

Oral Health Care for the Pregnant Adolescent

Review Council

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Purpose

The American Academy of Pediatric Dentistry (AAPD), as the oral health advocate for infants, children, adolescents, and persons with special needs, recognizes that adolescent pregnancy remains a significant social and health issue in the U.S. These recommendations are intended to address management of oral health care particular to the pregnant adolescent rather than provide specific treatment recommendations for oral conditions.

Methods

Recommendations on oral health care for the pregnant adolescent were developed by the Council on Clinical Affairs Committee on the Adolescent and adopted in 2007. This document is an update of the previous version, revised in 2012. The revision included a search of the PubMed®/MEDLINE database using the terms: teen pregnancy AND dental and adolescent pregnancy. This search yielded 209 articles that met the defined criteria to update this document. The search then was narrowed to include articles that were limited to clinical trials, systematic reviews, or meta-analysis. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background

General considerations

In 2014, a total of 249,067 infants were born to 15 through 19 year olds, for a live birth rate of 24.2 per 1,000 women in this age group.¹ This is a nine percent decline from 2013 (26.5 per 1,000) and represents an historic low for the U.S., with an overall decline of 61 percent since the peak in 1991 (61.8 per 1,000).² While the decline in the U.S. teen birth rate is promising, the U.S. teen pregnancy rate still is substantially higher than other western industrialized nations.³ The declines in teen birth rates reflect a number of behavioral changes, including decreased sexual activity and increases in the use of contraception.^{4,5} Approximately 50 percent of adolescent pregnancies occur within the first six months of initial sexual intercourse, even with increasing use of contraceptives by adolescents.⁵

The correlation between poverty and adolescent pregnancy is great; many adolescent females who give birth are from low-income families.⁶ Teen childbearing may present unfavorable consequences for mothers and their children and

imposes high public sector costs.⁶ Eighty-two percent of adolescent pregnancies are not planned.^{7,8} More than half of these pregnancies (59 percent) end in births, 14 percent result in miscarriages, and 27 percent result in abortion.⁷

There exist economic, racial, and ethnic disparities related to oral hygiene practices and dental service utilization during pregnancy; reports indicate minority pregnant adolescents had only limited dental visits and possessed limited knowledge of oral health and pregnancy outcomes.^{9,10} Little is known about individual characteristics or behaviors related to clinically assessed oral health during pregnancy.¹¹

Medical complications involving mother and child occur more frequently in pregnant females aged 11 through 15 years than those aged 20 to 22 years.⁵ These include the delivery of low-birth-weight infants, increased neonatal death rate, and increased mortality rate for the mother.⁵ The socioeconomic and cultural environments of the pregnant adolescent are related to the increased frequency of low-weight and premature newborns.¹² Pregnancy-induced hypertension, anemia, sexually transmissible diseases, and premature delivery also are concerns for the pregnant adolescent.⁵ Hypertension increases the risk of bleeding during procedures. Teens are at a higher risk for pregnancy-related high blood pressure (preeclampsia) and its complications than older mothers.¹³ Preeclampsia is a dangerous medical condition that combines high blood pressure in women who have never before had high blood pressure with proteinuria and swelling of the hands and face.¹⁴ Risks for the baby include premature birth and low birthweight.¹³ Proper prenatal care is essential, and blood pressure monitoring, weighing in, and testing the urine for protein should take place at each prenatal healthcare visit.¹⁵ If an abnormal elevation in blood pressure is noted during a dental visit, the patient's physician should be notified. Blood pressure greater than or equal to 140/90 mmHg is considered mild hypertension, whereas values greater than or equal to 160/110 mmHg are considered severe.¹⁶ Acute-onset, severe hypertension that persists for 15 minutes or more is considered an emergency. The physician should be notified immediately

ABBREVIATIONS

AAPD: American Academy of Pediatric Dentistry. **MS:** Mutans streptococci. **TOP:** Teen Outreach Program.

as untreated severe hypertension can have significant morbidity (e.g., hemorrhagic stroke) or mortality.¹⁷

