scoring criteria was based on score 2 to 0 for yes, no and don't know respectively.

The second portion of the questionnaire contains 5 questions regarding the attitude among gynaecologists towards the periodontal health in pregnant female and its treatment needs. The scoring criteria was based on score of a 5 point Likert scale ranging from 1 to 5 (Strongly agree, agree, don't know, disagree and strongly disagree) was used.

Results –

Data analysis was done using SPSS 21v. Frequency analysis and Chi square test for proportion was used and Pearson's correlation coefficient was used to correlate the data.

A total of 200 participants (Gynaecologists) responded. The percentage of male gynaecologists were 41.5 % (83) and female gynaecologists were 58.5 % (117). The mean age of the participants were 40.73 years. The mean years of their work experiences was 10.97 years [i.e. 1-5 years, n=51 (25.5%); 6-10 years, n=52 (26%); 11-15 years, n=52 (26%); 16-20 years, n=27 (13.5%); 21-25 years, n=18 (9%)].

Table 1 shows the frequency and percentage of the responses given by the participants. There was a statistically significant differences seen in the responses ($p<0.05$) for both knowledge and attitude questions.

For questions based on 'knowledge and awareness' of gynaecologist regarding periodontal disease and pregnancy outcome. Question 1, which stated that ''Periodontal disease is NOT a risk factor for systemic complication'' out of 200 participants 23% (46) responded No, 68.5% (137) responded yes and remaining 8.5% (17) participants responded don't know.Question 2, which stated that "Periodontal disease is NOT a risk factor in preterm low birth weight deliveries", 5% (10) of the participants responded No, 90.5% (181) responded yes, and remaining 4.5% (9) responded that they don't know.Question 3, which stated that " Periodontal disease can be a risk factor for pre-eclampsia during pregnancy", 81.5% (163) of the gynaecologists responded No, 9.5% (19) responded yes and 9% (18) responded they don't know. Question 4, which stated that "Microorganisms (gram negative) level does not increase in periodontal disease during pregnancy", 83% (166) of the participants responded No, 10.5% (21) responded yes and 6.5% (13) responded that they dont know. And in question 5, which stated that " Safest trimester for dental treatment in Pregnant women", 100% (200) of the participants responded second trimester.

The response of participants for the questions based on 'attitude' of gynaecologist towards periodontal disease, periodontal therapy and preterm low birth weight deliveries were - Question 6, which stated that "Gingival changes observed in pregnant women are always referred to the dentist", 23%(46) of the gynaecologists strongly agreed, while 73.5% (147) agreed and 3.5% (7) responded Don't know/disagreed or strongly disagreed. For question 7, which stated that " Referral of gestational diabetes mellitus patients to Dentist (Periodontist) is always recommended", 0.5% of the participants strongly agreed, while 33%(66) agreed, 39%(78) don't know, 11%(22) strongly disagreed and 16.5% (33) disagreed. In question 8, which stated that "Advising patient to include periodontal evaluation as a part of their Prenatal care", 2.5%(5) of the participants strongly agreed, while 36%(72) agreed, 46%(92) responded they don't know, 5% (10) strongly disagreed and 10.5% (21) disagreed. For question 9 that stated " Pregnant women DO NOT need additional periodontal health care during gestational period", 3.5%(7) of the participants strongly agreed, while 48%(96) agreed, 35.5% (71) responded don't know, 9.5%(19) strongly disagreed and 3.5% (7) disagreed. And for question 10, which stated that "Knowledge regarding periodontal changes during pregnancy is essential for gynaecologist", 25% (50) of the participants strongly agreed, while 62.5% (125) agreed, 9% (18) responded don't know, 2%(4) strongly disagreed and 1.5%(3) disagreed.

Table 2 shows the frequency and percentage of the correct and incorrect responses of both Knowledge and attitude questions. There was a statistically significant differences seen in the correct / incorrect responses ($p<0.05$) for both knowledge and attitude questions.

The response for knowledge questions for question 1, 77%(154) of the participants responded incorrectly and rest 23% (46) responded correct. Question 2, 95%(190) of the participants responded incorrectly and remaining 5% (10) responded correct expected answer. Question 3, 90.5%(181) participants responded incorrectly and rest 9.5%(19) responded correct answer. Question 4, 90%(180) of the participants responded incorrectly and remaining 10% (20) responded correct answer. Question 5, 100% (200) all participants responded correct answer.

The response of participants given for attitude questions for question 6, 3.5% (7) of the participants responded incorrect and remaining 96.5% (193) participants responded the correct answer. In question 7, 66.5% (133) of the participants responded incorrect and rest 33.5%(67) responded the correct answer. For question 8, 61.5%(123) of the participants responded incorrectly and remaining 38.5%(77) responded correct answer. Question 9, 87%(174) of the participants responded incorrectly and 13%(26) responded the correct answer. And for question 10, 12.5%(25) of the participants responded incorrectly and rest 87.5%(175) responded the correct answer.

