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Prenatal Care Providers' Perceptions of Oral Health During Pregnancy

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Bachelor of Science
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2008

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Abstract

Prenatal Care Providers' Perceptions of Oral Health During Pregnancy
By Anne Elyse Almquist Wetmore

Evidence suggests that poor oral health during pregnancy may be associated with adverse pregnancy outcomes, such as preterm delivery. Even though periodontal disease is prevalent among pregnant women and preterm birth is a leading cause of neonatal mortalities, research indicates that fewer than half of pregnant were advised by a health care provider to seek dental services during pregnancy. Consequently, few women visit a dentist during pregnancy. In spite of the fact that poor oral health can have serious consequences for a pregnant woman and her fetus, little is known to date about why so few prenatal care providers discuss the importance of oral health care with their patients. Therefore, the purpose of the present research was to explore prenatal care providers' perceptions of and attitudes about oral health during pregnancy. Sixteen prenatal care providers, including four certified nurse midwives and four obstetrics and gynecology residents from a hospital that serves a low-income population and four certified nurse midwives and four obstetrician/gynecologists from a hospital that serves a more affluent population, were recruited to participate in face-to-face, qualitative interviews. Their perceptions of oral health during pregnancy, including the facilitators, barriers, and motivations for oral health promotion, were explored using qualitative methods, phenomenology, and thematic analysis. Themes surrounding their perceptions of access to dental services during pregnancy, patients' vulnerability, time, extent of oral health education, apprehension towards dental services during pregnancy, additional factors that encourage oral health promotion, and behavior emerged from the data. Similarities and differences within and across the provider types and hospitals were identified. Providers' perceptions related to the themes influenced their obstetric practices. Most of the providers had received little, if any, oral health training and reported that dentists are apprehensive to provide care to pregnant women. By connecting prenatal care providers and dentists, as well as increasing their knowledge and awareness of oral health during pregnancy, oral health promotion behaviors may increase and, therefore, improve utilization of dental services among pregnant women. This will have profound effects on the health of the expectant women, as well as the health of their fetuses.

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I. Introduction

Oral health is an important component of overall health. In 2000, the Surgeon General declared, "oral health is essential to the general health and general well-being of all Americans" (D. H. H. S., 2000). Some studies suggest that oral infections, such as periodontal disease and dental caries, may increase the risk of heart disease and preterm delivery, as well as complicate diabetics' blood sugar control. Despite the safe and effective means of maintaining oral health, many individuals still experience needless pain and suffering, complications that devastate overall health and well-being, and financial and social costs that diminish quality of life as a result of poor oral health. According to the Centers of Disease Control and Prevention (CDC), almost one-third of all adults in the United States have untreated tooth decay and one in seven adults aged 35 to 44 years has periodontal disease (CDC, 2007).

Evidence suggests that periodontal disease and dental caries, the two most prevalent diseases of the mouth, can impact a pregnant woman in profound ways including putting her at risk of atherosclerosis, rheumatoid arthritis, diabetes, and adverse pregnancy outcomes, such as preterm delivery (Beck et al., 1999; Mercado et al.; 2000; Thorstensson, 1996; Lamster et al., 2008; Offenbacher et al., 1996). Even though 30 percent of pregnant women suffer from periodontal disease and preterm birth is the leading cause of neonatal mortalities, only 40 percent of pregnant women were advised by a health care provider to seek dental services during pregnancy (New York State Department of Health, 2005; Gaffield et al., 2001; Strafford et al., 2008). Consequently, only 22 to 34 percent of women in the United States visit a dentist during pregnancy (Silk et al., 2008).

In spite of the fact that poor oral health can have serious consequences for a pregnant woman and her fetus, little is known to date about why so few prenatal providers discuss the importance of oral health care with their patients. Therefore, the purpose of the present research was to explore prenatal care providers' perceptions of oral health during pregnancy, including the facilitators, barriers, and motivations to oral health promotion in expectant patients, and how these perceptions influenced obstetric practices using qualitative methods and phenomenology.

II. Literature Review

The phrase "oral health" means being free of tooth decay, gum disease, chronic oral pain conditions, oral cancer, birth defects, such as cleft lip and palate, and other conditions that affect the mouth and throat. In spite of advances in dental care, many Americans unfortunately have myriad oral health problems. For example, dental caries and periodontal disease remain the most common oral diseases in the United States: 91 percent of adults have experienced dental caries and one out of every five adults has irreversible periodontal destruction (Borrell, 2005). These oral health problems can have important health consequences that extend to the rest of the body; recent evidence suggests that there is an association between oral infections and diabetes, heart disease and stroke, and adverse pregnancy outcomes (D. H. H. S., 2000).

Periodontal disease is particularly common among pregnant women and women of reproductive age (D. H. H. S., 2000; Allston, 2001). The prevalence of periodontal disease among women of reproductive age is estimated to be 37 to 46 percent and can be up to 30 percent among pregnant women (New York State Department of Health, 2005). Other oral and dental problems associated with pregnancy include dental caries, erosion,

gingivitis, epulis, increased tooth mobility, and dental problems related to labor and delivery (Hunter et al., 1997).

For pregnant women, poor oral health affects not only aspects of their physical and psychological well-being, but also that of their unborn children. Poor oral health during pregnancy has been associated with adverse pregnancy outcomes, such as preterm delivery and low infant birth weight (Scannapieco et al., 2003). Preterm birth is the leading cause of neonatal morbidity in the United States, costing approximately $26.2 million per year (Gaffield et al., 2001). Despite the prevalence of oral disease among pregnant women, only 40 percent were advised by a health care professional to visit the dentist in a study by Strafford and colleagues (2008). A lack of dental care and poor oral health can also lead to other physiological and psychological problems such as cardiovascular disease, cerebral ischemia, difficulty chewing, and poor self image.

Periodontal disease may contribute to these adverse outcomes of pregnancy as a consequence of a chronic inflammatory bacterial infection. Toxins or other products generated by periodontal bacteria in the mother may reach the general circulation, cross the placenta, and harm the fetus. In addition, the response of the maternal immune system to the infection elicits the continued release of inflammatory mediators, growth factors, and other potent cytokines, which may directly or indirectly interfere with fetal growth and delivery (D. H. H. S., 2000).

Periodontal infection is a gram-negative, anaerobic oral infection (Gajendra & Kumar, 2004). The bacteria responsible for periodontal infection is capable of producing a variety of chemical inflammatory mediators, such as prostaglandins (PG), interleukins (IL), and tumor necrosis factor (TNF), which can directly affect the host. An increase in

the percentage of the gram-negative bacteria is also attributed to the increased levels of sex hormones. These hormones may substitute naphthaquinone, an essential growth factor for bacteria, which may further promote the growth of these bacteria. Offenbacher et al. (1996) found that women with severe periodontal disease have elevated levels of these mediators. These molecules appear to be normal physiological mediators of parturition and have been implicated in inducing low birth weight, preterm babies.

Various physical, physiological, and behavioral mechanisms by which pregnancy might be associated with poor oral health have been proposed in the literature. Pregnancy involves complex physical and physiological changes that can have an impact on women, regardless of their health status (Gajendra & Kumar, 2004). Hormonal changes during pregnancy affect almost every organ system, including the oral cavity. Several studies have suggested that gingivitis during pregnancy is a result of increased levels of female sex hormones (Muramatsu et al., 1994). Progesterone causes increased exudation and affects the integrity of the capillary endothelial cells. It also influences the biosynthesis of prostaglandin in the gingiva. Raber-Durlacher and colleagues (1994) found that cell-mediated response is also depressed, which could contribute to the altered response in plaque. In addition, the ratio of anaerobes to aerobes in the sub-gingival tissues increases significantly from 13 to 16 weeks of pregnancy and remains high until the third trimester (Hunter et al., 1997; Raber-Durlacher et al., 1994). Muramatsu and colleagues (1994) observed that pregnancy gingivitis occurs within the second month of gestation and markedly increases as the pregnancy progresses, reaching a peak in the eighth month. The onset of pregnancy gingivitis may coincide with the increased levels

of progesterone and estrogen in the second month and, later, with the decreased levels observed in the eighth month of pregnancy.

In addition, changes in the gingiva during pregnancy have been well documented (Hunter et al., 1997; Muramatsu et al., 1994). Hormonal and vascular changes associated with pregnancy may exaggerate the response of gingiva to bacterial plaque. Studies have shown that 30 to 100 percent of pregnant women have gingival inflammation (Hunter et al., 1997). However, pregnancy can exacerbate an already existing condition (Gajendra & Kumar, 2004).

Nausea and vomiting during pregnancy may cause extensive erosion of teeth (Gajendra et al., 2004). According to Hunter and colleagues (1997), the palatal surfaces of the upper anterior teeth are most commonly affected during pregnancy. Other studies report that thermal sensitivity occurs because of exposure of the dentine (Gajendra & Kumar, 2004).

Possible behavioral mechanisms have been proposed which might be associated with oral health problems during pregnancy. For example, tooth decay results from repeated acid attacks on tooth enamel, not from pregnancy; therefore, the common increase in tooth decay during pregnancy may be attributed to diet and poor oral hygiene (Gajendra & Kumar, 2004). Because pregnant women usually experience food cravings, there may be an increased risk of tooth decay as a result of changes in diet if oral hygiene precautions are not taken.

