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Erika Meyer, April 21st, 2014

Working towards safe motherhood: Delays and barriers to prenatal care for women in rural and peri-urban areas of Georgia

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Master of Public Health, 2014

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Abstract

Working towards safe motherhood: Delays and barriers to prenatal care for women in rural and peri-urban areas of Georgia

By Erika Velin Meyer

Objectives: Georgia has the second-highest rate of maternal mortality in the United States, and the 8th-highest infant mortality rate. The Georgia Maternal and Infant Health Research Group (GMIHRG) was formed to understand and address the severe shortage of obstetric care providers outside the Atlanta area. Since access to prenatal care can improve maternal and infant health outcomes, we used qualitative methods to identify the access barriers experienced by women who live in rural and peri-urban areas of the state. Methods: We conducted semi-structured, in-depth interviews with 24 mothers who gave birth between July-August 2013, and who live in areas classified as shortage or non-shortage areas of obstetric care services. We also conducted key informant interviews with 4 perinatal case managers, and analyzed all data using applied thematic analysis. Results: We used Thaddeus and Maine's "Three Delays to Care" theoretical framework structure to describe the barriers to care found in this study: delays in a woman's decision to seek prenatal care (such as awareness of pregnancy and stigma); delays in accessing an appropriate healthcare facility (such as choosing a doctor and receiving insurance coverage); and delays in receiving adequate and appropriate care (such as continuity of care and communication). In particular, participants consistently discussed that their perceptions of low self-worth influenced their prenatal care exchanges. Conclusion: These data provide a rationale for developing solutions to current barriers and delays to prenatal care for women in Georgia.

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CHAPTER 1: INTRODUCTION

Access to Prenatal Care in the United States

Every ten years since 1990, the United States Department of Health and Human Services launches "Healthy People", a set of benchmarks and goals regarding the health and well-being of all Americans. These reports serve as an agenda for improving health metrics for the next decade and encompass a wide range of factors and markers. Within the Maternal, Infant, and Child Health Objective, Goal MICH-10 of Healthy People 2020 seeks to "Increase the proportion of pregnant women who receive early and adequate prenatal care" from a 2007 baseline of 70.8% to 77.9%.[1] Data from 2011 show that 73.7% of American women received prenatal care (PNC) in their first trimester of pregnancy, and 6% of women began PNC in their third trimester or did not receive any care at all. Perhaps the most telling statistic from a 2010 study showed that 17.2% of women in a 30-state area reported that they could not access PNC as early as they would have liked. [2] The Healthy People 2020 goal and the statistics supporting it show that the country has much room for improvement.

Where does Georgia stand?

In comparison to the rest of the country, several maternal and infant health indicators show how low Georgia ranks in comparison to the rest of the country. According to the Georgia Department of Public Health (GDPH), the state has the highest maternal mortality rate nationwide, with an estimate of 35.5 deaths per 100,000 live births annually in 2011.[3] Women experience high rates of maternal risk factors, with 23.7% of women categorized as obese when becoming pregnant and 8.1% smoking at the time of delivery, though this may be under-reported due to social desirability bias and not all hospitals collect this data from mothers. [4] Low birthweight (LBW, birth at less than 5.5 pounds) has been connected with low PNC utilization, and 9.4% of babies in Georgia fall under this threshold at birth.[5] For every 1,000 live births

annually, 6.93 of those infants die before their first birthday. This puts Georgia in 34th place for infant mortality and 45th out of 50 states for LBW. Additionally, 13.2% of infants born in Georgia are born preterm. [4]

March of Dimes keeps a wide range of statistics on PNC access and utilization by state. Their database reports that in 2011, 72% of pregnant women in Georgia sought PNC within their first trimester, and 20% initiated care within the second trimester. Of these births, 70% fell into the adequate or adequate-plus category for content and timing of visits, with 18.9% in the inadequate categories.[4] The women who received late or no PNC were primarily Hispanic (13.7% of the sample from 2009-2011), with African-American mothers making up 9.6% of the sample, 8.8% Native American, and 3.6% white mothers.[4] Several studies have found that these racial disparities are the most pronounced in Southern states. African-American women living in Georgia, Arkansas, Tennessee, and Mississippi are more likely to be on Medicaid than their counterparts in other states, and they are also more likely than white women to start PNC later and receive inadequate PNC.[6]

In order to fully contextualize these poor health outcomes, it is crucial to understand the burden on Georgia's obstetric care providers. The state has 159 counties—second in number only to Texas—and using a patient's county of residence in connection with where they receive their care is not always a useful indicator of access. Georgia has 18 Health Districts (see Figure 2 for map), but some encompass large areas and tend to mask disparities between rural and metropolitan parts of the district.[7] Therefore, in an effort to use suitable measures and data to truly capture the extent of the obstetric care shortage in Georgia, a group of Emory medical and public health students formed the Georgia Maternal and Infant Health Research Group (GMIHRG) in 2011.

Background work of GMIHRG

GMIHRG's original goal was to understand and address the increasing lack and maldistribution of obstetric services, as well as possible downstream effects in the coming years.[8] GMIRHG has involved key stakeholders from around the state; these include members of the Georgia Obstetrical and Gynecological Society (GOGS); epidemiologists at the GDPH and the Centers for Disease Control and Prevention (CDC); and professors at Emory University's Rollins School of Public Health and School of Medicine.

Among other advocacy work and research, GMIHRG conducted a quantitative workforce assessment of all obstetric service providers outside the Atlanta Metropolitan Statistical Area (MSA) in 2011. Phone surveys with all obstetric care providers in the state gathered data on delivery rates, reimbursement, workload, and other challenges facing this population. They then grouped the data using geographic units called Primary Care Service Areas (PCSAs). These use ZIP codes, Medicare patient records, and primary care providers to see how far patients travel to reach their doctor, and 96 PCSAs were delineated in Georgia in 1998.[9] County PCSA groups included those in which less than 30% of patients receive their care in their county of residence, and those in which at least 30% of the residents stayed in their county of residence for care. Strikingly, GMIHRG found that 52% of PCSAs in Georgia have an overburdening or complete lack of obstetric care.[8]

Even in PCSAs with adequate PNC services, there are other dynamics at play. As Partridge et al. point out, a mother's uptake of PNC relies on many different factors, including unplanned pregnancy, late recognition of pregnancy, socioeconomic status, and geographic location.[10] Many of the same social and physical determinants that affect maternal health can contribute to pregnancy and infant health outcomes, as well as care-seeking behaviors once the child is born. The initial quantitative work that GMIHRG has done provides a strong foundation for this study.

Georgia ranks so low in perinatal health outcomes – including maternal mortality, pre-term births, and LBW babies – due to a multi-faceted problem of access to prenatal care.

The purpose of this study was to use in-depth interviews with new mothers and perinatal case managers to understand the key challenges to prenatal care faced by women living in shortage and non-shortage areas of Georgia. In order to achieve this purpose, two main research questions guided this project:

1) How do new mothers and case managers describe the barriers to prenatal care for women living in rural Georgia?
2) What are the reactions of these participants to six proposed models of care as potential ways to increase prenatal care utilization around the state?

Clearly, women in Georgia are facing a severe shortage of providers which is projected to become more pronounced in the future. This study attempts to fill a gap in the current knowledge by focusing on the lived experiences of women both in shortage and non-shortage areas of the state. Despite the political and social climate that continues to limit women's healthcare options, particularly those in rural areas, results from this study demonstrate the components of a functional system that must exist for healthy future generations of babies and mothers living in Georgia.

CHAPTER 2: LITERATURE REVIEW

Introduction to Prenatal Care

Experts differ on their definitions of what constitutes adequate PNC, regarding both ideal frequency and content of visits. The temporal guidelines from the American College of Obstetricians and Gynecologists (ACOG) say that adequacy is met if a woman initiates prenatal visits within her first trimester of pregnancy and increases the frequency as she approaches full-term.[10] Alexander and Kotelchuck published a review of five indices of PNC utilization, which demonstrates the wide variation in how a woman's use of care can be categorized.[11] The first is the Institute of Medicine (IOM) or Kessner Index, developed in 1973. It uses three categories of levels of utilization—inadequate, adequate, and intermediate—by comparing gestational age at initiation of care, number of prenatal visits, and type of obstetric service.[11] While pivotal at the time, it has been adjusted to reflect developments in maternal health care, both in care delivered and ability to measure and analyze care.

The next measurement tool is called the graduated index or GINDEX. Alexander and Cornely expanded the levels of the Kessner index from three to six, to make new nominal categories for "no care", missing data, and "intensive" for those women who attended a large number of PNC visits.[11] They theorized that because these women typically had high-risk or high-morbidity pregnancies, their utilization of PNC was important to distinguish. This is especially relevant for linking intensive PNC users and birth outcomes, such as heavy birth weight infants or preterm deliveries.[12] Both this index and the IOM tool require that a woman begin PNC in her first trimester of pregnancy in order to be classified as having adequate utilization.

The Adequacy of Prenatal Care Utilization Index, or APNCU, sums two independent measures: adequate timing of initiation of PNC and adequacy of received services. Unlike the IOM index, the number of actual prenatal care visits was based on ACOG recommendations.[11] It adds an additional category of "adequate-plus care", which makes for a more sensitive index in

determining the relationship between level of PNC and birth outcomes.[13] The 1996 review of these indices used close to 170,000 live birth records from 1989-1991 to calculate PNC utilization, and the APNCU index categorized 20.3% of the cases as inadequate, and 22.6% as intensive. As the authors state, this wide variation in the classification of thousands of births demonstrates that these indices cannot be used interchangeably.[11] Additionally, Partridge et al. posit in their retrospective analysis of poor birth outcomes using the APNCU index that the women receiving adequate-plus care are typically high-risk patients and may have obscured the relationship. [10] Additionally, PNC is only one of several markers associated with poor birth outcomes.

The definition of adequate content of PNC is likewise ambiguous. However, it is usually characterized by three components: early and continuing risk assessment, health promotion, and medical and psychosocial interventions.[14] Several researchers have called for more comprehensive indices, such as those that include qualitative aspects of PNC, in order to more accurately understand the needs along a pregnant woman's care trajectory.[11, 15] As an attempt to systematically measure the content of care, Beeckman et al. designed the Content and Timing of care in Pregnancy (CTP) tool.[16] Their four categories of care included "inadequate", "intermediate", "sufficient" or "appropriate". Meeting adequacy for clinical components included at least six blood pressure checks, two blood screenings, and two ultrasound screenings, and they examined timing of initiation of care as well as timing of clinical interventions. In their subsequent study measuring the strength of this tool, they placed the APNCU against the CTP for 333 women in Belgium. This study only measured three interventions and did not include women at the highest risk of adverse health outcomes, those who did not receive any PNC. Even so, the CTP tool may be more meaningful in accurately categorizing women's utilization of care.[16]

Linking Prenatal Care to Maternal and Infant Outcomes

As with the debate on the appropriate number and content of prenatal visits, studies differ on the linkages between PNC and health outcomes, both for infants and mothers. The

infant health indicators most commonly used are LBW infants and preterm birth. Both have been connected with maternal risk factors such as smoking, inadequate weight gain during pregnancy, and hypertension, and these children are more likely to experience long-term health problems and to die in their first year of life.[17, 18] Even though infant mortality rates have dropped overall throughout the United States in the last several decades, African-American infants still have the highest rates of LBW and VLBW, with 13.18% and 2.94% of these children born under the 5.5 pound threshold.[2] Adverse selection can make it hard to measure the role that PNC plays in birth outcomes, because women at higher risk for complicated pregnancies or deliveries can also be higher users of PNC, and thus the relationship may be confounded.[18]

Several studies have shown that on average, pregnant rural women are younger, have a higher maternal mortality rate, have more children, are less likely to have Medicaid or no insurance, receive less PNC, and die at higher rates than those in urban areas.[19] Other socio-demographic maternal factors which may affect birth outcomes include educational level, marital status, and ethnicity.[6] Women with lower levels of education, those who are un-married, and those who are Hispanic, African-American, and Native American all suffer higher rates of maternal morbidity and mortality.[2] Hussaini et al. found that even when controlling for gestational age, alcohol and tobacco use, education, and mother's history of preterm birth, women who participated in a Health Start program in Arizona were twice as likely to have infants at normal birth weight.[20]

The Problem: Access

This study uses Phillippi's conceptualization of access to PNC as "the potential ability of a woman to enter prenatal care services and maintain care for herself and fetus during the perinatal period".[21] This literature review will explore the following categories of barriers to delineate our current knowledge of the challenges women face nationwide: cognitive, psychosocial, physical, and financial.

