Improving the Oral Health of Pregnant Women and Young Children:

Opportunities for Oral Care and Prenatal Care Providers

A Saskatchewan Consensus Document

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Document Purpose:

Influence oral and prenatal care providers in Saskatchewan toward a better understanding of the importance and safety of oral care during pregnancy so oral care becomes part of routine prenatal care, contributing to the overall health of pregnant women and their children.

Target Audiences:

Oral care providers, prenatal care providers (OB-GYNs, family physicians, midwives, nurse practitioners, public health nurses, dietitians & nutritionists, prenatal educators), professional bodies, Ministry of Health, and primary care managers.

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- Saskatchewan Dental Hygienists' Association
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For More Information:

For further information on this document or the Maternal Oral Health Project, contact the Saskatchewan Prevention Institute at info@skprevention.ca or call (306) 651-4300.

Introduction

Good oral health is an important part of good overall health. Oral health is particularly important during pregnancy as hormonal changes and changes in eating patterns increase the risk for oral disease. Oral disease during pregnancy may affect not only the health of a pregnant woman, but may also affect the health of her pregnancy and potentially, the health of her infant.[1]

Oral health is not only important to one's appearance and sense of well-being, but also to overall health. Cavities and gum disease may contribute to many serious conditions, such as diabetes and respiratory diseases. Studies are also currently examining whether there is a link between poor oral health and heart disease.[2, 3, 4, 5] Additionally, untreated cavities can be painful and lead to serious infections.[4, 5]

There is also ongoing research exploring whether pregnant women with poor oral health may be at a higher risk of delivering pre-term, low birth weight babies than women with good oral health. Babies who are pre-term or low birth weight have a higher risk of developmental complications, asthma, ear infections, birth abnormalities, behavioural difficulties, and are at a higher risk of infant death. Even though this research is ongoing, it is still important for pregnant women to take care of their gums and teeth.[3, 4]

In addition, good oral health during and after pregnancy may decrease the amount of caries-producing oral bacteria transmitted to the infant during common parenting behaviour, such as sharing spoons and cleaning soothers by mouth. The earlier an infant is infected with these bacteria, the more at risk the infant is for early childhood caries, which can have many health and developmental consequences for a child.[16]

Most women, however, are unaware of the potential consequences of their poor oral health for themselves or their infants.[6] Although dental care during pregnancy is both safe and can prevent long-term health problems for both mother and child, an overwhelming number of women do not seek dental care during pregnancy.[7] Primary reasons for women not receiving dental care are lack of perceived need for care and financial barriers.[8]

Factors related to the health care system also present barriers to oral health services for pregnant women and their children. Some prenatal and oral care providers may be limited by their lack of understanding of the impact and safety of oral care during pregnancy. Some oral care providers may be needlessly reluctant to see pregnant patients due to concerns regarding the safety of the woman and/or fetus. In addition, because prenatal care providers generally have received limited training to understand the relationship between oral health and overall health, they may not provide anticipatory guidance on oral health or refer their patients regularly to dental providers.[9] Further, a lack of coordination between the oral care, prenatal and pediatric care communities is a barrier to improving maternal and child oral health outcomes.

Efforts to Promote Oral Health during Pregnancy

There have been efforts during the past decade to help both women and care providers have a better understanding of the importance of oral care before, during, and after pregnancy and the safety of oral care during pregnancy.

The Public Health Agency of Canada highlights the importance of oral health during pregnancy in The Sensible Guide to a Healthy Pregnancy resource (available at http://www.phac-aspc.gc.ca/hp-gs/guide/assets/pdf/hpguide-eng.pdf).

There are two programs currently operating in First Nations and northern Saskatchewan communities that include a focus on prenatal oral health:

- Health Canada's Children's Oral Health Initiative (COHI) program works to prevent and control early childhood tooth decay among children living in First Nations or Inuit communities and to set the stage for a lifetime of healthy teeth. One-on-one oral health education is also provided for parents, caregivers, and pregnant women.
- The Northern Saskatchewan Prenatal/Preschool Dental Program works to reduce dental decay, promote oral health, and enhance oral care access of at-risk infants, preschool children, pre/post natal mothers, and their families. Services are currently provided in communities in the **Keewatin Yatthé** and **Mamawetan Churchill River** Health Regions and the **Athabasca Health Authority**.

