

Oral Health Care for the Pregnant Pediatric Dental Patient

Latest Revision

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ABBREVIATIONS

AAPD: American Academy of Pediatric Dentistry. FASD: fetal alcohol spectrum disorder. FDA: U.S. Food and Drug Administration. MS: Mutans streptococci. NAS: Neonatal abstinence syndrome.

Purpose

The American Academy of Pediatric Dentistry (**AAPD**), as the oral health advocate for infants, children, adolescents, and persons with special health care 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 2007.¹ This document by the Council of Clinical Affairs is a revision of the previous version, last revised in 2016². The revision included a search of the PubMed[®] database using the terms: ("pregnancy"[Mesh] OR "pregnancy in adolescence"[Mesh] OR "teen pregnancy"[Text word] OR "pregnant teen"[Text word] OR "pregnant adolescent"[Text word] OR "adolescent pregnancy"[Text word]) AND ("Oral Health"[Mesh] OR "oral health"[Text word] OR "dental health"[Text word] OR "dental care"[Mesh]); Filters: 10 years, Humans, English. This search yielded 434 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 yielding 56 articles. Additional strategies such as Google Scholar and hand searches were employed. 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

Teen birth rate is defined by the Centers for Disease Control and Prevention as the number of births per 1000 females aged 15-19 years.³ In 2018, the overall teen birth rate was 17.4 births per 1,000 females, which was a seven percent decline from 2017.³ However, racial disparities exist with the teen birth rates being higher for non-Hispanic black teenagers (26.3 births per 1000 females) and Hispanic black teenagers (26.7 births per 1000 females) compared to non-Hispanic white teenagers (12.1 births per 1000 females).³ Although the United States has seen the lowest rates of teen pregnancy in seven decades, the U.S. is still ranked highest among developed countries.⁴ The declines in teen birth rates reflect a number of behavioral changes, including decreased sexual activity and increases in the use of contraception.⁵ Why adolescents have become more effective contraceptive users is unclear; involvement in school activities, educational and career aspirations, mentoring programs, economic fluctuations, childbearing norms, contraceptive coverage under the Affordable Care Act, and the availability of health information via internet or television may have all contributed.⁵ The American College of Obstetricians and Gynecologists supports access for adolescents to all U.S. Food and Drug Administration (**FDA**) approved contraceptive methods.⁵ The prevalence of unplanned pregnancies in adolescents worldwide ranges from 33 to 82 percent.⁶ In the United States, 75 percent of adolescent pregnancies (age 15-19 years) are not planned.⁷ Women living below the federal poverty level had unintended pregnancy rates two to three times the national average.⁸

Adolescent pregnancy (or childbearing) is a complex issue and more likely among socioeconomically disadvantaged adolescents.⁵ Adolescent childbearing may present unfavorable consequences (e.g., not completing high school) for mothers and imposes high public sector costs. Nearly two-thirds of teenage mothers receive public assistance and have increased risk for living in poverty as they enter adulthood.⁹ Furthermore, the challenges of teen pregnancy may last generations with children of teen mothers more likely to perform poorly in school or drop out, and daughters of teen mothers to become teen mothers themselves.⁹

Recommendations

General considerations

Proper prenatal care is essential. Oral health care providers are in a position to encourage pregnant pediatric dental patients to seek routine care with their obstetrician and other primary care providers throughout their pregnancy. Likewise, obstetric care providers are able to counsel patients regarding good oral health habits, including the importance of professional oral health care during pregnancy. Dental visits during pregnancy are safe, effective, and encouraged.^{10,11}

Recommendations: Health care providers should counsel patients on the safety and benefits of prenatal medical and dental care. Recommendations for adolescent oral health care can be found in AAPD's *Best Practices on Adolescent Oral Health Care*.¹²

Diet considerations during pregnancy

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. Nutrients of particular importance include folic acid, iron, calcium, vitamin D, choline, omega-3 fatty acids, B vitamins, and vitamin C.¹³ Vitamin D works with calcium to help the bones and teeth of the fetus develop.¹³ 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.¹⁴ Folic acid supplementation has been shown to decrease the risk of isolated cleft lip with or without cleft palate.^{15,16}

A healthy diet during pregnancy is encouraged. 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.¹⁷ In addition, diabetes during pregnancy has been associated with cleft lip and palate in fetuses.¹⁸ 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, which are common symptoms during the first trimester, may cause a woman to avoid routine oral health practices such as toothbrushing and flossing. In addition, avoidance of certain foods may lead to an increased cariogenic diet, putting the individual at risk for dental caries.

