



Original Research Article

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Periodontal Status in Mothers with Preterm Labor or Low Birth Weight Infants in Comparison with Mothers with Term Labor and Normal Birth Weight Infants at Imam Khomeini & Sina hospital in Ahvaz in 2015

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Abstract

Background: The relationship between periodontal diseases in pregnancy and children born prematurely or with low birth weight has been increasingly investigated, showing positive and negative results, respectively. **Objective:** To evaluate the association between Maternal Periodontitis and Preterm delivery or Low Birth Weight. **Materials and Methods:** In this case-control study, 60 pregnant women without systemic disease or other risk factors for preterm labor in Imam Khomeini & Sina hospital in Ahvaz in 2015 were included. The control group (n = 30) had term labor (infants 37 weeks and 2500 g) and the case group (n = 30) had low birth weight or preterm labor (infants <37 weeks and < 2500 g). Periodontal parameters including PI, PPD, CAL, BOP and GR were assessed 1 to 2 days after delivery. The collected data was analyzed by the SPSS software. P<0.05 was considered significant. **Results:** PI, PPD and CAL were higher in control group and this difference was statistically significant (P<0.05). GR and BOP were statistically insignificant among case and control groups (P>0.05). **Conclusion:** The present study had shown periodontal status has no relation with Low birth weight or preterm labor in the studied population.

Keywords: Low birth weight, preterm birth, periodontal diseases.

Introduction

Periodontal research has emerged and evidences are published referring to the connection between periodontal infection and systemic diseases.^[1] Various factors have been found to associate with preterm and/or low birth weight infants. Maternal risk factors include age, height, weight, socio-economic status, ethnicity, smoking, alcohol, nutritional status, and stress.^[2] In addition, parity, birth interval, previous complications, pre- and ante-natal care, maternal hypertension, infections, and cervical incompetence may also be

important.^[3] However, a significant proportion of low birth-weight is of unknown etiology. Among these birth weight is identified as one of the most important determinants to survive a newborn infant in all population groups.^[4] Even after taking increased care to avoid these known obstetric risk factors which were identified in approximately one fourth of preterm low birth cases, there still has been a relatively small decrease in the proportion of preterm low birth weight leading to a continued search for other

causes and most of them are identified to be direct result of preterm labour or premature rupture of membranes, linking lower genital tract infection.^[5,6] Since the role of infection is receiving increasing attention, and the maternal infection on preterm delivery remained controversial, which may support an indirect effect as a consequence of the production of increased levels of inflammatory mediators shortening the gestational age. It is also plausible that micro-organisms may gain direct access to the amniotic fluid and fetus in several ways: Ascending *via* the vagina through the cervix into the choriodecidual sac during pregnancy or *via* the endometrium, which may be chronically infected prior to pregnancy, or alternatively through a hemotogenous route.^[7] An association has been established between severe periodontitis, and a variety of systemic conditions. Among these are cardiovascular disease, including endocarditis and coronary heart disease, insulin dependent diabetes mellitus, and respiratory disease.^[8] The 1996 study by Offenbacher and colleagues suggested that maternal periodontal disease could lead to a seven-fold increased risk of delivery of a PLBW infant. Moreover, it has been observed in animal models that infection with Gram-negative periodontitis-associated micro-organisms may adversely affect pregnancy outcomes. As pointed out by Offenbacher *et al*^[9] these findings have been shown potential significance to risk assessment of PLBW, to oral health care during pregnancy. Since then numerous studies have been published establishing the link^[10-15] and some studies failed^[16-19] to establish association between maternal periodontitis and preterm low birth weight.

The aim of this study was to compare the periodontal status of mothers with preterm labor or low birth weight infants with mothers with term labor and normal birth weight infants.

Materials and Methods

In this case-control study, 60 pregnant women without systemic disease or other risk factors for preterm labor in Imam Khomeini & Sina hospital in Ahvaz in 2015 were include. The control group (n = 30) had term labor (infants 37 weeks and 2500 g) and the case group (n = 30) had low birth weight or preterm labor (infants <37 weeks and

< 2500 g). First, a questionnaire for each patient, including demographic information, family literacy rate, the history of systemic diseases and infectious on all devices body, spacialy the urogenital tract was completed. Information was obtained from medical records. Periodontal parameters including PI¹, PPD², CAL³, BOP⁴ and GR⁵ were assessed 1 to 2 days after delivery. Each patient's periodontal examination was conducted in the following order:

PI: 4 points of teeth surface were examined and microbial plaque samples were reported as a percentage.