Cognitive access

Understanding the need for and importance of PNC is the start of a healthy pregnancy. As many studies have demonstrated, women who have the highest risk for poor birth outcomes are also at the highest risk of initiating PNC late or not at all.[22, 23] Phillippi and Roman conceptualized the "motivation-facilitation theory" of access to PNC.[24] They write that the "drive for care" is the first essential step for a woman to begin seeking PNC, and then the clinic and providers facilitate her continuing care by addressing her needs and intentionally reducing barriers. This is particularly important for high-risk women who may have had negative interactions with the healthcare system in the past, and need the clinicians to both simplify the process and invite them to be active participants in their care.[24]

An additional aspect of cognitive access is when women lack knowledge surrounding the importance of PNC, both for themselves and for their infants. Sword et al.'s qualitative study of low-income women's utilization of PNC found that women face difficulties in finding accurate and comprehensible educational resources on pregnancy, childbirth, and postpartum care.[25]

Women who perhaps face the most basic barrier to PNC are those who discover their pregnancy later than the first trimester. In a 2009-2010 national study, 37.1% of mothers reported that their delay in seeking PNC was due to not knowing they were pregnant.[2] This is especially true for women whose pregnancies are unplanned or unwanted. One study found that 43.1% of its 3,071 participants were initially unhappy about being pregnant and 12.7% feared disclosing their pregnancies to others – both concerns in terms of timely initiation of care. This study also found that the most significant barriers other than lack of insurance were unintended pregnancy and lack of secondary education.[26] A study of 90,000 women receiving Medicaid benefits in New Jersey between 1988 and 1996 found that unintended pregnancy was the strongest modifier of early initiation of PNC. They operationalized this risk factor as when a

woman “ignored the pregnancy, delayed care or missed PNC appointments; is considering abortion [...] or adoption; or totally refuses to accept any aspects of the pregnancy and her future pregnancies”. In this study, women placed in this category were 63% less likely to get early PNC than those who wanted their pregnancy.[22]

Psychosocial access

Women also make their prenatal care choices based on psychosocial factors. Preferred characteristics of a provider play an important role for many women, such as the gender, race, and age of the doctors available to them.[27] Inter-personal behaviors and traits can also influence women’s PNC provider choices. Boerleider et al. conducted a systematic review of factors affecting use of PNC by non-western women in developed countries, and found that direct and indirect discrimination by the providers was an influential aspect of accessibility.[14]

Social support from friends and family members has a well-documented impact on PNC utilization. This is especially true for low-income women who face a myriad of obstacles in receiving any type of healthcare, not just PNC, and increasing their social support can have important impacts on their satisfaction with care received.[28-30] Specifically, ensuring that women are connected to care early in their pregnancy can predict significant positive effects on birth outcomes. Researchers have found that women who face higher levels of psychosocial stress – due to issues such as unemployment, experience of racism, intimate partner violence, single motherhood, and low social support – have a higher prevalence of preterm births and LBW infants.[31-33] Other studies have found that newborn health, as measured by the APGAR test (**A**ppearance, **P**ulse, **G**rimace/Reflex Irritability, **A**ctivity, and **R**espiratory Effort) is directly affected by social support.[34]

Finally, women need to find PNC that is relevant to them, and the importance of patient-centeredness in primary care has been noted in several studies. One study in the Midwest analyzed the interactions of 440 primary care visits and subsequently created a four-pronged

model describing factors which influence patient-centeredness: practice culture, community culture, patient characteristics, and physician characteristics.[35] Other aspects of patient-centeredness noted in studies include sharing of information and decision-making between the provider and the patient, creating a collaborative environment, and culturally appropriate care.[35-37] The Agency for Healthcare Research and Quality published a set of indicators to measure patient-centeredness in a range of healthcare services. While not specifically written for prenatal visits, Wheatley et al. note that these are especially relevant for prenatal care due to their potential impact on both prevention and health promotion.[36]

Physical access

Just under 20% of the United States population is considered rural, and in Georgia, 2 million people live in rural areas.[38, 39] This creates a multi-dimensional issue of physical access to care: rural areas have fewer public transportation options, and few providers live in these areas due to a lack of incentives for them to stay in these communities. In a 2002 study of the healthcare workforce in rural America, nurses made up almost 70% of the providers, while less than 15% of them were physicians. [19] Obstetricians are also typically located in urban areas, leaving family practitioners (FPs) and non-physician providers (such as nurse practitioners and certified nurse-midwives) to do obstetric care. However, due to the high cost of malpractice insurance, more and more FPs are stopping obstetric care practice, with only 22% of them providing pregnancy care.[40] This is an increasing trend over the last decade, with a 20% decline (from 78% to 58%) in the proportion of recent family medicine graduates performing deliveries from 2000 to 2003.[40]

As previously described, Georgia faces a current shortage of OB providers outside the Atlanta MSA. The state defines “rural” as a county with a population under 35,000, and the 108 rural counties of the state have a total of 63 hospitals.[41] Of these, 33 are considered critical access hospitals (CAH), which are state-certified Medicare hospitals located more than a 35 mile

drive from another hospital.[42] Since 2000, nine rural hospitals have closed due to financial issues, leaving 10% of the state's population to drive between 30-60 miles to access a hospital.[43] While this is in some cases equivalent to the distance women travel across metropolitan Atlanta, women in the Atlanta area may be going further due to a preference of provider, as opposed to a pure lack of providers.

Even with adequate OB services in rural communities, women also have to find a way to attend their PNC visits. Many studies cite a lack of affordable transportation as a common logistical barrier for women seeking PNC.[26, 44, 45] Communities outside urban areas tend to lack reliable and efficient public transportation systems, and even when those systems do exist, the cost can be a barrier to women traveling to weekly visits. While Medicaid does provide transportation to PNC visits, restrictions prevent women using Medicaid transport from bringing their other children in this vehicle. This means that they must be able to find childcare for their other children.[26] Even if women have their own vehicle, gas and parking costs at appointments can be prohibitively expensive, particularly depending on the distance traveled.

Some retrospective analyses have found that living in a nonmetropolitan area puts women both at risk of late initiation into PNC and receiving inadequate care.[46, 47] Epstein et al. used three categories of residential location—urban, large rural, and small/isolated rural—to help distinguish between different maternal health care needs of these two sub-groups in Oregon.[48] A study using rural-urban commuting area (RUCA) codes, which look at size and direction of the commuting flows, to analyze pregnancies in Washington State found that women in rural areas were less likely than their urban counterparts to start PNC in the first trimester and to be more likely to smoke.[49] Some studies, such as Epstein's, have found no significant association between residence and access to care. The inconsistent grouping of births contributes to varying results across studies, making it difficult to do true comparisons and designate appropriate funding from the federal and state governments. Hart and Lishner call for a more sensitive unit

of analysis than the pure rural-urban dichotomy, and say that "averaging data across a single rural category fails to differentiate the more acute shortages of providers or the higher rates of some adverse outcomes found in the nation's smallest and most remote areas".[19]

Insurance access

Difficulties with insurance systems and companies, particularly for women covered by Medicaid, is one of the most often-cited factors affecting PNC utilization. Nationwide, around 1 in 6 women lack health insurance (about 17.7%) with 22.4% of black women and 12.8% of white women lacking insurance.[50]

Medicaid is currently the largest financer of maternity costs in the country: as of 2010, pregnancy-related services accounted for about 48% of all Medicaid charges nationwide, and 61.2% in Georgia.[51, 52] This represents a large increase over the last several years; nationwide, the program covered 40% of births in 2008, 44% in 2009, and as of 2010, 48% of births were covered by Medicaid.[51] State Medicaid coverage of various services does not always guarantee that women can access them, because low reimbursement rates have made many obstetric physicians hesitant to provide care to women with Medicaid.[53] Georgia's coverage of PNC services is spotty: visits, vitamins, transportation, and ultrasounds are covered, but smoking cessation services, nutrition counseling, substance abuse treatment, and psychosocial and medical risk assessments are not.[54]

According to a study done by the Kaiser Family Foundation, Medicaid maternity care beneficiaries fall into one of two categories: those already receiving Medicaid benefits due to their income eligibility, and those who become eligible due to their pregnancy. [54] Women are covered by pregnancy-eligible Medicaid benefits for 60 days postpartum, and after that date must apply for income-dependent benefits. In Georgia, pregnant women can make up to 200% of the federal poverty line (FPL) in order to be eligible for Medicaid in Georgia, and after giving birth that percentage drops to 50% of the FPL.[55]

Studies in several states throughout the country have demonstrated that women receiving Medicaid benefits either delay or avoid starting PNC at higher rates than their counterparts with private insurance.[56] Additionally, low-income women face higher prevalence of chronic health issues such as diabetes, obesity, and hypertension, and are therefore at risk for poor maternal and birth outcomes.[54] However, Medicaid does not usually reimburse providers for preconception care, which is when many women could be screened for chronic issues and receive family planning counseling. [53] Researchers have termed it "insurance churning", when application and eligibility requirements make it so women lose coverage and then must reenroll periodically.[53] Due to the fragmented nature of Medicaid's care and strict eligibility requirements, the women who are at the highest risk for the worst outcomes tend to fall in the insurance gap between pregnancies.

Proposed Models of Care

In addition to understanding the current shortage in Georgia, GMIHRG also seeks to research potential solutions for improving maternal and infant health outcomes around the state. As proposed by local MCH researchers and stakeholders, the following models of care could mitigate current challenges facing mothers and providers in Georgia: group prenatal care; expanding the use of mid-level providers, particularly certified nurse-midwives; home visitation programs; mobile clinics; telemedicine consultations with specialists for high-risk pregnancies; and rotating medical teams.