Despite the prevalence of oral disease among women of reproductive age and pregnant women, dental services during pregnancy are often avoided and misunderstood by physicians, dentists, and patients. Only 22 to 34 percent of women in the United

States consult a dentist during pregnancy (Silk et al., 2008). Even when an oral problem occurs, only one-half of pregnant women seek dental care. In a study by Al-Habashneh and colleagues (2005), half (49 percent) of the participants reported a visit to the dentist during their most recent pregnancy; whereas, prior to pregnancy, almost three-quarters (71 percent) reported visiting the dentist every six to 12 months. Among those who did not report a dental visit during pregnancy, the most common reasons for not going to the dentist were, "I was not having a problem" (89 percent) and "I chose to delay until after pregnancy" (68 percent). Of the 34 percent who cited "other" as the reason for not having a visit, nearly two-thirds indicated that they did not think they should go to the dentist during pregnancy or had not been informed that they should visit the dentist. In addition, around one-third (39 percent) of the participants indicated that they did not consider a dental visit a priority.

Iida et al. and colleagues (2009) evaluated perinatal health and oral health behaviors using the 2005 New York State Pregnancy Risk Assessment Monitoring System data. The researchers found that 41 percent of the participants reported a dental visit during pregnancy. Only 60 percent of the participants reported discussing oral health with a health or oral health professional during pregnancy.

Boggess and colleagues (2010) examined women's oral health practices and use of dental services during pregnancy. Among their sample of pregnant women, 74 percent reported having made no routine dental visits during pregnancy. Finances were the most common reason reported for not visiting the dentist among the participants who reported not having received routine dental care during pregnancy. However, among the participants who reported having private dental insurance, only 41 percent received

routine dental care during pregnancy. In addition, seven percent of the participants who did not receive routine dental care during pregnancy reported having been told "not to go to the dentist" during pregnancy. This suggests that other factors outside of finances influence the utilization of dental services during pregnancy.

In comparison, Hanson and Persson (2003) assessed utilization of dental services and behavioral beliefs in relation to oral health among Medicaid-eligible adults. When asked to provide a self-rating of their own dental health, nearly one-half (46.1 percent) responded that their oral health was either fair or poor; while only about six percent of the participants reported their dental health was excellent. Despite the common poor oral health self-rating, only 13.2 percent reported utilizing dental services within six months. When assessing their beliefs and attitudes toward dental care, the authors found that 22.4 percent agreed that losing teeth during pregnancy is unavoidable; 38.2 percent agreed that finding a dentist who accepts Medicaid is a waste of time; 18.4 percent reported that their fears were often the reason for putting off utilization; and finances interfered in the daily life of 65.8 percent of participants.

For many women, pregnancy is the only time they have medical and dental insurance and thus provides a unique opportunity to access care (Timothe et al., 2005). Medicaid requires states to cover pregnancy-related services (Markus & Rosenbaum, 2010) and, therefore has served to fill a void in a health insurance environment in which a large proportion of lower and moderate income women happen to be uninsured before and during pregnancy, particularly at the beginning of pregnancy, and again after the postpartum period (Adams et al., 2003). In 1996, 45 percent of lower income women, transitioned from uninsured to Medicaid-insured during pregnancy. In Georgia, most

Medicaid-insured adults only qualify for emergency dental services (Georgia Budget and Policy Institute, 2011). Medicaid-insured, pregnant women, on the other hand, qualify for a more comprehensive set of benefits, including routine cleaning and restorative care. Consequently, pregnancy is an ideal time for various health interventions, including oral disease prevention and oral health education interventions, because it is often the reason why many underserved women of childbearing age seek health care (New York State Department of Health, 2005).

Pregnancy is an opportune time to educate women about the importance of oral health. During pregnancy, women are more receptive to changing unhealthy behaviors that have been associated with an increased risk of poor pregnancy outcomes during pregnancy (Timothe et al., 2005). Poor maternal oral health can be a significant risk factor for the offspring's oral health as well (Berkowitz, 2003). Evidence suggests that most young children acquire caries-causing bacteria from their mothers (Kumar & Samelson, 2009). Oral disease is not only prevalent among adults; dental caries affects more children in the United States than any other chronic infectious disease (Kumar & Samelson, 2009; CDC, 2011). Improving maternal oral health status and behaviors, as well as providing oral health counseling, is of great importance for the prevention of oral disease among adults and children.

Although many studies have been conducted to investigate the link between oral health and adverse pregnancy outcomes, little is known about the practice implications of this potential relationship to patient care. Several studies have been performed to determine physicians' knowledge and practice behaviors regarding oral health care. In a study by Lewis et al. (2000), half of the physicians reported that they had no training in

medical school or residency regarding oral health. In addition, only nine percent had current knowledge regarding oral or periodontal health. Other studies demonstrate that physicians recognize that they receive inadequate training about oral health. Because few women are advised to seek dental care during pregnancy, it is important to understand why providers are not encouraging their patients to improve their oral health during pregnancy.

Al-Habashneh and colleagues (2008) assessed the knowledge, behavior, and attitudes of health care providers' regarding the association between oral health and pregnancy outcomes. Among the physician participants, the majority of the physicians (88 percent) reported advising their patients to delay treatment until after pregnancy (Al-Habashneh et al., 2008). Only half (50 percent) of the participants thought that there was a possible connection between oral health and adverse pregnancy outcomes. Physicians who reported advising a dental visit during pregnancy were more likely to be a gynecologist, older, and female. The results also indicated that greater knowledge was associated with a greater likelihood of advising a dental visit during pregnancy. These findings suggest that better knowledge and awareness play an important role in understanding the benefit of utilizing dental services during pregnancy.

Oral health has increasingly been recognized as an essential component of perinatal health, especially since the association between maternal periodontal infection and adverse pregnancy outcomes was first reported in 1996 (Offenbacher et al., 1996). Even though studies have shown mixed results with regard to the effect of periodontal therapy on birth outcomes, oral health care during pregnancy should be promoted to

reduce unnecessary suffering and improve the quality of life for both the mother and infant.

In recent years, there has been increased emphasis on maintaining good oral health during pregnancy. According to the Surgeon General's report, *Oral Health in America*, perceptions must change to improve oral health and make it an accepted component of general health (D. H. H. S., 2000). Strategies to change the perceptions of health care professionals include updating health curricula and continuing education courses, training health care providers to conduct oral screenings as part of routine physical examinations and to make appropriate referrals and promoting interdisciplinary training in counseling patients how to reduce risk factors common to oral health and general health. Formicola and colleagues (2008a) recommended that dental students and dentists be educated on the systemic diseases and conditions that can be affected by oral diseases. Current research focuses on how oral diseases affect systemic conditions, such as cardiovascular, cerebrovascular, and respiratory diseases, diabetes mellitus, and pregnancy. Approaches that span dental and medical education should create in students, who will soon be practicing providers, an appreciation and value of the connection between dental science and medical science, as well as the opportunity to enhance each profession's capacity to improve and maintain the oral and overall health of individuals and populations (Formicola, 2008b). A study by Lamster and colleagues (2008) showed that dentists, other health professionals, members of the academic community, and members of the insurance industry believed that dental care providers are familiar with the relationship between periodontal disease and other disorders, but other health professionals are not. The professionals believed that health care providers, other than

dentists, were not aware of the relationship due to the amount of information they receive during training, as well as the lack of a defined bridge connecting dentistry and medicine. Medical and dental school curricula should emphasize the connection between oral health and general health. Health care providers involved in the care of pregnant women need to stress the importance of oral health during pregnancy to their patients. Two populations that may benefit from these changes are pregnant women and young children (New York State Department of Health, 2005). Guidelines are needed to assist health care professionals in improving clinical practice guidelines and to promote oral health in pregnant women and children.

Due to the prevalence of oral disease, the possible association of poor oral health with adverse pregnancy outcomes, and women's low utilization of dental services during pregnancy, it is important to understand prenatal care providers' knowledge, attitudes, and beliefs with regard to oral health during pregnancy, including the facilitators, barriers, and motivations to promoting the oral health of their expectant patients, using qualitative methods.

III. Methods

Sixteen prenatal care providers were recruited from two hospitals in Atlanta, Georgia between January and March of 2011. The two hospitals, named Underserved Hospital and Affluent Hospital, were selected based on the hospitals' different patient demographics. By recruiting from multiple sites, the researcher explored the similarities and differences across and between the different provider types and hospitals in regard to providers' perceptions of oral health during pregnancy.

Purposeful, maximum variation sampling was used to select four obstetrics and gynecology (OB/GYN) residents and four certified nurse midwives (CNMs) from Underserved Hospital, and four obstetrician/gynecologists (OB/GYNs) and four CNMs from Affluent Hospital. Through purposeful sampling, the researcher selected and recruited participants who were able to provide information-rich data on their perceptions of oral health during pregnancy. According to Patton (2002), "Studying information-rich cases yields insights and in-depth understanding rather than empirical generalizations" (p. 230). Maximum variation sampling allowed the researcher to identify and describe themes that emerged, despite the degree of variation in recruitment site. Data collection continued until a saturation of themes was observed. Common themes emerged in the participants' responses relevant to their perceptions of the importance of oral health during pregnancy, including the facilitators, barriers, and motivations to promoting the oral health of their pregnant patients.

