Knowledge, awareness, and practice among gynecologists, medical practitioners and dentists in Madurai regarding association between periodontitis and pregnancy outcomes

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INTRODUCTION

Periodontitis, an inflammatory disease of gingiva and its supporting structure, is known to cause systemic infection which has an adverse effect on pregnancy outcomes. Adverse pregnancy outcomes, namely preterm birth, low birth weight, preeclampsia, miscarriage, or early pregnancy loss have been linked to maternal periodontitis. Periodontal infection contributes to nearly 18.2% of preterm low-birth-weight (PTLBW) cases. Studies linking maternal periodontal disease and adverse pregnancy outcomes have yielded conflicting results.1,2 Various risk factors for PTLBW include maternal age, socioeconomic status, nutritional status, stress, birth interval, maternal hypertension, infection, and cervical incompetence showed an increased risk of PTLBW.3,4 Periodontitis, a low-grade chronic infection because of its systemic influence, considered as a major health problem and maintenance of oral health becomes an integral part in maintaining general health. The relationship and awareness regarding the association between periodontitis and pregnancy outcomes should be well understood.

Abstract:

Background: The prevalence of oral disease during pregnancy affects the health of the fetus and mother. The interdisciplinary protocol between general dentists (GDs), gynecologists, and general medical practitioners (GMPs) is proved to reduce the incidence of maternal and neonatal complications. Aim: The aim of the present survey is to assess the knowledge, awareness, and attitude of practicing gynecologists, GMPs, and GDs regarding the association of periodontitis and adverse pregnancy outcomes. Materials and Methods: This cross-sectional study was conducted among 150 health-care professionals in Madurai. A well-structured pretested questionnaire consisted of 12 questions which were used to assess the awareness of association regarding maintaining oral health during pregnancy among GMPs, GDs, and gynecologists. The knowledge, awareness, and practice scores were calculated for the correct answers to the questions. A software program (SPSS 12) was used for statistical analysis. Results: The mean age of participants was of 33.14 ± 1.5, 32.58 ± 2.80, and 37.7 ± 9.7, respectively. Majority of the participants agreed the importance of dental examination and maintaining oral health during pregnancy GMPs (96%), GDs (100%), and gynecologists (92%). About 92% of gynecologists and GMPs supported that providing dental treatment during pregnancy improved pregnancy outcomes. About 64%, 76%, and 68% of GMPs, GDs, and gynecologists, respectively, confirmed the association between periodontal disease and adverse pregnancy outcomes. Conclusion: In this study, knowledge and awareness of gynecologists and GMPs are appreciable; however, their attitude toward bringing the facts into clinical practice needs to be improved through integrated programs.

Key words:

General dentists, general medical practitioners, gynecologists, periodontitis, preterm low birth weight

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by health-care professionals as they play a pivotal role in the promotion of health-care practices among pregnant women. Knowledge about the preventive aspects of periodontal treatment should be inculcated before pregnancy because intervention strategies given once the inflammatory cascade has started could not yield favorable results.

The American Academy of Periodontology recommended that periodontal examination and appropriate treatment should be given for pregnant women and women planning for pregnancy.[5,6] Meta-analysis of randomized controlled trials suggested that periodontal treatment during pregnancy reduces the risk of PTLBW.[6] For delivering, standard prenatal care to pregnant women dentists and medical practitioners should have adequate knowledge about the association and consider oral care as an integral part of prenatal care program. The systemic data and the studies were done to evaluate the knowledge, awareness, and association of periodontitis and pregnancy outcomes among health-care professionals are very few.[8-10] The present study is aimed to evaluate the knowledge and awareness regarding the association of periodontitis and adverse pregnancy outcomes among health-care professionals in Madurai.

