Pregnancy and Periodontal Health – A Study of Coexistence and Correlation

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ABSTRACT
INTRODUCTION: Increased levels of estrogen and progesterone in pregnancy induces edema, hyperemia and bleeding in periodontal tissue, also higher incidences of gingival enlargement. Various studies conducted worldwide have shown that there is an association between periodontitis and adverse pregnancy outcomes. This gives a reason to oral health-care professionals to engage with expectant mothers and spread awareness about need of oral health care in pregnant females.

AIM: The aim of this study was to assess the knowledge of pregnant females about association between pregnancy and periodontal health and to provide them with phase one periodontal therapy.

MATERIALS AND METHODS: A self-administered close ended questionnaire was distributed among the pregnant women. The questionnaire included the questions related to their knowledge/awareness regarding oral health practices, effects of pregnancy on oral health and understanding the importance of maintaining oral health during pregnancy. A baseline Oral Hygiene Index Simplified (OHIS), and Gingival Index (GI) was recorded to assess current oral hygiene status following which oral prophylaxis was provided. After one-month interval these indices were recorded again so as to evaluate the effectiveness of knowledge and awareness together with oral prophylaxis in reducing the severity of gingival inflammation.

RESULTS: substantial number of the females did not find that there is association between pregnancy and oral health. Majority of the participants were unaware that not maintaining oral health could cause adverse pregnancy outcomes. There was gradual reduction in mean gingival index scores and mean OHIS scores from baseline to one-month interval. Gingival health of pregnant females was improved when oral prophylaxis was performed in all the participants.

CONCLUSION: Most of the pregnant women said that they were unaware about effects of pregnancy on oral health, pregnancy gingivitis and the adverse outcomes. Collaborative efforts are needed to raise awareness among pregnant women regarding timely dental care to avoid the adverse pregnancy related outcomes due to gingivitis and periodontitis.

Keywords: Awareness, Gingivitis, Knowledge, Pregnancy, Oral Health, Oral Hygiene

INTRODUCTION

Gingival pathologies during pregnancy are associated with physiologic hormonal changes in the female patient. Increased levels of estrogen and progesterone in pregnancy induces dilation, tortuosity and altered vascular permeability of the gingival microvasculature. All these changes lead to gingival edema and an increased inflammatory response to dental plaque. An association has been suggested between the higher levels of pregnancy hormones in plasma and declining periodontal health status. Maternal periodontal diseases can be a possible risk factors for adverse pregnancy outcomes such as preterm deliveries, low birth weight, and spontaneous abortions. Gingival inflammation associated with pregnancy has been initiated by dental plaque and accentuated by endogenous steroid hormones. The effect of progesterone is more pronounced than that of estrogen.
According to different reports it has been found that the prevalence of pregnant women suffering from periodontal diseases ranged from 30% to 100%. Various studies conducted worldwide have shown that there is an association between periodontitis and adverse pregnancy outcomes. According to a report given by the American Dental Association, around 60% to 75% of pregnant women have gingivitis. The importance of oral health in pregnant women is of paramount significance, since it not only has a direct effect on the expecting mother but also on the child.

The gingival and periodontal diseases are very well preventable during pregnancy. This study was designed to assess the knowledge of pregnant females about association between pregnancy and periodontal health. It also assessed the women’s awareness about the effect of oral hygiene on adverse pregnancy outcomes.

MATERIALS AND METHODS:
The study was conducted in department of Periodontology, Government Dental College and Hospital, Aurangabad in association with department of Obstetrics and Gynaecology, Government Medical College Aurangabad. The participants included during this study were 2nd trimester pregnant females reporting to the Outpatient Department of Obstetrics and Gynaecology and department of Periodontics over a period of two months from September 2019 to November 2019. Women using any chemical mode of plaque control, and under medications that would affect the state of plaque and gingival tissues were not included. A total of 50 participants were included. Eligible women were given information pamphlet regarding the study, and an informed written consent was taken before the commencement of the study.

Demographic data of the participants were obtained. A close ended questionnaire was given to all the participants including simple questions on how they maintained oral hygiene, if they are aware about the effects of pregnancy on oral health and understanding the importance of maintaining oral health during pregnancy. The questionnaire was provided in both languages – Marathi and Hindi, according to the preference of the participants. The responses of participants were recorded in the form of YES or NO. The women’s awareness and knowledge were assessed based on the number of questions answered correctly in the questionnaire.

A baseline Gingival Index (GI) by Loe and Silness; 1963 and Oral Hygiene Index Simplified (OHIS) by Greene and Vermilion; 1964 were recorded to assess the gingival inflammation and the current oral hygiene status of pregnant females. Following which oral prophylaxis was done in all the participants. The brushing technique and importance of maintaining of proper oral hygiene was also explained.

After 1-month interval, all the participants were recalled for follow up. Gingival index and oral hygiene index simplified were recorded again so as to evaluate the effectiveness of knowledge and awareness along with oral prophylaxis in reducing the severity of gingival and periodontal inflammation in 2nd trimester pregnant females.