The diet of the pregnant adolescent can affect the health of the child. A healthy diet is necessary to provide adequate amounts of nutrients to the mother-to-be and the unborn child. Recommended dietary allowances during pregnancy and lactation are tabulated as absolute figures rather than additions to the basic allowances.¹⁸ Nutrients of particular importance include folate (folic acid), calcium, magnesium, zinc, and vitamins K, C, B-6 and B-12.¹⁸ Maternal levels of vitamin D during pregnancy may affect the developing primary dentition, with lower levels altering enamel integrity and increasing the risk for early childhood caries.¹⁹ Folic acid, a B vitamin, plays an important role in the production of cells and helps in the development of the neural tube, the brain, and spinal cord.²⁰ Folic acid supplementation has been shown to decrease the risk of isolated cleft lip with or without cleft palate.²¹ A recent study supports the hypothesis that folate supplements play a significant role in preventing cleft lip and palate when taken in the first 12 weeks of pregnancy.²² The growing benefits of folic acid and the importance of folic acid supplements should be included as part of prenatal counseling.²⁰ Assessment of folic acid status in children having orofacial clefting is yet to be evaluated in depth.²³

During pregnancy, a woman's nutritional needs are increased, but certainly the eating for two concept is not recommended.²⁴ The total energy needs during pregnancy range between 2,500 to 2,700 kcal a day for most women, but pre-pregnancy body mass index, rate of weight gain, maternal age, and physiological appetite must be considered in tailoring this recommendation to the individual.²⁵ Poor prenatal dietary intakes of energy, protein, and micronutrients have been shown to be associated with increased risk of adult obesity in off-spring.²⁶ Recent studies have shown that improving the nutritional status of women prior to and during pregnancy can reduce the risk of low-birth-weight babies substantially.²⁶ Nausea and vomiting are common during the first trimester and often are associated with young age and low socioeconomic status.²⁷ An expectant female may modify food choices due to morning sickness and/or taste aversions, but appropriate nutrition for the health of the mother and fetus is crucial. Nausea and vomiting may cause a woman to avoid routine oral health practices such as toothbrushing and flossing. This could lead to dental caries and gingivitis.²⁸⁻³⁰ Gingivitis is reported to be the most common oral disease during pregnancy.³¹

The goal of any drug therapy during pregnancy is to improve maternal/fetal health while avoiding adverse drug reactions.³² Reporting that medications for pregnant patients sometimes are prescribed under less than optimal conditions, a study of obstetrician-gynecologists emphasizes the importance of generating and having available to health care providers up-to-date information on effects of medications during pregnancy.³³ The U.S. Food and Drug Administration has defined drug categories according to the risk they pose to pregnant women and their fetuses.³⁴ These categories provide some guidance

to the relative safety of the medication for use by pregnant women. Category A includes drugs that have been studied in humans and have evidence supporting their safe use; Category B drugs show no evidence of risk to humans. Generally, these drugs are considered acceptable for use during pregnancy.³² Category C drugs, such as aspirin and aspirin-containing products, may be used with caution, whereas drugs in categories D (e.g., tetracycline) and X are not intended for use during pregnancy. The Organization of Teratology Information Services provides useful national information for drug safety during pregnancy.³⁵

Low socioeconomic status and lack of parental involvement can place an adolescent at increased risk of initiating tobacco use.³⁶ Smoking during pregnancy is associated with adverse outcomes.^{36,37} Women who smoke may have increased risks for ectopic pregnancy, spontaneous abortion, and preterm delivery.^{36,37} Infants born to women who smoke during pregnancy are more likely to be small for gestational age and have low birthweight.³⁶⁻³⁹ The longer the mother smokes during pregnancy, the greater the effect on the infant's birthweight.³⁷ Increasing evidence shows that maternal tobacco use is associated with intellectual disability and birth defects such as oral clefts.³⁶ The risk for perinatal mortality and sudden infant death syndrome (SIDS) is increased for infants of women who smoke.^{36,37} Infants and children exposed to environmental tobacco smoke have higher rates of lower respiratory illness, middle ear infections, asthma, and caries in the primary dentition.³⁶⁻⁴¹ Women are more likely to stop smoking during pregnancy, both spontaneously and with assistance, than at other times in their lives.³⁷

Oral conditions associated with pregnancy

Physiologic changes in the oral cavity during pregnancy are well documented.⁴² These include alterations in both the hard and soft tissues. An increase in caries has been associated with carbohydrate loading as snacking becomes more frequent.⁴² Nausea and vomiting are common and occur in 70-85 percent of women, but are usually self-limiting after the first trimester. Persistent, severe vomiting (hyperemesis gravidarum) is rare (0.3-2 percent of pregnancies),⁴³ but may contribute to the onset of perimyolysis, an erosion of the lingual surfaces of the teeth caused by exposure to gastric acids. A confounding factor is that pregnancy-associated hormonal changes may cause dryness of the mouth. Approximately 44 percent of pregnant participants in one study reported persistent xerostomia.⁴⁴