MATERIALS AND METHODS

This cross-sectional survey was conducted from June 2017 to December 2017 with the questionnaire distributed to all practitioners and then collected 3–4 days after the first visit. The survey included the convenience sample of 50 general medical practitioners (GMPs), gynecologists, and general dentists (GDs), respectively, in Madurai, Tamil Nadu, India. A well-structured pretested questionnaire was used to assess the awareness of the association between maternal periodontitis and preterm birth among medical practitioners, gynecologists, and dentists. Ethical clearance was obtained from the respective hospitals where the participants were enrolled in this study. A total of 50 GMPs, GDs, and gynecologists in Madurai were approached and asked to participate in this study. Participants were asked to complete the self-administered questionnaire containing 12 questions. The first part of the questionnaire recorded the demographic information which included the age, sex, and the specialization followed by questions designed to assess the knowledge, awareness, and attitude toward oral care among the health-care professionals. It was a closed-ended questionnaire with responses recorded as Yes or No. The reliability of the questionnaire was checked with the pretested questionnaire.

A pilot study was done on 10% of the total sample size to check the feasibility and validity of the questionnaire. The individuals who participated in the pilot study were not considered for the main study to prevent bias. The statistical analysis was conducted using SPSS 12 software (IBM, Chicago, USA). The data collected was analyzed using Chi-square test which was used to detect the association among variables. The knowledge, awareness, and attitude scores were calculated with the Score 1 given to participants who have answered Yes and Score 0 for an answer No. P < 0.05 was considered statistically significant for analysis.

RESULTS

The mean age of the participants was of 33.14 ± 1.5, 32.58 ± 2.80, and 37.7 ± 9.7, respectively. Table 1 shows the percentage of response provided by health-care providers. Results were presented as the mean ± standard deviation and the significance assessed at 5% level. The responses were recorded as Yes/No and if any question left unanswered the response for that particular question would be taken as do not know. However, among the participants who enrolled in this study, there was not a single question left unanswered which meant that they were aware of the question asked, and hence, data regarding the option of not aware, not sure, or do not know were not included in the table. Tables 2-4 represent the knowledge, awareness, and attitude scores calculated on the basis of number of positive response as Score 1. Majority of the participants regarded the importance dental examination and maintaining oral health during pregnancy as necessary (GMPs [96%], GDs [100%], and gynecologists [92%]). About 92% of gynecologists and GMPs supported that providing dental treatment during pregnancy improved pregnancy outcomes. About 64%, 76%, and 68% of GMPs, GDs, and gynecologists, respectively, confirmed the association between periodontal disease and adverse pregnancy outcomes.

DISCUSSION

Dental awareness among medical practitioners, particularly gynecologists, may not be sufficient about their prior knowledge of oral disease condition. There are few studies reported in literature assessing the awareness among these health practitioners. This questionnaire study was undertaken to assess the knowledge, attitude, and awareness of health-care professionals regarding the association of periodontal disease and adverse pregnancy outcomes in Madurai city. The knowledge, awareness, and attitude/practice scores were calculated as the sum of positive response, and differences in the mean score are calculated using ANOVA.

In the present study, gynecologists had adequate knowledge of the effects of oral health on pregnancy outcomes. These findings were similar to the study conducted by Suri et al.[11] Only 64%, 76%, and 68% of GMPs, GDs, and gynecologists, respectively, confirmed the association between periodontal disease and adverse pregnancy outcomes. This level of awareness is less compared to the studies done showing the evidence of the association. For GMPs, the percentage reported is less which is comparable with the survey done in North Carolina in which the percentage reported was 84%.[12] A study done in Jordan reported a percentage which reported the association was 50%.[1] The difference in the study can be attributed to the difference in the interpretation of the question. The level of awareness is comparatively higher among dentists because the current research reported to the association is more pertinent to the dental field with GDs reporting 76%. In this study, the number of dentists supporting the association is comparable with the study done by Taranum et al.[14] Nearly 68% of the gynecologists and 58% of the GMPs reported that periodontal disease is the main cause for low-birth-weight babies which was not reported in other studies. Very limited studies have been conducted to assess the knowledge, attitude, and practices of the health-care professionals; hence, direct comparison with other studies is not possible.