Currently, there are no Canadian (national or provincial) guidelines that focus on dental treatment during pregnancy. However, there have been advances in other jurisdictions regarding oral care during pregnancy for both oral care and prenatal care providers.[11] Guidelines developed by the California Dental Association Foundation[9] and the New York State Health Department[12] as well as the national consensus statement developed by the U.S. Maternal and Child Health Bureau, the American Dental Association, and the American College of Obstetrics and Gynecology[13] provide up-to-date evidence on the safety and efficacy of dental care during pregnancy, including: the safety of X-rays and medications; strategies for reducing cavity-causing bacteria load in new mothers; and guidance on the appropriate positioning of pregnant women in the dental chair in later pregnancy.

Further resources include the American College of Obstetricians and Gynecologists' Committee Opinion on Oral Health Care during Pregnancy and through the Lifespan[14] and the American Academy of Pediatric Dentistry's Guidelines on Perinatal Oral Health[15] and Infant Oral Health Care.[16]

Risk of Dental Disease during Pregnancy

Pregnancy places women at higher risk for oral conditions such as tooth erosion and periodontal disease due to physiologic changes in the mouth that occur during pregnancy.[17, 18] The prevalence of gingivitis during pregnancy ranges from 30% to 100% (depending on the study) and an estimated 5% to 20% of pregnant women have periodontal disease. It is estimated that one in four women of childbearing age have at least one untreated cavity. Therefore, a sizable number of women may enter pregnancy with active oral disease, or pregnancy may trigger the progression of the disease process.[19]

Dental Care Utilization during Pregnancy

Many women, including those with private insurance, do not seek - and are not advised to seek - dental care during pregnancy. Only about one-quarter to one-half of women receive any dental care during their pregnancies. The likelihood of low-income and uninsured women receiving such care is even lower.[20]

Oral care in pregnancy may be avoided and misunderstood by oral care providers, prenatal care providers, and pregnant women, because of the lack of information or misperceptions about the safety and importance of dental treatment during pregnancy.[21] To support more effective care, oral care and prenatal care providers who care for women during pregnancy need evidence-based and practical information concerning the risks and benefits of dental treatment to oral and overall health, and an understanding of the factors that affect a woman's oral health.[9] Further, given the low overall oral health literacy of pregnant women themselves, there is a need for targeted oral health information, across all socioeconomic levels.[6]

While evidence-based practice guidelines exist, many dentists delay treatment of pregnant patients because of a fear of injuring either the woman or the fetus.[22, 23] And, because prenatal care providers have had limited training to understand the relationship between oral health and overall health, many fail to refer their patients regularly for dental care.[24, 25]

A coordinated effort between the oral care and prenatal care communities can benefit maternal and child health outcomes. With increased awareness and understanding of the importance of oral health guidance and screening as well as knowledge of oral care providers to whom pregnant women can be referred, prenatal care providers can play a key role in preventing oral disease, especially among minority and underserved populations who have limited access to dental services and poorer oral health status.[26] In addition, emerging data on the important connection between oral health and systemic health concerns suggest an increasing need for dental-medical collaboration and cross-training.[27]

Maternal Oral Health and Adverse Pregnancy Outcomes

Pregnancy is a particularly important time to access oral care because the consequences of poor oral health can potentially impact the health of the mother and subsequently the pregnancy. Poor periodontal health is associated with chronic conditions such as diabetes and some respiratory diseases. For women with diabetes diagnosed prior to pregnancy, for example, oral health is essential because acute and chronic infections make control of diabetes more difficult.[19]

Research released in 1996 by Offenbacher, Katz, Ferik et al.[28] presented a possible connection between periodontal disease (gum disease) and preterm birth. Since the release of this research, several studies have followed either supporting or countering this research. Although a causal relationship has not been established, a growing body of research is focused on linkages between a woman's untreated gum disease and adverse birth outcomes including preterm birth and low birth weight.[1, 29]

The Prenatal and Postnatal Periods and Early Childhood Tooth Decay

The prenatal period is a critical time for influencing early childhood cavities. As the duration of calcification of the baby teeth is short and begins during the second trimester, prenatal nutrition has a tremendous influence on the formation of dental tissues.[30] Further, maternal vitamin D levels may have an influence on baby teeth development and early childhood caries as vitamin D plays a central role in the calcification of dental tissues.[30] Women are encouraged to discuss nutrition and vitamin D with their prenatal care provider.

