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## Research Article

### ASSESSMENT OF THE KNOWLEDGE, AWARENESS AND PERCEPTION OF GYNECOLOGY AND OBSTETRICS RESIDENTS REGARDING THE ASSOCIATION BETWEEN PRETERM LOW BIRTH WEIGHT AND PERIODONTITIS

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#### ABSTRACT

**Aims:** To assess the knowledge, awareness and perception of gynecology and obstetrics residents regarding periodontal disease as a risk factor in PLBW.

**Methods and Material:** A structured questionnaire was prepared. It was filled by residents of gynecology from 2 colleges. The knowledge and awareness of the effects of periodontal disease on outcome of pregnancy were correlated with their practices. A total of 55 residents were approached and voluntarily participated and filled up the questionnaire.

**Statistical analysis used:** Descriptive statistics and Pearson chi-square was used.

**Results:** A total of 55 residents participated in the study and 74.5% had knowledge about periodontal disease but only 34.5% knew periodontal disease is risk factor for PLBW. Around 42% of residents knew that periodontal disease occur at higher rate in pregnant women but only 11% of residents inform their patients about this inter-relationship.

**Conclusions:** It was concluded that residents have knowledge about relationship of periodontal disease and pregnancy outcome but low levels of knowledge was seen about periodontal disease as a risk factor for PLBW.

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## INTRODUCTION

Delivery which occurs before 37 weeks of gestation is pre-term delivery and the child born with less than 2500 gram weight is low birth weight<sup>1</sup>. Every year around 15 million babies are born due to pre-term delivery and this number is increasing rapidly. Due to this many complications are arising and often leads to death of children below the age of 5 years and those who manage to survive live a very compromised life facing severe challenges like learning disabilities and visual and hearing problems.

Commonly associated risk factors with PLBW include high maternal age (above 35years) or low (below 18 years) maternal age, low economical background, inadequate prenatal care, drug abuse, alcohol and tobacco use, hypertension, genitourinary tract infections, diabetes or multiple pregnancies<sup>2</sup>.

Although it is reported that around 25% of PLBW occur without any risk factor and roughly around 18% is caused due to periodontal disease. Various authors in different studies have proved that for PLBW to occur periodontal disease is

prerequisite and the patients who have severe periodontal disease are at greatest risk to acquire PLBW<sup>3</sup>. Pregnant women often presents with deep periodontal pockets and this increases 3 to 8 times more chances to acquire PLBW.

Periodontal disease which is caused by Gram- negative microbes, also has the ability to influence the outcome of pregnancy. The ability of inflammatory mediators such as Prostaglandin E2 is not only observed in inflammation of periodontal tissue but it also regulates the normal physiologic process of parturition. Throughout gestation, in amniotic fluid PGE<sub>2</sub> increases and when it reaches to sufficient level, it induces normal labor and delivery<sup>1</sup>.

Several amniotic bacterial products such as LPS or endotoxin may be present due to maternal genitourinary infection, these bacterial products stimulate production of host-derived either fetal or maternal cytokines in the amnion and decidua. The presence of cytokines, mainly IL-1, TNF- $\alpha$  and IL-6 stimulate excessive prostaglandin production from the amnion and decidua, leading to preterm labor<sup>4</sup>.

Whether clinical or subclinical maternal genitourinary infection is present or absent the characteristic sign for preterm labor is

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premature increase in PGE<sub>2</sub> and PGF<sub>2α</sub>. The question still remains to what causes the increase in cytokine levels and as a result increased prostaglandin levels seen in preterm delivery in patients with no signs of genitourinary tract infection. This theory lead to the current opinion that many cases of PTLBW are a result of infections of unknown origin that is, infections originating in areas other than the genitourinary tract.

From the epidemiological evidence, various theories have been proposed to establish the link between preterm birth and periodontal diseases. The theories are bacterial spreading, inflammatory products dissemination, role of fetomaternal immune response against oral pathogens<sup>5</sup>.

**Selection Criteria**

**Inclusion criteria**

All the residents who will be studying in gynecology and obstetrics department will be included in the study.

**Exclusion criteria**

Residents who are not willing to participate in this study.

**METHODOLOGY**

- The residents of gynecology and obstetrics department of the city were selected as per the inclusion and exclusion criteria and after informing them, their informed consent was taken.
- The questionnaire form was taken to the residents of gynecology and obstetrics department of every medical college of the city.
- The residents were asked to fill the questionnaire and those were collected on the same day.
- Validation of the questionnaire has been done.

**RESULTS**

In this study a total of 55 residents were included. A questionnaire consisting of 13 questions was designed and filled by the residents to assess their knowledge and awareness regarding the association of preterm low birth weight and periodontitis.

In table 1 the questions determining the knowledge of residents regarding the association of preterm low birth weight and periodontitis have been grouped together.

In table 2 the questions determining the awareness of residents regarding the association of preterm low birth weight and periodontitis have been grouped together.

In table 3 the response of residents regarding the association of periodontal disease as a risk factor for preterm low birth weight is established. It proves that though the residents have the knowledge about periodontal disease but do not know that it is risk factor for PLBW.

In table 4 it is observed that only 36.4% of residents refer their patients to periodontist for complain of bleeding gums or mobility of teeth.

In table 5 it is seen that only 23 residents are aware that periodontal disease can occur at higher rate in pregnant women

and only 11 residents inform their patients about this relationship.

