

**COMPONENTS AND EXPERIENCES OF DOULAS WORKING WITH
DISADVANTAGED MOTHERS**

by

Kristina E. Wint

BA, University of Pittsburgh, 2014

Submitted to the Graduate Faculty of
Graduate School of Public Health in partial fulfillment
of the requirements for the degree of
Master of Public Health

University of Pittsburgh

2017

UNIVERSITY OF PITTSBURGH
GRADUATE SCHOOL OF PUBLIC HEALTH

This thesis was presented

by

Kristina E. Wint

It was defended on

April 18, 2017

and approved by

Thesis Advisor

Tiffany L. Gary-Webb, PhD, MHS
Associate Professor, Behavioral and Community Health Sciences and Epidemiology
Graduate School of Public Health, University of Pittsburgh

Committee Member

Thistle I Elias, DrPH
Visiting Assistant Professor, Behavioral and Community Health Sciences
Graduate School of Public Health, University of Pittsburgh

Committee Member

Dara D Mendez, PhD, MPH
Assistant Professor, Department of Epidemiology
Graduate School of Public Health, University of Pittsburgh

Copyright © by Kristina E. Wint

2017

**COMPONENTS AND EXPERIENCES OF DOULAS WORKING WITH
DISADVANTAGED MOTHERS**

Kristina E. Wint, MPH

University of Pittsburgh, 2017

ABSTRACT

African-American women have significantly poorer birth outcomes compared to their white peers; African-American women are more likely to give birth to a preterm baby and to have a baby with low birth weight. Additionally, African-American infants are more likely to die within their first year of life than white infants. Further, this health disparity between African-American and white women in infant mortality rates persists, the gap between groups showing little sign of closing. Thus, modifications are needed to tailor interventions to better suit the needs of African-American women. A potential enhancement is the inclusion of doula or doula-like services in existing home-visiting systems and the expansion of community doula programs. By providing support from a paraprofessional such as a doula, potentially the birth outcomes of African-American women and their children may be positively influenced. The goal of this research is to learn from doulas what components of their services might best serve low-income African-American women and to explore ways in which training can be modified to better help community doulas when working with this population. Ten doulas were interviewed about their experiences working with women who are low-income, African-American and both. Doulas were recruited from a local community doula program, and via word-of-mouth referrals from participants. Interviews were transcribed verbatim and analyzed using Atlas.ti software to identify emerging themes. The themes that emerged from the interviews included: 1) Doulas work to support mothers

during the different phases of pregnancy, 2) Doulas work to advocate for mothers with a special emphasis on helping women self-advocate for themselves and their babies, 3) Doulas often step outside of their role to provide mothers with extra support, and 4) Doulas recognize the institutional biases that exist in the hospital system and try to mediate their effect on mothers. These themes highlight the ways doulas can intervene between the effects of negative social determinants of health, as well as show potential avenues to improve training to help doulas when working with disadvantaged women. The public health significance of this project lies in that it explores a perspective not previously explored in the literature: that of doulas with experience working with low-income African-American women, in an effort to improve the health of this population.

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	AFRICAN-AMERICAN BIRTH OUTCOMES.....	2
1.2	CURRENT AND POTENTIAL INTERVENTIONS.....	3
	1.2.1 Home Visiting Programs.....	3
	1.2.2 Doula Services.....	5
1.3	POTENTIAL METHODS OF INCORPORATION.....	7
	1.3.1 Government Reimbursement.....	7
	1.3.2 Medicaid Reimbursement.....	8
	1.3.3 Community Organizations.....	9
1.4	RESEARCH QUESTION.....	10
	1.4.1 Methods for qualitative data analysis.....	10
2.0	JOURNAL ARTICLE.....	12
2.1	INTRODUCTION.....	12
2.2	METHODS.....	14
	2.2.1 Study Participants.....	14
	2.2.2 Developing the Interview Guide.....	15
	2.2.3 Analysis and Coding.....	15
2.3	RESULTS.....	16
	2.3.1 Sample.....	16
	2.3.2 Interviews.....	17
	2.3.2.1 Doulas work to support mothers.....	18

2.3.2.2	Doulas work to advocate for mothers, often helping them self-advocate	21
2.3.2.3	Doulas often step outside of their role to provide mothers with extra support	23
2.3.2.4	Doulas recognize and navigate institutional biases that exist in the hospital system	25
2.4	DISCUSSION.....	27
2.5	STRENGTHS & LIMITATIONS.....	29
2.6	CONCLUSIONS.....	29
3.0	THESIS CONCLUSION	31
	APPENDIX: TABLES.....	32
	BIBLIOGRAPHY	35

LIST OF TABLES

Table 1. Demographic Characteristics	32
Table 2. Interview Themes	33
Table 3. Interview Guide	34

PREFACE

I would like to extend my most sincere thanks to the Center for Health Equity who made this project possible, especially for their support through the Bernard D. Goldstein Award in Environmental Health Disparities and Public Health Practice. Without your support this project would not have been possible. I also want to thank the members of my committee, Dr. Gary-Webb, Dr. Elias, and Dr. Mendez, whose support throughout this project made the experience enjoyable.

Thank you to the 10 doulas who participated in this research. Going into this project, I never thought that I would meet so many wonderful women willing to share their experiences with me, and yet every single one of you was so kind and helpful. Thank you to The Birth Circle, and the administrators of the home-visiting programs at the Allegheny County Health Department Division of Maternal and Child Health. I knew little about doulas and home-visiting programs before starting this project, and the conversations with the administration of these organizations helped tremendously to inform this project. Thank you Gabby for your help coding and to Cyndy for lending your professional knowledge and perspective.

Lastly, I want to thank my family and friends for your prayers, support, and late-night reading – you made this process less stressful. “Behind every great woman is a group text hyping her up”, and so I say thank you to the group texts, thank you for your prayers, positive thoughts and support; without them this process would have felt so much more difficult.

1.0 INTRODUCTION

Some of the most unfortunate impacts of social injustice are the effects that inequality has on health, an argument intensified by the negative implications inequality has on maternal and child health¹. Current data show that women of color are disproportionately affected by numerous adverse outcomes associated with pregnancy and reproduction, particularly African-American women. For example, African-American women are about one and a half times more likely to give birth to a preterm baby than white women and about twice as likely to have a baby with low birth weight than a white women². Additionally, in comparison to white infants, African-American infants are twice as likely to die within their first year of life³. Despite medical and technological advances, these disparities persist and current research is limited in providing an understanding of the complex mechanisms that result in inequality in maternal and infant health. To improve the health of African-American women, to help them have healthier pregnancies and babies, creative approaches must be used: one such approach is doulas. Doulas, paraprofessionals who in this context provide continuous support for mothers during labor and delivery, have the potential to provide an alternative method of care delivery that may have positive effects on African-American birth outcomes. The purpose of this research is to understand the potential strengths and roles that doulas can play at reducing low-birth weight and preterm birth among African-American women.

1.1 AFRICAN-AMERICAN BIRTH OUTCOMES

Infant mortality is a metric often used to measure the health of a nation. The United States is one of the wealthiest countries in the world, thus one would expect the infant mortality rate to be low. However, in comparison to other developed nations, infants are dying at an alarming rate. Additionally, Black/African-American women have an infant mortality rate (IMR) that is roughly twice as high as the rate of white infants. Per 2014 vital statistics, the IMR of non-Hispanic black infants was 10.93 per 1,000 live births, compared to 4.89 deaths per 1,000 in non-Hispanic white infants³⁻⁵.