PPD: were measured to the nearest mm at 6 sites per tooth, i.e., around mesio-buccal, mid-buccal, disto-buccal, mesio-lingual, mid-lingual, and disto-lingual using William's periodontal probe.

CAL: After determining the amount of gingival recession using these numbers, and the pocket depth, amounts of CAL was found in each patient.

BOP: 6 points of tteeth surface were examined. bleeding immediately and up to 30 seconds after leaving the probe from the gingival sulcus was recorded on the chart with a plus sign for, Otherwise the minus sign was recorded.

GR: In each of the teeth, gingival recession (The distance from CEJ to the gingival margin) by probe was measured and recorded.

The collected data was analyzed by the SPSS software. P<0.05 was considered significant.

- 1 Plaque Index
- 2 Pocket Probing depth
- 3 Clinical attachment level
- 4 Bleeding on probing
- 5 Gingival Recession

Results

Since the normality of the data is required for data analysis after reviewing the data normality by Kolmogorov-Smirnov tes it was observed that, except for age, weight and height of patients, other data were not normally distributed (p>0.05). so for the Statistical analysis of these data Non-parametric Mann-Whitney test (To determine the

significance of difference between the two groups) and Spearman (To clarify the relationship between the variables in each group) was used.

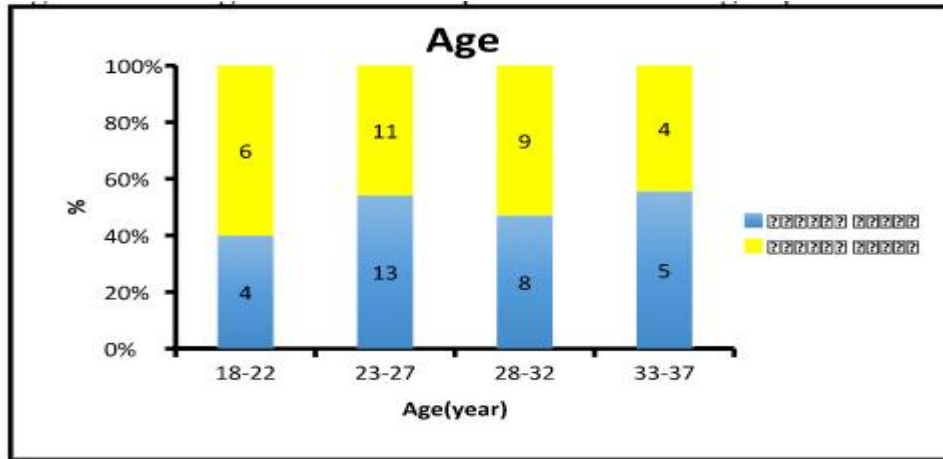


Figure 1 . The age distribution of patients in the two groups.