Recommendation: Oral health care providers should encourage pregnant patients to consume non-cariogenic, nutrient-dense foods to promote the general and oral health of the mother and developing fetus.

Pharmacotherapy during pregnancy

Availability of current information on the potential effects of medications during pregnancy is important for improving health care providers' prescribing practices and patient safety.¹⁹ In 2014, the FDA updated its requirements for labeling of human prescription drugs and biological products via the *Pregnancy and Lactation Labeling Rule (PLLR)*.²⁰ Labeling must include usage information (e.g., risks of the medication, clinical considerations, fertility effects) for specific populations including pregnancy, lactation, and females and males of reproductive potential.²⁰ Searchable information on prescription medication labeling can be found at *DailyMed*, the official provider of FDA label information.²¹ Some prescription medications such as doxycycline and tetracycline (both antibiotics), as well as alprazolam and diazepam (both anxiolytics), should be avoided.²² Certain anticonvulsants (e.g., topiramate, valproic acid) during pregnancy have been associated with cleft lip and palate in fetuses.¹⁸ Federal regulations require labeling for over-the-counter (OTC) medications to include specific warnings such as contraindications, when to consult a doctor or pharmacist, and considerations with pregnancy/breastfeeding.²³ Some OTC medications to be avoided by pregnant patients include medications for gastrointestinal upset/diarrhea that contain bismuth subsalicylate, decongestants (e.g. phenylephrine, pseudoephedrine), cough and cold medicines that contain guaifenesin, and pain medications such as ibuprofen, naproxen, and aspirin.²² When in doubt, consultation with the patient's obstetrician is warranted.

Recommendations: Oral health care providers should be aware of different medications and their effects on pregnant patients. Oral health care providers should be aware of and recommend that pregnant patients avoid medications that cross the placenta and pose a risk to the developing fetus.

Effects of smoke, tobacco, alcohol, and illicit substance exposure during pregnancy

Education on the serious health consequences of tobacco use and fetal exposure to tobacco and other environmental smoke is an important component of prenatal counseling. Women who have higher exposure levels to polycyclic aromatic hydrocarbons (PAHs) produced by the burning of coal, oil, gas, or garbage or smoke from gas/garbage/cigarette/cigar/pipe, or charbroiling meat also were more likely to have babies with cleft lip with or without cleft palate.²⁴ Prenatal exposure to secondhand smoke has been associated with cognitive deficits.²⁵ Dental health care providers can discourage the use of tobacco and educate individuals on the serious health consequences of tobacco use and exposure to environmental tobacco smoke (ETS).²⁶

No amount of alcohol and no time to drink alcohol during pregnancy is safe.^{27,28} Alcohol use during pregnancy is known to cause miscarriage, stillbirth, and lifelong birth defects and developmental disabilities.²⁹ Children with fetal alcohol spectrum disorders (FASDs) may present with abnormal facial features (e.g. smooth philtrum), small head size, shorter-than-average height, low body weight, poor coordination, hyperactive behavior, difficulty with attention, poor memory, difficulty in school, learning disabilities, speech and language delays, intellectual disabilities, poor reasoning and

judgement skills, sleeping and sucking problems as baby, vision or hearing problems, and problems with heart, kidney, or bones.²⁷ Determining the number of individuals with FASDs is difficult, but the Centers for Disease Control and Prevention (CDC) estimates 0.2-1.5 infants with fetal alcohol syndrome (FAS) are born for every 1,000 live births in certain areas of the U.S.³⁰ In addition, a 2019 report from the CDC found that one in nine pregnant women reported drinking alcohol in the past 30 days.³⁰ Screening for alcohol use and providing counseling may help decrease the risk of FASDs and harm to the infant.^{30,31} Early recognition, diagnosis, and prevention can reduce negative outcomes and lifelong consequences for the child.²⁸

Individuals with substance (e.g. opioids) misuse issues may misuse these substances regularly or only occasionally.³² Sexually active adolescents who misuse substances have high rates of sexual risk behaviors, unintended pregnancy, and repeated unplanned pregnancy.³³⁻³⁶ Therefore, substance misuse among pregnant adolescents represents a major public health problem.