There are several explanations of the racial disparity in infant mortality. There is research that suggests a genetic component, with an emphasis on an epigenetic explanation, which focuses on the interaction between the environment and genes^{6, 7}. Other researchers have specifically explored the genetic contribution of fathers, although the evidence is limited. In this study, researchers compared infant mortality rates between children who were born of two African-American parents, to children who were born of a white mother and African-American father, thus the limitation arises because researchers did not collect genetic information, but used race as a proxy; additionally, the incidence of infant mortality in the sample studied was very low, making it difficult to create solid conclusions^{8, 9}.

Some studies argue that individual behaviors could possibly explain the racial disparity. Behaviors such as substance abuse with drugs, tobacco and alcohol consumption, physical activity, and nutrition work to influence infant mortality⁹. These variables are not only associated with infant mortality, but also contributors to low birth weight and preterm birth.

For the purpose of this study, the “birth outcomes of interest are preterm birth and low birth weight, because they are two factors strongly associated with infant mortality; and, there

are persistent racial disparities in these outcomes that have not improved over the past 3 decades^{10, 11}. According to a 2014 CDC report, 13% of African-American infants were born with low birth weights in comparison to about 7% of non-Hispanic White infants^{5, 12}. Additionally, this same report showed that 8.91% of non-Hispanic White infants born were premature, in contrast to 13.23% of non-Hispanic African-American infants¹². The majority of infant deaths are due to complications that arise from preterm birth or low birth weight: specifically, 63% of African-American neonatal deaths are due to very low birth weight¹⁰. Despite this knowledge, little is understood about why these rates are higher among African-American infants^{10, 11}.

There is a need for successful interventions than can reduce these disparities. One such model that has shown promising results in improving birth outcomes, are home-visiting programs. These programs work to bring education, care and support to women who need it the most, thus improving the outcomes of both mother and baby.

1.2 CURRENT AND POTENTIAL INTERVENTIONS

1.2.1 Home Visiting Programs

Home visiting programs, provided to mothers at-risk for negative birth outcomes, have shown to have positive results, specifically with respect to low birth weight and preterm birth. In this context, “at-risk” describes women who have a higher risk of having a low birth weight or preterm infant. In several systematic reviews and meta-analyses of home visiting programs and their effect on birth outcomes, it was found that home-visiting programs implemented during the first and second trimester can benefit birth outcomes as well as post-birth outcomes such as

breastfeeding and infant-parent interaction^{13, 14}. In one review, the researchers found that home-visiting programs increased the use of prenatal care in more than one third of reviewed studies. Although the authors do not discuss the specific relationship between prenatal care and birth outcomes at length in their analysis, other research suggests increased prenatal care, usually around eight or more prenatal visits starting early in pregnancy, can help prevent and reduce negative birth outcomes^{13, 15, 16}. Another systematic review that examined the association between home-visiting programs and preterm birth found evidence to support the notion that prenatal home-visits may reduce the risk of preterm birth or low birth rate; however, the researchers describe the research as limited as a result of the small number of studies that explore this relationship¹⁴. Because the results of the reviewed studies varied relating to low birth weight and preterm birth, the authors conclude more research is needed to form more reliable association. Other avenues for future research include studies to understand what the appropriate “dosage” of home-visiting programs is, at what time in the prenatal period is best for them to begin, as well as how many sessions a mother should have and for how long. Additionally, although a disparity exists between African-American infants and their white counterparts, there is little research exploring how home-visiting programs work specifically with this population. A recent study specifically targeting African-American women found that women enrolled in the home visiting program were significantly less likely to have a preterm birth; however, more research is needed to see if these results are replicable¹⁷. Moreover, there is space in the research to explore potential causes of negative outcomes for African American women as well as the specific mechanisms to which home-visiting programs are supporting positive birth outcomes.

Based on suggestions from a systematic review of prenatal home-visiting programs, the effect of the home visiting programs is most influential when mothers were enrolled in the

program during their first or second trimester and if sessions engaged with the home visitor were of “high intensity¹⁵.” Other studies have found similar results; for example, a randomized control trial to evaluate the effectiveness of home-visiting to reduce low birth weight rates in African-American and Hispanic mothers living in New York, found that participants in the home visiting program were less likely to have a low birth weight baby than those who did not participate in the program¹⁸. Specifically, this study found that the risk of having a low birth weight baby was 5.1% in the intervention group in comparison to a 9.8% risk in the control group. The effects were improved in women who were enrolled before or at 24 weeks gestation, and even more so for women enrolled in the program at or before 16 weeks gestation, with women in the intervention group having a 3.6% chance of having a low birth weight baby in comparison to the risk of 14.1% in the control group¹⁸.

1.2.2 Doula Services

Another model that has the potential to show promising results in reducing low birth weight and preterm birth is the use of doulas. The word doula is Greek for “a woman who serves”¹⁹. Modernly, the term refers to nonclinical support paraprofessionals, who in the context of maternal and child health, work to both support and advocate for a mother during labor and delivery²⁰. Additional services these individuals offer include, but are not limited to, postpartum care for both mother and child, private prenatal education, and lactation consulting. Doulas can help provide mothers with a gratifying birth experience, and research shows that their use can provide a host of benefits such as reducing the use of unnecessary medical interventions during birth²¹. Some of the benefits doulas have been shown to provide are reduction in cesarean rates, decreased labor times, reduced use of forceps and vacuums in delivery, reduced use of anesthesia

and analgesia, increased infant APGAR scores, and mothers feeling more satisfied and positive about their births²². Because of their inherently supportive position, doulas provide a possible avenue of quality prenatal care and support that is not often available to low-income women due to cost.

Doulas have the potential to mitigate factors hypothesized to be part of the cause of the high rates of negative birth outcomes in African-American women. For example, by placing doulas in the context of social determinants of health, doulas work to reduce the stress that is associated with having a low socioeconomic status, being a minority, or both²¹. While doulas have been shown to be an effective tool in decreasing surgical birth outcomes such as cesareans, more research is needed to see how their support can influence birth outcomes such as a preterm birth and low birth weight²³⁻²⁵.

Research also shows that doulas are a cost-saving way to improve health outcomes for both mother and child. In a cost-benefit model to predict the cost savings of using doulas to prevent cesarean section births and preterm birth, researchers estimated that doulas could prevent approximately 3,288 preterm births per year, saving an average of \$986 per birth, and a total of \$58.4 million a year in Medicaid reimbursement²⁶. In a more generous estimation, researchers hypothesized that doulas could save upwards of \$9 million a year per state in Medicaid reimbursement²⁷. However, there no research on the cost effect of doulas influence on low birth weight²⁵⁻²⁸.

Despite the potential results that these two options show, there are few examples in the literature of home visiting programs incorporating doula methods in their service delivery. This lack of research provides a window for interventions and studies to see how the combination of doula services and home-visiting programs can positively influence birth outcomes.

Although not an explicit combination of the two models, a potential blending of the two methods can be seen in community doula programs. Community doula programs expand on traditional doula programs, to bring supportive techniques to mothers while they are pregnant, providing services such as, but not limited to, teaching them baby bonding techniques, nonmedical methods of handling pain during labor and delivery, and prenatal education^{29, 30}. Additionally, community doulas often have a cultural aspect not seen in traditional doula services, with community doulas often coming from the same communities as the mothers being served^{29, 30}. Although this model does incorporate a home-visiting component, it is not exclusive to meeting mothers in their homes: community doulas will meet mothers at the medical care provider's office, or "neutral" places such as coffee shops or libraries. However, despite the potential benefits of this model, little research has been performed to understand the efficacy of these programs in relationship to traditional home-visiting programs, or how these programs may influence birth outcomes.