Informal points of contact at each hospital were established to facilitate the recruitment process. Each contact person assisted the researcher in distributing recruitment fliers and emails, as well as recruiting participants by word of mouth. In addition, the contacts informed the researcher of additional contacts and possible participants, who were then contacted by email. Following the interview, each participant was asked if he or she would distribute recruitment fliers and emails and/or recommend prenatal care providers for the study. When recruitment by email proved no longer successful, the researcher requested the assistance of hospital staff to help locate potential participants at each hospital.

Data were gathered through one-on-one, face-to-face interviews. Each interview lasted about 30 minutes. The benefits of using these methods included the opportunity to build rapport with participants, the ability to adapt the interviews to a participant's responses and probe when necessary, and make observations during data collection that were relevant to the study's results.

The interview guide was developed following an extensive literature review and consisted of both close-ended and open-ended questions (see Appendix A). The close-ended questions functioned to introduce a topic before it was explored further through open-ended questions. The open-ended questions allowed the researcher to explore any possible themes that emerged in the interviews. Probes also were included in the interview guide in case the participant did not expand on his or her beliefs and/or experiences, which were a major focus of the study. Through the pre-developed probes, the researcher was prepared to encourage the participant to elaborate on his or her responses.

The interview guide questions were designed to explore participants' perceptions of oral health during pregnancy (see Appendix A). The guide consisted of 21 questions, including eight questions related to oral health promotion behaviors and experiences, three questions related to training and education, six questions concerning profession and practice setting, two questions about providers' general perceptions and understanding of oral health during pregnancy, one question specific to facilitators of oral health promotion, and one question that invited participants to share additional information. The facilitators, barriers, and motivations to oral health promotion related to each of these

topics were probed following each question. The topics were generally addressed in this order, which created an appropriate flow for the interview.

The location and time of the interviews were determined based on each prenatal care provider's availability. Before an interview commenced, an individual was provided the informed consent form, the primary investigator explained the consent process and then invited the individual to sign the consent form (see Appendix B). After consent was attainted, the researcher provided the participant with a copy of the consent form, as well as a five-dollar gift card to demonstrate appreciation for the provider's time and participation. All of the interviews were digitally recorded, with consent of the participants, and then transcribed verbatim by the researcher.

Thematic analysis was used to analyze the data because it is flexible, can highlight similarities and differences across the data set, and can generate unanticipated insights (Braun and Clarke, 2006). The analytic methods allowed the researcher to explore the participants' perceptions of oral health during pregnancy and identify the similarities and differences within and across the different provider types and hospitals. Thematic analysis also assisted the researcher in determining when negative cases exist, what characterized these negative cases, and how they were different. The analytic method was also selected because it describes patterns across the data. Because little is known about the attitudes of prenatal care providers concerning oral health and pregnancy, thematic analysis helped the researcher identify and understand the themes, patterns, and relationships among the data and within and across the different provider groups and hospitals.

Following transcription, all transcripts were reviewed, emerging themes were identified, and a codebook was drafted based on the themes and subthemes that emerged from the data. Differences and similarities were identified within and across the provider types and hospitals. Typically, identifying a pattern observed in at least three participants' responses was included as a theme or subtheme. After developing the codebook, the researcher hand coded each transcript. After coding, the codebook was revised based on the appropriateness of the codes, themes, and subthemes. Then, the researcher hand coded each transcript again, noting the appropriateness of each code, theme and subtheme. Following coding, the researcher identified the number observations of each theme and subtheme within each transcript.

Phenomenology, the "focus of exploring how human beings make sense of experience and transform experience into consciousness, both individually and as shared meaning," was selected to guide the research (Patton, 2002, p. 104). The phenomenon of interest was promoting oral health in a pregnant woman. Phenomenology allowed the researcher to focus on how the participants put together the phenomena they experienced in such a way as to make sense of the world and, in doing so, develop a worldview. Through the interviews, the researcher learned about the participants' experiences and worldviews, and how they influenced oral health promotion during pregnancy. Through the study, the researcher hoped to learn the perceptions and beliefs of prenatal care providers with regard to oral health during pregnancy, as well as the facilitators, barriers, and motivations for oral health promotion among their expecting patients. The theory allowed the researcher to understand how prenatal care providers understand and make sense of their experiences and realities. The researcher hoped to understand how

providers understand the potential association of oral health and pregnancy, and how this understanding influenced their obstetric practices. In addition, the researcher hoped to learn how prenatal care providers' perceptions of the facilitators, barriers, and motivations for promoting the oral health of pregnant patients influenced behavior.

Qualitative methods allowed the researcher to explore an area of public health where little research had been conducted. Through open-ended interview questions and probes, the researcher was able to make unanticipated discoveries, which was crucial since little research had been performed in this area of public health. According to Patton (2002), an open-ended interview "permits one to understand the world as seen by the respondents…[and] enable[s] the researcher to understand and capture the points of view of other people without predetermining those points of view through prior selection of questionnaire categories" (p. 21). Qualitative methods also allowed the researcher to collect data through observation and adapt the study design in response to findings or changes in the study. In addition, qualitative methods allowed the researcher to select information-rich cases to illuminate the topic under study through purposive sampling.

In comparison to qualitative methods, quantitative methods were not appropriate because little is understood about providers' attitudes towards oral health during pregnancy, oral health promotion behaviors among prenatal care providers, or the facilitators, barriers, and motivations to the oral health promotion of pregnant women. A quantitative instrument could not be developed because the researcher must first discover what topics are relevant to the research question. The findings of the study will encourage future research, which may pave the way for quantitative methods later on, once more is understood. Qualitative methods are necessary in order to explore the area

of interest, an objective that would have been difficult to accomplish with a quantitative survey.

IV. Results

Interviews with the providers shed light on the similarities and differences among their beliefs regarding oral health during pregnancy, as well as the facilitators, barriers, and motivations for promoting oral health in their expectant patients. The interviews also illustrated how providers make meaning of their knowledge and experiences, and how this understanding influences their obstetric practices.

Sixteen prenatal care providers, including four CNMs and four OB/GYN residents from Underserved Hospital and four CNMs and four OB/GYNs from Affluent Hospital, were recruited to participate in the study (see Table 1). Among the patients that received care at Underserved Hospital in 2006, approximately nine percent were self-pay, 34.1 percent were covered through private insurance, and 56.8 percent were covered by public insurance (Financial Performance Report, 2008). In comparison, approximately one in 10 patients treated at Affluent Hospital in 2006 was a self-pay patient, 74 percent were covered by private insurance, and 15 percent were covered by public insurance (Georgia Watch, 2009). The percentages on insurance statuses do not include patients who received charity care, or services delivered with no expectation of payments for those services, or patients who received indigent care, or services provided to patients who are unable to pay any portion of their bill. Affluent Hospital provides approximately one-third less indigent care and charity care than Underserved Hospital (Georgia Watch, 2009). Predictably, the net annual income of Affluent Hospital exceeds that of

Underserved Hospital by $71,081,151. This illustrates the hospitals' differing patient demographics.

Table 1. Participant and Hospital Patient Demographics

Occupation and Hospital Affiliation		
Provider Type	**Underserved Hospital**	**Affluent Hospital**
CNM	4	4
OB/GYN	0	4
OB/GYN Resident	4	0
Participant Total	8	8
Hospital Patient Profile		
Payer Type	**Underserved Hospital**	**Affluent Hospital**
Self-Pay	9.1%	10%
Private Insurance	34.1%	74%
Public Insurance	56.8%	15%

Affluent Hospital consistently ranks first in the nation among community hospitals for the number of children it delivers (Georgia Watch, 2009). Of the estimated 38,906 obstetrical admissions in Fulton County in 2005, approximately 50.5 percent were admitted to Affluent Hospital. Among the remaining 49.5 percent of admissions, approximately one-fifth was admitted to Underserved Hospital.