The postnatal period is also an important time. Substantial evidence exists supporting the many health benefits associated with breastfeeding. The Canadian Dental Association supports breastfeeding as it provides nutritional benefits to the infant and is recognized as an effective preventive health measure when combined with mouth cleaning or tooth brushing as part of the daily routine for all infants to reduce the risk of dental caries.[31]

Another important issue during the period following pregnancy relates to the transmission of bacteria that causes cavities. There is well-established evidence that caregivers (primarily mothers[32]) with high levels of the cavity-causing bacteria, mutans streptococci (MS), have a high likelihood of infecting the child before the second birthday. [33, 34, 35, 36] Early colonization in an infant's mouth by MS is a major risk factor for early childhood caries as well as future dental caries.[9] Early childhood caries can have serious consequences for the functional, psychological, and social dimensions of a child's wellbeing.[43]

Cariogenic or decay-causing bacteria are typically transferred from the mother or caregiver to child by behaviours that directly pass saliva, such as sharing a spoon when tasting baby food or cleaning a dropped pacifier by mouth.[9] Key strategies to reduce the risk for future cavities for the child are to minimize the MS levels in the mother in order to delay the colonization of MS in the infant as long as possible and to minimize the sharing of MS from mother to child.[16]

Women with poor oral health can also indirectly affect their children's oral health through the influence of their beliefs, knowledge, and skills.[37, 38] The prevention of transmission (from mother to child) of the MS bacteria and establishing good oral hygiene habits can significantly minimize a lifelong battle with dental caries, the infectious disease that causes tooth decay/cavities.[15]

Pregnant women who may not be concerned about their own oral health are generally very receptive to information about the consequences it can have on their children,[39, 40] indicating pregnancy as a teachable opportunity for improving health behaviours. Many people do not realize that dental caries is the most common infectious disease in childhood, that it has health and developmental consequences, and that it is preventable.

Dental Treatment during Pregnancy

According to the Public Health Agency of Canada, regular dental checkups and cleanings by a dental professional, including during pregnancy, are the best ways to detect and prevent oral disease.[10]

The benefits of providing dental care during pregnancy are significant and far outweigh very minimal potential risks, particularly for a pregnant woman who has oral pain, an emergency oral condition, or infection. Prevention, diagnosis and treatment of oral diseases, including needed dental X-rays and use of appropriate local anesthesia, are highly beneficial and can be safely undertaken during pregnancy and are advised to avoid more complex problems that may result from delayed treatment, both for the woman and her infant.[9]

Treatment for dental caries is recommended to reduce the level of caries-causing bacteria in the pregnant woman's mouth. If the woman does not receive treatment by the time of delivery, her infant's chance of early acquisition of bacteria from the mother's saliva could be increased. There are practical considerations as well. For instance, after the baby is born the mother may find it more difficult to attend dental appointments.[9]

Practice Opportunities

The following practice opportunities are based on the California Dental Association Foundation's guidelines, **Oral Health During Pregnancy and Early Childhood**,[9] unless otherwise indicated.

For Oral Care Providers:

The role of oral care providers includes providing preventive services and restorative treatment along with anticipatory guidance for pregnant women and their children. Oral care providers are encouraged to render all needed dental services to pregnant women. Pregnancy is not a reason to defer routine dental care or treatment of oral health problems.

Oral care providers are encouraged to take the following actions for pregnant women:

- Provide education and offer oral care (including referrals when required), understanding that such care may have relatively low priority for some women, particularly those challenged by financial worries, unemployment, housing, intimate partner violence, substance abuse, or other life-stressors.
- Ask the woman if she has any concerns/fears about getting dental care while pregnant. Based on her response, be ready to assure her that dental care is safe during pregnancy and address specific concerns.
- Advise the pregnant woman that prevention, diagnosis and treatment of oral diseases, including needed dental X-rays and use of local anesthesia (when necessary for the care of the patient), are acceptable and can be safely undertaken. Any risk is minimal when compared to the risk of not receiving appropriate care.
- Plan definitive treatment based on customary oral health considerations.
- Develop and discuss a comprehensive treatment plan that includes preventive, treatment, and maintenance care throughout pregnancy. Discuss the benefits, risks, and alternatives to treatments.
- Provide emergency/acute care at any time during pregnancy as indicated by oral condition.
- Perform a comprehensive periodontal examination.