1.3 POTENTIAL METHODS OF INCORPORATION

1.3.1 Government Reimbursement

Although these interventions have promising results, it is important to also explore how these methods can be implemented and paid for by current health care insurance programs. The Affordable Care Act provides support for home-visiting programs; specifically, the Maternal, Infant, and Early Childhood Home Visiting (MIECV) Program provides funding for home-visiting programs³¹. This program provides funding for maternal child health programs in at-risk

communities³². Additionally, the law created a \$1.5 billion federal grant program to fund state based home-visiting programs³³. These government funding sources provide a monetary source to sustain existing home-visiting programs as well as to create new ones.

Health departments also offer a great avenue for potential doula care delivery because many already have the funding and home-visiting infrastructure in place. There are many health departments across the country that offer home-visiting programs; however, there is no standardized curriculum that health departments use, which make them a difficult entity to study. In light of this, an opportunity for further research is to investigate how health departments with substantial and evaluated home visiting programs operate, and if they do not offer doula services, to see how their current systems can be adjusted to create space for the addition.

1.3.2 Medicaid Reimbursement

Another potential method of delivery is through Medicaid reimbursement. Currently, Oregon and Minnesota have state-wide programs that provide reimbursement for doula services²¹. Although these systems have been implemented recently, Oregon in 2012 and Minnesota in 2014, they prove to be models on how Medicaid can be used to bring doula services to at-risk women in any state³⁴. Because the negative trends of poor birth outcomes are highest among low-income women, Medicaid may be a great option for bringing doula care to this population^{35, 36}.

1.3.3 Community Organizations

Another method of bringing doula care to those who need it is through community organizations, one example being the Young Women's Christian Association (YWCA). Many YWCAs across the nation have programs that work to bring services to pregnant women such as child care and prenatal classes, with some sites offering low-cost or free doula care²¹. Partnering with community organizations like YWCAs, which are currently working to help improve the health and birth outcomes of at-risk mothers is an excellent way to bring doula services to the target population, mainly because these organizations already have funding systems in place. Other potential organizations are non-profit organizations which cater to women's health. An example located in Allegheny County is The Birth Circle, a non-profit organization community doulas program presently located within UPMC's Department of Family Medicine³⁷. The Birth Circle provides free birth and community doula services for women who live in Allegheny County and have the UPMC Medicaid or CHIP insurance coverage. The Birth Circle is an example of an established organization providing doula services. Grant funding provided by Heinz, FISA, United Way, March of Dimes, and private insurance reimbursement support the doula services as well as the administration and other administrative responsibilities^{38, 39}.

However, despite these facts, it is difficult to find research that addresses this mode of prenatal delivery. If an organization does undergo evaluation or research on their methods of care, findings are not often disseminated in way that is accessible to the average researcher, rather they are often used internally. It is important to include these community based organization in future research, as it is possible that they are already doing the work, it is just not being captured by the academic audience.

1.4 RESEARCH QUESTION

The goal of this project is to understand doula services and components of doula services that might be attractive to African-American and low income mothers. This study specifically asked: What components are beneficial (cost-effective, easy to incorporate) and what additions to doula training would better equip doulas to work with African-American and low-income mothers?

1.4.1 Methods for qualitative data analysis

Key-informant interviews were scheduled with home-visiting program administrators to answer questions about home-visiting programs. Additionally, informant interviews were held with doulas and local doula program administrators to understand the scope of doula services and care delivery. These informal interviews provided information about programs including: the programs' target population, recruitment methods, interventionists, the number of visits and duration of the program, how early the program starts and the frequency of intervention, evaluations, and target outcomes. In addition, a literature review was conducted to understand the scope of doula service. This review of the literature, in combination with key-informant interviews, helped create the interview guide used in one-on-one doula interviews (Table 3).

Next, in-depth one-on-one interviews were conducted with a goal of 10 interviews with 10 doulas with experience working with women who were low-income, African-American and both. The questions asked covered topics such as the doulas' experience with African-American mothers, the services that the doulas offer, and what aspects of their training and service could be change to better reach African-American mothers (Table 3). Doulas were recruited using a

combination of purposive and snowball sampling methods, with emphasis in recruiting from the local community doula program, The Birth Circle Doulas were also recruited from participant referrals.

Interviews were recorded and transcribed verbatim using the TranscribeMe.com service. Lastly, interview transcripts were coded by two researchers, and analyzed for recurring themes using grounded theory techniques, with the assistance of the software program Atlas.ti⁴⁰.

All participants provided verbal consent for participation, and were paid \$30 for their participation. This project was considered exempt from monitoring by the University of Pittsburgh Human Research Protection Office (HRPO).

2.0 JOURNAL ARTICLE

2.1 INTRODUCTION

Doulas, nonclinical support paraprofessionals, have shown positive results in labor and delivery specific and postpartum specific outcomes²⁰. Doula services have been associated with decreased cesarean rates, higher Apgar scores among infants, shorter labors, and an increase in breastfeeding initiation and retention^{21, 22, 28}. Additionally, an argument has been made for positioning doulas as disrupters of negative social determinants of health⁴¹. For example, doulas can help mothers understand and move around the medical system, a skill many women disadvantaged women may not have⁴¹. Despite having a host of potential benefits, doulas go unknown and underutilized; it is estimated that 40% of women, and likely more, are unaware of doula care and the potential support they can provide²⁸. Additionally, doula care has traditionally been limited to women with the financial means to hire these individuals, given that cost is the greatest barrier to women using the service^{22, 28}. Doulas have come to be viewed as a privilege reserved for wealthy, white women capable of paying for the resource. Despite the privilege associated with this care, low-income African-American women often report wanting this support during labor and delivery²⁸.

Community doula programs work to fill this void, removing the barrier of cost to having continuous support. This model of doula care involves the traditional labor and delivery support doulas provide, while also adding prenatal and at times postnatal home-visiting services, where doulas facilitate prenatal education, postnatal check-ins and emotional support throughout pregnancy³⁰. Additionally, in the community doula model, doulas providing support come from

the same community as the mothers receiving service³⁰. Literature on community doula programs has explored the ways in which doulas can help positively involve partners in birth and how programs work to promote the initiation and retention of breastfeeding^{29, 30, 42}. However outside of these studies, there is little research exploring the benefits and potential clinical outcomes of community doula program, especially when working with disadvantaged mothers. A search of the literature found a single study that explored how doulas tailor their services when working with women living at society's margins, specifically immigrant mothers. In a qualitative study of community doulas and their work with immigrant women in Washington state, researchers explored the influences of cultural beliefs on a doula's ability to provide support and advocate for these mothers⁴³. However, such a reflection has not been performed among doulas working with low income, African-American women.

This study draws from the perspective of doulas who have experience working with low-income African-American mothers, to learn from their experiences how to better serve this population, a perspective not currently documented in literature. The aim of this study is to understand how doulas work and interact with low-income, African-American women, learning the specific activities and services these women request, and to highlight the significance of doulas in helping women have healthy, positive, birth experiences.

