

# Oral care during pregnancy: make every mother and child count- a review

## Abstract

Pregnancy is a dynamic physiological state evidenced by several transient changes and significant hormonal changes like increased production of estrogen and progesterone. Both periodontal disease and caries are highly prevalent among pregnant women. Also association of periodontal disease and preterm low-birth weight has been found. Thus, it is essential to educate pregnant women to promote oral health behaviours. Pregnant women should be emphasised on the relationship of maternal oral health with fetal health and specific preventive oral health care programme should be made an integral part of antenatal care.

**Keywords:** pregnancy, oral health, caries, periodontal disease

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Ritu Gupta,<sup>1</sup> Neha Gupta,<sup>2</sup> Basavaraj Patthi,<sup>1</sup> Venkatesh Goud,<sup>3</sup> Ashish Singla,<sup>1</sup> Anshul Garg,<sup>4</sup> Devanshu Gupta,<sup>5</sup> Prerna Kataria<sup>6</sup>

<sup>1</sup>Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, India

<sup>2</sup>Department of Oral Medicine and Radiology, People's College of Dental Sciences and Research, India

<sup>3</sup>Department of Public Health Dentistry, Malla Reddy Institute of Dental Sciences, India

<sup>4</sup>Department of ENT and Otolaryngology, Sanjeevani Clinic, India

<sup>5</sup>Mysore Medical College and Research Institute, India

<sup>6</sup>Department of Periodontics and Oral Implantology, D.J. College of Dental Sciences and Research, India

**Correspondence:** Ritu Gupta, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Uttar Pradesh, India-201204, Tel +91-9810161504, Email [driritupcd@gmail.com](mailto:driritupcd@gmail.com)

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## Introduction

Good oral health is important across a person's lifespan. Pregnancy is particularly important to promote oral health & healthy behaviour. Oral changes due to complex physiologic alterations occurring in pregnancy are believed to be related to fluctuations in levels of estrogen & progesterone, leading to increase in oral vasculature permeability and a decrease in host immune competence thereby increasing susceptibility to oral infection.<sup>1</sup> Recently the dental community has focused on potential association between periodontitis and pregnancy outcomes.<sup>2</sup> Furthermore, oral health may contribute to general health outcomes.<sup>3</sup> Dentistry can be vital in improving prenatal outcome and maternal or fetal dental health through screening, referral & education of pregnant women. It is important to understand that establishing a healthy oral examination is the most important objective in planning care for pregnant women.<sup>4</sup> Although largely preventable through evidence-based interventions, both periodontal disease and caries in women of childbearing age are highly prevalent, particularly among low-income women. Studies have demonstrated poor oral hygiene,<sup>5</sup> high prevalence of dental caries ranging from 62.5%<sup>5</sup> to 99.9%,<sup>6</sup> periodontal diseases ranging from 95%<sup>5</sup> to 100%<sup>7</sup> and large proportion of unmet dental treatment needs among pregnant women indicating low utilization of dental services by pregnant women.<sup>5,8</sup>

## Oral conditions during pregnancy

During pregnancy major physiological and hormonal changes occur making the oral tissues liable for dental diseases. The most significant hormonal change is the increased production of estrogens and progesterone.<sup>9</sup> Evidence shows 30times increase in estradiol level during reproductive cycle which affects the permeability of the microvasculature and also changes the production of collagen.<sup>10</sup> These

hormonal alterations during pregnancy tend to increase incidence of dental diseases. During pregnancy, the oral cavity is exposed more often to gastric acid that can erode dental enamel. Morning sickness is a common cause early in pregnancy; later, a lax esophageal sphincter and upward pressure from the gravid uterus can cause or exacerbate acid reflux. Patients with hyperemesis gravidarum can have enamel erosions.<sup>11</sup> It is believed that increased consumption of carbohydrates, increased acid in the mouth from vomiting, and reduced salivary production and/or increased acidity of saliva combine to raise the risk of dental caries in pregnant women.<sup>12</sup> Cellular events in the gingiva during pregnancy are not fully understood. Balance between host response and bacteria seem to be largely maintained. Although there are some changes that can exacerbate gingival inflammation, there is no evidence so far that the progression of disease to supporting bone is increased during pregnancy.<sup>9</sup> The onset of pregnancy gingivitis coincides with the selective growth of periodontal pathogens such as *Prevotella intermedia*, in sub gingival plaque from 3<sup>rd</sup> -4<sup>th</sup> month of pregnancy.<sup>13</sup> Increased proportion of *Prevotella intermedia* (previously *Bacteroides intermedius*), concomitant with an increase in gingivitis and elevated serum levels of oestrogen and progesterone have been shown during pregnancy.<sup>14</sup> Pregnancy oral tumor occurs in up to 5 percent of pregnancies and is indistinguishable from pyogenic granuloma. This vascular lesion is caused by increased progesterone in combination with local irritants and bacteria. Lesions are typically erythematous, smooth, and lobulated; they are located primarily on the gingiva. Pregnancy tumors are most common after the first trimester, grow rapidly, and typically recede after delivery.<sup>15</sup> Multiple studies have associated periodontal disease with premature birth and low birth weight of infants.<sup>16-18</sup> Pre-term (PT) birth is a major cause of infant mortality and morbidity that has considerable societal, medical, and economic repercussions. The rate of PT birth appears to be increasing

worldwide and efforts to prevent or reduce its prevalence have been largely unsuccessful. If periodontal disease is associated with higher risk of adverse pregnancy outcome in these specific populations, large multicenter randomized-controlled trials will be needed to determine if prevention or treatment of periodontal disease, perhaps combined with other interventions, has an effect on adverse pregnancy outcome in these women.<sup>19</sup> The National consensus statement was developed to help health professionals, program administrators and staff, policymakers, advocates and other stakeholders to respond to the need for improvement in the provision of oral health services to women during pregnancy.<sup>20</sup> But developing and low-income countries where majority of the population lack knowledge about the competent practices of good oral hygiene measures, oral health should be made an integral part of antenatal and primary health care in order to prevent oral diseases.<sup>5</sup>