Group prenatal care

CenteringPregnancy (CP) is perhaps the most well-known type of group prenatal care, where health assessment, education and support are combined in a group setting for 8-12 women in similar gestational stages.[57] This model was designed by Sharon Schneider Rising in 1998, and is regulated by the Centering Healthcare Institute in Boston, Massachusetts.[57] Each participant is required to attend at least 10 sessions which combine self-assessments of blood

pressure, height, and weight; provider assessments of fetal heart tones and fundal height; and group discussion. Since each session is allotted between 90-120 minutes, women have ample time to not only ask questions of the attending obstetrician-gynecologist or certified nurse-midwife, but also to learn from each other and discuss common issues in a group setting.[58] This is perhaps the greatest strength of the program, and increased empowerment not only benefits the patients but also their providers. Typically, education topics include nutrition and exercise, discomfort during pregnancy, fetal development, preparation for labor and delivery, infant care, and breastfeeding.[59] Women with low-risk pregnancies are the best candidates for this type of program, since mothers with pre-existing or high-risk gestational conditions need closer clinical monitoring.[57]

Since its institutionalization, the impacts and success of the CP model have been demonstrated in small and large-scale studies and settings around the country. Maternal factors positively affected include: social support during pregnancy, patient satisfaction with prenatal care, compliance with provider recommendations, and maternal knowledge of pregnancy.[58, 60, 61] Infant health outcomes improved include a decreased incidence of preterm birth, LBW infants, and neonatal death.[57, 58, 60, 62] Specifically, pregnant teenagers experience the most marked impacts from participating in the CP intervention. These young women often struggle with receiving adequate social support during pregnancy, and so the social cohesion created in the CP groups is especially important for them. CP can help provide this essential emotional support and thereby improve birth outcomes for adolescent teenagers. [63, 64]

Expanding the use of mid-level providers: certified nurse-midwives

Increasingly, certified nurse-midwives (CNMs) are being recognized as essential parts of a successful maternity care system. The midwifery model, as distinct from the medical model of pregnancy and birth, was first operationalized by sociologist Barbara Katz-Rothman in 1979, and while different levels and types of midwives practice in different settings, “they are all trained to

provide comprehensive prenatal care and education, guide labor and birth, address complications, and care for newborns ".[65] CNMs currently attend around 10% of births nationwide, with state averages ranging from 2.9% in Texas to 23.9% in New Mexico.[66] CNMs have prescriptive authority in all 50 states, but they have varying scopes of practice across the country.[67] Most of them currently work in practices where they care primarily for women with low-risk pregnancies and work closely with physicians.[68]

A 2008 Cochrane review conceptualized three main models of care that utilize midwives: Midwife-led care, where the midwife is the main provider but also routinely refers to and consults with other medical staff; family doctor-led care, where a doctor is present for the birth and a midwife provides intra-partum and immediate postnatal care; and a shared model of care, where different levels of health professionals share the organization and delivery of care throughout pregnancy.[69] The review examined effects of midwifery care on safety, effectiveness, woman-centeredness, and efficiency in 11 trials with 12,276 patients in four countries. In addition to lower cost of delivery and hospital stays, women were significantly more likely to have increased spontaneous vaginal births and 18% less likely to have episiotomies. Infants delivered under physician and midwife-led models were 21% less likely to die before 24 weeks. Women reported higher levels of perceived control during labor and higher satisfaction across a variety of indicators (i.e. preparation for labor, choice for pain relief, and advice) in the midwife-led models as opposed to other models of care.[69]

Considering the current difficulties in recruiting and retaining obstetrician-gynecologists to practice in rural areas due to cost and volume of work, several studies have looked into the viability of CNMs as a mid-level solution to address deficiencies. The American College of Nurse-Midwives found that just 22% of CNMs practice in rural areas.[70] However, Johganten et al. argue that due to the way CNMs treat the labor and delivery process, they are "well-positioned to influence maternity care practices that can optimize maternal and neonatal outcomes…and

should be better utilized to address the projected health care workforce shortages."[68], Midwives can be trained to implement the Centering Pregnancy model, combining two impactful ways of delivering care into one setting.[71]

Home visitation programs

In various studies nationwide and with different groups of women, researchers have demonstrated how effective in-home visitations can be in decreasing poor birth outcomes such as preterm births and LBW infants. These impacts—including improved nutrition, increased attendance at childbirth education classes, increased partner and family support in pregnancy—are thought to be so strong since public health nurses and social workers directly address each woman within her own environment. Olds et al. conducted the pivotal study from 1978-1980 which set the foundation for successful home visitation programs.[72] They found that when high-risk obstetric patients received health and pregnancy education, connections with community and social services, and increased social support, many maternal and infant health outcomes were improved.[72] Due to the potentially high impact of this type of public health intervention, the American Academy of Pediatrics has recommended the following requisite characteristics for efficacious home visitation programs:

1) Specifically targeting mothers/families in the greatest need, rather than attempting to function as a universal program;
2) Home visits should begin during pregnancy and continue for two to five years postpartum;
3) The program should be family-specific and flexible according to their needs and risks;
4) Positive health-related behaviors, particularly for infant care-giving, are actively promoted rather than focusing solely on social support;
5) A broad focus on supporting all of the family's needs;
6) A focused aim on reducing family stress;
7) Use nurses or well-trained paraprofessionals.[73]

Olds et al. posit: "Without an appreciation of the full set of stressful family and community influences on women's health, habits, and behaviors, office-based personnel are not in a strong position to foster change".[72] In their study, impacts of the program were particularly strong for two high-risk groups: teenaged mothers, who had infants with higher birth

weights; and mothers who smoked, who had a decreased incidence of preterm births. Related studies have found numerous other benefits: increased utilization of PNC; increased use of health care and community resources such as family planning services, WIC, and immunizations; decreased maternal smoking; improved maternal nutrition; and subsequent birth spacing.[72, 74-76]

Beyond clinical or psychosocial outcomes experienced by mothers and infants, home visitation programs can also reduce financial and programmatic strains on healthcare systems. Costs associated with maternal and neonatal hospitalizations, welfare and food stamp payments, and child protection and foster care placement costs have all been decreased when mothers participate in home visitation program. Research has demonstrated an especially sharp decrease in unintended pregnancies.[77, 78]

Mobile clinics

By retrofitting recreational vehicles (RVs) or large vans with medical supplies and exam spaces, care providers around the country have used mobile clinics to increase access to a variety of services. In a variety of locations, these include mammography, dental care, primary care services, cardiology screenings, and sexually transmitted diseases (STD) screenings.[79, 80] One program in New Haven, Connecticut aimed to connect at-risk women with PNC as well as identify those with substance-abuse issues and deliver treatments as well as refer them for other social services.[81] They treated over 5,000 women and children over two years, and connected 21% of their PNC clients to WIC benefits. Another example in Palo Alto, California found that the 108 women using PNC via the “Women’s Health Van” initiated care an average of three weeks earlier than their control group counterparts, and 79.6% of them did so within their first trimesters, as opposed to just 59.8% of the women in the control group.[82]

These mobile clinics not only increase access to services by being physically present in underserved neighborhoods or areas, but they can also decrease other barriers such as cost,

language, and insurance. While many examples of this type of intervention exist across the country on a small scale, very little has been published about its effectiveness in increasing access and utilization of PNC, particularly in rural areas.

Telemedicine consultations with specialists

Defined as "the use of telecommunication technologies to assist in the transmission of medical information and services between health care providers and patients", the interest telemedicine for obstetric care is growing around the country.[83] There are various applications for this type of care, but videoconferencing (with systems such as Google Hangout or Skype) can provide the most interaction between patients and clinicians. One highly successful initiative is hosted by the University of Arkansas, which provides high-risk obstetric consultations via 30 call centers throughout the state, and in 2012 delivered 5,221 telemedicine visits across the state.[84] In Tennessee, the Solutions to Obstetrics in Rural Counties program (STORC), allows rural hospitals to have 24-hour access to a maternal fetal medicine specialist as well as weekly visits from an advanced nurse practitioner and sonographer.[85] A study of almost 300 women with gestational diabetes found that those enrolled in a telemedicine management program who visited a clinic once a month had lower rates of cesarean delivery and fetal macrosomia (high birth weight infants) than their counterparts who were seen weekly in clinics. [86]

Rotating medical teams

Finally, a large OB care group in Atlanta has proposed the viability of increasing access to OB-GYN services in shortage areas of the state by developing a rotating schedule of visiting physicians. Participating physicians would spend 3-4 days each month providing women in an underserved area with OB-GYN care. Accommodation incentives would serve to encourage physician participation in the program, as well as the coverage of all malpractice costs bye the group practice. The aim of this model is to reduce the burden on rural physician colleagues, as well as increase the availability of services to women in these communities. While this model may

exist in other parts of the country, very little exists in the current literature to provide an evaluative base, and more research should be done.

Mothers' Perspectives

Currently, most of the literature regarding PNC is focused on the clinical connections between PNC and infant and maternal health outcomes. However, barriers have also been described in many qualitative studies focusing on specific populations, such as women who speak no or limited English, women receiving Medicaid benefits, and those participating in group prenatal care. One influential study called "Listening to Mothers" surveyed thousands of mothers around the country about their pregnancies, from planning through postpartum. In 2002, this was the first national-level poll of maternity experiences, and augmented data collected through hospital discharge records and birth certificates. The study has been conducted five times since, with some women participating longitudinally, and the project gives important qualitative and quantitative insight into the range of women's experiences.[87]

While most of their data focuses on the delivery and postpartum narrative, some findings have important implications for PNC. For example, 17% of women whose births were covered by Medicaid did not have a regular medical provider, as opposed to 10% of women whose birth was covered by private insurance.[87] Additionally, 26% of women covered by Medicaid were uninsured at the time of postpartum follow-up (approximately 10-15 months after delivery). Decision-making during birth was a key portion of the survey, which found that 2/3 of the women would prefer to deliver in a birthing center and slightly more (69%) of the participants believed a mother should be able to choose a vaginal birth after Cesarean (VBAC). Women also reported that these decisions influenced their choice of provider, with 22% of the sample having changed providers during pregnancy.

Conclusion

Campbell, Stanfod, and Ewigman called for a "comprehensive theoretical framework" to guide the process for researching and understanding women's prenatal care usage, as well as to aid in influencing policy and program change.[56] This paper proposes the adaptation of the internationally-recognized "Three Delays" model to achieve this nuance. Originally conceived to understand and prevent maternal mortality in the developing world, Thaddeus and Maine conceptualized this model and posit that three main phases of delays impede women's access to obstetric care during delivery: "1) Delay in deciding to seek care on the part of the individual, the family, or both; 2) Delay in reaching an adequate health care facility; 3) Delay in receiving adequate care at the facility".[88] The framework has since been applied in various country and cultural contexts, as well as in other aspects of family planning decision-making and care-seeking.

As Phillippi notes in her 2009 review of studies examining women's perceptions of access to PNC, "It is difficult to determine which of these [barriers] exert the greatest effect on women or how they interrelate unless the women themselves are asked. Utilization data cannot reveal the woman's lived experience of accessing care".[21] Kotelchuck, the researcher behind the APNCU index, notes in his discussion of the Pregnancy Risk Assessment Monitoring System (PRAMS) that mother's voices are essential for monitoring public health programming and birth experiences.[89] By focusing on a critical and unique population, and adapting a well-respected model to fit the data, this study attempts to fill an existing gap in the qualitative literature. Additionally, it follows the mission of GMIHRG to help catalyze change for prenatal programming and care delivery in Georgia.

CHAPTER 3: MANUSCRIPT

Working towards safe motherhood: Delays and barriers to prenatal care for women in rural and peri-urban areas of Georgia

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STUDENT CONTRIBUTION:

As a part of the Georgia Maternal and Infant Health Research Group team, the student was responsible for all aspects of the study: development of the interview guide, participant recruitment, interview facilitation, verbatim transcription, code creation and analysis. Dr. Monique Hennink provided guidance on qualitative methods, analysis and scientific writing throughout the entire project. Dr. Roger Rochat supplied his content and topical advice and expertise regarding maternal and infant health as well as review of the manuscript.