Statistical analysis:
Data obtained was entered into Excel sheet and analysed using SPSS version 22. Paired t test was used for intra group comparison of pre- and post-scores of Gingival Index and Oral Hygiene Index Simplified (OHIS). For all the tests, a P value of 0.05 or less was set for statistical significance, and a value of 0.001 or less represents a highly significant relation.

RESULTS:
In (Table 2) on intragroup comparison of mean gingival score; it was found that there was a gradual decline in mean gingival score from 1.43±0.95 at baseline to 1.08±1.28 at 1-month interval. P value was <0.05 and was considered statistically significant for mean gingival scores.

(Table 3) depicts the intragroup comparison of mean OHIS score and it was found that there was a gradual decline in mean OHIS score from 2.07±1.62 at baseline to 1.66±1.53 at 1-month interval. P value was <0.05 and was considered statistically significant for mean OHIS scores.

DISCUSSION:
Pregnancy gingivitis, can be defined as gingival inflammation initiated by plaque and exacerbated by endogenous sex steroid hormones (Mariotti 1994), affecting 36%–100% of pregnant women (Maier & Orban 1949, Loe & Silness 1963, Jensen et al. 1981). The hormonal variations during pregnancy put
pregnant females at a higher risk for developing various dental problems. The untoward effects of pregnancy gingivitis on the health of both mother and the unborn child can be prevented by creating awareness among the expectant mothers, reinforcing the importance of oral hygiene during pregnancy and providing them with the comprehensive oral health care.

In the present study when a self-structured questionnaire was used to assess the oral hygiene habits and awareness about oral health among pregnant females, it was found that substantial number of the females did not find that there is association between pregnancy and oral health. Majority of the participants were unaware that not maintaining oral health could cause adverse pregnancy outcomes. Although the research is still trying to establish a concrete relationship between poor oral health and adverse pregnancy outcomes, several studies were in accordance toward the same. (13-15) More than half of the females believes that it is not safe to visit dentist during pregnancy and avoided dental treatment unless it was an emergency. However, these beliefs are unfounded and routine dental care is considered safe during pregnancy. The safest period for dental treatment remains the second trimester where complex procedures such as minor surgeries can also be carried out. (16)

In the present study, there was gradual reduction in mean gingival index scores and mean OHIS scores from baseline to one-month interval when oral prophylaxis was performed in all the second trimester pregnant females. Comparison of groups concerning nonpregnant women was not done, which was limitation of the study. There is also a need for this kind of study to be conducted among a bigger group of population which would have more clearly depicted the temporal association between pregnancy and gingival changes. Nevertheless, the present interventional study showed that, a highly significant number of participants were unaware about the importance of oral health during pregnancy, so there is need for oral health care professionals to create awareness among expectant mothers. Also, after providing phase 1 periodontal therapy to all the participants, gingival health of pregnant females was improved.

CONCLUSION

Hormonal changes are predisposing factors and the local deposits are the precipitating factors for periodontal changes in pregnant women. Excellent oral hygiene is an important factor for preventing these changes. Comprehensive oral health care of pregnant females will prevent not only adverse pregnancy outcomes but also will help in early maintenance of oral hygiene in children of these mothers. A program of oral health promotion should be planned for pregnant women on their early stage of pregnancy to provide education on oral hygiene maintenance and periodontal disease treatment.

Table 1: Pre intervention questionnaire to assess the oral hygiene habits and awareness about oral health among pregnant females

<table>
<thead>
<tr>
<th>Sr. no</th>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you use toothpaste and brush to clean your teeth?</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Do you use any interdental aid?</td>
<td>14</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>How many times a day do you brush your teeth?</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>4</td>
<td>Do you have bleeding gums while brushing your teeth?</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Do you have swollen gums?</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>
Do you know pregnancy and oral health are related? Yes-08 No-42

Do you know not maintaining oral health during pregnancy can have adverse effects on unborn child? Yes-02 No-48

What do you think is it safe to visit dentist during pregnancy? Yes-11 No-39

Do you know not maintaining oral health during pregnancy can cause preterm birth? Yes -0 No-50

Do you know there are higher chances of gingivitis during pregnancy? Yes-11 No-39

Table 2: Comparison of mean of pre and postintervention gingival index score in 2nd trimester pregnant females by paired t test

<table>
<thead>
<tr>
<th></th>
<th>GI</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>50</td>
<td>1.4360</td>
<td>0.95997</td>
<td>2.048</td>
<td>0.046*</td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>50</td>
<td>1.0810</td>
<td>1.28440</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

n = total no. of second trimester pregnant females; MD, mean difference; statistically significant (P < 0.05).

Table 3: Comparison of mean of pre- and post-intervention OHIS score in 2nd trimester pregnant females by using paired t test

<table>
<thead>
<tr>
<th></th>
<th>OHIS</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>50</td>
<td>2.0700</td>
<td>1.62396</td>
<td>2.093</td>
<td>0.042*</td>
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</tr>
<tr>
<td>Post</td>
<td>50</td>
<td>1.6660</td>
<td>1.53232</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

n = total no. of second trimester pregnant females; MD, mean difference; OHIS, oral hygiene index simplified; statistically significant (P < 0.05)
REFERENCES:


5. Wu M, Chen SW, Jiang SY. Relationship between gingival inflammation and pregnancy. Mediators of inflammation. 2015;2015.2