### Guidelines for prenatal and perinatal oral health care

Evidence suggests that most infants and young children acquire caries causing bacteria from their mothers. Providing pregnant women counselling to promote healthy oral health behaviours may reduce the transmission of such bacteria from mothers to infants and young children, thereby delaying or preventing onset of pregnancy. It is essential for health and oral health professionals to provide pregnant women with appropriate and timely oral health care including oral health education.<sup>20</sup>

#### Oral health education during pregnancy<sup>21-23</sup>

Pregnancy offers an opportunity to educate women regarding oral health by providing a “teachable moment” in self-care with future children.

**Oral hygiene:** Tooth brushing with fluoridated toothpaste and flossing by the mother to help dislodge food and reduce bacterial plaque levels. For a pregnant women experiencing frequent vomiting, rinsing with a cup of water containing a teaspoon of baking soda and waiting an hour before brushing can help minimize dental erosions.

**Diet:** A healthy diet is necessary to provide adequate amounts of nutrients for the mother-to-be and unborn child. Eating healthy foods containing proteins and vitamins such as fresh fruits and vegetables, grains and dairy products such as milk and cheese. From the dental perspective, the expectant mother should take adequate nutrition during the third trimester because the enamel (primary or milk teeth) maturation of the child occurs in that phase. Food craving may lead to the consumption of foods that increase the mother’s caries risk. Pregnant women should be educated on maintaining a healthy diet avoiding frequent exposures to cariogenic foods and beverages.

**Professional oral health care:** Every pregnant women should have an oral evaluation, be counselled on proper oral hygiene and be referred to for preventive and therapeutic oral health care. The dentist should provide preventive treatment such as oral prophylaxis followed by restoration if required and discuss the transmissibility of mutans streptococcus from the mother to the child. Pregnant women should be educated regarding the ill-effects of consumption of tobacco.

#### Guidelines for infant oral health care<sup>24</sup>

All primary health care professionals who serve the parents and

infants should provide education on etiology and prevention of early childhood caries. Parents especially mothers should be educated on avoiding saliva sharing behaviours, example; sharing spoons and other utensils, sharing cups, cleaning a dropped pacifier or toy with their mouth to prevent early colonization of mutans streptococcus in infants.

**Teething:** Parents should be educated regarding teething. Teething can lead to intermittent localized discomfort in the area of erupting primary teeth, irritability and excessive salivation.

**Oral hygiene:** Oral hygiene measures should be implemented no later than the time of eruption of the first primary tooth. Cleansing the infant’s teeth as soon as they erupt with a soft toothbrush will help reduce bacterial colonization.

**Diet:** Dietary education for the parents includes the cariogenicity of certain foods and beverages, role of frequency of consumption of these substances, and the demineralization/remineralisation process. Mothers should be educated about ill-effects of frequent night time bottle feeding with milk or juice and prolonged use of pacifiers which increase the risk of caries.

**Non-nutritive habits:** Non-nutritive oral habits like digit or pacifier sucking, bruxism, abnormal tongue thrust may apply forces to teeth and dentoalveolar structure. Therefore, mothers should be educated on the need to wean infants from these habits if present before malocclusion or skeletal dysplasias occur.

**Injury prevention:** Age-appropriate injury prevention counselling for oro-facial trauma should be given, initially for playing with play objects and pacifiers.

Various types of dental procedures that can be undertaken during each trimester are summarized as follows:<sup>22-23</sup>

**First trimester:** It is the most crucial period for growth of the foetus. Only emergency dental treatment should be undertaken in consultation with the patient’s gynaecologist/physician when organogenesis is incomplete.

**Second trimester:** This phase is considered the most safest to treat patients among the three trimesters. Emergency as well as elective dental treatment can be provided in the second trimester. Treatment such as emergency dental treatment extractions, periodontal surgeries, and completion of root canal treatment can be performed.

**Third trimester:** During the third trimester, the increased sensitivity of the uterus to external stimuli increases the risk associated with premature delivery. There is positional discomfort in the third trimester and the risk of compression of vena cava.

Thus a two-stage approach is suggested to have prenatal women address their own oral health needs and provide them with skills and information to maintain oral health through the pregnancy as well as address the oral health of the child. An oral health policy should be made to provide dental health education to all prenatal women.<sup>25</sup>

### Conclusion

Pregnant women should be emphasized on the relationship of maternal oral health with fetal health and made aware of the possible risk of preterm low birth weight due to periodontal infection. Oral health care services should be routinely integrated with prenatal care

services for all the pregnant women. Specific preventive oral health care programme should be made an integral part of antenatal care by including a dentist or dental hygienist in the antenatal team along with gynaecologist and paediatrician. Their needs have to be met largely through prevention oriented treatment plan by laying more emphasis on self care measures and dental care should be provided depending on the trimester of pregnancy.

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## Conflict of interest

The author declares no conflict of interest.

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