For Prenatal Care Providers:

Oral health should be a core component of routine prenatal care for all pregnant women.

Prenatal care providers are encouraged to take the following actions for pregnant women:

- Educate the pregnant woman about the importance of her oral health, not only for her overall health and her pregnancy, but also for the oral health of her children.
- Provide education and dental referrals for oral care, understanding that such care may have relatively low priority for some women, particularly those challenged by financial worries, unemployment, housing, intimate partner violence, substance abuse, or other life-stressors.

- Ask the woman if she has any concerns/fears about getting dental care while pregnant. Based on her response, be ready to inform her that dental care is safe during pregnancy and address specific concerns.
- Determine and document in the prenatal record whether the patient is already under the care of an oral health provider; if a referral is needed, make a referral and document this in the prenatal record.
- Encourage all women at the first prenatal visit to schedule a dental examination if one has not been performed in the past six months, or if a new condition has developed or is suspected. The Public Health Agency of Canada recommends a dental checkup in the first trimester to have the teeth cleaned and oral health assessed. If dental work is required, the best time to schedule it is between the fourth and sixth month of pregnancy (the second trimester). While routine dental X-rays should be avoided during pregnancy, an X-ray may be essential in the event of a dental emergency.[10]
- As a routine part of the initial prenatal examination, conduct and document an oral health assessment of the teeth, gums, tongue, palate, and mucosa. Please refer to the Resources section in this document for more information on tools being developed to assist with this assessment.

For Both Oral Care and Prenatal Care Providers:

Both oral care and prenatal care providers are encouraged to take the following additional actions related to training, continuing education, and collaboration:

- Encourage women to learn more about oral health during pregnancy and early childhood by accessing available consumer information (see Resources section).
- Provide health education or anticipatory guidance about oral health practices for her children to prevent early childhood caries.
- Recommend strategies to decrease maternal cariogenic bacterial load (i.e., tooth brushing, flossing, treating caries, mouth rinses, fluoridated water, healthy diet, regular dental visits).
- Discuss the importance of nutrition, in particular, getting enough calcium, vitamins A, C and D, as well as protein and phosphorous. Taking a multivitamin can help. Eating well is important for women's oral health and can also help to build strong teeth and bones in the developing baby.[10]
- Support the development of provincial guidelines on oral care during pregnancy.
- Engage in training and continuing education opportunities on oral health during pregnancy.
- Engage in interprofessional learning and practice opportunities involving oral care and prenatal care providers.

Refer to the New York State Department's (available at http://www.health.ny.gov/publications/0824.pdf) and California Dental Association Foundation's (available at http://www.cdafoundation.org/Portals/0/pdfs/poh_guidelines.pdf) practice guidelines on oral care during pregnancy for further detail on precautions and treatment guidelines by pregnancy trimester.

- Develop collaborative relationships between oral care and prenatal care providers, including case management and a dental referral network.
- Given the important role of healthy eating for oral health, develop collaborative relationships with dietitians when there are concerns about nutrition or to access resources on healthy eating.[41]

Resources

The following resources will be available for use by both oral care and prenatal care providers to promote oral health during pregnancy and early childhood:

- Patient Information Cards
- Poster
- Information Display
- Anticipatory Guidance resource for oral care and prenatal care providers
- Risk assessment tool
- Presentation/workshop

Please visit **www.skprevention.ca/oral-health** or contact the Saskatchewan Prevention Institute at info@skprevention.ca or (306) 651-4300 for more information on accessing these resources.