Substance misuse during pregnancy is associated with an increased risk for stillbirths and neonatal abstinence syndrome (NAS).^{37,38} NAS occurs with a sudden discontinuation of fetal exposure to licit or illicit substances that were used or misused by the mother during or after pregnancy.^{39,40} The American Academy of Pediatrics recommends important prevention measures such as a focus on preventing unintended pregnancies, universal screening for drugs in women of childbearing age, knowledge and informed consent of maternal drug testing and reporting practices, and improved access to comprehensive obstetric care.^{41,42}

Recommendations: Oral health care providers should be aware of and recommend that pregnant patients avoid substances that cross the placenta and pose a risk to the developing fetus. Pregnant pediatric dental patients should be encouraged to avoid smoking, exposure to smoke, and use of alcohol and drugs. Dentists should counsel pregnant patients on the increased risk of negative consequences to the developing fetus if exposed to these substances.

Common oral conditions associated with pregnancy

Physiologic changes in the oral cavity during pregnancy are well documented.⁴³ These include alterations in both the hard and soft tissues. Nausea and vomiting are common during the first trimester and occur in up to 70 percent of women.⁴⁴ Acid from vomitus can cause demineralization and erosion of enamel, known as perimyolysis. A sodium bicarbonate rinse can neutralize the acidic challenge.⁴⁵ Immediate toothbrushing, however, can cause erosion/loss of the weakened enamel.⁴⁶ When erosion is established, fluoride may be used to minimize hard tissue loss and control sensitivity; a daily neutral sodium fluoride mouth rinse or gel to may be prescribed.⁴⁷ Some physicians advocate frequent snacking or eating multiple small meals throughout the day to help relieve morning sickness.⁴⁸ Sipping ginger ale or sucking ginger lollipops also has been recommended.⁴⁸ However, frequent exposure to cariogenic substances may increase the risk of developing caries.

Pregnancy-associated hormonal changes may cause dryness of the mouth. Approximately 44 percent of pregnant participants in one study reported persistent xerostomia.⁴⁹ A palliative approach to alleviate dry mouth may include increased water consumption or chewing sugarless gum to increase salivation.⁴⁹

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.⁵⁰ These findings may be exacerbated by poor plaque control and mouth breathing.⁵¹ 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.^{52,53}

Periodontal disease has been associated with adverse pregnancy outcomes such as pre-term birth⁵⁴⁻⁵⁶, fetal growth restriction⁵⁴, low birthweight^{54,55}, pre-eclampsia⁵⁴, and gestational diabetes⁵⁴. True cause-and-effect relationships between periodontal disease and poor fetal outcomes cannot be determined. The development of more interventional trials would be beneficial⁵⁶ as some recent studies have shown that the treatment of periodontal disease does not eliminate adverse pregnancy outcomes⁵⁷⁻⁵⁹ and may actually put some women at a higher risk for pre-term delivery.⁵⁹

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.^{51,60} Although the lesion may regress postpartum, surgical excision may be necessary.⁶⁰

Recommendations: Oral health care providers should counsel pregnant patients experiencing morning sickness or gastroesophageal reflux to rinse with a cup of water containing a teaspoon of sodium bicarbonate, and toothbrushing should be avoided for about one hour after vomiting to minimize dental erosion. Pregnant patients who alter their diet to combat morning sickness should be counseled on the negative effects of frequent exposures to sugary substances and the increased risk for developing caries with these practices. Pregnant patients should be encouraged to have routine dental examinations to be evaluated for commonly associated oral lesions. Oral health care providers should encourage pregnant patients to practice good oral hygiene, including brushing twice daily with fluoridated toothpaste and flossing, to minimize periodontal insult.

Oral health care during pregnancy

The most significant predictor of not receiving routine dental care during pregnancy was a woman's lack of routine dental care when not pregnant.⁴⁶ Improving the oral health of pregnant women reduces complications of dental diseases to both the mother and the developing fetus.⁶¹ Despite this, the prevalence of dental usage during pregnancy ranges from 16-83 percent.⁶² A recent systematic review indicated facilitators and barriers to dental care during pregnancy include physiological conditions, low importance of oral health, negative stigma regarding dentistry, fear or anxiety towards dental treatment, mobility and safety, financial barriers, employment, time constraints, lack of information, health professionals' barriers, family and friends' advice, and beliefs and myths regarding the safety of dental treatment.⁶³ Routine dental care for pregnant adolescents is encouraged.