The awareness score regarding the association of maternal oral health and systemic health seems to be highly significant among
Table 1: Percentage of responses provided by health-care professionals

| Questions                                                                 | Responses | GMP’s (n=50), n (%) | GD’s (n=50), n (%) | Gynaecologists (n=50), n (%) | P       |
|----------------------------------------------------------------------------|-----------|---------------------|-------------------|-----------------------------|---------|
| 1. Do you think oral hygiene maintenance during pregnancy improves maternal health? | Yes       | 48 (96)             | 50 (100)          | 48 (96)                     | 0.001*  |
| No                                                                        | 2 (4)     | -                   | 4 (8)             |                            |         |
| 2. Do you think dental examination is necessary for pregnant patients?     | Yes       | 47 (94)             | 49 (98)           | 40 (80)                     | 0.005*  |
| No                                                                        | 3 (6)     | 1 (2)               | 10 (20)           |                            |         |
| 3. Do pregnant women frequently complain of gum disease?                   | Yes       | 29 (58)             | 41 (82)           | 24 (48)                     | 0.001*  |
| No                                                                        | 21 (42)   | 9 (18)              | 26 (52)           |                            |         |
| 4. Do you think pregnancy increase the risk of periodontal disease?        | Yes       | 24 (48)             | 40 (10)           | 27 (54)                     | 0.002*  |
| No                                                                        | 26 (52)   | 10 (20)             | 23 (46)           |                            |         |
| 5. Does periodontal disease cause preeclampsia in pregnant patients?       | Yes       | 19 (38)             | 30 (60)           | 12 (24)                     | 0.001*  |
| No                                                                        | 31 (62)   | 20 (40)             | 38 (76)           |                            |         |
| 6. Do you think periodontal disease is a risk factor for Preterm low-birth-weight delivery? | Yes       | 29 (58)             | 38 (76)           | 40 (58)                     | 0.003*  |
| No                                                                        | 21 (42)   | 12 (24)             | 10 (20)           |                            |         |
| 7. Do you think maintaining oral hygiene during pregnancy also improves foetal health? | Yes       | 46 (92)             | 46 (92)           | 46 (92)                     | 0.003*  |
| No                                                                        | 4 (8)     | 4 (8)               | 4 (8)             |                            |         |
| 8. Is periodontal disease during pregnancy a cause for low-birth-weight infants? | Yes       | 29 (56)             | 33 (66)           | 34 (68)                     | 0.001*  |
| No                                                                        | 21 (42)   | 17 (34)             | 16 (32)           |                            |         |
| 9. Have you come across recent journal supporting the link between periodontal disease and adverse pregnancy outcomes? | Yes       | 17 (34)             | 29 (58)           | 16 (32)                     | 0.001*  |
| No                                                                        | 33 (66)   | 21 (42)             | 34 (68)           |                            |         |
| 10. Do you think treating periodontal disease during pregnancy would improve pregnancy outcomes? | Yes       | 45 (91)             | 44 (88)           | 46 (92)                     | 0.001*  |
| No                                                                        | 5 (10)    | 6 (12)              | 4 (8)             |                            |         |
| 11. Do you thinking treating periodontal disease is safe during pregnancy? | Yes       | 46 (92)             | 49 (98)           | 40 (80)                     | 0.003*  |
| No                                                                        | 4 (8)     | 3 (2)               | 10 (20)           |                            |         |
| 12. Do you think dental examination should be included as an integral part of ante natal care? | Yes       | 49 (98)             | 49 (98)           | 47 (95.9)                   | 0.002*  |
| No                                                                        | 1 (2)     | 1 (2)               | 2 (4.1)           |                            |         |

*Highly significant. GMP’s – General medical practitioners; GD’s – General dentists; n – Number of responses; P – Significance level

Table 2: Mean knowledge score of health care professionnals

| Knowledge score | GMP’s | GD’s | Gynaecologists | P for ANOVA |
|-----------------|-------|------|----------------|-------------|
| 1. Link between periodontal disease and adverse pregnancy outcomes (maximum=3) | 2.29±1.3888 | 2.82±1.304 | 2.45±0.198 | 0.05* |
| 2. Dental treatment in pregnancy (maximum=2) | 1.52±0.535 | 1.56±0.501 | 1.35±0.535 | 0.04* |