The Downstream Effect of Poor Oral Health among Mothers and Infants

Tooth decay is the most common chronic childhood disease. In fact, it is five times more common than asthma in children five to 17 years of age.[19] Overall, 57% of Canadian children, aged 6-11 years old, are affected by dental caries, and 24% of all children have caries in their permanent teeth.[42]

According to the Canadian Paediatric Society,[43] oral health can affect the functional, psychological, and social dimensions of a child's well-being. Oral pain has devastating effects on children, including lost sleep, poor growth, behavioural problems, and poor learning. Developmentally crucial processes of communication, socialization, and self-esteem are also affected by poor oral health. Tooth extraction may affect the alignment of the permanent teeth and increases the risk of dental problems later in life.[47]

Early childhood caries (ECC) is defined as the presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth in a preschool-aged child.[44] In urban areas of Canada, the prevalence of ECC in preschool children is 6% to 8%,[45] but in some disadvantaged First Nations communities, the prevalence of decay exceeds 90%.[46]

Advanced forms of ECC frequently necessitate surgery under general anesthesia. One-third of all day surgery operations for preschoolers in Canada are done to perform substantial dental work, making it the leading cause of day surgery for children this age.[47]

According to the Canadian Paediatric Society,[43] paediatricians and family physicians play an important role in identifying children at high risk for dental disease and in advocating for more comprehensive and universal dental care for children.

The Canadian Dental Association's Position Statement on Early Childhood Caries[50] provides further information on preventing and managing early childhood caries.

According to a Canadian Institute for Health Information report (2013), Saskatchewan has the third highest rate in Canada for day surgery operations performed to treat cavities among children aged 1-5 years, after Nunavut and Northwest Territories. From 2010-12, 3,878 day surgery operations were performed on preschool children in Saskatchewan because they had multiple cavities and tooth decay so severe that it required surgical treatment. These dental procedures represent the tip of the iceberg in terms of the magnitude of the problem, because left uncounted are the many children who are treated for serious tooth decay in dentists' offices or community clinics.[47]

Day surgery operations typically involve a combination of baby teeth being filled and extracted. General anesthesia (GA) is almost always administered and the intensive nature of the treatments requires 82 minutes of surgery on average. Children who undergo such surgery often have improved oral health quality of life; however, GA is not without risk. The complications that result from GA range from non-life-threatening complications such as nausea and vomiting, fever, inflammation of the throat, and swollen lips to life-threatening complications including bronchospasms, anaphylaxis, cardiac arrest, and respiratory failure. Further, day surgery is not a permanent solution for some children as repeat surgeries are common to deal with new dental diseases or the failure of past dental treatment.[48]

ECC is generally preventable and, when caught early, is treatable in community-based settings. Minimizing the risk of dental caries among children can be accomplished in large part by maintaining good oral health starting at an early age (such as brushing teeth and having healthy dietary habits), using proven preventive techniques (such as topical fluoride treatments), ensuring access to fluoridated water, and having regular dentist visits by age one.[47, 49] Also, good oral health among mothers and primary caregivers is important to minimize the transmission of bacteria that causes cavities and to model good oral health habits for children.[47]

References

[1] Saskatchewan Prevention Institute (2011). Maternal Oral Health and Pregnancy Outcomes Literature Review. Retrieved from http://www.skprevention.ca/wp-content/uploads/2013/01/Maternal-Oral-Health-Report-Lit-Review.pdf

[2] Canadian Dental Hygienists Association (2006). Review of the Oral Disease-Systemic Disease Link. Part 1: Heart Disease, Diabetes. Canadian Journal of Dental Hygiene, 40(6), 288-342. Retrieved from http://www.cdha.ca/pdfs/Profession/Resources/Disease_Link_Article.pdf

[3] Canadian Dental Hygienists Association (2007). Review of the Oral Disease-Systemic Disease Link. Part II: Preterm Low Birth Weight Babies, Respiratory Disease. Canadian Journal of Dental Hygiene, 41(1), 8-21. Retrieved from http://www.cdha.ca/pdfs/Profession/Resources/respiratory_part_II_eng.pdf

[4] Health Canada (2009). The Effects of Oral Health on Overall Health. Retrieved from http://hc-sc.gc.ca/hl-vs/alt_formats/pacrb-dgapcr/pdf/iyh-vsv/life-vie/dent-eng.pdf

[5] Canadian Dental Association (2005). CDA Position on Association between Periodonatal Disease and Systemic Disease. Retrieved from http://www.cda-adc.ca/_files/position_statements/periodontalDisease.pdf

[6] Saskatchewan Prevention Institute (2014). Knowledge, Attitudes, Beliefs and Practices Regarding Oral Health among Pregnant Women.