Abstract

Objectives: Georgia has the second-highest rate of maternal mortality in the United States, and the 8th-highest infant mortality rate. The Georgia Maternal and Infant Health Research Group (GMIHRG) was formed to understand and address the severe shortage of obstetric care providers outside the Atlanta area. Since access to prenatal care can improve maternal and infant health outcomes, we used qualitative methods to identify the access barriers experienced by women who live in rural and peri-urban areas of the state. Methods: We conducted semi-structured, in-depth interviews with 24 mothers who gave birth between July-August 2013, and who live in areas classified as shortage or non-shortage areas of obstetric care services. We also conducted key informant interviews with 4 perinatal case managers, and analyzed all data using applied thematic analysis. Results: We used Thaddeus and Maine's "Three Delays to Care" theoretical framework structure to describe the barriers to care found in this study: delays in a woman's decision to seek prenatal care (such as awareness of pregnancy and stigma); delays in accessing an appropriate healthcare facility (such as choosing a doctor and receiving insurance coverage); and delays in receiving adequate and appropriate care (such as continuity of care and communication). In particular, participants consistently discussed that their perceptions of low self-worth influenced their prenatal care exchanges. Conclusion: These data provide a rationale for developing solutions to current barriers and delays to prenatal care for women in Georgia.

Key words: access, prenatal care, rural, Georgia, barriers, qualitative methods, Medicaid

Objectives

Within the Maternal, Infant, and Child Health Objective, Goal 10 of Healthy People 2020 seeks to "Increase the proportion of pregnant women who receive early and adequate prenatal care" from a 2007 baseline of 70.8% to 77.9%.[1] Data from 2011 show that nationwide, 73.7% of women received prenatal care (PNC) in their first trimester of pregnancy, and 6% of women began PNC in their third trimester or did not receive any care at all. The Healthy People 2020 goal and the statistics supporting it show that the country has much room for improvement.

In comparison to the rest of the country, several maternal and infant health indicators show how low Georgia ranks in comparison to the rest of the country. According to the Georgia Department of Public Health (GDPH), the state has the highest maternal mortality rate nationwide, with an estimate of 35.5 deaths per 100,000 live births annually in 2011.[3] Women experience high rates of maternal risk factors, with 23.7% of women categorized as obese when becoming pregnant and 8.1% smoking at the time of delivery, though this may be under-reported due to social desirability bias.[4] Low birthweight (LBW, or birth at less than 5.5 pounds) has been connected with low PNC utilization, and 9.4% of babies in Georgia fall under this threshold.[5] For every 1,000 live births annually in the state, 6.93 of those infants die before their first birthday. This puts Georgia in 34th place for infant mortality and 45th out of 50 states for LBW. Additionally, 13.2% of infants born in Georgia are born preterm. [4]

March of Dimes reports that in 2011, 72% of pregnant women in Georgia sought PNC within their first trimester, and 20% initiated care within the second trimester. Of these births, 18.9% fell into the "inadequate" category of care based on content and timing.[4] The women who received late or no PNC were primarily Hispanic (13.7% of the sample from 2009-2011), with African-American mothers making up 9.6% of the sample, 8.8% Native American, and 3.6% white mothers.[4] African-American women living in Georgia are more likely to be on Medicaid

than their counterparts in other states, and they are also more likely than white women to start PNC later and receive inadequate PNC.[6]

An understanding of the burden on Georgia's obstetric care providers is critical to fully contextualize these poor health outcomes, but measuring them is difficult. The state has 159 counties—second in number only to Texas—and using a patient's county of residence in connection with where they receive their care is not always a useful indicator. In an effort to use suitable measures and data to truly capture the extent of the obstetric care shortage in Georgia, a group of Emory medical and public health students formed the Georgia Maternal and Infant Health Research Group (GMIHRG) in 2011.

GMIHRG's original goal was to understand and address the increasing lack and mal-distribution of obstetric services, as well as the possible downstream effects in the coming years.[8] Among other advocacy work and research, GMIHRG conducted a quantitative workforce assessment of all obstetric service providers outside the Atlanta Metropolitan Statistical Area (MSA) in 2011. Phone surveys gathered data on delivery rates, reimbursement, workload, and other challenges facing this population, and they then grouped the data using geographic units called Primary Care Service Areas (PCSAs). Strikingly, GMIHRG found that 52% of PCSAs in Georgia have an overburdening or complete lack of obstetric care.[8]

As Partridge et al. point out, a mother's uptake of PNC relies on many different factors, including unplanned pregnancy, late recognition of pregnancy, socioeconomic status, and geographic location.[10] Many of the same social and physical determinants that affect maternal health can contribute to pregnancy and infant health outcomes, as well as care-seeking behaviors once the child is born. Georgia ranks so low in perinatal health outcomes – including maternal mortality, pre-term births, and LBW babies – due to a multi-faceted problem of access to prenatal care.

Clearly, women in Georgia face a severe shortage of providers which is projected to become more pronounced in the future. This study used in-depth interviews with new mothers and perinatal case managers to understand the key challenges to prenatal care faced by women living in shortage and non-shortage areas of Georgia. The study also aimed to understand reactions of these participants to six proposed models of prenatal care delivery. Despite the political and social climate that continues to limit women's healthcare options, particularly those in rural areas, results from this study demonstrate the components of a functional system that must exist for healthy future generations of babies and mothers living in Georgia.

Methods

Qualitative research was used to gain a detailed and nuanced understanding of the barriers to perinatal care in rural Georgia from the perspectives of service providers and women who have recently given birth.

Study Sites

Four study sites in Georgia were selected for this study in order to understand differences in access to prenatal care; two counties considered to have a shortage of obstetric (OB) services and two with adequate OB services (see Figure 1 for map). Shortage areas were defined by the annual delivery workload of providers including obstetricians, certified nurse midwives and family practitioners working in the same Primary Care Service Area (PCSA). Using workforce assessment data that GMIHRG collected in 2011, providers performing more than 144 deliveries a year were considered to be in a provider-shortage area. Calculations were based on data from the Council for Maternal and Infant Health, the American Congress of Obstetricians and Gynecologists (ACOG) and GMIHRG's advisors.[8]

The four study sites are shown in Figure 1: Burke and Ware Counties were classified as shortage areas with insufficient OB services, and Chatham and Dougherty were classified as non-shortage areas. Burke County (pop. 25,000) is a rural area with the urban center of Augusta nearby, and most notably has seen the closure of its hospital-based labor and delivery unit in December 2012. Ware County (pop. 35,000) is surrounded by 10 counties whose OB services are at-risk, deficit, or non-existent, thereby representing a broader region with few perinatal services. It includes the city of Waycross where the Southeast public health district office is located. Savannah is the urban center of Chatham County, with several hospitals providing OB services (including an Army hospital) and a population of 142,000. In Dougherty County, Albany is the primary urban area in the southwest part of Georgia and the county has a population of around 70,000.[90]

Key Informant Interviews

Four key informant interviews (KII) were conducted with perinatal case managers to gain a provider perspective of the barriers facing pregnant women in the study areas. Key informants targeted were nurses or social workers practicing as perinatal case managers in health departments, care management organizations, clinics, or hospitals. The purpose of the KII was two-fold: a) to provide perspectives of health professionals on study issues and b) to identify core issues to refine the design of the interview guide with new mothers (described below).

Key informants were recruited by email through professional networks of GMIHRG, which included health department staff, obstetric providers, and maternal and child health advocates. Professional networks were effective for recruiting key informants because perinatal case managers are few in number, making the pool of participants very small; they are often mobile, working in multiple locations; and in high demand, with limited scheduling flexibility. Potential participants received detailed information via email about GMIHRG's goals, the study itself, and a request to participate in an interview. Four perinatal case managers were recruited: two working in shortage counties and two working in non-shortage counties. Two of the case managers who participated are registered nurses (RNs) and the other two have a social work background; three practice within a healthcare setting with home visits as a part of their job (a hospital and two health departments), and one solely does home visitation. All are women, three are non-Hispanic white and one is non-Hispanic black.

A semi-structured interview guide was used to understand the obstetric and prenatal care system in Georgia and the context of the provider shortage. Topics included participants' professional background and training, their positions within the obstetric care system, services available for pregnant women, current gaps and limitations in providing care to obstetric patients, and opportunities for expanding obstetric and prenatal care services. Key informants were also asked for feedback on the viability of six proposed models of care, including: a rotating

team of visiting OB/GYN's to rural areas, a tiered model of care for in-patient and out-patient services which heavily relies on mid-level practitioners such as certified nurse midwives (CNMs) and nurse practitioners (NPs); telemedicine consultations with specialist providers for high-risk care; group prenatal care programs; mobile clinics; and prenatal home visitation programs. It was important to understand whether these proposed models could address any of the challenges currently experienced in service delivery. Three interviews were conducted in person at the participants' office, and one via telephone due to scheduling limitations.

In-depth Interviews

Twenty-four in-depth interviews were conducted with women who had given birth within the last year to understand their perspectives on prenatal care services. Eligible participants were women at least 18 years of age, who spoke English and resided in the study areas at the time of their last delivery. We sought to recruit a diverse sample of mothers and therefore posted fliers about the study in a variety of locations with distinctly different socio-demographics. Fliers were placed in health departments and crisis pregnancy centers, daycares, pediatrician's offices, and notices in newspapers and at public libraries targeted the local population more generally. The participants varied by age, racial/ethnic background, marital status, employment status, health insurance coverage, number of children, and level of education (Table 1). Similar recruitment strategies were employed in both shortage (n=13) and non-shortage study sites (n=11).

A semi-structured interview guide was developed with guidance from MCH researchers and physicians, current literature, and issues reported by key informants (described above). The interview guide included the following topics: personal experiences with pregnancy and delivery, services used and suggestions for improvements, their post-delivery health, the health of their baby, and plans for future pregnancies. Mothers were also asked about the feasibility of the same potential models of care as discussed in the key informant interviews. All mothers who completed an interview were given a $20 gift card.

Interviews with mothers were conducted by trained interviewers in a location of the participant's choice (typically a public library or health clinic). Most interviews (17) were conducted in person, while 7 were conducted by telephone due to transport and scheduling difficulties.

Data Analysis

Two research assistants who conducted interviews transcribed the recorded interviews verbatim using Sound Organizer software. All interviews were de-identified to remove names, job titles, locations and other information that may identify participants. The 28 transcriptions were managed and analyzed using MaxQDA10 (Verbi software 2014). Initially, all transcripts were read and memos were developed to distinguish the core issues in each participant's narrative, which subsequently were listed in a codebook. To improve reliability, a portion of the data was used to do inter-coding agreement with a researcher outside of the study, and codes were adjusted accordingly before coding all remaining transcripts. While dozens of codes and themes were generated, analysis followed an iterative process, and extra consideration was given to those themes which directly addressed the research questions and aims of the study.

MaxQDA was used to organize data based on codes relevant to each research question, and searches were conducted to gather relevant segments of data. Applied thematic analysis was used in order to explore the main challenges that women face in receiving prenatal care and understand participants' feedback on proposed solutions. This methodology included cross-case comparisons as well as comparisons between the women in these groups: those living in areas with and without a shortage of obstetric care services; those with different types of insurance (Medicaid, employer-based plans, and/or Tri-Care); and those of varying parity. As the nuances and various perspectives emerged from the data, the "Three Delays" theoretical framework was selected as a structure for the results, and the richest topics within each delay were

described.[88] The data and relevant literature were repeatedly consulted in order to ground and validate the findings.