Signs of gingivitis (e.g., bleeding, redness, swelling, tenderness) are evident in the second trimester and peak in the eighth month of pregnancy, with anterior teeth affected more than posterior teeth.⁴⁵ These findings are exacerbated by poor plaque control and mouth breathing.⁴⁶ From a periodontal perspective, the effects of hormonal levels on the gingival status of pregnant women may be accompanied by increased levels of progesterone and estrogen which contribute to increased vascularity, permeability, and possible tissue edema.^{47,48} Evidence shows a relationship of periodontal disease and gestational

diabetes which contributes to maternal and infant morbidity as well as the risk of the mother developing type II diabetes mellitus.^{45,49}

The study of periodontitis during pregnancy and its effect on preterm, low-birth-weight infants is ongoing. Early studies noted an increase rate of preterm/low-birth-weight deliveries associated with periodontal disease.^{45,50,51} However, a more recent study of 116 postpartum women noted clinical attachment level measures were not different between those with preterm/low-birth-weight babies and control groups. Therefore, maternal periodontal microbiota and clinical characteristics of periodontal disease were not associated with having preterm/low-birth-weight babies.⁵² Additional studies continue to demonstrate conflicting results.⁵³⁻⁶⁰ The effect of periodontitis and the development of preeclampsia, a rapidly progressing condition occurring in pregnancy characterized by hypertension and the presence of proteinuria, continues to be studied as well.^{55,59-62}

Poor plaque control coupled with hormonal changes may lead to the development of a pyogenic granuloma (i.e., pregnancy tumor or granuloma gravidarum). This benign vascular lesion appears as a deep red to purple gingival nodule in the second or third trimester of pregnancy.^{46,63} Although the lesion may regress postpartum, surgical excision may be necessary.⁶³

Oral health care during pregnancy

A multi-state study concluded that, besides neglecting medical care during pregnancy, most expectant females of all ages do not seek dental care, even though 50 percent of them have a dental problem.¹⁵ One study reported the most significant predictor of not receiving routine dental care during pregnancy was a woman's lack of routine dental care when not pregnant.⁹ Although an expectant mother might question the safety of dental treatment during pregnancy, untreated oral disease may compromise the health of the pregnant female and the unborn child.^{64,65} The consequences of not treating an active infection during pregnancy outweigh the possible risks presented by most of the medications required for dental care.³³ In addition, deferring elective dental treatment during a healthy pregnancy is not justified.⁶⁵

The objectives of professional oral health care during the first trimester include avoiding fetal hypoxia, premature labor/fetal demise, and teratogenic effects.⁶⁰ Due to the increased risk of pregnancy loss, use of nitrous oxide may be contraindicated in the first trimester of pregnancy.⁶¹ Because the pregnant uterus is below the umbilicus, the woman is generally more comfortable for treatment during weeks 14 to 20 of gestation. Pregnant women are considered to have a full stomach due to delayed gastric emptying and, therefore, are at increased risk for aspiration, particularly during the last trimester.⁶⁶⁻⁶⁸ Elective restorative and periodontal therapies during the second trimester may prevent any dental infections or other complications from occurring in the third trimester.⁶⁵

Evidence is insufficient to support or refute that mercury exposure from dental amalgams contributes to adverse

pregnancy outcomes.^{68,69} Currently, there is no evidence that the exposure of a fetus to mercury release from the mother's existing amalgam fillings causes any adverse effects.^{67,69} Mercury vapor released during the removal or placement of amalgam restorations may be inhaled and absorbed into the blood stream and does cross the placental barrier. The use of rubber dam and high speed suction can reduce the risk of vapor inhalation.⁷⁰ Because use of tooth whitening products that contain or generate hydrogen peroxide results in release of inorganic mercury from dental amalgams, these products should be used with caution during pregnancy.⁶⁷