Using thematic analysis and phenomenology, the following themes and subthemes emerged from the data:

Table 2. Themes and Subthemes

Themes		**Subthemes**	
Perceptions of Access to Dental Services During Pregnancy	Provider's beliefs about a patient's insurance status and/or financial resources for dental services, as well as the availability of dentists who provide care to Medicaid-insured, pregnant patients, influenced his or obstetric practices	**Insurance**	Medicaid insurance status and/or patient's ability to pay out-of-pocket costs or dental insurance premium
		Availability	Presence of dentists who provide care to Medicaid-insured, pregnant women • **Powerline:** Provider mentioned a phone number that patients can call to locate a dentist that accepts Medicaid

			• **OB dentist:** Provider mentioned a dental provider who is accessible to patients and comfortable treating pregnant women
		Opportunity	Provider wanted to take advantage of the patient's increased access to dental services during her pregnancy
Perceived Vulnerability	Provider's beliefs about his or her patient's susceptibility to physical complications as a result of being pregnant and/or having oral health symptoms	**Symptoms**	Provider's recognition of a patient's poor oral health status from a complaint or during an exam, as well as the lack of symptoms
		Pregnancy	Provider mentioned the patient's risk simply because she is pregnant
		Assumptions about Patient's Oral Hygiene and Oral Health	Provider reported making presumptions about the oral hygiene and oral health of his or her patients based on socioeconomic status
Time	The duration of visit with patient limited provider's ability to address oral health	**Priority**	Provider mentioned the need to prioritize due to short appointment times and lots of things to cover in regard to pregnancy
Extent of Oral Health Education	Provider acquired oral health knowledge through formal education, literature, and/or other professional events	**Training**	Extent of oral health education in school
		Literature	Provider acquired oral health knowledge by reading journal publications
		Professional Exposure to Oral Health	Provider attended conference, session, grand rounds, etc., which addressed oral health, later in his or her career
Apprehension Towards Dental Services	Provider observed apprehension from dentists to provide care to pregnant patients and	**Dentist Apprehension**	Provider reported that dentists are not comfortable treating pregnant women

During Pregnancy	apprehension from patients to receive dental services during pregnancy	**Patient Apprehension**	Provider reported that women hesitate to seek dental services during pregnancy
Additional Factors that Encourage Oral Health Promotion	Provider reported that a patient's interest in receiving dental care during pregnancy, as well as the provider's upbringing and/or holistic approach to health during pregnancy, motivated him or her to promote oral health	**Patient Interest in Dental Services**	Provider said that a woman's interest in receiving dental services during pregnancy encouraged oral health promotion
		Upbringing	Provider motivated to promote oral health because he/she was brought up to value oral health
		Holistic Approach	Provider valued oral health during pregnancy due to a strong belief in the importance of good quality of life and general health during pregnancy
Oral Health Promotion Behaviors	Provider efforts, if any, to promote oral health among their pregnant patients	**Referral**	Provider reported that he/she has given a written form to patients for the dentist so that dental care will be provided during pregnancy
		Recommendation	Provider mentioned that he/she suggests to patients that they maintain routine cleanings and get needed treatment done, if needed
		Oral Exam	Provider said that he/she examined a patient's mouth after receiving an oral complaint, during the first prenatal visit and/or after recognizing oral symptoms

While similarities within and across provider type and hospitals were observed, variations within each participant type and hospitals were observed as well. Each of these themes will be discussed in the following sections, as well as the similarities and differences within and across provider type and hospital.

Perceptions of Access to Dental Services During Pregnancy

Thematic analysis indicated that a prenatal care provider's perceptions of his or her patient's access to dental services during pregnancy influenced his or her obstetric practices. Two subthemes emerged concerning providers' perceptions of access: (1) insurance status and a patient's ability to pay out-of-pocket expenses for dental services or the dental insurance premium, and (2) the availability of dentists that accept Medicaid-insured, pregnant patients.

Insurance

Every certified nurse midwife at Underserved Hospital and Affluent Hospital mentioned that insurance status and a patient's ability to pay out-of-pocket costs for dental services influenced his or her obstetric practices. All four of the midwives from Underserved Hospital stated that oral health promotion was difficult in patients without Medicaid or the ability to pay for dental services. One certified nurse midwife who practices at Underserved Hospital said:

> "It's a little bit trickier…if they don't have Medicaid insurance and they're paying cash…I really do not bother giving them a referral unless they ask specifically…it's hard for me to imagine that they would forgo a hundred dollars for a cleaning."

Another certified nurse midwife at the same hospital said:

> "I say to everybody, "you need to go see a dentist while you're pregnant." Now again this is just for Medicaid patients. I am currently in a clinic…and only one [patient] has Medicaid, so for all those patients who don't have health insurance, they don't have access."

These quotations illustrated how a patient's insurance status influenced the CNMs. The certified nurse midwives at Underserved Hospital reported making recommendations to patients with Medicaid to seek dental services during their pregnancy. Medicaid insurance status served as a facilitator to oral health promotion among the CNMs interviewed from Underserved Hospital. In comparison, all of the certified nurse midwives at Affluent Hospital mentioned that a patient's lack of dental insurance or her inability to pay for dental services is a barrier to promoting oral health among their patients. When asked what facilitates her to promote oral health, one certified nurse midwife at Affluent Hospital said:

> "I mean the only issue is with patients that don't have insurance cause most of our patients are insured."

Even though every CNM stated that insurance status serves as a barrier to oral health promotion, all of the providers who practice at Underserved Hospital mentioned that Medicaid serves as a facilitator to promoting oral health within their system; whereas, providers at Affluent Hospital perceived Medicaid status and patients without financial resources as a barrier to promoting oral health among their patients. When asked what makes it easier for her to promote the oral health of her patients, one certified nurse midwife at Underserved Hospital said:

> "Medicaid helps…I don't know how the clinics function that have a lot of indigent patients that…don't get Medicaid."

Another provider at Underserved Hospital describes how Medicaid makes it possible to recommend their patients to seek dental care during their pregnancies:

> "It makes it possible…so for a new American, undocumented person, it's out of the realm of their financial circumstances many many times."

In comparison, three of the four midwives at Affluent Hospital perceived Medicaid as a barrier to encouraging their expectant patients to seek dental services during pregnancy, rather than a facilitator like the certified nurse midwives from Underserved Hospital. One certified nurse midwife at Affluent Hospital shared:

> "The only issue is with patients [that] don't have insurance, cause most of our patients are insured…or if they can't afford um to see a dentist…patients with no insurance or you know Medicaid I think have issues getting in to see someone to take care of their teeth, but insured people…don't."

Most of the residents at Underserved Hospital stated that insurance status influenced oral health promotion in pregnant patients. Similarly to the CNMs at Underserved Hospital, the residents said that Medicaid facilitates oral health promotion. When asked what makes it difficult to make promote oral health, one resident said:

> "The patients who don't have Medicaid…I do a lot of times give them the referral…but sadly if we know that they don't have insurance, it doesn't do too much good to send them [to the dentist]."

This illustrates how the residents' obstetric practices are influenced by insurance status. They also perceive Medicaid as a facilitator to oral health promotion within their system, unlike the obstetricians at Affluent Hospital.

Most of the obstetricians from Affluent Hospital shared that insurance status, specifically Medicaid, and a patient's ability to pay for dental services was a barrier to promoting the oral health. One obstetrician shared:

> "A lot of times the dentist charges a lot of money and…I'm sure that can be a very daunting task. Um, I think financial is can be…and obstacle for some for some of the patients and some people…have insurance but there's not dental coverage…there's not a lot of dental places that take Medicaid, which a lot of pregnant patients have…I think access to the provider and insurance coverages can be a problem."

Almost every provider, regardless of provider type, shared that insurance status and a patient's financial resources for dental services were barriers to oral health promotion among their pregnant patients. Though, providers from Underserved Hospital perceived Medicaid insurance status as a facilitator, while providers at Affluent Hospital saw Medicaid as a barrier to promotion. The providers also shared that these factors influenced their practices.

Availability

Among the certified nurse midwives at Underserved Hospital, only two mentioned that patients might experience difficulty locating a dentist who accepts Medicaid. One provider said, "Sometimes it's difficult for patients to find dentists." Every provider at Underserved Hospital referenced resources that assist pregnant patients in locating a dentist. The two resources mentioned include a phone number called the Powerline which will locate a Medicaid-accepting dentist in a patient's residential area and a dentist who only provides care to Medicaid-eligible, pregnant patients (his office is located across the street from the hospital). One certified nurse midwife at Underserved Hospital stated:

> "We have a doc a dentist that we refer to specifically…who takes care of our pregnant ladies, but with Medicaid they can see any provider that will take Medicaid. So we give them um his number specifically and then we give them…the Powerline number."

Another CNM at Underserved Hospital shared her perceptions on how the dentist across the street facilitates oral health promotion in their patients:

> "He's (laugh) one of our heroes cause he is very confident in treating pregnant women and does it all the time…sometimes I'll say you know go to him…they're giving you a hard time, then drop them…go here and you won't."

Most of the certified nurse midwives from Affluent Hospital mentioned that patients have difficulty locating a dentist, but their comments mainly referenced Medicaid patients' inability to locate dentists who accept their insurance. One provider said:

> "There's few dentists that will take Medicaid patients…patients with no insurance or you know Medicaid…have issues getting in to see someone to take care of their teeth, but insured people…don't…we took Medicaid a couple years ago and I remember…trying to get those patients any kind of specialist referral for whether it be dental of anything it's more difficult because fewer providers take that insurance."

None of the residents from Underserved Hospital said that it was difficult to locate a dentist who provides care to Medicaid-insured, pregnant women. Every resident referenced the dentist who provides care to all Medicaid-insured, pregnant patients and is

located across the street from the hospital. When asked if anything facilitated oral health promotion, one resident responded:

> "Just knowing that the dentist is right across the street…they do not have trouble getting appointments. The dentist only sees pregnant patients. He's not afraid of medications or procedures…just having a direct resource makes it really really easy."

Most of the obstetricians from Affluent Hospital did not share that it was difficult to locate dentists who will provide care to pregnant patients. One obstetrician shared:

> "I certainly get calls from dentists all the time with patients in the office seeking approval, so they're certainly out there."

