

Assessing the knowledge, attitude and practice of pregnant women regarding the association between periodontal diseases and pregnancy.

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Abstract

Periodontal disease in pregnant women usually occurs due to physiological changes and may appear in various forms, such as pregnancy gingivitis, pyogenic granuloma, and stomatitis. Pregnancy involves complex physical and hormonal changes that increases the susceptibility to gingival and periodontal diseases which may also lead to adverse pregnancy outcomes such as preeclampsia and preterm low birth weight deliveries.

The study was conducted to assess knowledge and awareness of periodontal disease and its effect on pregnancy. In this cross-sectional survey, a questionnaire assessing knowledge, attitudes and practices towards oral

health was distributed among 100 pregnant females and the responses were recorded and statistically analysed.

The results showed that majority of the pregnant women were aware about the general oral hygiene measures. But they have very limited knowledge regarding the association between pregnancy and periodontal disease and the correlated adverse pregnancy outcomes. Therefore, it is concluded that an interdisciplinary approach involving both periodontologist and gynaecologist is required to educate and motivate the pregnant women in order to highlight the importance of good periodontal health in achieving overall health of mother and the foetus.

Keywords: Periodontal Disease, Pregnancy, Attitude, Knowledge, Practice.

Introduction

The prevalence of periodontitis in pregnant women ranges from 0% to 61%. Periodontal infections during pregnancy do not only affect the mother, but may also have adverse effects to the foetus if left untreated for longer period of time. Many are unaware of the potential negative impact of poor oral health on preterm birth, low birth weight, pregnancy outcomes, and early childhood caries as there exists misinformation regarding the safety and importance of oral health care treatment for pregnant women.

During pregnancy, significant fluctuations in the levels of female sex hormones take place. The plasma level of oestrogen peaks 10 times whereas progesterone 30 times, higher than those observed during the menstrual cycle. Thereby, increasing the risk for oral health issues such as pregnancy gingivitis, periodontal infections, and pyogenic granuloma. Receptors for these hormones have been identified in various periodontal cell subsets, making periodontium more susceptible to bacterial challenge leading to enhanced periodontal tissue destruction.

Clinical studies have shown that pregnancy affects the severity of previously inflamed gingival tissues but does not alter healthy gingiva [1]. The earlier research showed that the first clinical signs of gingival inflammatory changes appear in the 2nd month of pregnancy and continue to progress until the 8th month of pregnancy. The incidence of periodontal disease has been positively correlated with lower educational achievement and lower socio-economic status [2].

Periodontal disease is both preventable and treatable. Controlling plaque by brushing, flossing and professional prophylaxis, including scaling and root planing, all help to achieve good dental health in pregnancy [3]. There is, however, minimal information available on pregnant

women's understanding of dental hygiene and whether they comply with current oral health strategies.

This study is designed to apprehend the perception of pregnant women towards periodontal disease and their relationship with adverse pregnancy outcomes which would familiarize them to attain timely treatment and preventive measures. The study will also provide a baseline to design educational programmes that can improve knowledge and motivate pregnant woman towards optimal periodontal health during pregnancy.

Hence, a study was designed to assess knowledge, practice and awareness among pregnant females regarding association between periodontal disease and pregnancy.

Materials & Methods

Study setting: Department of Periodontology, Faculty of Dental Sciences, Ramaiah University of Applied Sciences in collaboration with Department of Obstetrics and gynaecology, MSRUAS.

Sample size: 100

Sample size estimation

$$N = \frac{Z_{(1-\alpha)}^2 \times P \times Q}{\delta^2}$$

$Z_{(1-\alpha)} = 1.65$ (For 90% Confidence Interval)

$P = 0.60$ [Probability, that 60% of the Pregnant women are unaware about the association between Pregnancy and Periodontitis].

$Q = 1 - P$

δ (Margin of Error) = 0.10

$N = 57.17$ * design effect [A design effect of 1.5 is used for sampling variation]

$N = 85.75$, finally the total sample size is rounded off to 100.

The total sample size, N= 100

Statistical Analysis

Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0. Released in 2013. Armonk, NY: IBM Corp., was used to perform statistical analyses.

Descriptive Statistics: Descriptive analysis includes expression of responses for KAP based questions in terms of Frequency and Proportions.

Inferential Statistics: Chi Square Goodness of Fit test was used to compare the distribution of responses for Knowledge, Attitude and Practice based questions among study participants. The level of significance [P-Value] was set at $P < 0.05$.

Study duration: 1 month.

Study design: Observational study

The questionnaire was self-designed and included 17 multiple choice questions in 3 languages (English, Hindi and Kannada) divided in 3 sections based on Knowledge, Practice and Attitude.

