



Perinatal Oral Health

BACKGROUND & OVERVIEW

Perinatal oral health is a topic that encompasses not only women's health (including preconception health) but early childhood health as well. The health status, risk factors, and modifiers of the mother also affect the child.

Improved health outcomes for the mother and unborn child is the ultimate goal yet, "The achievement of optimal oral health in pregnant women (itself has been)... hampered by myths surrounding the safety of dental care during pregnancy. "

Perinatal oral health could be viewed in two possible pathways:

- Hard tissue diseases (most commonly, dental caries); and
- Soft tissue disease (periodontal disease or gingivitis).

Periodontal disease (not gingivitis) is quite common across the lifespan, most commonly affecting those in middle age and older; however, up to 40% of pregnant women have some form of periodontitis.

15-25% of women of reproductive age are estimated to have untreated dental caries.

In some populations, caries and periodontal experience recorded maybe much higher than national averages. A recent study in California, Ramos-Gomez et al., discovered a 89% caries experience rate among pregnant women in a newly immigrated group of women accessing services near the southern California border with Mexico. Hence, the same oral health disparities that affect certain subgroups of people living in the U.S. may also further affect their pregnancy, and the oral health of their children.

There is positive association between periodontal disease in pregnant women and adverse birth outcomes, including:

- Low birth weight;
- Preterm birth;
- Preeclampsia; and
- Gestational diabetes.

Dental treatment is safe during all stages of pregnancy if the pregnant woman is considered medically stable (not ASA 4). Treatment options for active periodontal disease during pregnancy, however, have not yielded any measurable improvements in birth outcomes to date.

According to the Center for Disease Control, the number of U.S. births was 4.1 million in 2009 (the last year full data is available) down from the all-time high of 4.3 million in 2007. The birth rates, however, for women over the age of 40 years increased in this time between 2007-2009 while all other age groups saw a decline.

Prime motivators for addressing perinatal oral health from a public health perspective include:

- To reduce or delay the infectivity and transmissibility of oral bacteria affecting the mother, her pregnancy, and her child.
- To reduce the maternal burden of chronic infection and inflammation associated with periodontal disease. (See soft tissue disease section for more on the inflammatory process link).

Intended outcomes of addressing maternal oral health before and/or during pregnancy may include:

- Improved pregnancy and birth outcomes
- Reduction of oral bacterial quanta in the mother, and consequently...
- Delay of colonization of maternal oral bacteria in the child's oral cavity.

Known pregnancy risk factors, outside of oral health status, include:

- Smoking
- Parity (number of births)



- Alcohol consumption
- Race
- Short cervical length
- Low maternal weight
- Maternal Age (> 34 y or < 17y)
- Increased physical/psychological stress
- Low SES
- Low education level
- Poor maternal nutrition
- Genitourinary infections
- Malaria, VRI, other systemic infections (implicated).

Excluding the above list, 25% of complicated pregnancies have unknown contributing factors. The chronic inflammatory markers associated with periodontal disease led researchers to first examine a possible association with birth outcomes in reliable animal models in the 1990's.

In 2005, Reader's Digest published the story of the association between periodontal disease and adverse birth outcomes saying, "Pregnant women with serious periodontal disease have about four times the risk of delivering preterm babies..., and they face an increased risk of pre-eclampsia... threatening the lives of both mother and fetus." A few years later, the risk multipliers were revised with Boggess reporting a two to seven-fold increased risk for an adverse pregnancy outcome (preeclampsia, small for gestational age [SGA] or low birth weight [LBW] baby, spontaneous preterm delivery, gestational diabetes, or fetal loss) with active periodontal infection in the pregnant woman.

SOFT TISSUE DISEASE

"Periodontal disease is an inflammatory disease that affects the soft and hard structures that support the teeth. In its early stage, called gingivitis, the gums become swollen and red due to inflammation, which is the body's natural response to the presence of harmful bacteria. In the more serious form of periodontal disease called periodontitis, the gums pull away from the tooth and supporting gum tissues are destroyed. Bone can be lost, and the teeth may loosen or eventually fall out."

ACCESSING DENTAL CARE DURING PREGNANCY

Pregnant women in the U.S. have low dental service utiliza-

tion during their pregnancy. This may be for many reasons, two of which are the unknown safety of dental treatment during pregnancy, and the lack of knowledge of association of maternal oral risk factors and pregnancy outcomes.

Two concerted efforts, called consensus conferences, called together medical, dental, environmental and other related experts to clarify in statements to health professionals, perinatal resources, and pregnant women and their families their findings.