Only one obstetrician perceived Medicaid insurance status as a barrier to locating a dentist. One obstetrician at Affluent Hospital shared that she provides her patients who cannot afford dental services with the number to a local dental clinic that provides free dental services to Medicaid-insured patients. Later, she also shared that having a dental provider across the street from where she received her obstetric training to whom she could refer her patients was a facilitator to oral health promotion. She said:

> "Where I trained, we actually had [a dental school] across the street, so we actually sent the patients…across the street…It was never a question. It was assumed that they can go across the street and get great dental care for zero, for nearly zero effort."

This quotation illustrates how the availability and provider's knowledge of a dentist who provides care to Medicaid-insured patients facilitated her in promoting good oral health in her patients.

Opportunity

Every provider regardless of provider type at Underserved Hospital mentioned that coverage for dental care among Medicaid patients improves during pregnancy. All of the providers at Underserved Hospital shared that the improved coverage and availability of dentists willing to provide care to pregnant, Medicaid patients motivated them to encourage patients to utilize this free service, but it did not always lead to oral health promotion. One certified nurse midwife shared:

> "We know that it improves pregnancy outcomes but it's also an opportunity that they're not going to have except for when they're pregnant is to actually have something remedied about their mouth."

When asked why she is motivated to promote oral health, she said:

> "It's the access cause the research isn't conclusive…I really push it because of…the access issue because otherwise they don't get it."

This illustrates how increased access influences providers' behaviors. Another provider said:

> "Most of our women this is the only time in their life they have dental care…it's one of those few things that we try really hard to follow up on during pregnancies to make sure they have seen a dentist…the whole reason is the preterm delivery…but otherwise it's just you know trying to take advantage of them having Medicaid."

None of the providers at Affluent Hospital mentioned the opportunity due to a patient's increased access to health services during pregnancy.

Perceived Vulnerability

Presence of oral health symptoms, pregnancy status, and provider assumptions based on a patient's socioeconomic status influenced provider beliefs about a patient's susceptibility to physical complications. This emerged as an important theme. A provider's perception of his or her patient's vulnerability was determined by oral health symptoms brought to the provider's attention though a complaint or during a prenatal visit, her pregnancy status, and the provider's assumptions of his or her patient's oral health status and hygiene.

Symptoms

All providers, regardless of provider type and hospital, shared that they recommend that their patients seek dental services when they come in with an oral health complaint. One provider said:

> "We encourage patients to go to the dentist if they need to go…and get their teeth cleaned or have any procedures that they need."

Another provider at Affluent Hospital said:

> "It's just standard practice…I'm not a dentist, so if you have a mouth problem, you refer a patient to a dentist. (laugh) It's sort of a no-brainer."

Three of the providers shared that the apparent hygiene of a patient's teeth sometimes prompted them to recommend dental services. One provider stated that an "overwhelming or a stinky, stenchy mouth" alerted her to encourage her patient to seek dental services. One of the obstetricians from Affluent Hospital shared how an appearance of good oral health discouraged him from promoting oral health. He said:

> "You can tell if they are taking care of themselves and have healthy gums and healthy teeth and they have access to dental care and they're upper middle class you don't worry about it."

This quotation illustrates how a lack of symptoms or an appearance of good oral hygiene discouraged this provider from promoting oral health in his patients. No pattern among provider type or hospital was observed.

Pregnancy

A provider's perception of his or her patient's vulnerability to physical complications was also influenced by the pregnancy status. Every provider referenced the possible association between poor oral health during pregnancy and adverse pregnancy outcomes. One CNM stated:

> "The hormones of pregnancy can cause um changes in their oral health that may not be um either comfortable or cosmetically pretty…the status of the mouth…is a risk factor for their pregnancy…their mouth is in better shape, they're less likely to have a miscarriage and preterm labor, among other thing."

Even though most of the providers shared their knowledge of the link between oral health and pregnancy outcomes, many shared that without conclusive evidence, providers are hesitant to change their practices.

One CNM at Underserved Hospital shared:

> "There's research that we uh always cite…about you know the link between um oral health and rates of preterm delivery…my understanding is that so far it hasn't been real conclusive…that being said, um it's part of just our regular practice that

all women who come in for prenatal care are given dental referrals and strongly encouraged to see a dentist."

Another CNM explained her motivation to promote the oral health of her patients, despite the lack of evidence:

"Prematurity is a major, major issue and as long as the evidence isn't clear, it's not helpful. I'm assuming that good oral health is essential in promoting the decrease in the likelihood of having a premature baby. It's just easy for me to promote it from that point of view. Who knows? Maybe in ten years they may find a link. It's a major, major problem in this setting. Major!"

Without definitive research, providers are hesitant to state that oral health influences pregnancy outcomes; yet, almost every provider stated that pregnancy impacts a patient's oral health status and oral health impacts pregnancy outcomes. One provider mentioned:

"I think there was something about maybe periodontal disease possibly leading to some sort of pregnancy maybe preterm labor…its obviously…possibly a link so I mean I think if it covers several factors then why not recommend it in hopes it gives em quality of life, good general health, and possibly you know can prevent reduce the risk of preterm labor then it's worth mentioning."

Pregnancy clearly influenced providers' perceptions of patient vulnerability, and, consequently, their obstetric practices. Despite the need for conclusive evidence, providers value health promotion during pregnancy. An obstetrician from Affluent shared his motivation for oral health promotion during pregnancy:

> "I think it's dealing with trying to maintain someone in a healthy condition for nine months…The bottom line is someone is pregnant and you are responsible for them. You don't want them to have a rotten mouth. It affects everything, from their ability to eat to spraying their body with bacteria."

There were no differences observed across provider type and hospitals.

Assumptions about Patient's Oral Hygiene and Oral Health

Among the participants, four providers, including one CNM from Underserved Hospital, one CNM from Affluent Hospital, and two obstetricians from Affluent Hospital, reported making assumptions about the oral health status of their patients based on socioeconomic status (SES). When asked why she does not make routinely promote oral health, the certified nurse midwife from Underserved Hospital said:

> "I can remind them to brush their teeth and floss…most of my patients I think do not even own a toothbrush…I would be surprised if that's part of their normal routine for many of them…and then sometimes I'll see a toothbrush in their purse and it's usually accompanied with some toothpaste and deodorant and to me that's…a marker for house insecurity…maybe I'm wrong in my assumption that most of them are not really brushing their teeth."

This quotation illustrates how the CNM's assumption that her patient was not taking care of their teeth influenced her obstetric practices. Her assumption, which was based on her perception of her patient' SES, discouraged her from promoting oral health and therefore, influenced her obstetric practices. No other provider at Underserved Hospital mentioned making assumptions about oral health status of his or her patients.

Among the providers at Affluent Hospital, one CNM and two obstetricians stated that they had made assumptions based on the SES of their patients. When asked why providers do not promote oral health, the CNM responded by saying:

> "Dental care is probably like last on the list of things that we need to talk about…our patient population being middle class, I mean, probably we assume…they're getting dental care."

This illustrates that providers are making assumptions about the oral health status of their patients based on their SES. The quotation also shows how and possibly why their assumptions influenced their obstetric practices. The CNM shared that assumptions based on SES were made due to time constraints, which then influenced their behavior.

Time

Almost every provider, regardless of the provider type or hospital, mentioned that time and the need to prioritize served as a barrier to encouraging patients to seek dental services. No pattern was observed within or across provider type or hospital. One certified nurse midwife stated:

> "There's only so many issues that you can address um in what's supposed to be a ten-minute tummy check…It's not that it's difficult…it can be time consuming to bring this up and when there's so many things competing for the priority of your time um it's hard to fit that in."

Another certified nurse midwife said:

> "It's the bottom of the list…if periodontal disease is possibly linked to preterm labor. There's a thousand other things that are linked to preterm labor too so, you

know, unfortunately you focus on things that are more likely to cause preterm labor."

One obstetrician at Affluent Hospital mentioned:

"There are so many things that you could talk about. You've got to prioritize and obviously you can tell if they are taking care of themselves and have healthy gums and healthy teeth and they have access to dental care and they're upper middle class, you don't worry about it."

Time serves as a common barrier to oral health promotion among all provider types, regardless of patient demographics.

Extent of Oral Health Education

A theme emerged regarding the extent of oral health education acquired by providers. The providers acquired oral health knowledge through formal education, literature, and/or exposure to professionals interested in the field influenced their knowledge of oral health, as well as their obstetric practices. Three subthemes emerged from the data: education, literature, and other opportunities to learn about oral health later in a career.

Training

Most of the prenatal care providers, regardless of provider type and hospital, reported that they had not received any formal education regarding oral health or specifically oral health during pregnancy. When asked if she received any formal oral health training, one certified midwife from Underserved Hospital said:

> "Nothing at all…like a I hate going to the dentist because I do not even know the language…in terms of actually studying and looking at disease processes of the mouth, I am wholely undereducated."

Similarly, an obstetrics/gynecology resident at Underserved Hospital reported, "It's definitely not formal training in our curriculum."

Among the certified nurse midwives, four discussed training in school related to oral health, but the focus of the training appeared to be around promoting good overall health. One midwife said:

> "There was a dentist that came and spoke to use when I was a student…and how to do a good oral exam, just part of the whole body thing."

Another CNM shared:

> "In my graduate program, we were taught overall assessment skills and so overall assessment skills include if there's bad breath, if they're having problems in their mouth...I've just been taught the overall assessment skills."