Discussion:

Gynaecologists play a major role among all practitioners, as they are the main person who on regular basis perform health check of pregnant women and keep a record of it. Hence their awareness and attitude towards the associated risk factors and prevention of periodontal disease among pregnant female becomes essential.

The present study was a questionnaire based cross sectional study aimed at to assess the knowledge and attitude of gynaecologist regarding preterm low birth weight cases and periodontal disease among pregnant woman. There were 200 participants/ gynaecologist in and around Pune, who participated in this study. 68.5%(n-137) of the participants responded that they didn't considered periodontal disease as a risk factor for systemic diseases/ conditions. Similarly, 90.5% (n- 181) of participants did not regard preterm low birth weight deliveries and 81.5 % (n-163) participants for other pregnancy outcomes (like preeclampsia) as risk factor of periodontal disease. This may be due to the lack of awareness as well as the current research material which is available and is established and proven only for few conditions and diseases like diabetes mellitus and cardiovascular diseases. Association regarding periodontal disease and rest of the systemic diseases and conditions are still being under research. This was in accordance with the study conducted by Jampani et al., [13] where in their study they assessed the level of knowledge of periodontal disease and its effect on pregnancy outcomes among the gynaecologists practicing in and around the city Vijayawada. The results of their study [13] showed that 48.3% were not aware of the risk of periodontal disease on pregnancy outcomes and 54.4% of the practitioners never performed visual intraoral examination. They mentioned that it indicated considerable section of gynaecologists did not relate periodontitis to adverse pregnancy outcomes.

Shenoy et al., [14] assessed the gynecologists knowledge of periodontal disease as a risk factor in preterm low birth weight cases. The results of study showed that although knowledge regarding periodontal infection as a potential risk factor for systemic complications, importance of regular dental check-ups, and the oral manifestations of periodontal disease was high in their study, awareness regarding periodontal disease as a risk factor in preterm low birth weight deliveries was low.

Tarannumet. al., [15] conducted a study to examine the awareness of the association between periodontal diseases and premature low birth weight infants among general medical practitioners (GMPs), general dental practitioners (GDPs) and Gynecologists. The results of the study showed that GDPs (67.4%) were significantly more likely to report an association than GMPs (56.4%) and Gynecologists (63%), which might indicate that the incorporation of this topic in the curriculum is practiced in dental schools, but not medical schools.

83% (n-166) of gynaecologists responded no increase in the level of microorganism (gram negative) in periodontal disease during pregnancy, most participants responded incorrectly indicating basically there is poor knowledge regarding periodontal disease and its risk factors during pregnancy. Hence efforts should be taken to conduct awareness programs in medical hospitals regarding dental and mainly periodontal diseases and its associated risk factors. Although, all the participants were aware about the safest trimester to do dental treatment.

The overall attitude of gynaecologist was good, 73.5% (n- 147) of the gynaecologist agreed that gingival changes and disease complaints among pregnant females needs to be referred to a dentist for further evaluation and treatment. However, 39% (n- 78) were uncertain regarding referral of gestational diabetes cases to dentist. This shows that gynaecologist are aware about the general dental problems and the need to be referred to a dentist. But awareness regarding risk factors and effects of periodontal diseases in pregnant women is low.

46% (n- 92) of the participants were uncertain regarding advising for periodontal evaluation as part of prenatal care among pregnant females. Similarly, 48% (n-96) of gynaecologist did not felt the need for advising pregnant women for additional periodontal health care during gestational period. While Tarannumet. al. [15] in their study reported 93% of dentists recommended a pregnant female should have an evaluation/prophylaxis visit during pregnancy, only 61% of physicians did, hence it is a cause for concern due to the resultant negative influence on preventive efforts.

A study by Nutalapati et al., [16] stated that referral to an oral health care professional was low among gynaecologist and referral was based mainly on the complaint of the patient and not on the awareness of the gynecologist about the possible relationship of periodontal disease and delivery outcome.

Jampaniet. al., [13] in their study reported that 53.7% practitioners who were diagnosed with periodontal disease, referred their patients to the dentists(64%) and 39.3% did not refer their patients to the dentist. The reason they stated with accordance of Baseer et al study[12] was that due to time constraints, heavy number of patients seeking care make it difficult for the gynaecologists to focus on oral health related issues of the patients.

However, 62.5% (n-125) of the gynaecologist agreed regarding upgrading their knowledge for periodontal changes during pregnancy and its usefulness. Baseer et al., [12] in their study reported that 32% of gynecologists mentioned scientific journals were the main source of information about the prevention of oral diseases while 87% expressed that there is need for further information about the prevention of oral diseases.