[7] Association of State & Territorial Dental Directors (2012). Best Practice Approaches for State and Community Oral Health Programs. Retrieved from http://www.astdd.org/bestpractices/BPAPernatalOralHhealth.pdf

[8] Marchi, K. S., Fisher-Owen, S. A., Weintraub, J. A., Yu, Z., & Braveman, P. A. (2010). Most pregnant women in California do not receive dental care: findings from a population-based study. Public Health Rep, 125(6), 831-42. Retrieved from http://www.publichealthreports.org/issueopen.cfm?articleID=2551

[9] California Dental Association Foundation (2010). Oral Health During Pregnancy and Early Childhood: Evidence Based Guidelines for Health Professionals. Retrieved from http://www.cdafoundation.org/Portals/0/pdfs/poh_guidelines.pdf

[10] The Public Health Agency of Canada (2012). The Sensible Guide to a Healthy Pregnancy. Retrieved from http://www.phac-aspc.gc.ca/hp-gs/guide/assets/pdf/hpguide-eng.pdf

[11] National Maternal and Child Oral Health Policy Center (2012). Improving the Oral Health of Pregnant Women and Young Children: Opportunities for Policymakers. Retrieved from http://nmcohpc.net/resources/Improving%20the%20Oral%20Health%20of%20Pregnant%20and%20Young%20Children.pdf

[12] Kumar, J., Samuelson, R., eds. (2006). Oral Health Care during Pregnancy and Early Childhood: Practice Guidelines. New York, NY: New York State Department of Health. Retrieved from http://www.health.ny.gov/publications/0824.pdf

[13] Oral Health Care During Pregnancy Expert Workgroup (2012). Oral Health Care During Pregnancy: A National Consensus Statement. Washington, DC: National Maternal and Child Oral Health Resource Center. Retrieved from http://www.mchoralhealth.org/pdfs/OralHealthPregnancyConsensus.pdf

[14] American College of Obstetricians & Gynecologists (2013). Oral Health Care During Pregnancy and Through the Lifespan: Committee Opinion. Retrieved from http://www.acog.org/~/media/Committee%20Opinions/Committee%20on%20Health%20Care%20for%20Underserved%20Women/co569.pdf?dmc=1&ts=20140325T1205478452

[15] American Academy of Pediatric Dentistry, Clinical Affairs Committee (2011). Guideline on Perinatal Oral Health Care. Retrieved from http://www.aapd.org/media/Policies_Guidelines/G_PerinatalOralHealthCare.pdf

[16] American Academy of Pediatric Dentistry, Clinical Affairs Committee (2011). Guideline on Infant Oral Health Care. Retrieved from http://www.aapd.org/media/Policies_Guidelines/G_InfantOralHealthCare.pdf

[17] Gajendra, S., Kumar, J. V. (2004). Oral health and pregnancy: a review. NY State Dent J, 70(1), 40-44. Retrieved from http://www.nysdental.org/img/current-pdf/jrnlarchivesjan04.pdf

[18] Offenbacher, S., Boggess, K. A., & Murtha, A. P. (2006). Progressive periodontal disease and risk of very preterm delivery. Obstet Gynecol, 107(1), 29-36. doi:10.1097/01.AOG.0000190212.87012.96

[19] U.S. Department of Health and Human Services (2000). Oral Health in America: A Report of the Surgeon General. NIH Publication No. 00-4713, Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research. Retrieved from http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf

[20] Gaffield, M. L., Gilbert, B. J., Malvitz, D. M., & Romaguera, R. (2001). Oral health during pregnancy: an analysis of information collected by the pregnancy risk assessment monitoring system. J Amer Dent Assoc, 132(7), 1009-1016. doi: 10.14219/jada.archive.2001.0306

[21] Silk, H., Douglass, A. B., Douglass, J. M., & Silk, L. (2008). Oral health during pregnancy. Amer Fam Physician, 77(8), 1139-1144. Retrieved from www.aafp.org/afp

[22] Dellinger, T. M. & Livingston, H. M. (2006). Pregnancy: physiologic changes and considerations for dental patients. Dent Clin N Amer, 50(4), 677-697. doi: 10.1016/j.cden.2006.06.001

[23] Washington Dental Service Foundation (2010). Dentist's Approach to Prenatal Oral Health: Focus Group Report.