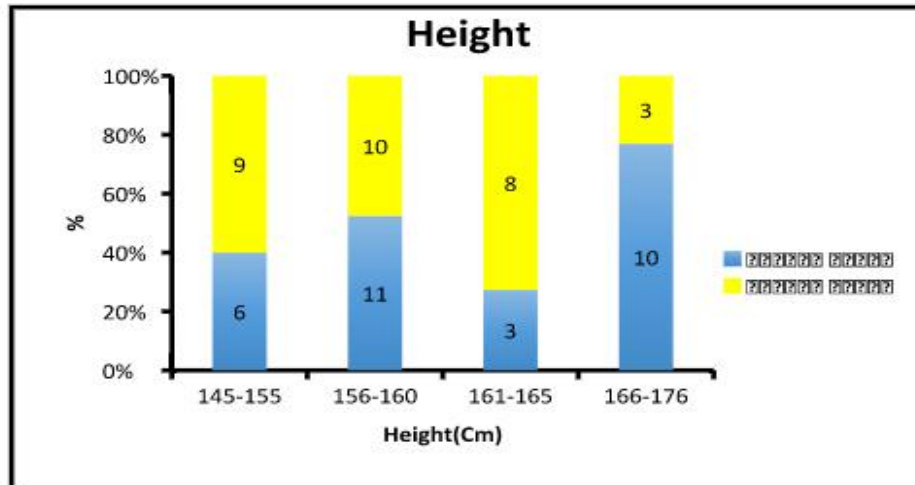


Figure 2 . Height of the subjects in the two groups

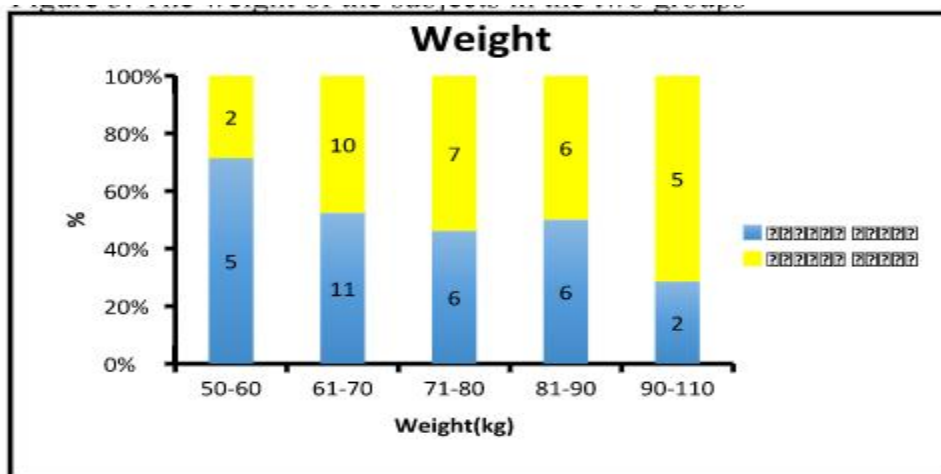


Figure 3. The weight of the subjects in the two groups

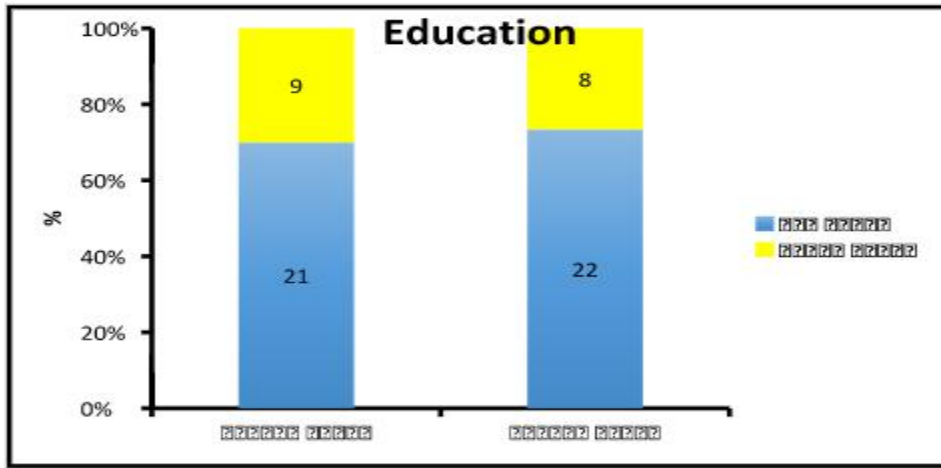


Figure 4. education level of the participants in the two groups

The results of medical history :

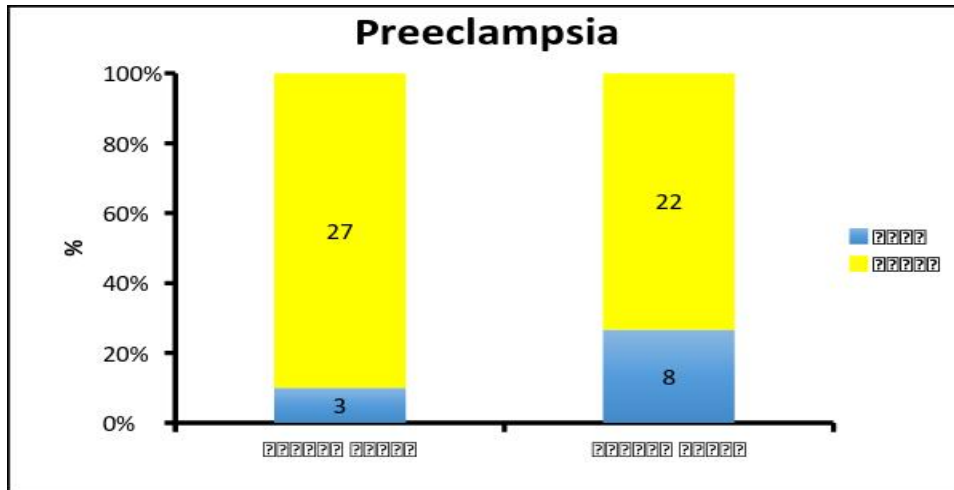


Figure 5 . rates of gestational hypertension in subjects in the two groups

The results of periodontal parameters :