2.2 METHODS

2.2.1 Study Participants

Study participants were doulas, most receiving previous certification from DONA (Doula of North America)⁴⁴. We specifically targeted doulas who had a range of experience, with special emphasis on recruiting doulas with experience working with low-income, African-American women. A combination of purposive and snowball sampling was used to recruit doulas for participation. Because it was important to learn from the experience of doulas who have experience working with African-American and low-income mothers, the majority of doulas were recruited from a local non-profit, The Birth Circle (TBC). TBC is a community and birth doula organization in the greater Pittsburgh area, that provides services free or low cost, particularly for women who are members of the UPMC for You Medicaid Program³⁷. The purpose of the research study was shared with Birth Circle doulas through the organization's director via email, and the project was discussed during weekly staff meetings. Other potential participants were contacted via phone, after being referred by participants or key-informants. To participate in the study, a doula had to have experience working with mothers who were African-American, low-income or both. From the Birth Circle, seven doulas were recruited and participated in the study. In interviews, doulas were asked if they knew of other doulas who might be interested in the study and asked to share the research project with them. Through referrals, three additional doulas were recruited to participate in the study. The final sample for this study was 10 doulas. To maintain anonymity, each doula interviewed is referred to by a letter A-J.

All participants provided verbal consent for participation, and were paid \$30 for their participation. This project was considered exempt from monitoring by the University of Pittsburgh Human Research Protection Office (HRPO).

2.2.2 Developing the Interview Guide

A semi-structured interview guide (See Table 2) and brief demographic questionnaire (See Table 3) were developed from information from key-informant interviews with local home-visiting program administrators, in addition to information gathered from literature searches on the potential benefits of doulas. The demographic questionnaire captured items, such as how long women had been practicing as a doula, the organization they were affiliated with and rough estimations of how much of their clientele was comprised of African-American and low-income women. The in-depth interviews were designed to capture more information about the doulas' experiences working with African-American and low-income mothers, with emphasis on the doulas' perceptions of mothers' experience, specific services offered, challenges of providing service and reflections on doula training (Table 2).

2.2.3 Analysis and Coding

Interviews were recorded using an audio recording smartphone application and were transcribed verbatim using the transcription service TranscribeMe.com. Transcripts were analyzed using a grounded theory approach⁴⁰. Initial codes were compiled by using line-by-line coding of interviews. Two researchers independently read and coded each transcript to ensure codes remained true to the words of each interviewee and decrease the chance of themes being missed

by a single reader, which also helped maintain the qualitative confirmability of this project. Codes were discussed with the other researcher to ensure clarity and credibility that each code was appropriate to the transcripts. In the instances where there was disagreement in codes, the interview transcripts were read and reread to come to consensus on the code between the readers, considering the questions asked during interviews, the purpose of the research study, and the context of the statement. From these codes, the primary investigator created a codebook. The codebook was consistently modified after the coding of each transcript to adjust for new data. Codes were organized to highlight emerging themes, with special attention to ideas and concepts surrounding the techniques and methods doulas use to support mothers who are African-American, low-income or both.

2.3 RESULTS

2.3.1 Sample

A total of 10 doulas were interviewed with years of doula experience ranging from 2 to 14 years with an average of 6.4 years of practice. All doulas had experience working with mothers who are African-American, low-income, or both: 60% of doula reported having a client base 50% or more African-American and 100% of doulas reported a client base that is 50% or more low-income. The majority of doulas (80%) were affiliated in some way with the local organization, The Birth Circle. Two (20%) doulas worked as independent or private doulas. Demographic information can be found in detail in Table 1.

Doulas received clientele from various avenues, including referrals from community organizations, for example the Latino Family Center (50%), word-of-mouth (40%) the organization they worked for, such as The Birth Circle of Family Foundations (40%), local insurance plans (40%), referrals from local home-visiting programs (20%), and doula certifying websites (10%). Additionally, 20% of the doulas interviewed stated that being a doula was their full-time job, with the other 80% working full-time or part-time in another capacity. Other occupations included: childbirth educator, business owner, Lamaze instructor, massage therapist, mental health therapist, program coordinator and translator. The majority of doulas identified as African-American or Black (50%), followed by White (20%) and 1 doula representing each of the following racial/ethnic groups: Hispanic or Latino, Asian or Pacific Islander, and Bi-racial. The demographic characteristics of the sample are included in Table 1.

2.3.2 Interviews

Interviews revealed the various ways in which doulas tailor their practice to support marginalized women, specifically women who are African-American, low-income, or both. The shared experiences demonstrate how doulas attempt to help these women feel empowered in a system that often works to disempower women of color and of lower socioeconomic status. The four major themes highlight the experience of doulas working with these women (See Table1): 1) Doulas work to support mothers during each phase of pregnancy, 2) Doulas work to advocate for mothers with a special emphasis on helping women advocate for themselves and their babies, 3) Doulas often step outside of their role to provide mothers with extra support, and 4) Doulas recognize the institutional biases that exist in the hospital system and try to mediate their effect on mothers.

2.3.2.1 Doulas work to support mothers

The first theme that emerged was the idea that doulas work to support mothers. The concept of support is one that is rooted in the very definition of the word doula. In the definition of doula used by the popular certifying body DONA International, a doula is defined as “a trained professional who provides continuous physical, emotional and informational support to a mother before, during and shortly after childbirth to help her achieve the healthiest, most satisfying experience possible⁴⁵”. When posed with the question of what doulas do for low-income, African-American women, all interviewees indicated that they provide support. Doulas used language such as “a helping hand”, “someone who's going to be there for mothers”, “consistent”, “stable”, “a trustworthy figure of support”. When prompted on specifically how they provide “support”, doulas shared the many ways in which they provide support for all mothers, not just those at society’s margins. Some of the supportive measures doulas perform include, but are not limited to: creating birth plans, teaching mothers comfort measures to ease labor pains, and teaching mothers bonding techniques that start while their baby is still in the womb. Doula A describes the support she provides:

Hands down is having somebody there. And I had a doula with one of my deliveries too, so I can relate to that experience. It's just knowing that there's one person there that's just for you. And family members and partners can be there, but they are there in a different way because they're experiencing it also. They're feeling the same emotions. Whereas the doula, you've seen lots of births. You're not so emotionally connected to that woman, so you can be supportive without getting upset when things go wrong at that same level.

Similarities of race, culture, and experience impact care

While doulas provide support for all mothers under their care, it is important to note the ways in which doula care is at times altered when working with marginalized women. In interviews, a subtheme to the concept of support arose, encompassing the significance of race and culture when working with women who are often mistreated by society and consequently the hospital care system. Because of such treatment, African-American women may develop feelings of mistrust towards the hospital institution. This mistrust can manifest itself in a way where African-American mothers feel uncomfortable working with white doulas, feelings of distrust that may not be present if working with a doula with the shared experience of being African-American. This idea is captured in a story shared by Doula B:

I'm not Caucasian, but I do know that some of my [black] clients are fearful. "What if I get a white doula?" I always say, "You're never going to meet a mean doula. It doesn't matter what color they are, you're not going to get a mean doula." But a lot of the African American women are afraid of that. Because I talk to them on the phone, and when I get there, they say, "Girl, I'm so glad you're not white." I had one just flat-out say to me on the phone, "I don't want a doula." And I said, "Okay, that's fine." I said, "Can I ask you why?" She says, "I don't want you coming in here telling me what I need to do and telling me how I need to do it." And I said, "Okay. Well, what makes you think I would do that." "All you white people are like that." I said, "Well, I'm not white, so." I said, "Do you want a doula now?" She said, "Prove it." So I Facetimed her. She said, "Oh. Okay, girl".