[24] Al-Habashneh, R., Aljundi, S. H., & Alwaeli, H. A. (2008). Survey of medical doctors' attitudes and knowledge of the association between oral health and pregnancy outcomes. International J Dent Hygiene, 6(3), 214-220. doi: 10.1111/j.1601-5037.2008.00320.x.

[25] Aved, B., Meyers, L., & Burmas, E. (2008). California First 5 Oral Health Education and Training Program. Final Evaluation Report. Barbara Aved Associates. Sacramento, CA. Retrieved from http://www.first5oralhealth.org/downloads/0/1589/First%205%20Oral%20Hlth%20Final%20Eval%20Reprt%20for%20CDAF-DHF.pdf

[26] Drum, M. A., Chen, D. W., & Duffy, R. E. (1998). Filling the gap: equity and access to oral health services for minorities and the underserved. Fam Med, 30(3), 206-209. Retrieved from http://www.stfm.org/NewsJournals/FamilyMedicine/PastIssues

[27] Mouradian, W. E., Berg, J. H., & Somerman, M. J. (2003). Addressing disparities through dental-medical collaborations, Part 1: The role of cultural competency in health disparities: training of primary care medical practitioners in children's oral health. J Dent Educ, 8(67), 860-868. Retrieved from http://www.jdentaled.org/content/67/8/860.full.pdf

[28] Offenbacher, S., Katz, V., Fertik, G., Collins, J., Boyd, D., Maynor, G., McKaig, R., & Beck, J. (1996). Periodontal infections as a possible risk factor for preterm low birth weight. J Periodontol, 67(S10), 1103-13. doi: 10.1902/jop.1996.67.10s.1103

[29] Xiong, X., Buekens, P., Vastardis, S., & Yu, S. M. (2007). Periodontal disease and pregnancy outcomes: State -of-the-science. Obstetric and Gynecological Survey, 62(9), 605-15. doi: 10.1097/01.ogx.0000279292.63435.40

[30] Schroth, R. J., Lavelle, C., Tate, R., Bruce, S., Billings, R. J., & Moffatt, M. E. K. (2014). Prenatal vitamin D and dental caries in infants. Pediatrics, 133, e1277. doi: 10.1542/peds.2013-2215

[31] Canadian Dental Association (2013). CDA Position on Breastfeeding and Early Childhood Caries. Retrieved from http://www.cda-adc.ca/_files/position_statements/BreasfeedingandECC.pdf

[32] Caufield, P. W., Wannemuehler, Y. M., & Hansen, J. B. (1982). Familial clustering of the Streptococcus mutans cryptic plasmid strain in a dental clinic population. Infect Immun, 38(2), 785-787. doi: 10.1128/JB.01183-06

[33] Berkowitz, R. J. (2003). Acquisition and transmission of mutans streptococci. J Cal Dent Assoc, 31(2), 135-138. Retrieved from http://www.researchgate.net/publication/10857543_Acquisition_and_transmission_of_mutans_streptococci

[34] Alaluusua, S., Matto, J., Gronroos, L., Innila, S., Torkko, H., Asikainen, S., Jousimies-Somer, H., & Saarela, M. (1996). Oral colonization by more than one clonal type of mutans streptococcus in children with nursing-bottle dental caries. Arch Oral Biol, 41(2), 167-73. http://dx.doi.org/10.1016/0003-9969(95)00111-5

[35] Lindquist, B. & Emilson, C. G. (2004). Colonization of Streptococcus mutans and Streptococcus sobrinus genotypes and caries development in children to mothers harboring both species. Caries Res, 38(2), 95-103. doi:10.1159/000075932

[36] Li, Y., Caufield, P. W., Dasanayake, A. P., Wiener, H. W., & Vermund, S. H. (2005). Mode of delivery and other maternal factors influence the acquisition of Streptococcus mutans in infants. J Dent Res, 84(9), 806-811. doi: 10.1177/154405910508400905

[37] Huebner, C. E. & Riedy, C. A. (2010). Behavioral determinants of brushing young children's teeth: implications for anticipatory guidance. Pediatr Dent, 32(1), 48-55. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2939855/pdf/nihms227947.pdf