Ethical Considerations

The project was reviewed by the Emory Institutional Review Board and exempted as it was not deemed human subjects research. However, ethical issues were addressed throughout the study. To protect vulnerable populations, we excluded mothers under age 18, un-documented individuals, and those who did not speak English. Each participant was informed of confidentiality of the interview and data. All participants gave verbal consent for recording the interview. Any identifying information was kept in a password-protected file only accessible to the researchers. After the study was completed, all data were destroyed.

Data Limitations

Women under 18 years old and those who do not speak English were not included in this study. The study also excluded women who are undocumented immigrants, due to the legal and ethical issues. Therefore, the results presented do not report the views of these types of mothers, who may have faced some of the most severe challenges in accessing appropriate prenatal care due to their age, language, and/or legal status.

Results

The study results are structured by the stages of the "Three Delays" model described earlier: decision to seek prenatal care, accessing an appropriate healthcare facility, and receiving adequate and appropriate care. Each delay is described in turn, showing the differing perspectives and nuances of each delay as it relates to this study context. The latter half of the results section describes participants' views on several proposed models of care, to understand the advantages and disadvantages perceived by mothers and key informants.

First delay: Decision to seek prenatal care

The first category of delays for women seeking prenatal care relates to their awareness of pregnancy, concealment and stigma of pregnancy, and the perceived importance of prenatal care. First, a fundamental delay in the decision-making process for women to seek prenatal care is recognizing their pregnancy. Five participants were unaware they were pregnant until after their first trimester (12 weeks or later), while seven discovered their pregnancy between 8 and 12 weeks. Home pregnancy tests confirmed pregnancies for 16 participants, while six women had their pregnancy confirmed by a doctor and two by their local health department. Only three participants specifically noted that their pregnancy was unplanned; these women described they were "in denial" about their pregnancy, and therefore did not seek prenatal care during their first trimester.

A second delay in deciding to seek prenatal care is a woman's knowledge of pregnancy and perceptions of the importance of prenatal care. Several key informants noted that many of their clients do not have reliable sources of information regarding pregnancy, and are "trying to figure it out all on their own". One working in a shortage area described it this way:

> "When you don't have a supportive mother, or a mother who was 14 when she had you, and didn't get prenatal care and you were fine, why would you get prenatal care? They don't understand the value and importance of everything that could go wrong – but they just think, 'Oh whatever, I'm pregnant.'"

When asked about where they received information regarding pregnancy, the most common sources mentioned were the health department and their doctor's offices. Seven participants in shortage areas noted that besides friends and family members, these were their only sources of information, and they did not seek out books or internet sources. All of the seven women who mentioned seeking out information from the internet had at least some college education, and three of them were the only ones in the sample with private insurance, suggesting that women with higher education levels and access to private insurance are more likely to utilize extra sources of information.

A final delay in deciding to seek prenatal care relates to potential shame and stigma associated with the pregnancy. Key informants described that they frequently encounter clients, particularly adolescents, who try to conceal their pregnancy due to potential shame and stigma associated with teenage pregnancy. Mothers also observed the issue of shame surrounding teenage pregnancy in their own communities, especially in small rural areas of Georgia, which tend to be both politically and religiously conservative. Perceived stigma delays teenagers to seek prenatal care, and therefore they may not become aware of any issues during early pregnancy.

Second delay: Accessing an appropriate health care facility

The second range of delays in seeking prenatal care was two-fold, relating to finding an appropriate doctor or healthcare facility. First, women described challenges in selecting a doctor. This involved a complex process of navigating personal preferences (including age, gender, and/or length of time practicing medicine), logistical issues (such as the provider's proximity to her home) and accepted insurance plans. Some women described that they preferred to see female providers who had children of their own, whereas others relied on recommendations from friends or family members in order to make their decisions. Women in shortage areas had a much harder time meeting all of these criteria, simply due to a lack of providers in their area.

Second, accessing a doctor was also influenced by participants' health insurance coverage, particularly for those on Medicaid. During their most recent pregnancy, 21 of 24 participants received Medicaid, either as their sole insurer or to meet a shortfall not covered by their private insurance. Participants reported delays in accessing prenatal care related to difficulties with the lengthy Medicaid application system, finding current information on healthcare providers accepting Medicaid patients, and then locating a preferred doctor who accepted their Medicaid health plan. These issues caused long time delays in seeking prenatal care, ranging from weeks to months. One participant reported a five-month wait for Medicaid coverage, and said, "It made it very frustrating because I was here, and I was pregnant, and I needed to see a doctor, and I couldn't even get the insurance to go see a doctor."

Third delay: Receiving adequate and appropriate care

The final category of delays relates to receiving adequate and appropriate PNC. Three main themes emerged related to quality-based delays: consistency and continuity of care, communication, and their perceived self-worth as patients.

Several women living in one of the shortage areas ended up switching providers when they discovered that the provider they had been seeing would not deliver their baby due to the recent closure of the local hospital's labor and delivery unit, which contributed to a delay in continuity. Some of these women had the resources available (transportation, time, and money) to travel to the provider's new location about an hour away, so they remained with the same doctor when he moved. However, women with Medicaid often experienced delays in initiating care since not all providers accept Medicaid patients and women were more restricted in their choice of providers. One woman said, "I got discouraged about that and I finally found a doctor when I was three months pregnant." The list of providers accepting Medicaid patients often changed between their pregnancies, so even after building a relationship with a provider they

could not return to the same provider for their next pregnancy. One participant described it this way:

> "They should have took [*sic*] them off instead of giving us numbers to doctors that didn't accept Medicaid anymore. So we were going to these doctors and they were turning us around. So it took me about a month to find an actual doctor."

All of the mothers and key informants described the importance of seeing a small number of providers consistently throughout their pregnancy to provide continuity. One key informant said, "That matters to people. That impacts their healthcare, that makes them want to come back, that makes them feel engaged in their healthcare." For some mothers located in non-shortage areas, having a reliable provider outweighed any logistical and financial issues they may have faced in reaching their provider. They valued the bond that they were able to create with their obstetrician or family physician throughout their pregnancy, especially when it came time to deliver. One mother said, "I personally like to see just one doctor because I feel like they know what's going on with me. We have a past, like a little history with each other so I'm comfortable with them." Women who were not able to have this due to insurance or transportation challenges were often frustrated by having a rotation of physicians without one consistent or familiar face. When asked to describe her worst PNC experience, one woman said, "The whole switching of the doctors. Not having a bond with the doctor that was there to actually deliver – that was really stressful actually." Participants in shortage areas who had to drive long distances to their appointments had a decreased incentive to do so when they lacked continuity of care.

Communication with all levels of the healthcare system (e.g. health departments, doctors, nurses, and Medicaid personnel) delayed access to prenatal care for some women, and sped up the process for others. Mothers appreciated having procedures and potential issues explained to them during PNC visits, as well as having the opportunity to call their provider's office for more information in between appointments. After switching providers due to being unhappy with the communication style of her first doctor, one mother described feeling more satisfied with the

education and knowledge she received in terms of her health and the health of her baby. Even though the end result was positive, this process of switching providers took several weeks, delaying her connection to care.

However, poor communication pervaded the labor and delivery process for several participants, particularly in shortage areas. Many women regretted a lack of discussion about particular procedures (such as receiving Pitocin, an epidural, or a C-section) before they arrived at the hospital. One mother described it this way: “They didn’t really go over what to expect or what to do when this happens. They didn’t really go over how the day would be, I guess.” Another mother regretted not discussing her desire for a natural birth prior to delivery, and said, “It’s something I would have appreciated more discussion about prior to the moment when that needed to happen. […] It felt like that decision was made really kind of around me as opposed to with me which was frustrating.” For women in shortage areas who had to travel extensive distances to deliver, some were meeting their delivery doctors for the first time and as one mother put it, “It’s hard to have that conversation when you’re trying to push a baby out.” Finally, three mothers strongly linked continuity of care and communication when they described that no one explained why they saw different providers at each visit, and that this was unexpected and exasperating. This deficiency in care received represents a severe delay for women who did not have clear and open communication with their providers.

Strikingly, several women with Medicaid described feeling less worthy to use certain aspects of the healthcare system. One woman assumed she waited longer at PNC appointments because she had Medicaid, and many women mentioned that their providers would only see Medicaid patients on one particular day of the week, which made them feel like they needed to be separate from patients with private insurance. Across the sample of 21 women who had Medicaid benefits, many of these mothers felt they had access to fewer providers and medical technologies than women with private insurance, which decreased their overall satisfaction with their

pregnancies and PNC experience. These three deficiencies in quality—poor communication, inconsistent care providers, and low patient self-worth—all demonstrate delays for women in rural and peri-urban Georgia in accessing adequate and appropriate prenatal care.

Feedback on proposed models of care

In addition to understanding the challenges which women in Georgia face in accessing prenatal care, the other integral aspect of this research involved gathering feedback on six proposed models of care. These potential solutions for the current obstetric shortage crisis outside of metropolitan Atlanta were developed through literature reviews and discussions with current maternal and infant health stakeholders (see Methods).

Group prenatal care

Almost all of the women noted that a group setting for education and prenatal assessments would be helpful in decreasing the isolation of the pregnancy experience, especially for those in rural areas without a strong local support system. Four participants mentioned that they had either participated in group PNC during a previous pregnancy or had heard of something similar in their communities. Key informants also described several benefits to group PNC, such as the extended time that women have with providers. Another benefit which can reduce the delay in reaching a healthcare facility is that Medicaid transport can bring women who do not have their own vehicles to these sessions, because they are considered doctor's visits in addition to being educational. The most common concern with a group-based model of care was the lack of privacy, because not everyone feels comfortable sharing experiences with a group, even women in similar stages of pregnancy.

Certified nurse-midwives and/or nurse practitioners

Participants were given the option of receiving care from mid-level providers such as certified nurse-midwives (CNMs) and/or nurse practitioners (NPs). Based on their understanding of the roles and skill levels of these clinicians, mothers had mixed reactions to this

model. Some women thought that these providers are "still learning" and "need to follow doctors", so they did not want prenatal care from CNMs or NPs and preferred to see physicians. Key informants validated these misconceptions when they mentioned that educating patients about the training and skills of CNMs and NPs would have to occur to ensure that women feel comfortable with these types of providers. Additionally, they stressed that information-sharing and effective collaboration between providers would have to be prioritized. However, five participants did have care from NPs and CNMs during their PNC visits or delivery, and appreciated the "more personalized attention" and "hands-on care" they received. Key informants all mentioned clients who have seen midwives and enjoyed their experiences, and discussed how this could eliminate some of the "waste" that currently occurs when all patients see physicians even for low-risk care. Four mothers in shortage areas who did want to receive care from a CNM or NM had heard about the benefits from friends or relatives, but could not access them due to a lack of local clinicians, or Medicaid's lack of coverage of charges.