This example encompasses the distrust many African-American women have towards white practitioners in the medical establishment. A history of mistreatment at the hands of medical practitioners contributes to fear of white practitioners, held among many African-American

women⁴⁶. This distrust, being the legacy of black bodies being used for medical experimentation, such as the Tuskegee Syphilis Study and black female slaves being used as test subjects to pave the way for modern gynecology^{1, 47, 48}.

At times, racial similarity was not enough to help foster a trusting relationship between mother and doula. In these instances, doulas shared that a similarity in life or cultural experience worked to help build a bridge between mother and doula, helping to foster a trusting relationship where mothers can feel comfortable receiving the support doulas provide. For example, some doulas shared how their faith often worked as a bridge. One doula expressed how a shared experience of Hinduism, can help mothers build trust in her. This subtheme of racial, cultural, and experiential similarity is captured in the experience of Doula D, who shares:

Sometimes I feel like some moms are not comfortable with me. And I feel bad in that situation, because at [our organization] we're assigned. And I feel like if a woman feels more comfortable with somebody of their own skin color, that she should have that. There's times where it doesn't make a difference at all, and you can just connect with a person on a different level, like both being single moms. [I want moms] to feel comfortable with me, and maybe it's not her, maybe she's never been treated right by somebody who's white, then I might not be a safe person for her... It's not just race too. Sometimes there's socioeconomic or education level. I've had white moms reject me too because I don't fit into their pattern of comfortable...if I can find that point of relation, and you can help people to see how we are alike in some way and we can connect, it works usually. But there's times where that woman probably sees me and she's like, "This person is nothing like me, and I can't relate to her, and she's not going to make a difference for me."

2.3.2.2 Doulas work to advocate for mothers, often helping them self-advocate

Outside of supporting mothers during labor and delivery, a large portion of the work doulas do involve advocacy, both advocating on behalf of mothers and their infants, and helping mothers to self-advocate. Similar to the concept of support, the idea of advocacy is broad, and as one doula shared, advocating is potentially one of the hardest components of their work. At times advocacy involved linking mothers to care, as Doula C shares:

Sometimes it's advocating for a woman to have the most basic support system. Advocating for her to get in with her prenatal insurance provider. Sometimes we're advocating for her to get on her prenatal Medicaid and then get in to see a provider earlier on in her pregnancy; as early as possible, so prenatal care.

However, the example of advocacy in action that was most repeated by doulas was ensuring that mothers were asked consent while in the hospital. Doulas shared that, while in the environment of a teaching hospital, doulas often help ensure mothers are comfortable with extra hospital staff present in the room during pelvic exams and delivery. Doulas act as “guardians of the space”, helping to create a “safe, comfortable, and intimate place”, for women to prepare for and give birth, and protecting this space and the mother while she is giving birth. In advocacy, it is important for doulas to not be the voice of the mother, but rather to help mothers speak up and be heard. Doula I shared an experience where in previous conversation a mother decided to have a birth free of medical interventions. When they arrived at the hospital, that option was not presented to the mother and she was offered an epidural; however, the mom was unwilling to share her goals and birth plan with the physician. Doula I shares how she navigated the situation:

I never speak to the physician directly. I wanted mom to be able to make a decision based on what she wanted to do. So, to me, that wasn't really my place to go in and say something

in front of the doctor and in front of her like, "I thought you wanted an epidural?" Or, I mean, "I thought you didn't want an epidural?" Or to say like, "Well, she said she doesn't want it," because now I'm taking her voice and that's not fair.

Similarly, doulas work to help mothers self-advocate with their families as well. At times families may not be supportive of mother's decisions for birth, and in these moments, doulas help mothers self-advocate too. Doula C shares "we advocate for moms to really stand up to their support system at home for what they are wanting for their experience for the birth". Advocating does not begin and end in the hospital, rather doulas work to "model behavior" for mothers to learn to make informed decisions in all areas of their lives, not just limited to childbirth.

Doulas help marginalized mothers find and use their voice

Nested in this theme of self-advocacy is the idea of doulas helping marginalized mothers find their voice. Low-income, African-American women live in a society that actively works to oppress them, and thus it is not a surprise that many women may feel powerless and act as such when in the hospital. This idea of "finding one's voice" goes beyond self-advocacy, and includes mothers feeling empowered to have a sense of agency over their bodies and birth. Doula J shares the difficulty some mothers have feeling a sense of ownership of their bodies and births:

This is her [mom's] baby. This is her pregnancy. This is going to be her labor, her delivery. And she should stand up for herself. So whenever we were in a delivery room it was hard for some moms to kind of just say like, "Oh, well can I do this?" Or, "I want to do that."

Doula H adds to this idea, sharing the importance of mothers saying what they want, in their own words:

Using their voice. I mean, that's real important. We even [tell] women in labor. It's important that your voice is heard. There's always a way to ask a question. But using your

voice-- you have a right to get your questions answered. You have a right to have excellent care. You are the consumer. I always remind them, "You're delivering a baby. They're your providers. They're working for you. Your insurance, whether it's Medicaid or commercial, it's still paying the bill. So expect to be treated right. Have some high expectations for yourself.

Social circumstance has the potential to leave mothers feeling powerless and incapable of navigating their own birth, however doulas work to encourage mothers, especially marginalized mothers, to have a sense of ownership over their bodies, to not allow socioeconomic status or race to act as a hindrance to receiving an excellent level of care and having a gratifying birth experience.

2.3.2.3 Doulas often step outside of their role to provide mothers with extra support

Doulas also expressed how they often step outside of their roles of providing pregnancy and birth-specific care and support, to link mothers to other resources. Doula often had to help mothers “fulfill their basic needs”, such as linking mothers to housing resources or transportation services to help them get to and from prenatal appointments. Doula G stressed the importance of linking mothers to free resources to help mothers and their families,

WIC for example, Nurse-Family Partnerships, Healthy Start. These are all organizations that provide support to mothers free of charge. We might want to remind her the importance of getting a library card. That's free. Now, getting back and forth to her appointments? So there, we will connect her with organizations that will provide either Uber service at no charge to her, or she would get a ConnectCard. She can get the bus back and forth... So we want to connect her with some of those resources in the community.

In this desire to meet basic needs, doulas often stepped outside their role to be the provider of resources. One doula shared that she would provide transportation for mothers to their prenatal

care visits, another that she would often go through her own children's clothing to find items to give to mothers she worked with, both activities not required nor recommended of their service.

Doulas cannot do it all

While doulas may help link mothers to community resources, it is important for them to understand their role, especially when they find themselves providing resources as opposed to referring mothers to said resources. A subtheme to the idea of stepping outside of the traditional birth attendant role, is the idea that doulas cannot do everything for a mother. Community doulas already are stepping outside of this role, providing home-visiting services to providing mothers with childbirth education among other in-home services; however, even though they are providing more than support during labor and delivery, these doulas are still providing services outside what is required of them for work.

Women who daily endure the stress of being both African-American and poor, often also must endure stress from the various other negative social circumstances that often accompany these identities, such as housing insecurity and poor nutrition. These other issues often have impacts on pregnancy, and doulas desire to assist mothers; however, there is only so much doulas can do. Although doulas shared the benefits of providing and linking mothers to resources, many spoke about the high risk of burnout and the potential to overextend oneself when attempting to help these moms. Doula D shares her realization of this challenge:

The biggest challenge I had to learn in the doula work is what my scope is as a doula. I'm not really a social worker. I don't really have that training. And sometimes because we are community home visiting, we fill that role of social work kind of, but we don't always have the right amount of time and the right skill level to really do that in the most effective way. So just learning that I don't have to solve all the problems in her life, that's not my job,

even though part of me wants to. That I'm there to do doula services. I can help prepare her for her birth, and I can help her transition to motherhood afterwards. That's what I can do. And I can refer to other people for other things."