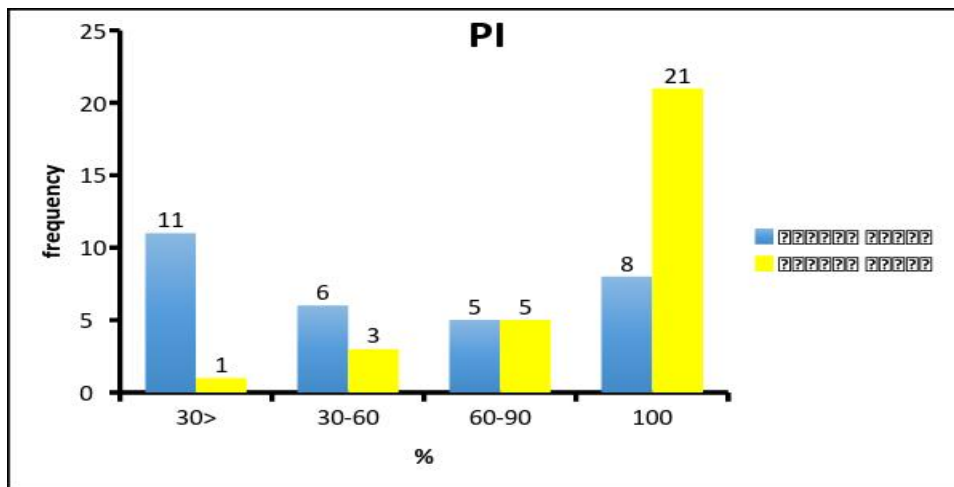


Figure 6 . compares the PI parameters in the two groups

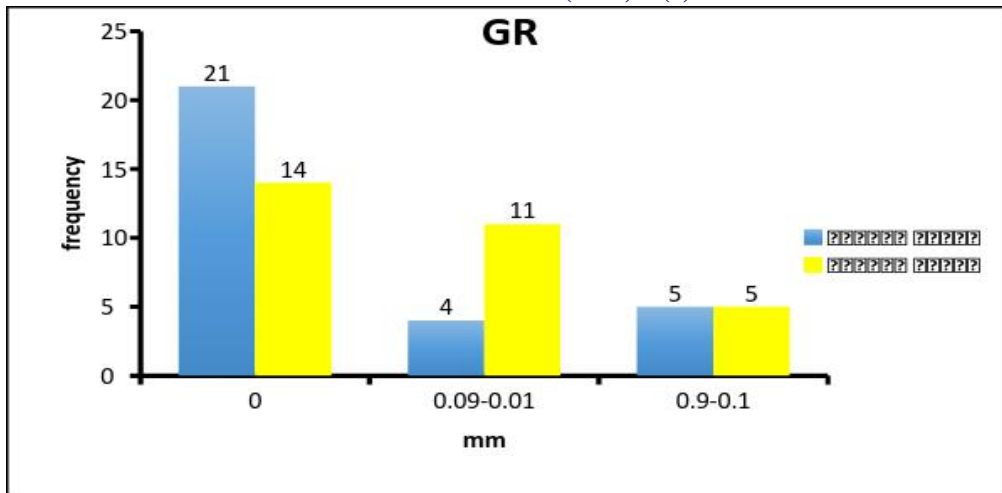


Figure 7 . Comparison GR parameters between two groups

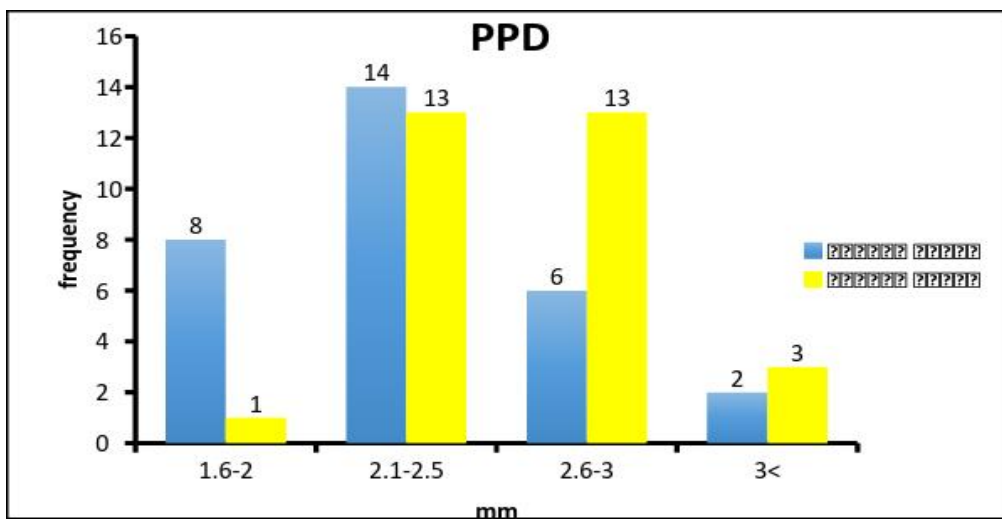


Figure 8 . Comparison PPD parameters between two groups

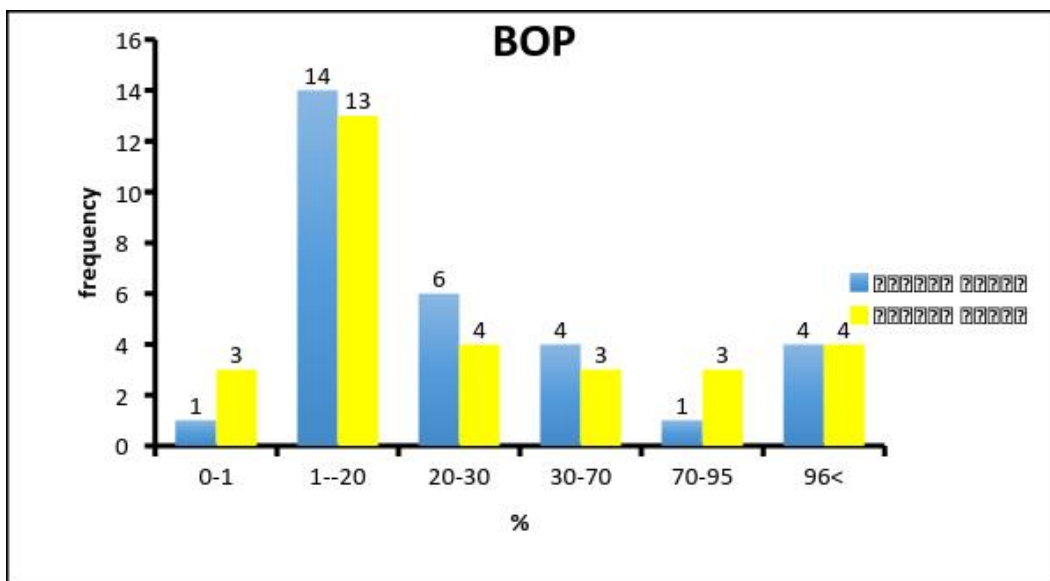


Figure 9 . Comparison BOP parameters between two groups

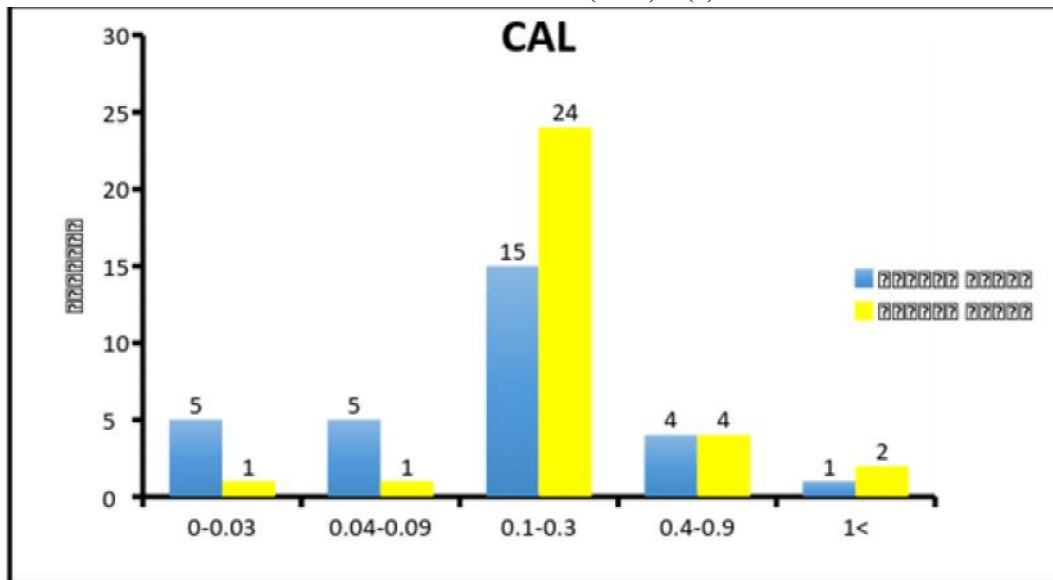


Figure 10 . Comparison CAL parameters between two groups

The relationship between the variables and periodontal status :

The results of the test didn't show the correlation between periodontal index and demographic characteristics of the patients in both group ($p>0.05$). The only significant differences was observed between GR index and the age of patients ($p=0.014$).

So that amount of GR also increased with age. In the control group there was a significant positive correlation between the two parameters GR and CAL and patient age (Respectively $p=0.007$ & $p=0.035$). In other cases, the relationship between periodontal parameters and clinical and demographic characteristics wasn't observed ($p>0.05$). There was no significant relationship between any of periodontal parameters and demographic and clinical variables of patients ($p>0.05$).

Discussion

In different studies, positive relationship between periodontal disease and risk of premature births has been reported^[20&21]. However, the results of reports and studies, was different and even contradictory. This study aimed to compare the periodontal status of mothers with normal birth and mothers of preterm or low birth weight were taken.

A significant relationship between demographic variables such as age, height, weight, occupation and level of education was not in the two groups. Significant differences between the clinical characteristics included under the care of mothers, history.