In order to achieve optimal oral health, a pregnant adolescent who does not already have a dental home and receive regular preventive and therapeutic care is encouraged to seek professional oral health care during the first trimester. The initial visit would entail thorough review of medical, dental, and social histories and a comprehensive evaluation. The dental history addresses diet and fluoride use, preexisting oral conditions, current oral hygiene practices and preventive home care, previous radiographic exposures, and tobacco and other substance use.⁶⁴⁻⁶⁸ Historical and clinical findings can be used to determine the patient's risks for caries and periodontal disease and to develop an individualized treatment plan. Blood pressure readings taken at each visit can help identify hypertension which increases the risk of bleeding during procedures. Of note, adolescents are at a higher risk than average mothers for pregnancy-related high blood pressure (preeclampsia) and its complications.⁶⁹ If an abnormal elevation in blood pressure is noted during a dental visit, consultation with the patient's physician is warranted. 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.⁷⁰ Acute-onset, severe hypertension that persists for 15 minutes or more is considered an emergency. Untreated severe hypertension can have significant morbidity (e.g., hemorrhagic stroke) or mortality.⁷¹

Preventive services are critical components of oral health care for the adolescent pregnant patient. Ideally, a dental prophylaxis would be performed during the first trimester and again during the third trimester if oral home care is inadequate or periodontal conditions warrant professional care. During pregnancy, elevation in sex steroid hormones occurs which may modify the gingival inflammatory response and result in an exaggerated gingival inflammation in the presence of even relatively small amounts of plaque.⁷² Referral to a periodontist may be necessary in the presence of progressive periodontal disease.^{50,73} While fluoridated dentifrice and professionally-applied topical fluoride treatments can be effective caries preventive measures for the expectant adolescent, evidence not support the use of fluoride supplements (tablets, drops, lozenges, chewing gum) to benefit the fetus.⁷⁴

Because the pregnant uterus is below the umbilicus, a pregnant woman generally is more comfortable for treatment during the second trimester. 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.⁷⁵⁻⁷⁷ In general, non-emergency dental treatment needed during the third trimester would be postponed until after birth due to the risk of premature labor and discomfort from lying on one's back for an extended period of time.⁷⁸

Common invasive dental procedures may require certain precautions during pregnancy, particularly during the first trimester. Performing elective restorative and periodontal therapies during the second trimester may prevent any dental infections or other complications from occurring in the third trimester.⁷⁹ A pregnant patient experiencing dental pain or infection requires immediate treatment. When contemplating therapeutic agents for local anesthesia, infection, postoperative pain, or sedation, consideration is given to the potential benefits of the dental therapy versus the risks to the pregnant patient and the fetus. Selecting the safest medication, limiting the duration of the drug regimen, and minimizing dosage⁸⁰ promote patient safety.

Nitrous oxide/oxygen analgesia/anxiolysis may facilitate the delivery of dental care for a pregnant adolescent when topical and local anesthetics alone are inadequate. Consultation with the prenatal medical provider is indicated prior to its use, and precautions are needed during treatment to prevent hypoxia, hypotension, and aspiration.⁸⁰ Due to the increased risk of pregnancy loss, use of nitrous oxide may be contraindicated in the first trimester of pregnancy.⁸⁰ If more advanced behavior guidance regimens such as moderate sedation or general anesthesia are needed, post-menarchal patients who have not disclosed a pregnancy may be subjected to a pregnancy test prior to treatment. Pregnancy testing has been recommended for female patients of childbearing age when the results would alter the patient's medical management.⁸¹

The FDA, in 2020, encouraged practitioners to avoid using dental amalgam in pregnant women, women planning to become pregnant, women who are nursing, and children under the age of six.⁸² However, the American Dental Association (ADA) has reaffirmed amalgam is a durable, safe, effective restoration and that the FDA warning did not present any new information.⁸³ The ADA recommends dentists discuss all restorative options with their patients, including the risks and benefits to amalgam use.⁸³ Dental bleaching is known to have side effects (e.g., tooth sensitivity, tissue irritation) in the general population⁸⁴ and has not been studied in pregnant patients. The lack of evidence regarding safety has led other organizations to recommend that bleaching be avoided during pregnancy.⁸⁵ For more information regarding bleaching, refer to AAPD's *Policy on the Use of Dental Bleaching for Child and Adolescent Patients*.⁸⁴ In general, deferring elective dental treatment that is not medically necessary should be postponed until after delivery helps minimize risk to patient and fetus.⁷⁸