Despite the best intentions, trying to help a mother in every way is not feasible, nor does it always work. Doulas spoke of the difficulty that arose when it was time to end their relationship with mothers, some mothers becoming dependent on the services the doulas had provided. Other doulas shared experiences of linking mothers to resources, when at times systems were set up in ways that mothers could not benefit, such as overextended public housing programs unable to provide housing or mothers who once linked to a resource did not use it.

2.3.2.4 Doulas recognize and navigate institutional biases that exist in the hospital system

A fourth and final theme that emerged from conversations was how doulas try to mediate the effects of institutional biases in the hospital system on African-American, low-income mothers. Doulas shared experiences of observing from their perspective, the mistreatment of marginalized women in the hospital system, experiences ranged from mothers not being asked consent for a pelvic exam, to witnessing hospital staff use disparaging language to talk to mothers. At times, it is appropriate for the doula to step in, to mediate situations. Doula G share provides an example of how she does this:

Whereas this black momma because her socioeconomic status looks different, she's not receiving the same treatment. I've seen that dozens of times where the doctor comes in, shoves her leg open, and does a pelvic exam without even talking with the mother...this isn't something we're just making up. We're seeing this where black women and women of color and immigrant women are not receiving the same treatment, and that we can't just stand by and watch this. We want to teach our moms how to speak up for themselves. And

sometimes that means we have to stand in the gap and say, "Could you wait?" even if she can't. "Can you just give her a couple minutes because before you came in we were talking, and she said that she was a little bit uncomfortable with having an exam right now? Can we just wait a few more minutes? Thank you so much. Thank you for being such a caring provider." And they might get mad and huff and puff and leave the room, but if they decide to examine that woman anyway, that provider needs to be reported."

Doula G, helps mothers recognize they are being treated unfairly, and then when possible, helps mothers be the ones to speak to their own defense. At times, this doula must use her own voice, as a doula with experience of attending multiple births, to speak up on behalf of the mother. However, this mediation of injustice runs a fine line. Doulas have a "philosophy to never argue over a laboring woman's body," a philosophy that can at times be difficult to uphold. Doulas, specifically African-American doulas, shared how they sometimes perceived mistreatment that mothers would not notice. Doula J shares how she navigates these scenarios:

I have to continue to be action-oriented. How can we navigate this issue or how can we move forward? You have to kind of just stay focused. Because if she's [mom's] offended, it's easy for me to get offended, and then grandma gets offended, and now, we're all in here offended. And that's not helping anybody. You don't want to stress moms out because that then prolongs the labor. So you just really have to always be cognitive of how is mom feeling, let me not add any more pressure or stress to her. Sometimes that means biting your tongue.

At times, direct mediation is not the best option, as priority is always the mother. Doulas have to balance knowing that a mother is being treated differently while at the same time being present to a mother's needs and feelings while she is in the hospital.

2.4 DISCUSSION

The goal of this research was to understand the ways in which doulas tailor their care to serve low-income African-American women. The interviews with doulas and the themes highlighted from these conversations, highlight how doulas tailor their service when working with African-American and low-income women with implications on how to better train doulas to work with this population of women. The highlighted themes: doulas working to support mothers during the different phases of pregnancy, doulas working to advocate for mothers with a special emphasis on helping women self-advocate for themselves and their babies, doulas often stepping outside of their role to provide mothers with extra support, and doulas recognizing the institutional biases that exist in the hospital system and try to mediate their effect on mothers, and their subthemes are connected by a thread of social injustice. Low-income black women are facing social disadvantages due to both their race, sex, socioeconomic status, with the intersection of these multiple sources of oppression having negative implications on health^{1,49}.

Although doulas work to support all mothers, there is an undercurrent of specialized care needed when dealing with women who may have been subject to societal mistreatment. Working with the women, doulas' advocacy and teaching self-advocacy, becomes more than just helping a mother speak up for herself in the delivery room, but teaching her to use her voice in her everyday life where she may often go unheard. Connecting the women to resources and providing them with resources is not a service that a doula may have to provide to women of greater incomes, and while all people have been subject to an unfavorable experience while in the hospital, the mistreatment of poor African-American women by the medical system is housed in a long history of racism¹.

A key component of the Public Health Critical Race Praxis is the concept of focusing on the margins⁵⁰. These women are disenfranchised by both their race and their socioeconomic status,

with little emphasis on how doula care can be made more accessible to them, as evidenced by gaps in current literature. This study is a step in a direction that centers the experience of African-American, low-income women, learning how doula services work to help them to have positive and healthy births.

Additionally, themes highlight the role of doulas, specifically community doulas, and the portions of their work that overlap with responsibilities of community health workers and other prenatal home-visiting programs. There have not been comparisons of the benefits and outcomes of community doula programs and traditional home visiting programs; however, there may be potential in community doula programs incorporating components that make traditional home-visiting programs successful or vice-versa. Home-visiting programs have been shown to have an effect on birth outcomes such as preterm birth and low-birth weight, as well as on infant mortality rates^{17, 18, 51, 52}. These programs bring prenatal care and education into the home, when mothers are pregnant, while also linking mothers to various resources, such as nutrition supplements and drug cessation programs and supports. Some programs continue postnatally, to help teach healthy parenting skills and prevent child mistreatment and abuse. While the programs have potentially contributed to the decreasing rates of infant mortality, effects have not been seen that close the racial disparity gap between white and African-American infants, and thus it is important to evaluate existing home-visiting programs to see how they can be modified to increase their access to and utilization of programs among low-income African-American women, in efforts to close this gap. A potential area of change is learning from the community doula model, and incorporating doula services early in pregnancy, with the potential to yield positive results in birth outcomes like preterm birth, low birth weight, and ultimately infant mortality^{29, 30}.

2.5 STRENGTHS & LIMITATIONS

A major strength of this study is that it focuses on the experience of working with low-income African-American women from the perspective of the doula, a perspective not explored previously in the literature. Potential future explorations should aim to understand how low-income African-Americans perceive the support that doulas offer, to further develop this understanding. Limiting factors of this study include the sampling procedures and small sample; however, in the context of this study, sampling procedures and size were appropriate.

2.6 CONCLUSIONS

The goal of this project was to explore ways in which doulas work with women who are low-income, African-American and both, in an effort to understand how to improve access for these women, as well as better prepare doulas to work with this population. The results reveal that doulas work to provide support and resources for marginalized mothers, support and resources that mothers may not be receiving elsewhere. When communicating to low-income African-American women on the benefits of using a doula, there could be a potential benefit in housing doulas in this context. This is especially significant in light of how doulas work to mediate the effects of institutional biases in the hospital system. Communicating to mothers that doulas are there for them, rather than a part of the larger hospital system as a whole, may help low-income African-American mothers better understand the work of doulas, but also this context may increase women's willingness to use a doula when available. Additionally, this study aimed to understand how to better prepare doulas to work with disadvantaged mothers. The results reveal the cultural

awareness is an important component of training. Having an awareness of bias and how it affects clients, as well as teaching doulas how to navigate situations where bias is overtly expressed, will better prepare doulas when working with disadvantaged mothers, and help them better provide support and advocate for mothers before, during and after birth.

Continuous labor support should not be relegated as a privilege only some women experience. All women deserve to have a gratifying birth experience, and with doulas, that is made possible. It is important to understand the ways in which doulas can be made more accessible to women who are low-income African-American women, and how the care and services of doulas can and should be tailored to better accommodate these women so that they too can feel empowered during birth.