Conclusion:

Hence, in the present study it can be concluded that the overall knowledge and attitude of gynaecologist regarding association of risk factors of periodontal disease among pregnant female and referral to dentist is moderate. A positive attitude among gynaecologist regarding upgrading their knowledge was also seen. Therefore, efforts can be taken for interdisciplinary approach among medical and dental fraternities. Awareness programs can be conducted in medical and prenatal care units regarding risk factors associated with periodontal disease and its prevention in pregnant women.

Conflict of Interest : None

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Table 1 – Frequency of responses given by the participants

Sr.no.	Question	Response	Frequency [n (%)]	p value
KNOWLEDGE				
1.	Periodontal disease is NOT a risk factor for systemic complication.	No	46 (23%)	.000*
		Yes	137(68.5%)	
		Don't know	17 (8.5%)	

2.	Periodontal disease is NOT a risk factor in preterm low birth weight deliveries	No Yes Don't know	10 (5%) 181 (90.5%) 9 (4.5)	.000*
3.	Periodontal disease can be a risk factor for pre-eclampsia during pregnancy.	No Yes Don't know	163 (81.5%) 19 (9.5%) 18 (9%)	.000*
4.	Microorganisms (gram negative) level does not increase in periodontal disease during pregnancy.	No Yes Don't know	166 (83%) 21 (10.5%) 13 (6.5%)	.000*
5.	Safest trimester for dental treatment in Pregnant women.	First trimester Second trimester Third trimester	0 200 (100%) 0	.000*
ATTITUDE				
6.	Gingival changes observed in pregnant women are always referred to the dentist	Strongly agree Agree Don’t know/ Strongly disagree / Disagree	46 (23%) 147 (73.5%) 7 (3.5%)	.000*

7.	Referral of gestational diabetes mellitus patients to Dentist (Periodontist) is always Recommended	Strongly agree Agree Don't know Strongly disagree Disagree	1 (0.5%) 66 (33%) 78 (39%) 22 (11%) 33(16.5%)	.000*
8.	Advising patient to include periodontal evaluation as a part of their Prenatal care	Strongly agree Agree Don't know Strongly disagree Disagree	5 (2.5%) 72 (36%) 92 (46%) 10(5%) 21 (10.5%)	.000*
9.	Pregnant women DO NOT need additional periodontal health care during gestational period.	Strongly agree Agree Don't know Strongly disagree Disagree	7 (3.5%) 96 (48%) 71 (35.5%) 19 (9.5%) 7 (3.5%)	.000*

10.	Knowledge regarding periodontal changes during pregnancy is essential for gynaecologist.	Strongly agree Agree Don't know Strongly disagree Disagree	50 (25%) 125 (62.5%) 18 (9%) 4 (2%) 3 (1.5%)	.000*

*($p < 0.05$)

Table 2 - Frequency of Correct /Incorrect answers given by the participants

Sr.no.	Question	Correct/ Incorrect answer	Frequency [n (%)]	p value
KNOWLEDGE				
1.	Periodontal disease is NOT a risk factor for systemic complication.	Incorrect Correct	154 (77%) 46 (23%)	.000*
2.	Periodontal disease is NOT a risk factor in preterm low birth weight deliveries	Incorrect Correct	190 (95%) 10 (5%)	.000*
3.	Periodontal disease can be a risk factor for pre-eclampsia during pregnancy.	Incorrect Correct	181 (90.5%) 19 (9.5%)	.000*
4.	Microorganisms (gram negative) level does not increase in periodontal disease during pregnancy.	Incorrect Correct	180 (90%) 20 (10%)	.000*
5.	Safest trimester for dental treatment in Pregnant women.	Incorrect	0	.000*

		Correct	200 (100%)	
ATTITUDE				
6.	Gingival changes observed in pregnant women are always referred to the dentist	Incorrect Correct	7 (3.5%) 193 (96.5%)	.000*
7.	Referral of gestational diabetes mellitus patients to Dentist (Periodontist) is always Recommended	Incorrect Correct	133 (66.5%) 67 (33.5%)	.000*
8.	Advising patient to include periodontal evaluation as a part of their Prenatal care	Incorrect Correct	123 (61.5%) 77 (38.5%)	.000*
9.	Pregnant women DO NOT need additional periodontal health care during gestational period.	Incorrect Correct	174 (87%) 26 (13%)	.000*
10.	Knowledge regarding periodontal changes during pregnancy is essential for gynaecologist.	Incorrect Correct	25 (12.5%) 175 (87.5%)	.000*

*($p < 0.05$)