*Prevalence of maternal periodontitis and its association with preterm and low birth weight infants: a hospital based study*

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**Summary of the article**

Priyanka S., Sowmya Koteshwara and Anitha Subappa conducted a cohort study amongst pregnant women to assess the relationship between the severity of periodontitis and obstetric outcomes like low birth weight and premature birth. This study took place from October 2016 to July 2018 in an Outpatient Department of Tertiary Care Hospital in Mysore, Karnataka, India and was published in the *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* in May 2019 (<https://www.ijrcog.org/index.php/ijrcog/article/view/6545>). DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20191530>.

Pregnant women receiving prenatal care in this hospital in India were examined for periodontitis. Forty-five pregnant women diagnosed with periodontal disease served as cases and forty-five pregnant women without it were included as the control group. All patients participating were followed up at childbirth. Gestational week and neonate’s birth weight were being noted and then compared to maternal periodontal status.

This study concluded that there is actually a correlation between the two and the severity of periodontal disease is inversely related to gestational age and newborn’s weight when delivered. The authors inferred maternal periodontitis is indicated to be a modifiable risk factor for these obstetric outcomes.

**Article information**

The study’s article, “Prevalence of maternal periodontitis and its association with preterm and low birth weight infants: a hospital-based study” by Priyanka S., Sowmya Koteshwara and Anitha Subappa was published in May 2019 by the *International Journal of Reproduction, Contraception, Obstetrics and Gynecology (*[*https://www.ijrcog.org/index.php/ijrcog*](https://www.ijrcog.org/index.php/ijrcog)*).* DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20191530> (<https://www.ijrcog.org/index.php/ijrcog/article/view/6545>). The Institutional Ethics Committee approved this study. The authors disclosed no conflict of interest were declared and there were no funding sources or sponsors for this study.

**Study analysis**

**Type of study**

This cohort study took place during the period of October 2016 to July 2018 in an Outpatient Department of Tertiary Care Hospital in Mysore, Karnataka, India.

**Study purpose**

The authors conducted this study because they believe the magnitude of preterm birth has not declined over the past several decades despite medical advances and identifying a possible risk factor susceptible to intervention can have far reaching effects. They consider diagnosing and treating periodontitis in pregnant women can decrease unfavorable obstetric outcomes immensely. Before this study, studies were conducted to evaluate the risk factors for preterm and low birth weight. Some studies showed an association between maternal infections, periodontal disease and premature low birth weight while one study suggested preterm birth is a multifactorial condition and periodontitis is not a sufficient trigger. The authors of this study in India aimed to learn and determine the correlation between the severity of periodontal disease with specific obstetric outcomes in pregnant women.

**Experimental design**

The study consisted of an inclusion criteria and an exclusion criteria. To be approved for the study the women had to carry a singleton pregnancy between twenty to thirty weeks of gestation. Pregnancies with complicated anemia, preeclampsia, diabetes mellitus and multiple gestations were excluded from the study. Participants with previous preterm deliveries, tobacco/alcohol addictions, antibiotic usage in the last three months, younger than eighteen years or older than thirty-five years of age were also omitted. A total of five hundred pregnant women were considered but after analyzing the inclusion and exclusion criteria, only ninety of the participants satisfied the criterion and were included for this study. All medical and dental histories were reviewed and participants received a full mouth periodontal examination, which included their probing depths and clinical attachment levels using a manual probe.

For this study, a bleeding index, plaque index and gingival index were used for each patient. The severity of periodontitis (if diagnosed) was also graded and recorded. Using this information, the Community Periodontal Index of Treatment Needs (CPTIN) score was then calculated to be able to divide the sample into periodontally healthy or unhealthy. Forty-five of the women were diagnosed with periodontal disease and selected as the case group. The other half served as the control group because they were considered periodontally healthy.

The study was conducted over time and the women of both groups were followed up at the time of their childbirth. Researchers evaluated gestational age and baby’s birth weight for each participant and recorded to later correlate it to the maternal periodontal status.

Researchers collected the data obtained on Microsoft Excel and analyzed their findings statistically using methods as “Descriptive Statistics (mean, SD, frequency, percentage), CHI square test, Cramer’s V, One-way Anova and One sample t test.

**Results**

Among the cases, 91.1% had mild periodontitis, 6.7% had moderate periodontitis and 2.2% had severe periodontitis. About 26.8% of cases with mild periodontitis and all cases of moderate and severe periodontitis had preterm birth. P value was 0.004 and there was statistically significant difference found between severity of periodontitis and preterm birth. All cases with severe periodontitis and 66.7% with moderate periodontitis had early preterm birth. P value <0.001, there was statistically significant difference found between severity periodontitis and prematurity. About 34.1% of cases with mild periodontitis and all cases with moderate and severe periodontitis had low birth weight infants. P value was 0.02, there was a statistically significant difference found between severity of periodontitis and birth weight. Infants of 19.5% of cases with mild periodontitis and all cases of moderate and severe periodontitis needed NICU admission. P value was 0.031, there was a statistically significant difference found between severity of periodontitis and NICU admission of newborn.

There was no statistically significant mean age difference between case and control group. There was no statistically significant difference found between parity among cases and control.

**Conclusions**

The incidence of preterm delivery was twice more among the cases when compared with controls. The researchers conclude maternal periodontitis is associated with preterm and low birth weight deliveries and the severity of periodontitis is inversely related to gestational age at delivery and birth weight of infant. Thus, periodontitis is suggested to be a modifiable risk factor for preterm and low birth deliveries.

Their findings contribute to the knowledge of the subject because most of their results were similar and substantiated the results of other studies done on this subject. For example, the research conducted by Offenbacher S, Collins JW et al, found that the incidences of preterm delivery were more among the periodontal disease pregnant mothers. This is similar to this study findings where the incidence of preterm delivery was 33.3% in cases and 17.8% in controls in this study. In this study, low birth weight was seen among 40% of the deliveries in the case group and 24.4% in control group. This indicated the incidence of low birth weight was more in cases than control, which substantiates the findings of various other studies where low birth weight was also seen more among the cases with periodontal disease. The results of this study were concurrent with the findings of Marin CI et al, where the bleeding of gingiva on probing was significantly greater in women with infants weighing less than 2500 gms when compared with neonates weighing more than 2500 gms.

The researches list the mechanism of periodontal disease causing preterm low birth weight is still unclear and both periodontal disease and preterm delivery have been associated with certain characteristic polymorphisms in genes that code for cytokines 96. These two findings will require further investigation. No study limitations were listed.

**Your impression**

I believe this study is very important because according to childstats.gov, infants born prematurely, with less than 37 completed weeks of gestation or with low birth weight (less than 2,500 grams) are at “higher risk of early death and long-term health and developmental issues than infants born later in pregnancy or at higher birth weights” (childstats, 2019.) Thanks to this research and all others that substantiated its results, we can now see how badly periodontal disease during pregnancy can affect the newborn. Evidence from the research showed all the participants with severe periodontal disease had a premature delivery and all of them gave birth to a baby with low birth weight. This can be applied to the field of Dental Hygiene because we can prevent and/or treat the disease to stop it from progressing. These findings are also important to us because the evidence found will help us educate our patients on the importance of a good oral home care routine and the effects periodontitis can have on their babies. Even if its mild periodontal disease, there are still risks associated.

After learning from this article, I would like to find out if research has been made on pregnant women receiving treatment for periodontitis. I would like to learn more about treating pregnant women with this disease. Does receiving treatment lessen the risks of a premature or low birth weight baby significantly or did the mechanisms of periodontal disease already affected the fetus?