Most of the providers reported that they never received formal training about oral health. Among the providers who reported receiving some oral health education, most explained that the emphasis of the training was on overall health promotion, rather than improving oral health specifically.

Literature

Most of the providers, regardless of provider type and hospital, reported that they acquired knowledge about oral health by reading journal publications. One CNM from Underserved Hospital shared:

> "I have learned the most of it just through professional literature and what's percolated through that…articles that have been published and had been featured prominently enough in major uh professional journals…you're just more aware of it."

This illustrates the common use of journal publications to acquire knowledge on health among prenatal care providers.

Professional Exposure to Oral Health

Several providers reported being exposed to professionals with an interest in oral health at professional events influenced their perceptions of oral health and, in some cases, their oral health promotion behaviors. No pattern was observed within or across provider type or hospital. Two of the certified nurse midwives from Underserved Hospital mentioned a dentist who came to speak to the prenatal care providers and how this influenced the providers' behaviors. One CNM said:

> "Several years ago, we had a dentist that was interested in perinatal health and he came to speak to us and he told us about the Powerline, so it's been like ten years that we've been doing it."

This illustrates how an exposure later in his or her career outside of any formal education influenced her perceptions and behaviors related to oral health. Similarly, an obstetrician from Affluent Hospital shared that a professional from the American College of Obstetrics and Gynecology educated him on the possible link between poor oral health and pregnancy outcomes. In addition, one CNM from Affluent Hospital explained:

> "One of…the people that works in our offices…was a dentist…she's an administrator, but she's also sort of like a case manager and um so her perspective of oral health, she's taught me a lot."

This also illustrates the opportunity later in a provider's career to influence his or her perceptions of oral health through exposure to oral health during pregnancy in a professional setting.

Apprehension Towards Dental Services During Pregnancy

Providers' reported encounters with apprehension among dentists and pregnant patients towards dental services during pregnancy emerged as an important theme. Providers said they had observed apprehension from dentists to provide care to pregnant patients and apprehension from patients to receive dental services during pregnancy.

Dentist Apprehension

Almost every provider, regardless of provider type and hospital, stated that dentists are apprehensive to provide care to pregnant women. When asked if she had noticed apprehension among dentists to provide care to expecting women, a CNM at Affluent Hospital responded said:

> "Definitely…that's why we have the [referral] letter…In general, most practitioners outside of OB/GYN are afraid of pregnant people. So, primary care doctors, dentists, I mean anybody is afraid of treating pregnant people."

Similarly, when asked if dentists were apprehensive to provide care to pregnant women, one OB/GYN resident from Underserved Hospital shared:

> "Constantly, because they're afraid of what they can do. What procedure? Anesthetic? Can they do oral surgery during pregnancy? Can they give

antibiotics? What antibiotics can they give them? Is it safe to clean their teeth during pregnancy?"

These quotations illustrate the common, provider belief that dentists are apprehensive to provide dental care to pregnant patients.

Patient Apprehension

Most of the providers from Affluent Hospital shared that patients were apprehensive to receive dental services during pregnancy. No pattern related to provider type was observed. One obstetrician from Affluent Hospital said, "Yes, very much" when asked if patients are scared to seek dental care during pregnancy. A CNM from Affluent Hospital mentioned:

"A lot of them think they can't go to a dentist when they're pregnant. I don't know why, but they think they can't."

Another CNM from Affluent Hospital shared:

"Some patients get the wrong idea that they think that um because they're pregnant they can't get care, but that's not true."

Similarly, one obstetrician who practices at Affluent Hospital said:

"I think that the pregnant patient really listen to you versus just a regular check up because they feel extra, extra vulnerable here in the pregnancy and they really want somebody to tell them what they need to do."

In contrast, two providers from Underserved Hospital stated that patients were apprehensive to seek dental services during their pregnancy. None of the CNMs from Underserved Hospital reported experiencing apprehension from patients in regard to

dental care during pregnancy. Two resident from Underserved Hospital shared that they had experienced apprehension to seek dental services among patients. One said:

> "When women are pregnant…a lot of women get hyper and worry about their bodies and what's going on."

While none of the CNMs at Underserved Hospital had observed apprehension from patients, all of the CNMs at Affluent Hospital had observed apprehension.

Additional Factors that Encourage Oral Health Promotion

Several of the prenatal care providers reported that a patient's interest in receiving dental services during pregnancy, as well as the provider's upbringing and/or holistic approach to health during pregnancy, motivated him or her to promote oral heath. These subthemes are discussed below.

Patient Interest in Dental Services

Most of the providers from Underserved Hospital said that a patient's interest in dental services facilitated oral health promotion. Among the providers from Underserved Hospital, all of the CNMs perceived a patient's interest as a facilitator to promoting oral health. One certified nurse midwife from Underserved Hospital shared that a patient's interested served as a reminder to provide a referral form. She said:

> "You know the patient ask, I give them a referral…I haven't put a lot of brain power into how to make that a little bit more routine."

Another CNM at Underserved Hospital stated that her patients were interested and eager to take advantage of the free dental services available to them during pregnancy, which facilitated oral health promotion, by saying:

> "They know that dental care is kind of hard to come by…I would say probably 75 percent of our women will get their teeth cleaned and get…what needs to be done done...[a] much smaller percent that's…very laizze faire about the whole thing…it's her level of interest [that makes it easier to promote the oral health of patients]."

Two of the residents at Underserved Hospital stated that their patients were interested in seeking dental services due to their increased access. One of the residents said:

> "They're very excited…they haven't had access to dental care before and they probably were having problems before they got pregnant."

Among the providers at Underserved Hospital, the majority mentioned that their pregnant patients were interested in seeking dental services during pregnancy because of the increased access. Most of the providers from Affluent Hospital did not share that a patient's interest in dental services influence their oral health promotion behaviors.

Upbringing

Among all providers, four mentioned that their upbringing's emphasis on oral health motivated them to promote oral health among their patients. Three of the four providers, including two CNMs and one obstetrician, practice at Affluent Hospital. The fourth provider is a resident at Underserved Hospital. When asked why she is motivated to promote oral health, one CNM said:

> "I guess I'm a tooth person…I mean I've always had good dental care growing up…never had a cavity…I've always taken really good care of my teeth, um, so I guess that's what leads to it."

Holistic Approach

Among all of the providers, six mentioned that an emphasis on general health during pregnancy motivated them to encourage a patient to seek dental services during pregnancy. Among the six who reported a holistic approach to health during pregnancy, only one is not a provider at Affluent Hospital. One CNM at Underserved Hospital shared similar beliefs. One obstetrician from Affluent Hospital explained her motivation:

> "It's part of a pregnant patient's well being. Just because you are pregnant you don't just look at the belly…You talk to them about the diet. You talk to them about exercise. You talk to them about...oral hygiene. It's part of the whole big picture. So, you know, to be a good obstetrician you gotta focus on everything."

Behavior

The prenatal care providers reported different efforts they took to promote the oral health of their pregnant patients. Providers shared that they have given a written form, or referral, to patients to give to the dentist sit gat dental care will be provided. Providers also recommended that patients seek routine dental services, as well as services when needed, during pregnancy. In addition, providers shared that they examine a patient's mouth after receiving an oral complaint, routinely during the first prenatal visit, and/or after recognizing oral symptoms.

Referral

While every provider at Underserved Hospital, regardless of provider type, reported providing referrals to patients, a variety in the consistency of referrals reported by providers was observed. One certified nurse midwife shared:

"I've got to confess. I'm not as obsessed about this as some of my partners…I do it when I remember basically…I haven't put a lot of brain power into how to make that a little bit more routine"

Another nurse midwife at Underserved Hospital said:

"With the Spanish-speaking patients, I mention it to a couple of them, but it's nowhere near the level of the Medicaid patients, cause I'm giving them a gift and I don't have that opportunity with the Hispanic patients."

One of the residents said:

"If they…referred without us filling something out, I think that would be great…cause that would take away like our variability in doing it."

These quotations illustrate that varied behaviors related to dental referrals are present within each provider type.

Among the providers at Affluent Hospital, half of the CNMs and obstetricians shared that they provide a written form to patients. This further illustrated varied behaviors across the two hospitals. No differences were observed between the provider types.

Recommendation

While every provider, regardless of provider type and hospital, stated that they recommend that their patients seek routine dental services during pregnancy and services when needed, all of them did not report systematically making this recommendation. No pattern was observed within or across provider type and hospital.

Exam

All of the certified nurse midwives at Underserved Hospital said that they examine a patient's mouth at every first prenatal visit or when they receive a complaint of oral pain. One CNM said:

> "I do on every new OB visit. I do. I don't do a thorough exam of their dental work, but I do look in."

Two of the certified nurse midwives at Affluent Hospital stated that they do oral exams. One said that she does the exam during the first prenatal visit, the other reported that she does the exam when a patient has a complaint of oral pain. The other two CNMs did not share that they do oral exams.

Among the residents at Underserved Hospital, two shared that they examine a patient's mouth only when a complaint of oral pain is received. One resident said:

> "It's interesting. I make a referral to the dentist, but I don't actually look in the mouth. I don't know what I'm looking for and I know that I'm not going to be able to do as thorough an exam as them, which is why I make the referral. But I don't look unless they tell me they have a complaint."

