The Impact of Oral Health on Low-Income Pregnant Women Living in the United States

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Abstract

***Introduction*:** Oral health has a significant impact on pregnancy outcomes. Interprofessional collaboration can assist in bridging the gap between oral and systemic health and assist in optimizing the health of low-income pregnant women, infants, and children.

***Methods*:** A literature review was used to ascertain the impact of oral health on adverse pregnancy outcomes. Research sources used in this literature review were gathered from the U.S. National Library of Medicine at the National Institutes of Health, PubMed, the Centers for Disease Control and Prevention (CDC), Elsevier, Department of Medical Assistance Services (DMAS), the Office of the Surgeon General, and Google Scholars. Inclusion criteria were pregnant women.

***Results*:** Poor dental health during pregnancy can contribute to adverse pregnancy outcomes and to early childhood caries. Conversely, many systemic diseases can present oral signs and symptoms. Low-income women are disproportionately affected due to limited or no access to oral health care through their health insurance, or due to poor quality health care. The socio-ecological model was used to identify factors that affect oral health at the individual, interpersonal, organizational, and public policy levels.

***Discussion*:** Studies have shown that interprofessional collaboration with health care professionals and other non-dental professionals can improve pregnant women's oral health. The Virginia Department of Health provides guidance on prenatal care that includes oral health screening, education, and referrals that can mitigate the risk of oral and systemic diseases during pregnancy and the postpartum period.

Keywords: interprofessional collaboration, postpartum, oral health, systemic health, adverse pregnancy outcomes, low-income pregnant women, prenatal care

Introduction

The mouth is the gateway to the rest of the body. Recent literature shows that oral microbiome may be responsible for contributing to several serious health conditions from cardiovascular diseases, respiratory diseases, diabetes, and adverse pregnancy outcomes, such as low-birth weight, miscarriage, premature delivery and pre-eclampsia (Harris & Johns, 2018; Stephens et al., 2018; Yenen & Ataçağ, 2019). In contrast, diseases of the body can present as oral manifestations. This oral systemic health link is important for pregnant and postpartum women to understand so that they may mitigate the risk of any adverse health events. The primary dental concerns among pregnant women are periodontal disease and dental caries (Yenen & Ataçağ, 2019). The mouth is not included as part of the body when it comes to healthcare. Primary healthcare typically does not include oral health care for adults, and in the past few years health policies and practices have been more focused on medicine (Northridge et al., 2020).

The purpose of this report is to explain the impact of oral health during the pregnancy and discuss how interprofessional collaboration can address the important connection between oral and systemic health that must be understood in order to achieve a healthy pregnancy, birth and beyond, and specifically among low-income women. An article by Xu and Han discusses the significance of the link between poor oral health and adverse pregnancy outcomes (Xu & Han, 2022). The research presented in this article has given rise to mitigating the risks of adverse pregnancy outcomes by optimizing oral health (Xu & Han, 2022). This relationship is significant in understanding the association between overall health and its relationship with oral health. Through intervention of healthcare and dental professionals, there can be a symbiotic relationship with the mouth and the rest of the body to protect the health of pregnant women and

their developing children. The impact of this study determined that “there is a positive correlation between periodontal disease and adverse pregnancy outcomes” which shows the need for interprofessional collaboration among dental care professionals and medical care (Xu & Han, 2022).

The socio-ecological model can be used to identify the different factors that affect oral health care among low-income pregnant and postpartum women. At the individual level, a person’s socioeconomic status can be a risk factor for not receiving, or seeking, oral health care. The CDC (2021) notes that an adult is three times more likely to have untreated cavities if they have less than a high school education, 40% of people who smoke cigarettes have untreated cavities, those who are Mexican American or non-Hispanic Black are almost twice as likely to have untreated cavities compared to non-Hispanic White adults, and adults who have no private health insurance or have low-income are 40% more likely to have untreated cavities compared to those with private insurance or higher incomes. A person’s genetics, diet, and dental hygiene practices can also make them more susceptible to having poor oral health. At the interpersonal level, family and friends can impact a woman's oral health because if they are encouraged to maintain good oral hygiene and have that increased social support, then they are more likely to seek oral health care. Furthermore, the relationship between provider and patient is an important factor because the quality of care they receive and the relationship they have with their provider can impact whether a woman decides to listen to their provider’s advice or chooses to continue seeking health care. Northridge et al (2020) identified that at the organizational level, access to provider-and-system level supports, patient programs and services, and insurance and affordability can impact a person’s oral health. Policies that affect programs, such as Medicaid, can impact whether someone is able to afford or receive dental care through their insurance.

