

Prenatal Maternal Stress: May Raise Marked Risk of Dental Caries in Offspring

Dr. Naresh Sharma¹, Dr. Amit Mohan²

Professor¹, Reader², Department of Paedodontics & Preventive Dentistry¹, Department of Oral & Maxillofacial Surgery², Manav Rachna Dental College, Faridabad, Haryana

How to cite this Article: Sharma N, Mohan A. Prenatal Maternal Stress: May Raise Marked Risk of Dental Caries in Offspring. HTAJOC.2019;11(6):31

Introduction

Tooth decay is a widespread, infectious disease classically related to the interplay of biological, behavioral and socio-economic influences. It affects about 40–50% of adults in industrialized countries. It has been hypothesized that pregnancy could increase the risk of caries initiation or progression, by changes in saliva composition, repeated gastric reflux or less effective oral health care. However, given the relatively short time frame of pregnancy and the kinetics of dental caries progression, it is unlikely that tooth decay will develop from initial carious lesion to major tooth damage within this period.

Many laypersons appear to believe that pregnancy is a direct cause of dental caries. The old wives' tale "with each child, a tooth" has been quoted even in dental and medical literature. In 1875 Coles wrote, "We have during pregnancy, an increasing liability to caries, with each generation." He noted that during the first months of pregnancy, patients may have "severe toothache" secondary to caries. He explained this as "a diminution of earthy salts" during pregnancy. This belief has been fostered and has been one of the most stubborn misconceptions to appear in dental and medical literature. There is no scientifically proven evidence to support this belief.

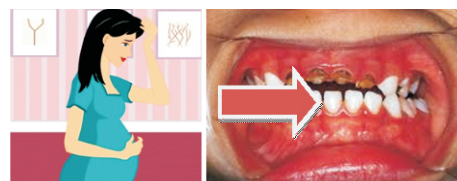
The hydroxyapatite crystal, of which enamel is made, does not respond to the biochemical and metabolic changes of pregnancy, nor does it respond to changes in calcium metabolism. The belief that morning sickness and vomiting can create an acid pH and therefore increase the decay rate is highly suspect as well. The few seconds that the pH of the oral environment may be lowered is a very brief period of time compared to the months needed for the production of decay.

Indeed, pregnancy in itself has never been clearly associated with an increased incidence of dental caries. Nevertheless, tooth decay is worth studying during pregnancy because the disease has potentially more critical consequences during this particular period. Tooth decay often leads to painful and stressful situations, with negative effects on the quality of life of pregnant women.

Very little is known on the prevalence of tooth decay among pregnant women. Better knowledge of tooth decay risk indicators during pregnancy could help to develop follow-up protocols for women at risk, along with better

prevention strategies.

Stress during pregnancy has been associated with a number of poor health implications for offspring, including low birthweight and increased risk of asthma and allergies. But for the first time, a new study suggests chronic stress in pregnancy may increase a child's risk for dental caries.



Researchers say chronic stress during pregnancy may increase a child's risk for dental caries.

Dr. Wael Sabbah, of the Dental Institute at King's College London in the UK, and colleagues publish their findings in the *American Journal of Public Health*.

Tooth decay is the leading chronic childhood illness in the US. According to National Institute of Dental and Craniofacial Research, 42% of children aged 2-11 in the US have had dental caries, or tooth decay, in their primary teeth, while 21% of children aged 6-11 have had dental caries in their adult teeth. Poor oral hygiene and high consumption of sugary foods and drinks are common causes of dental caries in children, but Dr. Sabbah and colleagues suggest the levels of stress a mother experiences throughout pregnancy may also play a role.

The research team - including investigators from the University of Washington in Seattle - analyzed the data of 716 children and their mothers who were part of the 1988-94 National Health and Nutrition Examination Survey (NHANES). Children included in the study were aged 2-6 years, while their mothers were aged 30 and older. Biological markers of chronic stress - as assessed by markers of allostatic load (AL) - were analyzed during mothers' pregnancy. Specifically, the team assessed blood levels of high-density lipoprotein (HDL) cholesterol, triglycerides, glucose and C-reactive protein, as well as their blood pressure and waist circumference.

In addition to monitoring the incidence of dental caries among offspring, the researchers assessed mothers' socioeconomic status, the number of child dental visits, whether mothers breastfed their offspring and whether offspring ate breakfast daily, among other care-related behaviors.

Maternal stress 'should be considered a potential risk factor for dental caries'

Compared with mothers who had no AL markers, those who had two or more were significantly more likely to have offspring with dental caries. What is more, they found incidence of dental caries among offspring was more common among those who were not breastfed, and lower incidence of breastfeeding was significantly more common among mothers with lower income. Lower-income mothers were also less likely to have taken their children to the dentist during the previous 12 months and less likely to feed their child breakfast each day, compared with mothers with higher income.

While previous studies have linked low socioeconomic status with increased risk of dental caries among offspring, the researchers say their study is the first to identify stress as a driver of this association. First study author Erin E. Masterson, of the Schools of Public Health and Dentistry at the University of Washington, says:

"This study uniquely highlights the importance of considering the influence of socioeconomic status and maternal stress on children's oral health through mothers' struggles to adopt healthy patterns that are major predictors of dental cavities, such as brushing her children's teeth regularly, maintaining healthy dietary habits and taking regular visits to the dentist for preventive care."

The team admits that their findings do not indicate maternal chronic stress causes dental caries in offspring. However, Dr. Sabbah says their findings do suggest that policies to improve children's dental health should include strategies to improve mothers' quality of life during pregnancy. "Chronic maternal stress as a potential risk factor is something we need to consider, in addition to the wider implications of maternal wellbeing, social, and psychological environment on dental health," he adds.

The frequency of tooth decay and the number of decayed teeth among pregnant women were high. Oral health promotion programmes must continue to inform women and care providers about the importance of dental care before, during and after pregnancy. Future research should also assess the effectiveness of public policies related to oral health in target populations of pregnant women facing challenging social or economic situations.