**Table – 1 Knowledge Regarding Preterm Low Birth Weight**

QUESTIONS	Yes	% (n=55)
Do you know about "Periodontal disease"?	41	74.5%
Do you know that "periodontal disease" is a risk factor for PLBW?	19	34.5%
Did you notice periodontal disease in any of your patients?	25	45.5%
Did any of your patients complain of bleeding gums or enlarged gums?	20	36.4%
Did any of your patients complain of mobility of teeth during pregnancy?	19	34.5%
Have you ever studied/ worked or presented on this relationship?	03	5%

**Table – 2 Awareness Regarding Preterm Low Birth Weight**

QUESTIONS		% (n=55)
Do you refer your patient to a periodontist for complaint of bleeding gums or mobility?	20	36.4%
Do you know about the fact that periodontal disease occur at a higher rate in pregnant women?	23	42%
If yes, do you inform your patients about this relation	11	20%
Are you aware about the fact that periodontal disease could affect the outcome of delivery?	18	33%
Do you think a regular dental check up is a must for pregnant women?	18	33%

**Table – 3 Awareness Regarding Periodontal Disease As A Risk Factor For Plbw**

		Q4. Do you know that "periodontal disease" is a risk factor for PLBW?		Total
		NO	YES	
Q3. Do you know about "Periodontal disease"?	NO	11 (78.6%)	3 (21.4%)	14 (100.0%)
	YES	25 (61.0%)	16 (39.0%)	41(100.0%)
Total		36 (65.5%)	19 (34.5%)	55 (100.0%)

**Table – 4 Attitude Regarding Bleeding Gums and Mobility of Teeth in Pregnant Women**

		Q8. Do you refer your patient to a periodontist for complaint of bleeding gums or mobility?		Total
		NO	YES	
Q6. Did any of your patients complain of bleeding gums or enlarged gums?	NO	22 (62.9%)	13 (37.1%)	35 (100.0%)
	YES	13 (65.0%)	7 (35.0%)	20(100.0%)
Total		35 (63.6%)	20 (36.4%)	55(100.0%)

**Table – 5 Knowledge and Attitude Regarding Periodontal Disease in Pregnant Women**

		Q10. If yes, do you inform your patients about this relation?		Total
		NO	YES	
Q9. Do you know about the fact that periodontal disease occur at a higher rate in pregnant women?	NO	32(100.0%)	0 (0.0%)	32 (100.0%)
	YES	12(52.2%)	11(47.8%)	23(100.0%)
Total		44(80.0%)	11(20.0%)	55(100.0%)

## DISCUSSION

Periodontitis is a destructive inflammatory disease of the supporting tissues of the teeth and is caused by specific microorganisms resulting in a progressive destruction of the supporting structures of periodontium. The diseased periodontal tissues produce significant amounts of proinflammatory cytokines such as IL-1 $\beta$ , IL-6, prostaglandin E2 and TNF- $\alpha$ , which further continues periodontal destruction. The high concentration of these cytokines can rupture the uterine membrane causing PLBW.

Periodontitis is a treatable and preventable condition therefore early diagnosis and management of this condition can prevent the chances of PLBW. As gynecologists are the primary care doctors during pregnancy their knowledge and awareness about this relationship is very important.

A questionnaire study was performed to assess the knowledge and awareness of residents about the relationship between periodontal disease and PLBW. Most of the residents who participated in the study in Vadodara, Gujarat knew that pregnancy could be associated with bleeding gums and mobility of teeth.

Over the last few years many studies have been performed and have proved the effect of the periodontal status of mother during pregnancy causing low-birth weight delivery. Though these facts are established and widely spread but very less is known about the knowledge and awareness among gynecologists of the above mentioned fact.

In the present study it was observed that 74.5% of residents had knowledge about periodontal disease but only 34.5% of residents considered periodontal disease as a risk factor for PLBW. Similar results were obtained in a study by [Shenoy R et al \(2009\)](#)<sup>6</sup> which was done to assess the knowledge of gynecologists' if periodontal disease was a risk factor for PLBW and also the oral symptoms of periodontal disease. A questionnaire was distributed among participants in Mangalore and was concluded that participants had good knowledge regarding the oral symptoms of periodontal disease but was low for periodontal disease being a risk factor for PLBW.

Also the results of present study showed that 41.8% of residents were aware that the chances of acquiring periodontal disease are high among the pregnant women but only 11% of residents inform about this inter-relationship to their patients. Similarly a study by [José Mariano da Rocha et al \(2011\)](#)<sup>7</sup> did a questionnaire study which was sent to members of the Brazilian Federation of Gynecology and Obstetrics (FEBRASGO). The questionnaire aimed to evaluate the knowledge and attitudes of participants about the relationship between periodontal diseases and preterm labor. In total 875 obstetricians replied to the questions.

It was concluded that obstetricians had adequate knowledge about the association between gingival inflammation and adverse obstetric outcomes and the attitudes of these professionals was not consistent with their knowledge.

Discrepancies between knowledge and awareness of residents was observed, suggesting for further interdisciplinary academic activities, continuing education about integrated approaches to health care.

## CONCLUSION

Though the residents of gynecology have good knowledge about the relationship of maternal periodontal status to adverse pregnancy outcome the knowledge level among residents was low about periodontal disease being a risk factor for PLBW, with only 34.5% considering it to be a risk factor. The awareness of these residents is not consistent with their apparent knowledge. Therefore, to prevent low birth weight or preterm delivery, the knowledge about this relationship should spread to the medical residents.

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