The American College of Obstetricians and Gynecologists affirms that with shielding of the abdomen and thyroid dental x-rays are safe during pregnancy.¹¹ Radiographs are an integral component of a comprehensive dental examination and can help the oral health care provider in assessment of dental disease and pathology and development of a treatment plan. However, because the effects of ionizing radiation accumulate over time, the oral health care provider must weigh the risks and benefits of taking radiographs in a pregnant patient.⁸⁶ The decision to obtain radiographic imaging is based on the patient's history and clinical examination.⁸⁶ During dental radiographic examination of all patients, including pregnant patients, optimizing techniques, shielding the thyroid and abdomen, choosing the fastest available image receptor (e.g., high-speed film, digital radiography), collimation of beam to size of receptor, and avoiding retakes help minimize radiation exposure.^{11,86,87} When a radiographic examination is conducted properly, the amount of radiation striking a patient's abdomen is negligible.⁸⁶ For diagnostic radiology outside of the abdomen and pelvis, including the head and neck, the amount of radiation a fetus is exposed to is a very low dose and, when standard precautions are taken, it does not pose a significant risk to the fetus.⁸⁸ Following the as low as reasonably achievable (ALARA) principle helps dentists minimize the patient's exposure.⁸⁶ The use of cone-beam computed tomography (CBCT) is not addressed in this document, and consultation with a patient's obstetrician/gynecologist is indicated prior to its use.

The vertical transmission of bacteria associated with dental caries from caregiver to child is well documented.^{89,90} 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.⁹¹ The transmission of cariogenic bacteria from mother to infant is increased when the mother has poor oral health with untreated dental caries.⁹²

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 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.^{93,94} 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.⁹⁵ Counseling may include:

- relationship of maternal oral health with fetal health⁹⁰ (e.g., possible association of periodontal disease with preterm birth and pre-eclampsia, developmental defects in the primary dentition⁹⁶);
- an individualized preventive plan including oral hygiene instructions, rinses, and/or xylitol products to decrease the likelihood of MS transmission post-partum;⁹⁷⁻⁹⁹
- dietary considerations (e.g., maintaining a healthy diet, avoiding frequent exposures to cariogenic foods and beverages, overall nutrient and energy needs^{90,100}) and vitamin supplements^{14,15,96};
- anticipatory guidance for the infant's oral health including the benefits of early establishment of a dental home;^{93,94}
- anticipatory guidance for the adolescent's oral health to include injury prevention, oral piercings, tobacco and substance abuse, sealants, and third molar assessment;¹²
- oral changes (e.g., xerostomia, shifts in oral flora) that may occur secondary to pregnancy^{50,73}; and
- individualized treatment recommendations based upon the specific oral findings for each patient.

Recommendations: Oral health care providers should recommend that pregnant pediatric dental patients continue with routine dental care during pregnancy, including preventive services such as in-office dental examinations, prophylaxis, and fluoride treatments. Pregnant pediatric dental patients should be encouraged to maintain good home care, including brushing two times daily with fluoridated toothpaste and daily flossing. 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. Restorative and periodontal therapies may be completed during the second trimester to prevent any dental infections or other complications from occurring in the third trimester. However, elective dental procedures should be postponed until after delivery. Consultation with the patient's obstetrician or primary care provider may be warranted before the use of local anesthesia, nitrous oxide analgesia, over-the-counter pain medications, or prescriptions are utilized. Oral health care providers should evaluate a pregnant pediatric dental patient's blood pressure at every dental visit. A referral to obstetrician or primary care provider is warranted if blood pressure is elevated.

Legal considerations

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. 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.¹⁰¹ 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.⁷⁹ However, if the parent is unaware of the pregnancy, the pregnant adolescent may be entitled to confidentiality regarding health issues such as the pregnancy.¹⁰² 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. If a pregnant adolescent's parents are unaware of the pregnancy, and state laws require parental consent for dental treatment, the adolescent is encouraged to inform them so appropriate informed consent for dental treatment can occur. The Health Insurance Portability and Accountability Act (HIPAA) specifically addresses minor confidentiality.¹⁰³ Recommendation: Oral health care providers should be aware of their state's regulations on consent and caring for a pregnant pediatric dental patient.

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