During dental radiographic examination of a pregnant patient, optimizing techniques, shielding the thyroid and abdomen, choosing the fastest available image receptor (i.e., high-speed film, rare earth screen-film systems, digital radiography), and avoiding retakes help minimize radiation exposure to the fetus.^{71,72} The primary dental X-ray beam may pass near or through the thyroid gland, even with attention to proper radiographic techniques. The juvenile thyroid is among the most sensitive organs to radiation-induced tumors, both benign and malignant.⁷² Risk decreases significantly with age at exposure, essentially disappearing after age 20.⁷² Evidence shows that radiation exposure to the thyroid during pregnancy is associated with low birthweight.⁷¹ Common dental projections rarely, if ever, deliver a measurable absorbed dose to the embryo or fetus.⁷² Gonadal absorbed dose from a typical dental x-ray procedure is equivalent to about one hour of natural background radiation.⁷² The National Council on Radiation Protection and Measurements recommends if dental treatment is to be deferred until after the delivery, so should the dental radiographs.⁷² Once the decision to obtain radiographs is made, it is the dentist's responsibility to follow the as low as reasonably achievable (ALARA principle) to minimize the patient's exposure.⁷⁰

Suppression of the mother's reservoirs of Mutans streptococci (MS) by dental rehabilitation and antimicrobial treatments may prevent or at least delay infant acquisition of these cariogenic microorganisms.⁷³ MS, present in children with early childhood caries, is predominantly acquired from mother's saliva.⁷⁴ The transmission of cariogenic bacteria from mother to infant is increased when the mother has poor oral health with untreated dental caries.⁷⁵ MS colonization of an infant may occur from the time of birth.⁷⁵⁻⁸³ Improving oral health during pregnancy leads to a reduction in salivary MS in the offspring.⁷³

Education is an important component of prenatal oral health care and may have a significant effect on the oral health of both the mother and the child. Counseling for the pregnant adolescent includes topics directed toward all adolescent patients (e.g., dietary habits, injury prevention, third molars), as well as oral changes that may occur during pregnancy and infant oral healthcare. Since the pregnant adolescent may be receptive to information that will improve the infant's health, anticipatory guidance, a proactive developmentally-based counseling technique, can be introduced to focus on the needs

of the child at each stage of life. Studies have documented that early oral health promotion starting during pregnancy can lead to a sustained and long-term improvement of the oral health of children.^{84,85} Programs that promote oral health must continue to inform pregnant women and care providers about the importance of dental care before, during, and after pregnancy. Oral health counseling during pregnancy and dental cleanings are recommended.⁸⁶ Mobile phone texting components added as a supplement to the Teen Outreach Program (TOP), a youth development program for reducing teen pregnancy and school dropout, has proven helpful in disseminating and sharing information to minority youth.⁸⁷ TOP can be used to address issues regarding oral health.

Legal considerations

Statutes and case law concerning consent involving pregnant patients less than 18 years of age vary from state to state. In some states, dentists are required to obtain parental consent for non-emergency dental services provided to a child 17 years of age or younger who remains under parental care.⁸⁸ This would involve obtaining consent from the parent who must be aware of the pregnancy in order to understand the risks and benefits of the proposed dental treatment.⁶⁵ However, if the parent is unaware of the pregnancy, the pregnant adolescent may be entitled to confidentiality regarding health issues such as the pregnancy.⁸⁹ In other states, there are mature minor laws that allow minors to consent for their own health care when a dentist deems the minor competent to provide informed consent. In addition, some states emancipate minors who are pregnant or by court order. Practitioners are obligated to be familiar with and abide by the laws specific to where they practice and where the patient resides.

Recommendations

The AAPD recommends that all pregnant adolescents seek professional oral health care during the first trimester. After obtaining a thorough medical history, the dental professional should perform a comprehensive evaluation which includes a thorough dental history, dietary history, clinical examination, and caries risk assessment. The dental history should include discussion of preexisting oral conditions, current oral hygiene practices and preventive home care, previous radiographic exposures, and tobacco use.³⁶⁻⁴¹ The adolescent's dietary history should focus on exposures to carbohydrates, especially due to increased snacking, and acidic beverages/foods. During the clinical examination, the practitioner should pay particular attention to health status of the periodontal tissues. The AAPD's caries-risk assessment guideline, utilizing historical and clinical findings, will aid the practitioner in identifying risk factors in order to develop an individualized preventive program.⁹⁰ Improving the oral health of pregnant women reduces complications of dental diseases during pregnancy to both the mother and the developing fetus.⁹¹

Based upon the historical indicators, clinical findings, and previous radiographic surveys, radiographs may be indicated.