Home visits by health care professionals

Participants overwhelmingly supported a model in which nurses or physicians made home visits during pregnancy. Three of the mothers who are not partnered mentioned the benefit of not having to make childcare arrangements during their prenatal appointments, which can be costly and difficult to schedule. Five women noted that they had received postpartum checkups in their homes and appreciated the convenience of not having to take their child(ren) out of the house. Additionally, women without reliable transportation liked that this barrier would be eliminated, removing the need for using public transportation or Medicaid transport, both of which are time-consuming. One mother stated, "I think that would save a lot of people a lot of stress and worrying about how they can get to their doctor's appointment and how they can make it on time." Another woman without a vehicle of her own said: "I like that one too [...] because when I had car trouble that time – if they came to the house I would not have had to miss that

appointment." One key informant manages a home visitation program through her health district office, and does home assessments for women with medically high-risk pregnancies who are referred by their obstetricians. She described in detail the clinical and educational benefits that this type of care provides for women, all the way from their first trimester until their child is two years old.

Mobile clinics

Receiving medical services in a traveling van was familiar to several participants, who noted that they had attended mobile clinics for cardiovascular checkups and dental care. One participant said, "I actually loved it because [...] it's closer to you without being the doctor's office." Several participants cited convenience as a positive factor for this model, because these clinics could be located closer than doctors' offices, and that this benefit would be the most pronounced for those without transportation of their own. One key informant brought up the possibility of using nurse practitioners or midwives in these mobile clinics, in order to decrease the workload on obstetricians, and two others described having this type of program in their community in the past. However, privacy was again mentioned frequently as a potential deterrent due to shame and stigma. Especially in small rural communities, visiting a mobile clinic parked in a public place such as a grocery store or library parking lot may be off-putting to some mothers and prevent them from seeking its services.

Telemedicine consultations with specialists

When presented with the concept of having specialist consultations via video conference, participants had mixed reactions. Women in shortage areas particularly appreciated the ability to receive the care from these providers without having to travel long distances. They noted the cost and time required for a multiple-hour trip to a provider's office, especially when considering they would need to go several times during pregnancy. However, the technology required concerned several of the participants, saying that they struggle with video conferencing when using it for

personal communication and that it could be a hindrance for some people. One woman said, "I think that if I was trying to have a conversation with my doctor and the sound kept cutting out that would be very problematic and take up a lot of necessary time." Others mentioned that they did not think all women would have access to a computer with a camera or to an internet connection, so the consultations would have to occur at their provider's office. Key informants recalled some communities with this type of care in the past, but these programs were cut due to the decreasing state healthcare budget, and so they were concerned about long-term viability.

Rotating medical teams

Most participants did not favor rotating medical teams. Mostly, mothers and key informants were worried about a lack of consistent providers throughout pregnancy, and women repeatedly expressed concerns that they would spend more time re-telling their medical and pregnancy histories to new providers than actually receiving care. Alluding to continuity of care, key informants described "opportunities for missed issues" when patients see different providers for each visit, and mothers did not want anything to "fall through the cracks" or have to "play catch-up" with these constant transitions. However, some women thought that two or three doctors would be beneficial for getting multiple opinions on any issues during pregnancy. Getting to know several doctors could also help women prepare for delivery, and as one participant said, "If your specific doctor can't come [to deliver], then you can have one of the doctors you already met with and know." Key informants also mentioned that this is a way to "get at least some care out to these women" living in shortage areas of the state.

Discussion

Studies with women from various socio-demographic backgrounds across the United States have demonstrated that accessing timely, adequate, and appropriate prenatal care is a multi-dimensional issue. This study aimed to understand the unique experiences for women in four rural and peri-urban areas of Georgia, two with a shortage of obstetric care services and two considered non-shortage areas. Both prenatal case managers and new mothers living in rural areas of the state described a variety of interactions with the prenatal care system, and the "Three Delays" model proved to be a useful foundation for the data.[91] Based on participants' experiences in Georgia, three main issues emerged as particularly relevant from the second delay: communication, consistency of care, and women's perceptions of lower self-worth.

Communication

Almost every participant described some aspect of communication—either positive or negative—as being an integral part of her most recent pregnancy experience. This validates findings in many other studies about the importance of strong patient-provider communication, because it demonstrates to women that their concerns are heard and addressed, and impacts their decision to continue care.[92] Raine et al. found that "empathic communication reduced anxiety, facilitated a constructive relationship with the [provider] and allowed effective information exchange". They categorized two main response patterns when women experienced poor communication: they either reduced the delay themselves by working harder to get the information they needed, or the delay became a total lack of access when women became averse and disengaged.[93] Women in our study discussed these frustrations as a part of their PNC experiences as well, which should serve as a catalyst for strengthening systems of communication. The positive examples of communication that participants discussed, such as feeling comfortable to ask questions both during and between appointments, are useful examples of how to improve perceptions of and access to quality care.

In addition to actual quality and accessibility of care, an integral part of the Three Delays framework also involves women's *perceptions* of quality and accessibility. These perceptions can affect women's decisions to seek care through both their satisfaction or dissatisfaction with their experienced health outcomes, or their satisfaction or dissatisfaction with the services they received. Wheatley posits that "it is important to acknowledge that medical encounters are not only micro-level processes that involve interaction of individuals, but that they occur in a social context shaped by macro-level societal structures".[36] This social context is especially relevant for rural Georgia, where the shortage of obstetric care providers is compounded by high rates of uninsured individuals, teen pregnancy, and poverty. Women may not always have had positive experiences with the health care system, so strong communication with clinic staff and providers is essential for facilitating a supportive environment.

Continuity of care

Along with communication, continuity of care throughout a pregnancy is an essential feature in building a positive relationship with one's healthcare provider and reducing delays in receiving PNC. Our study validates these findings, and specifically highlights their importance for women who receive Medicaid benefits. [27, 94-96] Participants consistently discussed delays and anxieties related to the process of applying for coverage and getting connected with a consistent provider, so increasing continuity of care could reduce the effects that this had on accessing timely PNC. A midwifery caseload model could be a viable option for mitigating some of these delays, and was supported by our participants. When midwives see patients before conception all the way through to delivery, they can deliver patient-centered care with the support of physicians if it becomes medically necessary. [97]

Women's perceptions of value/self-worth within the healthcare system

Currie and Wiesenberg conceptualized a three-phase model of women's healthcare-seeking behavior.[98] The second phase is particularly relevant to some of our study's findings,

where a woman considers if she *can* seek health care, based on if she views herself as valuable within her social and cultural context. Participants in our study described feeling less worthy of particular aspects of the healthcare system due to their status as Medicaid beneficiaries. This confirms findings of a qualitative study in Oregon with 120 new Medicaid enrollees, which examined how their health outcomes were affected by their interactions with the Medicaid system. The authors found that about 20% of participants decided to not pursue further care after experiencing delays in accessing care or frustrating initial interactions with a provider or administrator.[96] Mothers who perceive they have lower value during one pregnancy may decide not to seek early and adequate PNC for subsequent pregnancies, and since over 60% of deliveries in Georgia are currently covered by Medicaid, this is a critical issue to address. More research is needed to understand how having Medicaid benefits affects women's ability and intention to seek prenatal care, particularly in rural areas where providers may be limited.

Thaddeus and Maine write in their analysis of the second delay that users and providers are often cited as the "only actors in the healthcare-seeking process" and that this neglects the important structural and cognitive processes that occur between recognition of pregnancy and receiving care.[88] However, while the literature notes that women with less education or lower incomes tend to seek out PNC at a lower rate, all of our participants reported presenting for PNC after discovering their pregnancy. Even though some discovered their pregnancies quite late, they all made the important decision to seek care. We did not explore in-depth women's specific reasons for seeking care, particularly in shortage areas, and this could be a fruitful topic for future investigation. Patient education in evidence-based formats such as Centering Pregnancy or home visitation—both during pre-, post-, and intra-partum care—can ensure that women continue to prioritize these healthcare visits.

Conclusion

Data from mothers and key informants demonstrate that the current context of prenatal care is not conducive for women to seek care in Georgia, especially when contextualized in the "Three Delays" model. Self-esteem was not explicitly addressed in interviews, but was implicitly described in women's discussions of feeling pressured into making certain decisions and not having personal agency within their PNC context. They commonly felt like passive recipients of PNC, rather than active participants in their care, which may have reduced their commitment to continuing care. Data from other settings show that this lack of empowerment delays women's ability to make timely and appropriate decisions regarding their pregnancies and choice of providers, and this was evident in participants' descriptions of initiating care.

While this study is limited to selected areas of Georgia, its findings demonstrate the necessity of increasing adequate and appropriate access to prenatal care for this unique population. Georgia policymakers must consider the perinatal barriers and delays currently facing mothers and providers as they work to improve the state's maternal health outcomes. This will require a holistic focus—not solely increasing resources for clinicians, nor simply improving facilities available to women, but fully strengthening the environmental and structural conditions that encourage women to seek care early in their pregnancies. A particular focus should be placed on decreasing the delays to care for those populations most at risk of adverse conditions: women living in rural areas with a shortage of providers; single mothers; teenaged mothers; women of color; and those receiving Medicaid benefits. Proposed solutions should take into account the voices of mothers and providers currently facing the reality of living and practicing maternal medicine in rural Georgia.

CHAPTER 4: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Ensuring safe motherhood and a healthy start for infants will require addressing the three categories of delays experienced by mothers in our study: delays in decision to see prenatal care, delays in accessing an appropriate healthcare facility, and delays in receiving adequate and appropriate care. While improving clinical maternal and infant health outcomes should be an important goal for the state of Georgia, providing truly patient-centered care should be the driving force for making these advancements. This kind of system creates partnerships that serve both women and their providers, and can ultimately facilitate women's increased access to timely and context-specific prenatal care. Strong support should be given to the programs and policies which can reduce these delays, such as the ones described below.

One such program that has a solid evidence base for achieving these goals is group prenatal care, specifically the Centering Pregnancy model. These interactive sessions increase patient knowledge of pregnancy and birth, empower women to act on their own health, and can help them learn to navigate the complex healthcare system by learning from their peers and providers. CP has been particularly successful in reaching groups of women who may not have knowledge of or resources to attend traditional childbirth education classes. This additional time with providers and social support may be especially important for women in under-served areas of Georgia who feel a lower sense of value due to their interactions with the healthcare systems. Additionally, providers who may feel burned out with the traditional model of successive 10-15 minute appointments can learn to practice obstetric care in a different format. Facilitating group prenatal care visits can help them deepen connections with patients and fellow providers, which can increase strong communication and continuity of care, two major themes of delays found in our study.

Programs for safe motherhood in Georgia

- Group prenatal care (such as CenteringPregnancy)
- Expansion of certified nurse-midwives
- Coordination of care

The midwifery model of care can also serve the purpose of increasing patient education and empowerment. When women have a greater knowledge of the importance of PNC, this reduces the first delay in making the decision to seek care. Since midwives typically see women from pre-conception care through their pregnancy and delivery and then for post-partum care, they can provide much-needed comprehensive family planning services that address this gap in understanding. Several of our participants noted that their pregnancies were unplanned, and research has shown that having an unwanted/unplanned pregnancy can increase delays in seeking and continuing with PNC. GMIHRG's 2013 survey of certified nurse midwifery students found a high likelihood of their willingness to practice in rural areas, with 54% of the respondents answering "extremely likely" or "likely" to accept a job in a shortage area after graduation.[8]

Finally, no matter the model of PNC, creating a coordinated system of care for women and obstetric care providers in Georgia will help address the delays experienced by participants in our study. Smooth collaboration between different levels of providers, such as CNMs, obstetricians, and maternal-fetal medicine specialists, must occur. Incentivizing referrals to the appropriate level of care will make sure that women with high-risk pregnancies are seen by the right provider, but will also eliminate over-utilization of resources by women with low-risk pregnancies. Additionally, coordination of care must occur between providers and health insurers, both for patients with Medicaid and private health insurance. Our participants discussed the delays related to having to reapply for Medicaid benefits for successive pregnancies, and this "insurance churning" creates a population of women who do not have continuous access to healthcare. As described by both mothers and case managers, health departments play a fundamental role in assisting women in accessing Medicaid benefits and providing PNC. Since they provide such essential services at the community level, strengthening their collaboration with providers will create a more coordinated system, particularly in shortage areas of the state.