[38] Finlayson, T. L., Siefert, K., Ismail, A. L., & Sohn, W. (2007). Maternal self-efficacy and 1-5-year-old children's brushing habits. Community Dent Oral Epidemiol, 35(4), 272-281. doi: 10.1111/j.1600-0528.2007.00313.x

[39] Kowash, M. B., Pinfield, P., Smith, J., & Curzon, M. E. J. (2000). Dental health education: effectiveness on oral health of a long-term health education programme for mothers with young children. British Den J, 188, 201-205. doi:10.1038/sj.bdj.4800431

[40] Patrick, D. L., Shuk Yin Lee, R., Nucci, M., Grembowski, D., Zane Jolles, C., & Milgrom, P. (2006). Reducing oral health disparities: a focus on social and cultural determinants. BMC Oral Health, 6(S1), S4. doi: 10.1186/1472-6831-6-S1-S4

[41] T. Ives, Regional Executive Director, Dietitians of Canada, personal communication, July 2, 2014.

[42] Health Canada (2010). Report on the Findings of the Oral Health Component of the Canadian Health Measures Survey 2007-2009. Retrieved from www.fptdwg.ca/English/e-documents.html

[43] Canadian Paediatric Society Community Paediatrics Committee (2013). Oral Health Care for Children – A Call for Action. Retrieved from http://www.cps.ca/en/documents/position/oral-health-care-for-children

[44] Canadian Dental Association (2010). Report on Early Childhood Caries. Retrieved from http://www.jcda.ca/uploads/pdf/ccsa/ECC-Report-FINAL-April-2010_for-jcda-website.pdf

[45] Locker, D. & Matear, D. (2000). Oral Disorders, Systemic Health, Well-being and the Quality of Life: A Summary of Recent Research Evidence. Community Health Services Research Unit, Faculty of Dentistry, University of Toronto. Retrieved from www.utoronto.ca/dentistry/facultyresearch/dri/cdhsru/health_measurement/7.%20%20No%2017.pdf

[46] Schroth, R. J., Harrison, R. L., & Moffatt, M. E. (2009). Oral health of indigenous children and the influence of early childhood caries on childhood health and well-being. Pediatr Clin N Am, 56(6), 1481-99. http://dx.doi.org/10.1016/j.pcl.2009.09.010

[47] Canadian Institute for Health Information (2013). Treatment of Preventable Dental Cavities in Preschoolers: A Focus on Day Surgery Under General Anesthesia. Retrieved from https://secure.cihi.ca/free_products/Dental_Caries_Report_en_web.pdf

[48] Schroth, R. J. & Smith, W. F. (2007). A review of repeat general anesthesia for pediatric dental surgery in Alberta, Canada. Pediatric Dentistry, 29(6), 480-7.

[49] Canadian Dental Association (2012). CDA Position on First Visit to the Dentist. Retrieved from http://www.cda-adc.ca/_files/position_statements/firstVisit.pdf

[50] Canadian Dental Association (2010). CDA Position on Early Childhood Caries. Retrieved from http://www.cda-adc.ca/_files/position_statements/earlyChildhoodCaries.pdf

Saskatchewan Oral Health Coalition's Maternal Oral Health Project

The Saskatchewan Oral Health Coalition works collaboratively with dedicated partners to improve the oral and overall health of Saskatchewan residents. The Maternal Oral Health Project group formed in 2013 to raise awareness of pregnant women as a key group requiring focused oral health promotion.

The goal for the project is: "Oral health is increasingly included as a core component of routine prenatal care for pregnant women in Saskatchewan".

The current project action strategies include:

1. Launch a social marketing/communications campaign to increase oral health literacy among pregnant women in Saskatchewan.
2. Survey oral care and prenatal care providers in Saskatchewan to assess knowledge, attitudes, and practices regarding oral care during pregnancy.
3. Launch training and continuing education opportunities for oral care and prenatal care providers to enhance knowledge and practice regarding oral care during pregnancy.
4. Explore potential models to increase access to oral care among pregnant women and infants up to age one, with a particular focus on cultural and income groups facing the greatest access barriers.
5. Explore the feasibility of developing provincial practice guidelines on oral health during pregnancy for oral care and prenatal care providers.

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