Because risk of carcinogenesis or fetal effects is very small but significant, radiographs should be obtained only when there is expectation that diagnostic yield (including the absence of pathology) will influence patient care.⁷² If dental treatment must be deferred until after delivery, radiographic assessment also should be deferred. All radiographic procedures should be conducted in accordance with radiation safety practices. These include optimizing the radiographic techniques, shielding the pelvic region and thyroid gland, and using the fastest imaging available.⁷²

Counseling for all pregnant patients should address:

- relationship of maternal oral health with fetal health⁶¹ (e.g., possible association of periodontal disease with preterm birth and pre-eclampsia, developmental defects in the primary dentition¹⁹).
- an individualized preventive plan including oral hygiene instructions, rinses, and/or xylitol products to decrease the likelihood of MS transmission postpartum.⁹²⁻⁹⁴
- dietary considerations (e.g., maintaining a healthy diet, avoiding frequent exposures to cariogenic foods and beverages, overall nutrient and energy needs)^{61,62} and vitamin supplements¹⁹⁻²¹.
- anticipatory guidance for the infant's oral health including the benefits of early establishment of a dental home.^{84,85}
- anticipatory guidance for the adolescent's oral health to include injury prevention, oral piercings, tobacco and substance abuse, sealants, and third molar assessment.⁹⁵
- oral changes that may occur secondary to pregnancy^{45,50} (e.g., xerostomia, shifts in oral flora).
- individualized treatment recommendations based upon the specific oral findings for each patient.

Preventive services must be a high priority for the adolescent pregnant patient. Ideally, a dental prophylaxis should be performed during the first trimester and again during the third trimester if oral home care is inadequate or periodontal conditions warrant professional care. Referral to a periodontist should be considered in the presence of progressive periodontal disease.^{45,50} While fluoridated dentifrice and professionally-applied topical fluoride treatments can be effective caries preventive measures for the expectant adolescent, the AAPD does not support the use of prenatal fluoride supplements to benefit the fetus.⁹⁶

A pregnant adolescent experiencing morning sickness or gastroesophageal reflux should be instructed to rinse with a cup of water containing a teaspoon of sodium bicarbonate and to avoid tooth brushing for about one hour after vomiting to minimize dental erosion caused by stomach acid exposure.⁹ Women should be advised about the high sugar content and risk for caries associated with long term frequent use of over-the-counter antacids. Where there is established erosion, fluoride may be used to minimize hard tissue loss and control

sensitivity. A daily neutral sodium fluoride mouth rinse or gel to combat enamel softening by acids and control pulpal sensitivity may be prescribed.⁹⁷ A palliative approach to alleviate dry mouth may include increased water consumption or chewing sugarless gum to increase salivation.⁴⁴

Common invasive dental procedures may require certain precautions during pregnancy, particularly during the first trimester. Elective restorative and periodontal therapies should be performed during the second trimester. Dental treatment for a pregnant patient who is experiencing pain or infection should not be delayed until after delivery. When selecting therapeutic agents for local anesthesia, infection, postoperative pain, or sedation, the dentist must evaluate the potential benefits of the dental therapy versus the risks to the pregnant patient and the fetus. The practitioner should select the safest medication, limit the duration of the drug regimen, and minimize dosage.⁶¹ Healthcare providers should avoid the use of aspirin, aspirin-containing products, erythromycin estolate, and tetracycline in the pregnant patient.⁶² Non-steroidal anti-inflammatory drugs routinely are not recommended during pregnancy; if necessary, administration should be avoided during the first and third trimesters and be limited to 48 to 72 hours.⁶¹ Consultation with the prenatal medical provider should precede use of nitrous oxide/oxygen analgesia/anxiolysis during pregnancy. Nitrous oxide inhalation should be limited to cases where topical and local anesthetics alone are inadequate. Precautions must be taken to prevent hypoxia, hypotension, and aspiration.⁶¹

Patients requiring restorative care should be counseled regarding the risk and benefits and alternatives to amalgam fillings.⁶⁷⁻⁶⁹ The dental practitioner should use rubber dam and high speed suction during the placement or removal of amalgam to reduce the risk of vapor inhalation.⁶⁷

Dental practitioners must be familiar with federal and state statutes that govern consent for care for a pregnant patient less than the age of majority. If a pregnant adolescent's parents are unaware of the pregnancy, and state laws require parental consent for dental treatment, the practitioner should encourage the adolescent to inform them so appropriate informed consent for dental treatment can occur. The Health Insurance Portability and Accountability Act (HIPAA) specifically addresses minor confidentiality.⁹⁸

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