Section I included 5 questions on periodontal and general health awareness during pregnancy (KNOWLEDGE).

Section II included 6 questions on oral health care awareness and practice during pregnancy (PRACTICE).

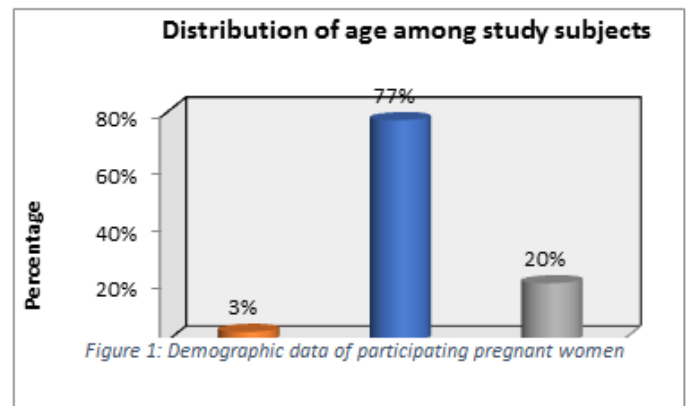
Section III included 6 questions on dental treatment during pregnancy and barriers to dental attendance among pregnant women (ATTITUDE).

After preliminary construction of the questionnaire, it was distributed to five dentists to test its validity their

suggestions regarding some modifications in the design of some of the questions were taken into account. Informed verbal consent from all pregnant women and head of department of obstetrics and gynaecology (RUAS) were obtained prior to participation. The questionnaires were distributed to 100 pregnant women who voluntarily participated, following an explanation of its purpose and objectives.

Results

Based on the demographic data, the participating pregnant women ranged from 19-40 years with the maximum participants (77%) under the age group of 21-30 years.



Comparison of distribution of responses for knowledge related questions using Chi Square Goodness of Fit test					
Knowledge related Questions	Responses	n	%	² Value	P-Value
Do you know that gum disease has an effect on overall health?	Yes	53	53%	25.340	<0.001*
	No	35	35%		
	Maybe	12	12%		
Do you know that gum disease can have an effect during pregnancy?	Yes	41	41%	18.490	<0.001*
	No	46	46%		
	Maybe	13	13%		
Do you think that diabetes has any connection with gum disease?	Yes	33	33%	3.380	0.19
	No	41	41%		
	Maybe	26	26%		
Do you know that gum disease during pregnancy can also affect the health of the baby?	Yes	32	32%	6.080	0.06
	No	44	44%		
	Maybe	24	24%		
Have you noticed swollen /painful /reddish gums during pregnancy?	Yes	28	28%	62.720	<0.001*
	No	68	68%		
	Maybe	4	4%		

Table 1: shows the knowledge based response of the participating subjects.

It showed that 53% of the pregnant women have the knowledge that gum disease has an overall effect on general health but its knowledge about its affect during pregnancy is comparatively less. 68% of the participants had no understanding of the gingival changes during pregnancy such as swelling, redness and painful gums.

Comparison of distribution of responses for Practice related questions using Chi Square Goodness of Fit test					
Practice related Questions	Responses	n	%	² Value	P-Value
Do you think it is necessary to brush twice a day?	Yes	94	94%	165.860	<0.001*
	No	5	5%		
	Maybe	1	1%		
Do you believe that floss /toothpicks / tongue cleaner are required for prevention of gum disease?	Yes	74	74%	74.480	<0.001*
	No	14	14%		
	Maybe	12	12%		
Do you think toothbrush needs to be replaced after 3-4 months?	Yes	87	87%	129.740	<0.001*
	No	8	8%		
	Maybe	5	5%		
Do you feel that blood while brushing can be an indication of gum disease?	Yes	54	54%	19.220	<0.001*
	No	23	23%		

	Maybe	23	23%		
Do you use mouthwash along with brushing to prevent gum disease?	Yes	47	47%	44.420	<0.001*
	No	51	51%		
	Maybe	2	2%		
Are you taking any additional oral hygiene care during pregnancy?	Yes	52	52%	37.340	<0.001*
	No	43	43%		
	Maybe	5	5%		

Table 2: shows the practice based response of participating subjects

Table 2 presents the practice based response which shows that more than three-fourth of the participants have the understanding of the basic oral hygiene regimens. 94% responded positively towards the necessity of brushing twice a day while 74% of them responded positively for the use of other oral hygiene aids.