Among the obstetricians at Affluent Hospital, two said that they examine a patient's mouth during the first prenatal visit. One obstetrician shared that she looked in her patients' mouths only when they have a complaint of oral pain. The fourth obstetrician shared that he does not do dental exams.

Only among the certified nurse midwives at Underserved Hospital does there appear to be an emphasis on doing an oral exam. No other patterns among provider type or hospital were observed. The behavior appears to be dependent on the individual.

V. Discussion

Through qualitative methods and phenomenology, the researcher explored the perceptions of prenatal care providers in regard to the importance of oral health during pregnancy, including the facilitators, barriers, and motivations to oral health promotion in expectant patients. Using thematic analysis, seven themes emerged from the data, including perceptions of access to dental services during pregnancy, perceived vulnerability, time, extent of oral health education, apprehension towards dental services during pregnancy, additional factors that encourage oral health promotion, and behavior (see Table 2). Within each theme, subthemes emerged (see Table 2).

Almost every provider, regardless of provider type and hospital, shared that a patient's insurance status and/or financial resources for dental care influenced his or her perceptions of access to dental services during pregnancy, which in turn influenced his or her obstetric practices. This finding is consistent with the literature that suggests that women who do not receive dental services during pregnancy are less likely to have health or dental insurance (Al-Habashneh et al., 2005; Timothe et al., 2005). Differences in perceptions of Medicaid insurance status were also observed. Every provider from Underserved Hospital said that coverage for dental care improves among Medicaid patients during pregnancy and, consequently, they perceived Medicaid insurance status as a facilitator to oral health promotion; whereas, providers from Affluent Hospital perceived Medicaid as a barrier to oral health promotion. Even though pregnancy is the only time that many women have medical and dental insurance, evidence suggests that women with Medicaid coverage are at increased risk of not having a dental visit during pregnancy (Timothe et al., 2005; Mangskau & Arrindell, 1996). These findings suggest that insurance status and/or a patient's financial resources influence providers'

perceptions and obstetric practices. Medicaid has contributed to a decrease in health disparities due to insurance status (Adams et al., 2003). In 1996, 45 percent of lower income women transitioned from uninsured to Medicaid-insured during pregnancy. Women have access to medical care and dental care during their pregnancy, which improves the general health and overall health of the pregnant woman and her fetus. In Georgia, Medicaid-insured, pregnant women qualify for a more comprehensive set of benefits, including routine cleaning and restorative car (Georgia Budget and Policy Institute, 2011).

Provider perceptions related to the availability of dentists who provide care to Medicaid-insured, pregnant women varied. Many CNMs, regardless of hospital, expressed that patients have difficulty locating dentists who accept Medicaid. Among the OB/GYNs from Affluent Hospital and the OB/GYN residents from Underserved Hospital, only one mentioned that Medicaid insurance was a barrier to locating a dentist. Many of the providers from Underserved Hospital, regardless of provider type, commented that availability of dental services improves among Medicaid patients during pregnancy. This finding suggests that availability of dentists is a perceived barrier to oral health promotion among some providers and, therefore influences their behaviors. Consequently, utilization of dental services among pregnant women may be affected.

Evidence suggests that many women have medical and dental insurance only during their pregnancy and thus provides a unique opportunity to access care (Timothe et al., 2005). These providers shared that the increased access motivated them to encourage their patients to visit a dentist, even though this motivation did not always lead to oral health promotion. This motivation was only observed among providers at Underserved

Hospital. This illustrates that insurance status may be an important facilitator to oral health promotion, depending on patient demographics. Providers at Underserved Hospital were motivated to promote oral health because their patients finally had access to dental care during pregnancy.

Prenatal care providers' perceptions of their patients' susceptibility to physical complications during pregnancy influenced their oral health promotion behaviors. Every provider, regardless of provider type and hospital, stated that he or she recommended dental care when a patient complained of oral pain. Provider behaviors were influenced by the presence of lack of oral health symptoms, which illustrates that providers value good oral health during pregnancy. Every provider also referenced the possible relationship between poor oral health and adverse pregnancy outcomes, which illustrated the providers' perceptions of increased risk due to her pregnancy status. In addition, several providers said that they have made assumptions about the oral hygiene and oral health of patients based on SES. No pattern was observed across provider type or hospital. These findings also suggest that providers value oral health during pregnancy. Providers may or may not make a recommendation to seek dental services during pregnancy, depending on the patients' SES.

Almost every provider, regardless of provider type or hospital, said that time and the need to prioritize served as barriers to encouraging patients to seek dental services. Providers perceived time as an important barrier to oral health promotion. Given the numerous topics covered during prenatal visits, providers were forced to prioritize and, therefore, oral health promotion was not a routine practice among most providers, regardless of provider type and hospital.

Providers stated that they had acquired oral health knowledge during their training, by reading journal publications, and/or through exposure to professional events later in their careers. Most of the providers, regardless of provider type and hospital, reported that they had not received any formal training related to oral health. This finding supports the literature. In a study of Lewis and colleagues (2000), half of the physicians reported that they had no oral health training in medical school or residency. Most of the providers, regardless of provider type and hospital, shared that they had acquired oral health knowledge by reading journal publications. Several providers said that they had been exposed to professionals in the field of oral health later in their careers, which increased their oral health knowledge. The findings illustrate that providers are familiar with the importance of good oral health during pregnancy, but their knowledge of oral health and its importance is limited. Additional training connecting oral health and general among prenatal care providers would provide them the skills needed to promote oral health, as well as increase their awareness of its importance during pregnancy.

Most of the providers, regardless of provider type and hospital, stated that dentists are apprehensive to provide dental care to pregnant. This finding supports the literature, which suggests that more than half of dentists are reluctant to perform routine services during pregnancy and three-quarters are reluctant to perform services to relieve pain or swelling associated with a oral pain (Shuk-Yin Lee, 2010). Most of the providers from Affluent Hospital shared that patients were apprehensive to receive dental services during pregnancy; conversely, only two OB/GYN residents from Underserved Hospital shared that they had experienced apprehension from their pregnant patients. Training for

dentists related oral health care during pregnancy and the connection between oral health and general health would decrease apprehension, as well as provide dentists the skill set to appropriately and confidently treat pregnant women.

None of the CNMs from Underserved Hospital mentioned that their patients were hesitant to receive dental care during pregnancy. This supports the literature. Studies suggest that cost more strongly influences the utilization of dental services during pregnancy, rather than concerns or anxiety over dental procedures during pregnancy (Keirse & Plutzer, 2010). Similarly, education among pregnant women is needed to make them aware of the importance of oral health during pregnancy, as well as the safety of receiving dental services during pregnancy.

The providers reported different oral health promotion behaviors. While every provider at Underserved Hospital, regardless of provider type, provided a referral to each patient, a variety in the consistency of referrals reported by providers was reported. Among the providers at Affluent Hospital, half of the CNMs and obstetricians shared that they provide a written form to patients. These findings support evidence in the field. Studies suggest that 45 percent of obstetricians reported writing one to five referrals to a dentist each year (Cunningham et al., 2000). While every provider, regardless of provider type and hospital, stated that they recommend that their patients seek routine dental services during pregnancy and services when needed, all of them did not report systematically making this recommendation. According to the literature, only 51 percent of obstetricians recommend dental exams during pregnancy, regardless of practice setting – private practice or academic setting (Wilder et al., 2007). No pattern was observed within or across provider type and hospital. Only among the certified nurse midwives at

Underserved Hospital does there appear to be an emphasis on doing an oral exam. Among providers in a private practice and academic setting, 55 percent and 30 percent, respectively, look into patients' mouths only when an oral complaint was received. No other patterns among provider type or hospital were observed.

There are limitations of the study and its findings, as well as threats to descriptive, interpretive, and theoretical validity (Maxwell, 1996). It is possible that the researcher misheard a participant's response and/or did not transcribe the interviews accurately. The potential for threats to descriptive validity were minimized by recording the interviews, transcribing interviews verbatim, and collecting information-rich data. These efforts increased the accuracy of the data, and limited the threat to inaccuracy and, therefore, poor descriptive validity. There was a potential threat to interpretive validity. The researchers may have unknowingly ignored participants' meanings, her own assumptions, and/or asked leading questions. Having an awareness of how her background, training, interests, and/or academic affiliations might have influenced interactions with participants, the principal investigator sought to minimize the threat to interpretive validity. In addition, the researcher used an interview guide during the interviews to increase the accuracy and consistency of data collection, as wall as decrease the opportunity for researcher bias. In addition, the principal investigator was mindful of how her responses may influence the data. In order to prevent this from happening, the researcher responded neutrally to participants. The threat to theoretical validity was minimized by searching for negative cases. In addition, individuals may have participated in the study because they have an interest in oral health and/or public health, which would have biased the results. Even though efforts were made to encourage

participants to feel comfortable responding honestly and accurately, the nature of the face-to-face interviews may have led to social desirability influencing the participants' responses. Participants may have responded how they perceived the researcher and/or society would have wanted them to respond. Both of these limitations would decrease the accuracy of the results.