Access to oral health care for low-income pregnant and postpartum women is impacted by complex factors at different levels of the socio-ecological model. Therefore, it is necessary to have interventions that target changes at the individual, interpersonal, organizational, and public policy levels.

Methods

A literature review was used to ascertain the impact of oral health on adverse pregnancy outcomes. A literature review was conducted using key search terms “oral health,” “pregnant women,” ”low-income,” and “pregnancy outcome.” Research sources used in the literature review were the Centers for Disease Control and Prevention (CDC), Elsevier, Department of Medical Assistance Services (DMAS), the Office of the Surgeon General, U.S National Library of Medicine at the National Institutes of Health, and Google Scholars. Inclusion criteria were low-income pregnant and postpartum women. We used PubMed advanced search builder with the following MeSH terms: "oral health" AND "health" OR "oral health" AND "pregnancy" OR "pregnancies," and yielded 201 articles. The literature review was conducted during the month of January 2022. Studies that were published after 2018 were chosen for the literature review, with the exception of the Office of the Surgeon General article that was published in 2003.

Research articles that analyzed qualitative and quantitative data about the oral health care of pregnant and postpartum women with low-income and programs that use interprofessional collaboration between non-dental professionals and dental professionals were reviewed. Research articles that were excluded from the search included anyone who is not pregnant or in the postpartum period, men, all individuals with private health benefits that included oral health coverage, and people with a moderate-to-high socio-economic status. Articles pertaining to health care delivery were limited to the United States.

Results

There are twenty-nine states within the United States, including the nation's capital, who provide Medicaid benefits that include extensive dental services for pregnant women (NASHP, 2021). Medicaid dental coverage for pregnant women below the poverty rate is provided in Virginia through the FAMIS MOMS program with extended coverage to two months postpartum and up to one year for the baby (Virginia Medicaid, 2022). The state of Maryland also has passed a bill to provide postpartum dental benefits for one year, which became effective on April 1, 2022 (Maryland Department of Health, 2022). This type of coverage signifies the importance of oral health for the mother and child throughout the pregnancy and postpartum period.

The oral microflora during pregnancy may cause women to be faced with dental issues such as gingivitis, periodontal disease, dental related abscesses, cavities, tooth mobility, gingival tumors and tooth erosion (Stephens et al., 2018). Hormonal and physiological changes are reported to contribute to oral disease susceptibility (Saadaoui et al., 2021). These issues, if serious, can cause harm to the mother and her unborn child. Virulent strains of oral bacteria have been found in the placenta (Cobb et al., 2017). Poor dental health during pregnancy can contribute to premature birth, low-birthweight babies, preeclampsia, growth restriction of the fetus, and fetal death (Cobb et al., 2017). Pregnant women who have cavity-causing bacteria could transmit the bacteria after their delivery from their mouth to their baby's mouth, according to the CDC (2019). Early childhood cavities can occur if an infant comes in contact with this bacteria and other sugars, which can lead to the need for extensive dental care at an early age (CDC, 2019). Conversely, many systemic diseases can present as oral signs and symptoms. Oral symptoms can present as the first sign of some systemic diseases (Urse, 2014). For example,

diabetes mellitus, hepatitis C, and chronic liver disease cause changes to the oral mucosa (Urse, 2014). Leukemia can present as oral changes on the tongue and gingiva. Vitamin B deficiencies can be detected from clinical observation of the tongue (Urse, 2014). An oral component of the autoimmune disease, Sjogren's syndrome, presents in the mouth as xerostomia or "dry mouth" (Urse, 2014). These oral systemic connections can lead to diagnosis or prevention of disease (Urse, 2014).