Comparison of distribution of responses for Attitude related questions using Chi Square Goodness of Fit test					
Attitude related Questions	Responses	n	%	² Value	P-Value
Do you feel visiting dentist every 6 months is necessary?	Yes	58	58%	27.440	<0.001*
	No	20	20%		
	Maybe	22	22%		
Have you visited your dentist for a routine check-up during pregnancy?	Yes	28	28%	70.640	<0.001*
	No	70	70%		
	Maybe	2	2%		
Do you believe that gum diseases can be treated safely during pregnancy with a procedure called cleaning of teeth?	Yes	46	46%	7.280	0.03*
	No	26	26%		
	Maybe	28	28%		
Do you believe that dental treatment can help you control your diabetes?	Yes	30	30%	1.040	0.60
	No	38	38%		
	Maybe	32	32%		
Do you believe that it is better to delay dental check-up and treatment until after pregnancy?	Yes	30	30%	19.940	<0.001*
	No	53	53%		
	Maybe	17	17%		
Are you interested in attending dental education programs?	Yes	62	62%	44.240	<0.001*
	No	30	30%		
	Maybe	8	8%		

Table 3: shows the attitude based response of participating subjects

Table 3 is based on attitude related questions shows that although 58% of the individuals are aware of the needful visit to the dentist every 6 months, only 28% have visited for a routine check-up during pregnancy. 30% participants consider that

it is better to delay dental opinion during pregnancy and 62% responders shows positive interest towards dental education programs.

Discussion

Gingivitis is not caused by pregnancy, but it can aggravate pre-existing disease. The most marked changes are seen in gingival vasculature. Dark red, swollen, smooth gingiva which bleeds easily is the characteristic feature of pregnancy gingivitis. Increase in the hormonal levels of oestrogen and progesterone can cause hyperaemia, oedema, and bleeding in periodontal tissues; and these are the risk factors for bacterial infections. Hence, it was important to assess the overall awareness of pregnant women towards their dental care which would help in making oral health promotion strategies towards prevention of its probable adverse outcomes on new born babies.

In the present study 68% of women never noticed swelling or redness of gums and 70% of women did not visit a dentist for a routine dental check-up during pregnancy. This is in accordance with a study by Tariq et al where 58% of the participants reported that they had not had a dental treatment during and/or before pregnancy [4]. This finding is a pointer to misconceptions which the women are having regarding dental care during or before pregnancy.

The American Dental Association (ADA) suggests that during the first and third trimester of pregnancy, elective dental care should be avoided, if possible. It is advisable for pregnant woman to seek dental care during second trimester of pregnancy, as in the first trimester of pregnancy most of the tissues are in the formative period and in the third trimester there is high risk of postural hypotension and positional discomfort.

The present study showed that pregnant females were aware about the periodontal problems seen in general but they were not aware about the association of periodontal

health and adverse pregnancy outcome. Periodontal disease progression is usually unnoticed and most people probably recognize it only when it reaches an advanced stage. Hence, knowledge and awareness of periodontal diseases is important to control and maintain periodontal health. This is in accordance with the study by Natalie J Thomas et al a survey which showed associations between the lack of knowledge of dental health and dental hygiene with women with lower educational achievements and women who resided in lower socio-economic areas [5].

In the present study, 46% of respondents did not know about the association of periodontal disease and pregnancy. These findings are in concord with a study, wherein they found that around 55.37% of the respondents were unaware about the adverse pregnancy outcome of pregnancy gingivitis and 21.91% believed that it had no such adverse effect [6]. There are many evidences suggesting periodontal disease as a risk factor for preterm deliveries.

In the current study, it showed that only 28% of pregnant women have visited dentist during their pregnancy which is in accordance with a study by Taani et.al. where results showed that only 14% of pregnant women know the best time during pregnancy to have dental treatments [7]. The reason for such an infrequent dental visit as responded by participants were 'treatment not necessary', 'cost of dental care', 'fear of dentist' and 'difficulty to get an appointment' with an additional basis of unawareness about the association of periodontal diseases and pregnancy which is seen in this study. According to **Brady**, 73% of patients with periodontal diseases did not know they had it [8].

However, we acknowledge that the study has certain limitations as it was carried out in a single hospital setup,

but it can be generalised to the population as a significantly large sample size has been taken.

Conclusion

In our study, it was found that pregnant women had very limited knowledge about the association between periodontal disease and pregnancy, therefore, they neglect appropriate oral hygiene measures before and also during pregnancy. It was also seen that no additional preventive measures are taken by the pregnant women regarding their oral health.

Therefore, an interdisciplinary approach involving both periodontologist and gynaecologist is required to educate and motivate the pregnant women in order to highlight the importance of good periodontal health in achieving overall health of mother and the foetus.

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