Hospitalization, medication, allergy medication, gestational hypertension, a history of scaling and periodontal treatment in the two groups wasn't observed. So there is no significant difference in any of their demographic and clinical variables showed no effect on periodontal condition among two groups are.

The results Shirinzad et al (1385) showed the main outcome variables contains urinary tract infection, preeclampsia, premature rupture of membranes, placenta previa, first pregnancy, smoking, age, height, socio-economic issues in the two groups showed no significant statistical difference.^[25] In a study Rigi et al (1387) the average age of cases (23.47) and control (25.20) was close and was higher in the control group and age and level of education as a confounding factor, the two groups showed no significant difference.^[23]

Periodontal status indicators in this study was PPD , BOP , GR , PI and CAL that based on the results of all parameters in the control group were higher than control group. But the difference was only statistically significant about indices PI , PPD and CAL. So we can say that periodontal status of mothers of preterm birth and low birth weight infants with mothers with vaginal delivery is better in the subjects. In other words you can not say that periodontal disease is a risk factor for preterm delivery or low birth weight.

In a study Faezy et al(1391) wasnt observed relationship between periodontal parameters including gingival index, health index and periodontal disease and plaque index between the two groups. In other words, this study showed that periodontal disease during pregnancy were not associated with low birth weight.^[24]