- In 1996, the New York Department of Health published the Oral Health Care during Pregnancy and Early Childhood: New York Practice Guidelines.
- In 2010, The California Dental Association and the American College of Obstetrics and Gynecology, Region IX published the Perinatal Oral Health Care during Pregnancy & Early Childhood: Evidence-Based guidelines for Health Professionals.

Both publications addressed and clarified the efficacy, safety, and rationale behind addressing perinatal oral health for the mother's health and the child's.

Pregnant women have very low utilization dental service utilization rates during pregnancy despite the increase in communication on the safety, and rationale for optimal oral health during pregnancy. A CDC surveillance program, called PRAMS for the Pregnancy Risk Assessment Monitoring Program, reports that only 23 to 35 percent of pregnant women in the U.S. accessed dental services during their pregnancy compared to 44 percent of all women of the same ages. While pregnant women without private dental insurance are less likely to access dental services during pregnancy, pregnant women with dental insurance still exhibit a reduction in dental service use compared to the pre-conception window. Furthermore, women often seek dental coverage shortly after delivery perhaps suggesting they delayed dental treatment or definitive treatment during pregnancy.

HARD TISSUE DISEASES

Mother-to-child transmission of oral bacteria associated with dental caries is called vertical transmission. DNA- tests



confirm that mothers transmit their dental caries, through saliva-sharing behaviors, to their babies, even prior to newborn tooth eruption. Factors affecting earlier vertical transmission include the following:

- Higher the bacterial load in the mother's saliva for *Strep Mutans*
- Poor maternal oral hygiene
- Maternal periodontal diseases
- Frequent snacking
- Low SES

High bacterial load of *Strep Mutans* is associated with untreated dental caries or recent caries experience with lack of bacterial targeting regimens. Yet, very few states provide Medicaid-funded dental services aimed at eliminating maternal dental caries and related services to delay bacterial transmission. The latest report, from 2008 and probably outdated due to recessionary changes in states' funding, lists only a few states that provide periodontal, preventive, and restorative dental services to pregnant women as a special population.

In California, for example, comprehensive adult dental services for low-income adults under Medicaid were previously covered. Now, after recessionary pressures leading to massive dental program elimination, pregnant women are only eligible for some periodontal-related dental services, and emergency dental services such as dental extractions. There is no service coverage, which would be the first step in breaking the vertical transmission of dental caries-causing bacteria from mother to child.

The American State and Territorial Dental Directors have outlined a 2010-2013 Perinatal and Early Childhood Committee Logic Model which aims "to increase the infrastructure and capacity to promote oral health among perinatal and early childhood populations in all U.S. states and jurisdictions." In this model, the ASTDD calls for better and more comprehensive data collection, and identification of data needs, gaps, and existing data sets on both perinatal oral health and early childhood oral health. Some of this will be accomplished with the Health Reform Act of 2014 which will require all states to participate in PRAMS surveillance. The ASTDD model also aims to identify strategies to encourage dental service utilization by all pregnant women, both insured and uninsured.

RECOMMENDATIONS

Potential areas for policy to support optimal perinatal oral health:

- Provide full service dental coverage to women of child-bearing age, including preventive, periodontal, and restorative services under Medicaid, thereby reducing financial barriers to care for low-income populations.
- Encourage and identify strategies to increase dental service utilization and oral disease elimination or maintenance prior to or early in pregnancy.
- Educate healthcare professionals, women and their support systems on the relationship of perinatal outcomes and good oral health.
- Discuss early in pregnancy with women and their support networks the importance of good oral health, anticipatory guidance for newborns infants and children, and saliva-sharing behaviors.
- Support early dental referrals for pregnant women or women considering conception from all perinatal providers thereby maximizing integration of oral health into perinatal health.

RESOURCES

Government Action & Communication Institute (GACI) has partnered with the University of the Pacific, Arthur A. Dugoni School of Dentistry to distribute this brief as part of their legislative and executive education and training efforts. For more information contact GACI at 916 966-6643.

Russell et al. MCN, American Journal of Maternal Child Nursing. 33(1):32-37 . 2008.

Lieff et al. The oral conditions and pregnancy study: periodontal status of a cohort of pregnant women. J Perio 2004;75;116-26.

Maternal oral health in pregnancy. Boggess K. Ob & Gyn 2008; 111:976-986.

Ramos- Gomez, accepted for publication in JADA 2012.