Phenomenology allowed the researcher to explore the perceptions of prenatal care providers in regard to the importance of oral health during pregnancy. Provider responses to the questions showed how they made meaning of their oral health experiences and how their perceptions influenced their obstetric practices. The findings illustrated that there are varying beliefs and behaviors among prenatal care providers in regard to oral health during pregnancy. For example, some of the providers from Underserved Hospital were deliberate about providing a referral, while providers at Affluent Hospital were not deliberate about making a recommendation to seek dental services during pregnancy. The findings also showed that patient demographics influence provider behaviors. Among the participants, four providers, including one CNM from Underserved Hospital, one CNM from Affluent Hospital, and two obstetricians from Affluent Hospital, reported making assumptions about the oral health status of their patients based on SES. Additionally, the findings show that prenatal care providers received no training related to oral health. By educating providers on oral health, awareness among prenatal care providers regarding the importance of good oral health and oral health promotion during pregnancy would increase and, hopefully, encourage providers to promote oral health in the expectant patients. Time was a

common theme in the data. Providers reported not having enough time to promote oral health.

If future studies support these findings, then increased knowledge and awareness of oral health, as well as its connection to overall health, may motivate health care providers to promote oral health. Additionally, providers said that dentists were apprehensive to provide care to pregnant women. Dentists should also be educated on the safety and importance of oral health care during pregnancy. Evidence shows that oral health care during pregnancy, including, prophylaxis, restorations, extractions, and periodontal treatment, is safe and effective (Offenbacher et al., 2009; Kumar & Samelson, 2009). Currently, many dentists are hesitant to provide care to pregnant women, which was a commonly held perception among prenatal care providers. By educating prenatal care providers and oral health care providers, oral health promotion will increase and utilization of dental services should increase as well.

Additionally, future research should assess the relationship between poor oral health and adverse pregnancy outcomes, and, then, national guidelines related to oral health and pregnancy should be developed and disseminated to prenatal care providers and dental care providers by influential organizations, such as the Centers for Disease Control and Prevention and the American Congress of Obstetricians and Gynecologists. Providers need to be made aware of the safety and importance of oral health care during pregnancy. If research showed an association (or no association) between poor oral health and pregnancy and that research was published in a prominent journal, provider awareness of the relationship and its consequences would increase. In addition, research and/or guidelines for prenatal care providers and dental professionals need to be

developed and disseminated in order to decrease the gap in knowledge around the importance of oral health during pregnancy, regardless of the research surrounding the association between oral health and pregnancy outcomes, and the safeness of providing dental services during pregnancy. A coordinated effort from the dental and obstetric communities to establish guidelines could benefit maternal oral health and perinatal outcomes.

VI. Appendices

A. Interview Guide

Due to the nature of qualitative methods, the interview guide may not be followed verbatim and new probes may arise in response to participants' answers.

The purpose of this interview is to learn about your experiences in promoting the oral health of pregnant women. I would like to remind you what the consent form says, which is that what you say in this interview is completely confidential. This interview will be recorded.

1. How long have you been working in this profession?
2. What do you enjoy most about your work?
3. Tell me about oral health during pregnancy?
    a. How did you learn this information?
4. Would you describe any efforts, if any, that you take to promote the oral health of your pregnant patients?
    a. What makes it easier for you to make these efforts?
    b. What makes it difficult for you to make these efforts?
5. Do other prenatal care providers at the hospital generally ask pregnant patients about their oral health care needs?
    a. Why or why not?
    b. (If yes:) What specialty?

6. Can you think back to a patient who had an oral health problem during her pregnancy?

   (If yes:)
   a. How did you come to learn about the oral health problem?

   b. What was the problem?

   c. How did the patient respond to the problem?

   d. How did you respond to the oral health problem?

7. Would you describe a moment in your career when you advised a pregnant patient to seek dental services during her pregnancy?

   a. What motivated you to provide this advice?

   b. Would you describe why, in this situation, it was easy to recommend that the patient seek care during pregnancy?

   c. Would you explain why it was difficult to provide the recommendation to this particular patient?

8. Can you think of a patient who complained of oral pain?

   a. (If yes:) Would you describe how you addressed her complaint?

9. Have you ever advised a patient to seek dental care during pregnancy?

   a. What factors influence your decision to suggest dental care during pregnancy?

   b. What factors discourage you from suggesting dental care during pregnancy?

10. Would you describe a case in which you *referred* a patient to a dentist for care during pregnancy?

    a. What motivated you to do this?

    b. Why was it easy to make the referral during her pregnancy?

    c. What discouraged you from making the referral?

11. What might make it easier for prenatal care providers to learn about oral health problems among patients and connect them to care?

12. Now, think back to your training-both in graduate school and more recently-what were you taught about oral health in general?

    a. How about oral health among pregnant women?

13. Have you ever sought information on oral health during pregnancy outside of any formal training you have received?

    a. (If yes:) What motivated you to seek this information?

    b. (If no:) Would you please describe why you have not sought information on oral health during pregnancy?

14. Does [HOSPITAL NAME] have any policies related to oral health promotion during pregnancy?

    (If yes:)
    a. What are they?

    b. What makes it easier for providers in general to follow these policies?

    c. In your opinion, what makes it difficult to follow these policies?

    d. What helps you personally to follow these policies?

15. Are there any informal efforts to promote oral health among pregnant women by prenatal care providers at [HOSPITAL]?

    a. (If yes:) Would you please describe them?

16. Would you describe any guidelines outside of the hospital that you are aware of that are meant to promote oral health during pregnancy?

    a. Would you describe the factors that influenced [HOSPITAL NAME]'s decision to adopt the guidelines, if applicable?

    b. Would you describe why it's easy to follow these guidelines?

    c. Would you describe why it's difficult to follow these guidelines?

17. Would you please describe any information that you feel would be valuable to prenatal care providers regarding oral health and pregnancy?

18. How long have you been certified to provide prenatal care?

19. Where did you get your training?

20. How long have you been practicing at [HOSPITAL NAME]?

21. Is there any other information relevant to oral health and pregnancy that you would like to share?

B. Informed Consent

Consent To Be A Research Subject

Title: The Experiences of Prenatal Care Providers with Regard to Oral Health During Pregnancy
Principal Investigator: Anne Almquist
Faculty Advisor: Hannah Cooper, ScD

Introduction and Purpose: You are being invited to participate in a research study. The purpose of the study is to begin to explore the experiences of prenatal care providers with regard to oral health during pregnancy, including their beliefs and knowledge of oral health during pregnancy, as well as the facilitators and barriers to promoting oral health among pregnant patients. Results from this study will be used to inform researchers of the opportunities for future research in an effort to promote good maternal and child health.

Procedures: If you agree to participate, I will ask you questions about experiences, beliefs, and knowledge with regard to oral health pregnancy, and what made it easy and/or difficult for you to promote oral health among your pregnant patients. The interview will take about 30 minutes. I will digitally record the interview so I can make sure that I capture everything that you are saying.

Risks, Discomforts, and Inconveniences: There are not foreseeable political or social risks associated with participation in this interview. Some of the topics that we will discuss may be sensitive and private. You may experience shame if others find out your responses. In a moment, I will describe the steps I will take to protect the confidentiality of this interview. At any time, we can stop the interview, take a break, or skip to another question.

Benefits: I do not anticipate that you will personally benefit from this interview. However, the results of this interview will help to develop a strong study of the topic of oral health during pregnancy and will encourage and facilitate future research.

Compensation: A five-dollar gift card will be provided to you for participating in the study.

Confidentiality: To minimize the risk of having others find out your responses, I will keep the digital audio file of the interview and my notes from the interview in a

locked cabinet that only I have access to. I will encrypt the digital audio file when I have completed this interview, and destroy the file once I have finished taking notes on it. While I may share my notes from the interview with others, these notes will not include your name or any other identifying information. When I write up the results of this interview, I will use a made-up name instead of your real name. Within two years of this interview, I will destroy my notes and tapes from the interview.

The sole exception to these protections is that if you mention planned violence towards another individual and/or organization, child abuse, and/or suicide during the interview, I may report contents of interview to proper authorities.

The Emory Institutional Review Board and the Emory Office for Research Compliance have the right to review study records.

Contact Persons: If you have any problems, questions, complaints, or concerns, please contact Anne Almquist at (770) 330 – 7292 or aalmqui@emory.edu. You may also contact my advisor, Dr. Hannah Cooper at (404) 727 – 0261 or hcoope3@sph.emory.edu.

If you have any questions about your rights as a participant in the study, you may contact the Emory University Institutional Review Board at (404) 712-0720 or toll free at 1-877-503-9797 or at irb@emory.edu, which oversees the protection of human subject participants.

It's Your Choice: You are free to choose whether or not to take part in this interview. You can change your mind and stop at any time without penalty. In addition, you are free to skip any question(s). This decision will not adversely affect your relationship with Emory, Atlanta Medical Center, Emory University Hospital Midtown, Grady Health System, or Northside Hospital. It's your choice.

If you are willing to volunteer for this study, please sign below. You do not give up any rights by signing this form. You may keep a copy for your records.

_____	_____	_____
Participant's Name/Signature	Date	Time
_____	_____	_____
Person Obtaining Consent	Date	Time

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