3.0 THESIS CONCLUSION

This thesis explores a perspective not previously explored in the literature: that of doulas with experience working with low-income African-American women, in an effort to improve the health of this population. The themes highlighted how the supportive and advocacy services of doulas become all the more beneficial when working with women marginalized due to their race, sex, socioeconomic status, and the intersection of these characteristics.

Doula care is a mode of care delivery that has potential to benefit African-American women; however, doula services must be viewed as a potential resource outside the realm of labor and delivery. Community doula programs begin to move doulas to these spaces; however, research needs to follow. Building upon these findings, future research can explore the ways in which this model of care, may affect African-American birth outcomes, specifically low birth weight, preterm birth, and ultimately infant mortality.

APPENDIX: TABLES

Table 1. Demographic Characteristics

Characteristic	n (%)
<i>Race Ethnicity</i>	
Black or African American	5 (50%)
Hispanic or Latino	1 (10%)
Asian or Pacific Islander	1 (10%)
Bi-racial	1 (10%)
White	2 (20%)
<i>Years of Doula Practice</i>	
2	2 (20%)
3	1 (10%)
4	1 (10%)
5	1 (10%)
6	1 (10%)
9	2 (20%)
10	1 (10%)
14	1(10%)
<i>Career outside of being a doula</i>	
Yes	8 (80%)
No	2 (20%)
<i>Percentage of clients who are Black or African-American</i>	
0-25%	1(10%)
26-50%	2 (30%)
51-75%	3 (30%)
76-100%	3 (30%)
<i>Percentage of clients who are low-income</i>	
0-25%	0
26-50%	0
51-75%	1 (10%)
76-100%	9 (90%)

Table 2. Interview Themes

Theme	Description
1. Doulas work to support mothers	Doulas provide supportive measures including, but not limited to: creating birth plans, teaching mothers comfort measures to ease labor pains, and teaching mothers bonding techniques that start while their baby is still in the womb
1a. Similarities of race, culture, and experience impact care	Racial, cultural, and experiential similarities between mother can help in the creation of a trusting mother-doula relationship.
2. Doulas work to advocate for mothers, helping them self-advocate	Doula advocate on behalf of mothers to ensure they receive adequate treatment and care. They also teach and help mothers self-advocate for themselves and for their babies
2a. Doulas help marginalized mothers find and use their voice	Beyond self-advocacy, doulas help mothers find and use their own voice, empowering them to speak up while in the hospital system, and when they have returned to their daily lives
3. Doulas often step outside of their role to provide mothers with extra support	Doulas often link mothers to outside resources, such as nutrition and housing supports. At times find themselves as the provider of resources, such as clothing or rides to medical providers
3a. Doulas cannot do it all	Taking on the extra tasks and services can lead to burnout and doulas feeling overextended
4. Doulas recognize the institutional biases that exist in the hospital system	Doula help prevent overt effects of institutional racism, such as ensuring mothers are asked consent of procedures and are addressed respectfully by medical staff

Table 3. Interview Guide

Interview Guide	
Background	<p>Why did you decide to become a doula? How do you see your role as a doula? Probe: Do you see yourself as a community or birth doula? Probe: How do you identify yourself as a doula?)</p>
Characterization of mother's experience	<p>What do mothers think you do? Probe: How much do mothers know about what you do? Probe: How do mothers learn about you as doula?</p> <p>What are some of the most important things you do to support mothers? Probe: Tell me about the points of pregnancy, delivery, and post-natal where you provide support?</p>
Specific services and their utilization among marginalized mothers	<p>Tell me about the other services you offer to mothers as a doula Probe: Are any of the tasks you perform more time-intensive? Tell me about them. Probe: Are any of the tasks you perform more costly? Tell me about them.</p> <p>In your experience, what services do mothers tell you they find most useful? Probe: What services do mothers request the most? Probe: Do you find that low-income mothers request certain services more than other services? Tell me about these. Probe: Are there services that you find African-American mothers request the most? Tell me about these. Probe: What do you think is the biggest challenge for these women?</p>
Challenges of providing service	<p>What are some of the challenges you face when providing services? Probe: Are any tasks especially physical or emotionally difficult? Tell me about those. Probe: Have you had experiences where your race/ethnicity has influenced your experience with a mother? Tell me about those. You can tell me about positive or negative experiences. Probe: Tell me about any differences when dealing with mothers who are your same race or mothers who are different race.</p>
Characterization of training	<p>What part of your training has helped you the most?</p> <p>Are there things you wish you had more training in or exposure to, to prepare you for your work with women who are African-American and/or low-income? Probe: What do you think would improve doula services in Pittsburgh? Probe: What do you think would improve home-visiting services for you?</p>
Closing	<p>Is there anything else you would like to share with me?</p>

BIBLIOGRAPHY

1. Hogan VK, Rowley D, Bennett T, Taylor KD. Life course, social determinants, and health inequities: toward a national plan for achieving health equity for African American infants--a concept paper. *Maternal and child health journal*. 2012; 16:1143-50.
2. Martin JA, Hamilton BE, Osterman MJ, Driscoll AK, Mathews TJ. Births: Final Data for 2015. *National vital statistics reports : from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System*. 2017; 66:1.
3. Mathews TJ, Driscoll AK. Trends in Infant Mortality in the United States, 2005–2014. 2017.
4. Matthews TJ, MacDorman MF, Thomas ME. Infant Mortality Statistics From the 2013 Period Linked Birth/Infant Death Data Set. *National vital statistics reports : from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System*. 2015; 64:1-30.
5. Fry-Johnson YW, Levine R, Rowley D, Agboto V, Rust G. United States black:white infant mortality disparities are not inevitable: identification of community resilience independent of socioeconomic status. *Ethnicity & disease*. 2010; 20:S1-131-5.
6. Burris HH, Baccarelli AA, Wright RO, Wright RJ. Epigenetics: linking social and environmental exposures to preterm birth. *Pediatr Res*. 2016; 79:136-40.
7. David R, Collins J. Disparities in Infant Mortality: What's Genetics Got to Do With It? *American journal of public health*. 2007; 97:1191-7.
8. El-Sayed AM, Paczkowski M, Rutherford CG, Keyes KM, Galea S. Social Environments, Genetics, and Black-White Disparities in Infant Mortality. *Paediatric and perinatal epidemiology*. 2015; 29:546-51.
9. Savitz DA, Murnane P. Behavioral influences on preterm birth: a review. *Epidemiology (Cambridge, Mass)*. 2010; 21:291-9.
10. Collins JW, David RJ, Handler A, Wall S, Andes S. Very Low Birthweight in African American Infants: The Role of Maternal Exposure to Interpersonal Racial Discrimination. *American journal of public health*. 2004; 94:2132-8.
11. Krans EE, Davis MM. Preventing Low Birthweight: 25 Years, prenatal risk, and the failure to reinvent prenatal care. *American journal of obstetrics and gynecology*. 2012; 206:398-403.
12. Hamilton BE, Martin JA, Osterman MJK, Curtain SC, Matthews TJ. Births: Final data for 2014. Hyattsville, MD: National Center for Health Statistics 2015 Contract No.: 12.
13. Issel LM, Forrestal SG, Slaughter J, Wiencrot A, Handler A. A review of prenatal home-visiting effectiveness for improving birth outcomes. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN / NAACOG*. 2011; 40:157-65.
14. Goyal NK, Teeters A, Ammerman RT. Home visiting and outcomes of preterm infants: a systematic review. *Pediatrics*. 2013; 132:502-16.
15. Goyal NK, Hall ES, Meinen-Derr JK, Kahn RS, Short JA, Van Ginkel JB, et al. Dosage effect of prenatal home visiting on pregnancy outcomes in at-risk, first-time mothers. *Pediatrics*. 2013; 132 Suppl 2:S118-25.
16. Hollowell J, Oakley L, Kurinczuk JJ, Brocklehurst P, Gray R. The effectiveness of antenatal care programmes to reduce infant mortality and preterm birth in socially