Oral Health Disparities

In the United States, over 40% of low-income adults have untreated tooth decay; and according to the CDC article, Disparities in Oral Health, productivity and quality of life can be greatly impacted by untreated oral disease (2021). Many will not seek care unless it is an emergency due to lack of dental insurance, which means they tend to be Medicaid recipients or lack health insurance altogether (KFF, 2019). Visits to the Emergency Department (ED) at the hospital for primary care cause a rise in health care costs (Becker & Newsom, 2003). In 2017, dental related ED visits cost the nation $2 billion (Owens et al., 2021). Approximately two out of every five, or 42.2%, of dental related ED visits were Medicaid recipients (Owens et al., 2021). On a state level, the Health Services Cost Review Commission (HSCRC) reports that emergency room visits related to dental conditions cost Maryland Medicaid over $10 million per year (Maryland Dental Action Coalition, n.d.). Opioid addiction for untreated dental diseases prescribed in the emergency room is also a concern (Naavaal et al., 2021). Since many dental issues are addressed but remain untreated in the ED, treatment is postponed due to lack of dental insurance coverage or dental home (Naavaal et al., 2021). The population of concern are low-income pregnant women and new mothers because they have fewer healthcare options, receive poor care, or may not seek care at all. On a federal level, this issue has been introduced in the

United States Senate as the *Oral Health for Moms Act* through Medicaid expansion of access to oral care throughout pregnancy and postpartum (Stabenow, 2021).

Barriers to Accessing Dental Care

In Virginia, despite 93% of pregnant women reporting that their healthcare provider discussed the importance of oral health during pregnancy, only 31.5% of them had gone to the dentist in the past year (VDH, 2016). The Virginia Department of Health identified that out of the women who were screened, 41.6% had untreated dental caries (VDH, 2016). The pregnant women explained that some of the reasons they had difficulty seeking dental care were because they could not find a dentist who would treat pregnant women (10.6%), Medicaid was not accepted (11.7%), they thought dental care during pregnancy was unsafe (20.8%), and/or some could not afford to pay for dental care (23.5%) (VDH, 2016). This survey emphasizes the importance of educating pregnant patients about the risks of not partaking in oral health care and identifies the need to improve dental care access and coverage.

Risk factors such as language barriers, poor lifestyles choices, and unhealthy behaviors are more likely to cause pregnant mothers to consume more healthcare services and experience increased adverse events (Al Shamsi et al., 2020). Lack of oral health literacy among women of lower socioeconomic status may prevent them from seeking dental care (Lee et al., 2010). The high cost and questioned safety of dental treatment during pregnancy are also limitations (Lee et al., 2010). Dental insurance is not a part of medical insurance plans. The separate systems of medical care and oral health provisions in the U.S have contributed to pregnant women not receiving care or receiving poor quality care. Northridge and her associates (2020) explain that commercial dental insurance plans are mostly employer-provided benefits and include high yearly maximum benefit limits and high coinsurance rates that have decreased significantly over

time due to inflation, resulting in oral health care spending being higher than that of general health care due to out-of-pocket payments. Low-income populations, in addition to minority and underserved groups, are more likely to receive dental care through facilities, providers, and payment programs that provide support, clinical, and nonclinical services (Northridge et al., 2020). This includes the State Children's Health Insurance Program (SCHIP), Medicaid, school-based health centers, Federally Qualified Health centers (FQHCs), and academic dental institutions (Northridge et al., 2020). Northridge and her colleagues (2020) state that under the federal Medicaid law, it is optional to have adult oral health care benefits because they are not deemed as essential health benefits under the Affordable Care Act (ACA) in certain states. Therefore, oral health coverage is limited to emergency oral services in many states and Medicaid oral healthcare coverage greatly differs across states. Those who receive Medicaid are unlikely able to pay out-of-pocket for oral health care.

Providers of patient care tend to compartmentalize their roles. Dentists may have insufficient knowledge on the pregnant patient population and feel uncomfortable with treatment procedures (Lee et al., 2010). The American Dental Association states that it is now safe to treat women throughout pregnancy, with certain limitations (Mark, 2021). However, many dentists still feel uncomfortable treating pregnant women (Lee et al., 2010). Obstetricians are usually the first line of defense and feel more comfortable prescribing medications and dental treatment, yet they are not as likely to recommend dental care (Lee et al., 2010).