Georgia currently has a wide range of public health issues to contend with, including high rates of obesity and diabetes, increasingly frequent closures of rural hospitals, and over half a million living in the state without insurance. This study provides essential qualitative context for the current state of prenatal care access in Georgia, particularly in areas of the state with a shortage of obstetric care providers. We hope that the results provided here will allow policymakers to recognize and include these lived experiences in designing a more patient-centered system of care.

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Tables and Figures

Figure 1: Map of Georgia's Obstetric Care Service Availability

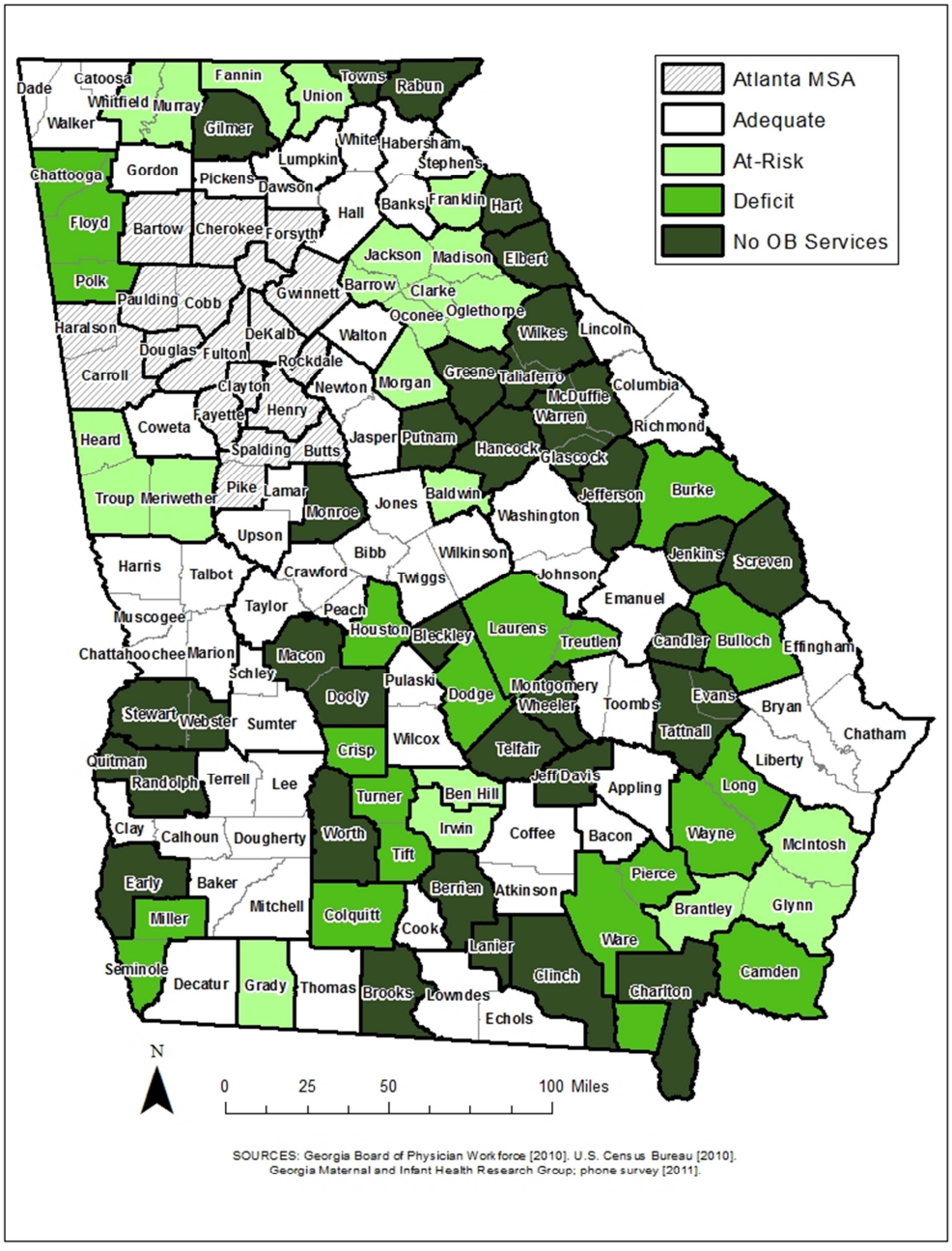
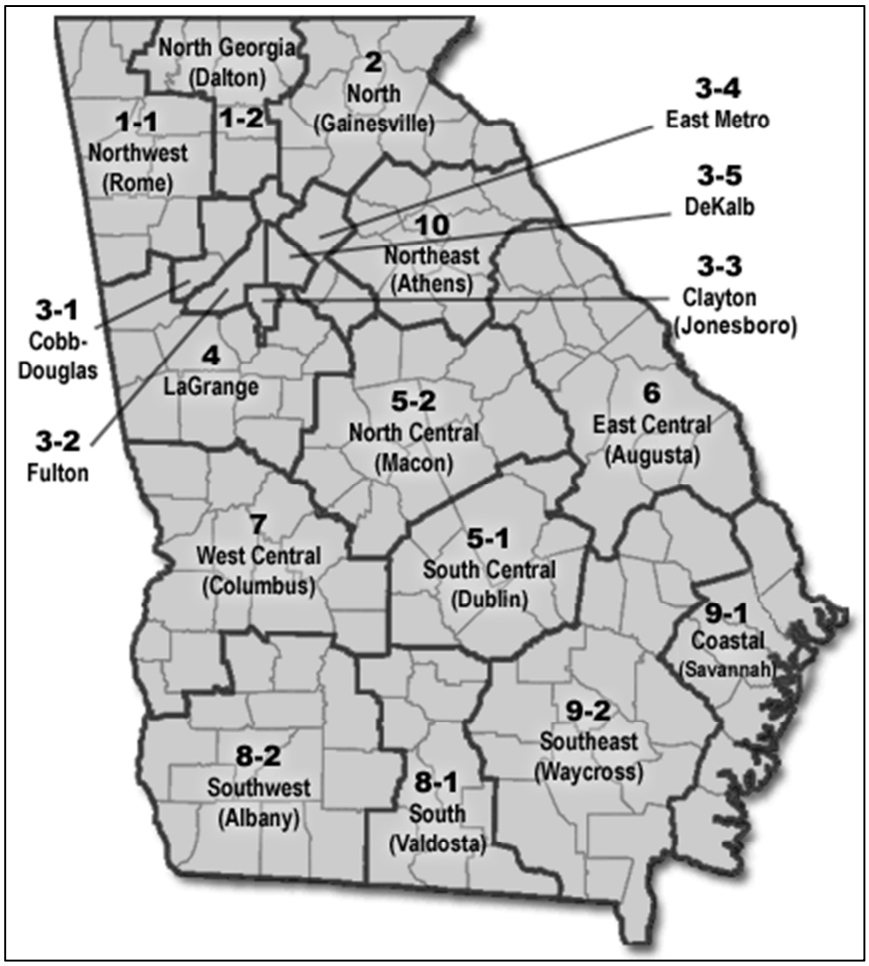


Table 1: Characteristics of women study participants (n=24)

Characteristic	
Average age in years	27.4
	n (%)
County of residence[1]	
Shortage area	13 (54.2)
Non-shortage area	11 (45.8)
Marital status	
Married	7 (29.2)
Living with a partner/engaged	4 (16.7)
Single	13 (54.2)
Number of children	
1	8 (33.3)
2	8 (33.3)
3	5 (20.83)
4	2 (8.3)
7	1 (4.2)
Insurance during pregnancy	
Medicaid	19 (79.2)
Private insurance	3 (12.5)
Both private and Medicaid	2 (8.3)
Employment status	
Full-time	8 (33.3)
Part-time	6 (25)
Unemployed	10 (41.7)

[1] As determined by GMIHRG's 2011 quantitative obstetric workforce survey.

Figure 2: Map of Georgia's Public Health Districts[7]



Appendices

In-depth Interview Guide: Case Managers

Objective

Explore gaps, barriers and opportunities in the availability of obstetrical care in rural Georgia.

Purpose Statement

To understand the role of social workers and medical case managers in the obstetric care system in rural Georgia, how the shortage of clinical providers affects their work, and comments and/or suggestions on alternative models of care.

Target Population: Social Workers/ Medical Case Managers

Three licensed social workers (LSWs or LCSWs) or nurse managers working in hospitals, care management organizations, health departments, or doctor's offices and three based in Medicaid offices. Preferably, their clients will live in our counties of particular interest though are not limited to these locations.

Recruitment Strategy: The National Association of Perinatal Social Workers has a membership base in Georgia, and a posting has been created on their list-serv. Contacts may also be made through calling hospitals in areas of interest, finding areas which use the Nurse Family Partnership model, or contacting other social service agencies.

INTRODUCTION

Introduction: Thank you so much for being here today! My name is Erika and as you know, I am working with a group called the Georgia Maternal and Infant Health Research Group. We are interested in exploring the gaps, barriers, and opportunities in the availability of obstetric care in rural Georgia. We feel that by discussing these topics with you, someone who has first-hand experience, we can more fully understand the role of social workers/medical case managers in the maternal care health system. The interview will take between 45 to 60 minutes, but please know that your participation is voluntary and you can stop me at any time. Don't hesitate to let me know if you feel uncomfortable answering any of the questions. I would like your permission to tape record this conversation so that I can come back to it later and have an accurate account of what we talked about. No one else will hear this recording – just me. If I discuss this interview with anyone else your name will be omitted from the records.

Is it ok if I start the recorder now? I have a list of topics I would like to discuss but please feel free to bring up anything else that you think is relevant or important for me to know. Before we get started do you have any questions for me? Okay, let's get started.

PERSONAL AND PROFESSIONAL BACKGROUND

I'm going to start with some shorter questions about your background.

1. Where you are from originally?
   Probe: (If rural) Did it influence you wanting to live/work here?

2. How many years have you lived here?

3. Can you describe your professional background, including where you went to school (name/date) and what degree(s) you possess?

4. Do you think your social work education prepared you for your practice in the area that you serve? Why or why not?

5. What do you like most about living/working here?

6. What do you feel are the biggest challenges in working/living here?

CURRENT POSITION

Now we're going to move on to questions about your job and how it fits into the current OB system in Georgia.

7. What is your current position, specifically relating to obstetric care?
   a. How long have you had that position?

8. How do you interact with the rest of the obstetric care system? (Hospitals, OB/GYNs, Medicaid, Medicaid CMOs, MFM specialists, public agencies, private businesses that provide support (i.e. Alere), etc.)

9. Can you walk me through a typical workday when you have OB clients? (Meetings, paperwork, time actually spent with clients, etc.)
   a. Most stressful parts of your day? How valued do you feel?
   b. If you were to draw a pie chart of your responsibilities, what percentage would you say you spend with OB clients?