- disadvantaged and vulnerable women in high-income countries: a systematic review. *BMC pregnancy and childbirth*. 2011; 11:13.
17. Wells N, Sbrocco T, Hsiao CW, Hill LD, Vaughn NA, Lockley B. The impact of nurse case management home visitation on birth outcomes in African-American women. *Journal of the National Medical Association*. 2008; 100:547-52.
 18. Lee E, Mitchell-Herzfeld SD, Lowenfels AA, Greene R, Dorabawila V, DuMont KA. Reducing low birth weight through home visitation: a randomized controlled trial. *American journal of preventive medicine*. 2009; 36:154-60.
 19. Doula. In: O'Reilly A, editor. *Encyclopedia of Motherhood*: SAGE Publications, Inc.; 2010.
 20. Lantz PM, Low LK, Varkey S, Watson RL. Doulas as childbirth paraprofessionals: Results from a national survey. *Women's Health Issues*. 2005; 15:109-16.
 21. Gruber KJ, Cupito SH, Dobson CF. Impact of doulas on healthy birth outcomes. *The Journal of perinatal education*. 2013; 22:49-58.
 22. Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. *The Cochrane database of systematic reviews*. 2013; 7:Cd003766.
 23. Porreco RP, Thorp JA. The cesarean birth epidemic: Trends, causes, and solutions. *American Journal of Obstetrics & Gynecology*. 1996; 175:369-74.
 24. American College of Obstetricians Gynecologists, Society for Maternal-Fetal Medicine, Caughey AB, Cahill AG, Guise JM, Rouse DJ. Safe prevention of the primary cesarean delivery. *American journal of obstetrics and gynecology*. 2014; 210:179-93.
 25. Strauss N, Giessler K, McAllister E. How Doula Care Can Advance the Goals of the Affordable Care Act: A Snapshot From New York City. *The Journal of perinatal education*. 2015; 24:8-15.
 26. Kozhimannil KB, Hardeman RR, Alarid-Escudero F, Vogelsang CA, Blauer-Peterson C, Howell EA. Modeling the Cost-Effectiveness of Doula Care Associated with Reductions in Preterm Birth and Cesarean Delivery. *Birth*. 2016; 43:20-7.
 27. Kozhimannil KB, Hardeman RR, Attanasio LB, Blauer-Peterson C, O'Brien M. Doula care, birth outcomes, and costs among Medicaid beneficiaries. *American journal of public health*. 2013; 103:e113-21.
 28. Kozhimannil KB, Attanasio LB, Jou J, Joarnt LK, Johnson PJ, Gjerdingen DK. Potential benefits of increased access to doula support during childbirth. *The American journal of managed care*. 2014; 20:e340-52.
 29. Edwards RC, Thullen MJ, Korfmacher J, Lantos JD, Henson LG, Hans SL. Breastfeeding and complementary food: randomized trial of community doula home visiting. *Pediatrics*. 2013; 132 Suppl 2:S160-6.
 30. Thullen MJ, McMillin SE, Korfmacher J, Humphries ML, Bellamy J, Henson L, et al. Father participation in a community-doula home-visiting intervention with young, African American mothers. *Infant mental health journal*. 2014; 35:422-34.
 31. Slaughter JC, Issel LM, Handler AS, Rosenberg D, Kane DJ, Stayner LT. Measuring dosage: a key factor when assessing the relationship between prenatal case management and birth outcomes. *Maternal and child health journal*. 2013; 17:1414-23.
 32. Sakala C. U.S. health care reform legislation offers major new gains to childbearing women and newborns. *Birth*. 2010; 37:337-40.
 33. Johnson KA. Women's health and health reform: implications of the Patient Protection and Affordable Care Act. *Current opinion in obstetrics & gynecology*. 2010; 22:492-7.

34. Kozhimannil KB, Hardeman RR. Coverage for Doula Services: How State Medicaid Programs Can Address Concerns about Maternity Care Costs and Quality. *Birth*. 2016; 43:97-9.
35. Hughes D, Simpson L. The Role of Social Change in Preventing Low Birth Weight. *The Future of Children*. 1995; 5:87-102.
36. Wallace ME, Mendola P, Liu D, Grantz KL. Joint Effects of Structural Racism and Income Inequality on Small-for-Gestational-Age Birth. *American journal of public health*. 2015; 105:1681-8.
37. The Birth Circle – Community Based Doula Program. 2012; Available from: <http://www.familymedicine.pitt.edu/content.asp?id=1508&subid=3320>.
38. Ramshaw G. *Mothering the Mother: The Heinz Endowments*.
39. Boyle E. Birth Circle Program of East Liberty Family Health Care Center. Pennsylvania Association of Community Health Centers Meeting 2010.
40. Ulin PR, Robinson ET, Tolley EE. *Qualitative Methods in Public Health: A Field Guide for Applied Research*: Jossey-Bas; 2004.
41. Kozhimannil KB, Vogelsang CA, Hardeman RR, Prasad S. Disrupting the Pathways of Social Determinants of Health: Doula Support during Pregnancy and Childbirth. *Journal of the American Board of Family Medicine : JABFM*. 2016; 29:308-17.
42. Cattelona G, Friesen CA, Hormuth LJ. The Impact of a Volunteer Postpartum Doula Program on Breastfeeding Success: A Case Study. *Journal of human lactation : official journal of International Lactation Consultant Association*. 2015; 31:607-10.
43. Kang HK. Influence of culture and community perceptions on birth and perinatal care of immigrant women: doulas' perspective. *The Journal of perinatal education*. 2014; 23:25-32.
44. DONA International. Available from: <https://www.dona.org/>.
45. What is a doula? : DONA International; [cited 2017]; Available from: <https://www.dona.org/what-is-a-doula/>.
46. Gamble VN. A legacy of distrust: African Americans and medical research. *American journal of preventive medicine*. 1993; 9:35-8.
47. Wall LL. The Medical Ethics of Dr. J. Marion Sims: A Fresh Look at the Historical Record. *Journal of medical ethics*. 2006; 32:346-50.
48. Feagin J, Bennefield Z. Systemic racism and U.S. health care. *Social science & medicine (1982)*. 2014; 103:7-14.
49. Williams DR, Mohammed SA. Racism and Health I: Pathways and Scientific Evidence. 2013.
50. Ford CL, Airhihenbuwa CO. Critical Race Theory, race equity, and public health: toward antiracism praxis. *American journal of public health*. 2010; 100 Suppl 1:S30-5.
51. Olds DL, Kitzman H, Knudtson MD, Anson E, Smith JA, Cole R. Effect of home visiting by nurses on maternal and child mortality: results of a 2-decade follow-up of a randomized clinical trial. *JAMA pediatrics*. 2014; 168:800-6.
52. Fowler BA. Prenatal outreach: an approach to reduce infant mortality of African American infants. *The ABNF journal : official journal of the Association of Black Nursing Faculty in Higher Education, Inc*. 1995; 6:15-8.