The results Rigi et al (1387) Showed that the factors of periodontal BOP CAL PDD & GR was higher in case (preterm delivery or low birth weight) compared with the control group (normal delivery). But statistically significant difference was not observed between the two groups.^[23] These findings do not correspond with the results of this study and can strengthen the hypothesis of association of periodontal disease with low birth weight and preterm birth.

The results Haerian ardakani et al (2013) mothers of case group than the control group had significantly deeper pocket areas and less healthy gingival. As a result of maternal periodontal disease can be a potential independent risk factor for low birth weight infants.^[22]

Also Ghasemi and Razavi (2006) by studying Periodontal indices PI, CAL, BOP & PPD did not report the relationship between maternal periodontal disease and preterm and low birth weight.^[26]

The results of this study demonstrate the periodontal status indicators included: PPD, BOP, PI, GR & CAL In the control group were higher than control group and this difference was statistically significant only about indicators PI, PPD & CAL . According to the results mothers with preterm delivery and low birth weight had

better periodontal health than mothers with vaginal delivery.

So it seems that the relationship between maternal periodontal disease and preterm birth and low birth weight does not exist. In other words, based on the evidence in this study can be said that periodontal disease is not from the risk factors for preterm or low birth weight in the population studied.

Cause of differences in the results of different studies can be considered because the studies that have addressed this topic in different societies and different methodologies have been used to do. have been used to do.

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