*Highly significant. GMP’s – General medical practitioners; GD’s – General dentists; SD – Standard deviation; P – Significance level

Table 3: Mean awareness score of health care professionnals

| Awareness score | GMP’s | GD’s | Gynaecologist’s | P for ANOVA |
|-----------------|-------|------|----------------|-------------|
| 1. Association of oral health and maternal systemic health (maximum=3) | 2.58±0.575 | 2.80±0.495 | 2.682±0.575 | 0.02* |
| 2. Association of maternal oral health and fetal health (maximum=1) | 0.92±0.274 | 0.94±0.240 | 0.93±0.262 | 0.03* |

*Highly significant. GMP’s – General medical practitioners; GD’s – General dentists; SD – Standard deviation; P – Significance level

Table 4: Mean attitude and practice score of health care professionals

| Attitude and practice score | GMP’s | GD’s | Gynaecologists | P for ANOVA |
|-----------------------------|-------|------|----------------|-------------|
| 1. Dental examination in pregnant patients (maximum=3) | 1.36±0.521 | 1.86±0.571 | 1.60±0.154 | 0.02* |
| 2. Oral signs in pregnancy | 0.92±0.274 | 0.95±0.284 | 0.94±0.262 | 0.03* |

*Highly significant. GMP’s – General medical practitioners; GD’s – General dentists; SD – Standard deviation; P – Significance level

all health-care professionals as compared to the association to the fetal health which is critical in supporting the association of periodontal disease and PTLBW. The level of awareness of this association is supported by the study done by Tarannum et al. [4]

Systematic data available to evaluate the knowledge, awareness, and attitude of health-care professionals regarding the association of maternal periodontitis and adverse pregnancy outcomes is limited. Approximately 48% of gynaecologists and 58% GMPs reported that their patients frequently complained of bleeding gums. This study reflects that the gynaecologists and medical practitioner’s familiarity with the pregnancy-related oral health problems which is in accordance with the previous studies. The actual oral health status cannot be assessed as it depends on the memory of participating health-care professionals. Dentists usually refrain from providing treatment because of the common misconception about harming the fetus. In this study, 96% GMPs and 92% gynaecologists are aware of the importance of maintaining oral health. With the advances in the field of dentistry, it is no longer considered as a contraindication. The importance of providing periodontal
treatment will reduce gingival inflammation which usually occurs due to altered hormone levels. Any acute periodontal infection should be treated to avoid harm to the developing fetus. The second trimester is safe for dental treatment as reported by 95.9% and 98% of gynecologists. However, slight modifications were considered to protect the mother and the fetus. The research showed that dental treatment can be provided for all trimesters of pregnancy but due to morning sickness experienced during the first trimester and postural hypotension during the third trimester; the second trimester is considered as the ideal period for delivering effective dental care.[12,13]

This study evaluates the importance of gynecologists, and their pregnancy prenatal counseling plays an important role in the promotion of oral health. Comprehensive oral health program handle with gynecologists has great impact on maintaining oral health. An integrated team of GMPs, GDs, and gynecologists working together can significantly decrease the possibility of occurrence of adverse pregnancy outcomes. The questionnaire study has its advantage as health-care professionals can freely express their views on oral healthcare. Increasing gynecologist’s involvement in oral healthcare plays a role in improving the overall health of expectant mothers. Interactive seminars and workshops conducted on a common platform would further enrich the knowledge and provide valuable insights in strengthening the association between periodontal disease and pregnancy outcomes. Further, long-term studies with larger sample size are needed to assess the impact of dental health education to health-care workers through various integrated programs.

CONCLUSION

The survey showed that gynecologists and GMPs were aware of the facts but failed to execute at the clinical level. The maintenance of oral health is important for the well-being of the pregnant patient and the fetus. Seminars and interactive workshops might be useful in creating awareness among health-care providers as creating awareness among them regarding this topic and updating the knowledge on perio-systemic link may be useful. The bilateral interdisciplinary protocol can thereby reduce the incidence of maternal and neonatal complications.

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Conflicts of interest

There are no conflicts of interest.

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