10. What services for pregnant women are available in your area?
    a. How accessible are they?
    b. Are they well utilized?

11. Can you describe any discrepancies between your "official" job description and what you actually do on a day-to-day basis?

GAPS AND BARRIERS

I would now like to know a little about the gaps and barriers that you face in providing services to patients.

12. Can you describe your typical client base? What do you do for them?

13. Do your clients have equal access to prenatal care?

14. What is being done to address these inequalities? Are there programs that target at risk groups?

15. What do you think are the main barriers for these women?
    a. *Patient* factors (can't get off work, lack of education), *provider* factors (office too far, wait too long), *system* factors (cost, coverage)

16. What are the greatest system-based obstacles you encounter when connecting/retaining pregnant women in care?
    a. (if colleagues are mentioned) What kinds of support do you get professionally, from your supervisor or colleagues?

17. What about any personal obstacles?

OPPORTUNITIES

I'm now going to move on to future opportunities for expanding services to patients.

18. Do you see your current role in the OB system changing in the near future with the implementation of the Affordable Care Act?

19. If you could change one thing in the way OB care is delivered in Georgia (or your area), what would it be?

20. *I am going to describe to you a few models that have been suggested in other Southern states to improve obstetric care in Georgia, and I would like to hear your thoughts about each of the proposed models of care. After I give you the details, would you mind giving me any thoughts you have about each of them? You can think of concerns/pros/cons as they relate to your particular position, or just general reactions.*

Prenatal and Obstetric Care in Shortage Areas: Proposed Models of Care

Model 1. Ob-Gyn Time-Share

A large obstetrical group in Atlanta has proposed increasing access to obstetric and gynecological services in shortage areas by developing a rotating schedule of visiting Obstetrician/ Gynecologists. Participating physician would spend 3-4 days each month providing women in an underserved area with obstetrical and gynecological services. Incentives, such as luxury accommodations and access to quality golf courses for the duration of their stay, would serve to encourage physician participation in the program. All malpractice costs would be covered through the group practice. The aim of this model is to reduce the burden on local physicians, as well as increase the availability of services to women in these communities.

Model 2. Tiered Model of Care

Since 2002, a private Atlanta based practice has used a tiered system of care to provide both obstetrical out-patient and in-patient services to a large region in metropolitan Atlanta. All deliveries take place at a centralized hospital, while outpatient services are provided at nine part-time clinics distributed throughout the area. Outpatient services are provided on three tiers:

1. Mid-level practitioners (certified nurse midwives (CNMs), obstetrical physician assistants (PAs)) provide care to low risk patients in decentralized clinics. Care is delivered part-time, in community-based facilities at low cost.
2. Obstetricians care for moderate risk patients, identified by the mid-level providers, in fewer, more centralized locations. Many obstetricians in this model work part-time and maintain their own private practices.
3. Maternal Fetal Medicine (MFMs) specialists see high-risk patients in one central location.

This tiered outpatient system is complemented by a similarly tiered system for in-patient services:

1. Normal, uncomplicated births are attended by mid-level providers (CNMs and obstetrical PAs)
2. Complicated births and uncomplicated ante-partum care are attended by obstetricians.
3. High-risk obstetrical care is handled by MFMs.

Departing from the fee-for-service model, this model provides the option of a single flat-fee for comprehensive outpatient maternity care (including all labs, ultrasounds, monitoring, etc.). They also accept private insurance and Medicaid. Over the past 11 years, this model of care has been effective at simultaneously increasing access and reducing cost of obstetrical services in the metropolitan setting.

Questions: This system relies heavily on mid-level providers. Do you foresee any challenges associated with this emphasis [Probes: hospital/ state by-laws, reimbursement, availability of mid-level providers]?

Model 3. Obstetrician Hospitalist
Obstetrician hospitalists work exclusively with hospitalized obstetrical patients. They manage labor, follow fetal heart tracings, address dysfunctional labor and perform operative deliveries. Many also care for gynecological and obstetric emergencies. As hospital based physicians, they maintain communication with patients' regular physician and provide the option of delivering for the physician. As full-time hospital employees, they enjoy a predictable shift-based work schedule. For these reasons, this model of obstetric care has been increasing in popularity since 2010. Georgia currently has three hospitals that use this model, Gwinnet Medical Center - Lawrenceville, Athens Regional Medical Center and Wellstar Cobb Hospitalists.

Model 4. Mobile Clinics
Historically, in Georgia and the southeast, mobile clinics and home visitation programs have been effective at reaching populations and improving outcomes for women living in shortage areas. There are several existing programs in Georgia that focus primarily on maternal and infant health in the post-partum period (ex. Nurse Family Partnership, BabyLuv).

Questions: Do you know of any current programs that use mobile clinics effectively in the prenatal and peri-partum period? Do you see a role for mobile clinics in your area? Would you use a mobile clinic? Why or why not?

Potential Questions for all models:
Additionally: If you could design a new model of obstetric care in your area, what would it look like?

Social Workers: Would this model address any of the current challenges in obstetric care for the population you serve?

CLOSING QUESTIONS
I am now going to ask you a few last general questions before we finish the interview.

21. Are there any additional comments that you would like to make in regards to reducing the gaps and barriers to care in rural Georgia?

22. Or opportunities for expanding care? *Do you have any final questions before we wrap up?*

In-depth Interview Guide: New Mothers

Objective
Explore gaps, barriers and opportunities in the availability of obstetrical care in rural Georgia.

Purpose Statement: Mothers
Gain insight into the prenatal and birthing experiences of recent mothers in rural Georgia, assessing the impact of the state of obstetrical care on maternal and infant health and exploring mothers' suggestions for alternative models of care.

Target Population Demographic: Mothers
Inclusion Criteria: Women of reproductive age that have given birth within the last six months and resided in one of the four target areas at the time of delivery.
Exclusion Criteria: Undocumented women and women under 18 years of age.
Diversity Considerations: Access to prenatal care, health insurance coverage, Medicaid status, first-time or multiparous mothers, teenage or adult mothers, racial/ethnic groups, and single or partnered parents.

INTRODUCTION

Hello! My name is [_____]. I am a student at Emory University and member of the Georgia Maternal and Infant Health Research Group. Our group is interested in learning more about the experiences of recent mothers in ***[your area].*** *Thank you for taking the time to talk with me today – we really appreciate your willingness to do this interview about your pregnancy! The interview will take about 45 to 60 minutes. We are hoping your story will help us better understand the experience of new mothers in rural Georgia and possibly make some improvements to prenatal care in this area.*
Your participation in this interview is completely voluntary. If at any time you do not want to answer a question or it makes you uncomfortable, please just let me know. I'm hoping to tape record this conversation so I can come back to it later and review what we talk about. No one else will hear this recording – just me. If I discuss the interview with anyone else I will use a different name to protect your privacy. Is it ok to start the recorder now?
Thank you!
Before we get started, do you have any questions for me? Also, let me congratulate you on your ***[son/daughter]****! How is* ***[he/she]*** *doing? Wonderful! To begin, I would like to learn more about your family and experience here in* ***[city]****.*

BACKGROUND INFORMATION

1. How long have you lived in **[city name]**? Do you consider it home?
    a. *Do you have many family and friends in this area?*

2. Can you describe your living situation? Who lives in your house with you?

3. Can you tell me about your work history in the months before and during your pregnancy?

PRE-PREGNANCY HEALTH AND HEALTH CARE

Next, I would like to ask you a couple questions about your health before you got pregnant …

1. Can you describe your overall health prior to your pregnancy?

2. How did you find out you were pregnant?
    a. Challenges in being able to find pregnancy tests?

3. Did you have health insurance? If so, what kind?
    a. *Did you have (the same) health insurance during your pregnancy?*
    b. *If Medicaid: How did you find about Medicaid? Can you describe the process you went through to get Medicaid?*

PRENATAL CARE EXPERIENCE

Now, I would like to hear about your health care experience during your pregnancy …

1. What kind of prenatal care did you receive during your pregnancy?
    a. *None: Why did you not have prenatal care? Do your friends/family have prenatal care?*
    b. How did you pick your health care provider (doctor or nurse practitioner)?
    c. *Did you see the same person at every visit?*

2. How easy or difficult is it to find a doctor or nurse practitioner in this area if you get pregnant?
    a. *When you called for an appointment, how long did it take for them to see you?*

3. Can you walk me through typical visit with your health care provider – how you got there, how long it took to get there, the wait-time, what happened during the appointment?
    a. *Did you attend all of your appointments? How many?*
    b. *Did you ever miss an appointment? Why did you miss it?*

4. How would you describe the state of your overall health during your pregnancy?

5. What was your best experience related to your prenatal care?

6. What was your worst experience related to your prenatal care?
    c. *What concerns or challenges did you experience?*

7. How satisfied were you with your prenatal care experience?
    d. *If high-risk, did you have any trouble accessing referrals or specialists?*

8. Can you describe other people or places from which you received information related to your pregnancy?

9. What suggestions do you have about improving your prenatal care experience?

10. How interested might you be in receiving the following different types of prenatal care?
    e. Group Prenatal Care – *attending health care visits with other women at similar stages in their pregnancy, providing education and check-ups in group settings*
    f. Mobile Clinics – *clinics on wheels that visit your community to provide primary health care – including medical, dental, prenatal and other health services*
    g. Home Visits – *having a doctor or nurse visit your home to talk to you about your health during pregnancy*
    h. Speaking to a specialist via telemedicine at your local Ob-Gyn's office – *talking to your health care provider via Skype or telephone from a local doctor's office*
    i. Rotating team of visiting physicians (*Urban Physicians) – would you feel comfortable being cared for by a team of doctors or nurse practitioners?*

j. Midwife or Advanced Nurse Practitioner Care – would you feel comfortable receiving prenatal care from an Advanced Practice Nurse Practitioner specially trained to care for women during their pregnancy?

LABOR AND DELIVERY EXPERIENCE

Thank you! Let's move on to your labor and delivery experience. I would like to hear more about the day you gave birth to your ***[son/daughter]*** *…*

11. Did you have a labor and delivery plan – an idea for what your day would be like when you went into labor?
    a. Yes: Can you describe what that plan was?
    b. No: Did you consider having a labor and delivery plan? What made you chose not to?

12. How did you know you were in labor and how did you get to the hospital?

13. What was your labor & delivery experience like? Walk me through the day you gave birth.
    c. *Was it different than you expected?*
    d. *How did you feel about your birthing experience?*
    e. *What was your son/daughter's birth weight?*
14. Who delivered your baby? A familiar provider or someone new?
    f. *If you had a cesarean section, was it planned?*

15. Did you feel prepared for your labor & delivery experience? Why or why not?

16. How might your labor & delivery experience have been improved?

POST-DELIVERY

Thank you! I just have a few more questions to wrap up …

1. How would you describe your health and your infant's health since your delivery?
    a. *Do you currently have health insurance for yourself? Your child?*

2. Are you planning to extend your family?
    a. *If not, what are you doing to prevent a pregnancy?*

3. Given your experience, what would you change or do differently if you were to become pregnant again?

4. Is there anything more you want to tell us about what it's like to be pregnant in this area?

CONCLUSION

This concludes our interview. Thank you so much for your time and your willingness to share your story. Would it be ok if I follow up with you at a later time if we have any additional questions?
Many thanks and congratulations again on your ***[son/daughter]!***