Discussion

Education, as it relates to oral-systemic health care for pregnant women, is beginning to expand, thanks to Medicaid grants for pregnant and postpartum women. Medicaid expansion does not change the fact that healthcare providers lack the proper education, are understaffed,

and lack the time to address oral-systemic health conditions with their patients. The Centers for Disease Control and Prevention (CDC) (2019) stated that they had partnered with the American Academy of Pediatrics (AAP) to create a program called "Protect Tiny Teeth," whose purpose is to provide communications resources about oral health to healthcare providers.This program provides talking points for the healthcare providers regarding oral health and includes videos and infographics about how to reach the target audience (CDC, 2019). This program emphasizes the importance of having conversations about oral health during the prenatal health care visit (CDC, 2019). Pediatric, maternity, and primary care providers can have access to this program for free, which could be beneficial in bringing awareness about the importance of oral health during the pregnancy and postpartum period to both healthcare providers and their patients.

Interpersonal collaboration between dental and non-dental professionals could help bridge the gap between the oral health and medical fields. George et al. (2019) analyzed programs that utilized non-dental professions such as midwives, community-based nurses, healthcare workers, vaccination health staff, health department employees, and field workers, to provide oral health education, assessments, screening, and/or provide referrals to dental services. Non-dental professionals who receive oral health training were beneficial in improving women's oral health and reducing dental caries in children (George et al., 2019). There are many opportunities for these non-dental professionals to provide information about oral health and referrals to dentists during the antenatal and postnatal periods since women frequently come into contact with them during these time periods. Women might not necessarily make it a priority to see a dentist during the pregnancy or postpartum period, which is why it is important for healthcare professionals and other non-dental professionals to receive oral health training so they can provide oral health education, conduct screenings, and make appropriate referrals. Providing

oral health training to staff working for the Women, Infant, and Children (WIC) program would be crucial in reducing oral health disparities because they work closely with low-income pregnant and postpartum women. Additionally, the VDH has provided comprehensive guidance to prenatal and dental providers through a publication, *Oral health During Pregnancy* (2016). This resource offers referral forms, educational resources for dissemination to pregnant women, photographs and infographics of oral conditions that may occur during pregnancy and state of prenatal oral care utilization within the state (VDH, 2016).

Conclusion

The Surgeon General's report on oral health, the *National Call to Action to Promote Oral Health,* was an important document in addressing the need for oral health, preventing disease and reducing dental health disparities (Office of the Surgeon General (US), 2003). Dental diseases, such as caries and periodontal disease, are mostly preventable but still contribute to the public health crisis (Cobb et al., 2017). Providing mothers with dental education throughout their regular OB/GYN appointments and through programs, such as the WIC program, can reinforce the importance of dental visits, screenings, and assessments during the prenatal period and postpartum. By educating health care providers and community health workers about oral-systemic health and pregnancy, providers in return, can educate the pregnant mothers at every prenatal and postpartum visit. It is important to target a range of health providers who are most likely to care for underserved and vulnerable populations with limited or no access to oral health care services (Northridge et al., 2020).

Several interprofessional models of oral-systemic health intervention currently exist to increase knowledge of the recognized link between the oral cavity and the rest of the body. The "Smiles for Life" program is an oral health curriculum designed by the Society of Teachers of

Family Medicine to give medical students a comprehensive oral-systemic approach to medical care (Alqahtani, 2016). Additionally, "Protect Tiny Teeth" offers free educational material about oral health to non-dental professionals. Collaborative relationships between oral health providers and medical providers using evidence-based practices are beginning to take hold. By adding a mandatory dental education component in medical school curricula, a systems change approach to collaborative care and advocacy for policy changes to connect dental and health care can impact public health on a monumental scale. Finally, encouraging legislation advocating for expanding the scope of practice of dental hygienists so that they may be incorporated into OB/GYN and pediatric practices. These types of programs and initiatives are imperative to increase the dental educational base of medical professionals and to improve the lives of women, infants, and children.

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