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PERSON-CENTERED DECISION-MAKING AND SOCIO-CULTURAL CONTEXTS  
INFLUENCING CESAREAN DELIVERIES: A NATIONAL ANALYSIS

By

Alice M. Story

B.S., Spelman College, 2011

M.P.H., University of Arkansas for Medical Sciences, 2013

J.M., Emory University, 2014

A Dissertation

Submitted to the Faculty of the

School of Public Health and Information Sciences of the University of Louisville

in Partial Fulfillment of the Requirements for the

Degree of

Doctor of Philosophy in Public Health Sciences

Department of Health Promotion and Behavioral Sciences

University of Louisville

Louisville, Kentucky

May 2022

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April 22, 2022

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## DEDICATION

This dissertation is dedicated to my parents

Dr. Troy L. Story

and

Jacqueline W. Story

who have always provided immense love and support.

## ACKNOWLEDGEMENTS

My gratitude is first extended to God, who has given me strength and blessings through family and friends who have supported and devoted their time throughout this journey. Dr. Aisha A. Brown, my advisor and committee member, I would not be in this position if it was not for you. Thank you for providing this opportunity to live my dream. Dr. Muriel Harris, my dissertation chair, I am grateful for your guidance and unimaginable opportunities you have exposed me to over the years. Dr. Jelani Kerr, my committee member, thank you for your continuous support and improving my research skills. Dr. Saraswathi Vedam, my committee member, thank you for the opportunity to collaborate with the Birth Place Lab and making this study possible.

To my parents, Dr. Troy L. Story and Jacqueline W. Story, who have instilled in me positivity and to work hard and never give up. My grandparents who have paved the way, Dr. Jacob White, Alice White, Troy L. Story, Sr., and Margaret Story. My sisters, Alysa Story and Sherise Beale and aunts, Lillie Jule Dyson and Andrea White who have provided support and prayers. Namu (Johnetta Cobb) who understood and always believed in me. Lastly, Ms. Faatimah Muhammad, my extended family, friends, and Spelman sisters who have encouraged me and provided a haven throughout this process.

## ABSTRACT

### PERSON-CENTERED DECISION-MAKING AND SOCIO-CULTURAL CONTEXTS INFLUENCING CESAREAN DELIVERIES: A NATIONAL ANALYSIS

Alice M. Story

April 22, 2022

Vaginal delivery is the safest mode of delivery yet, the cesarean delivery rate has steadily increased for several decades and accounts for a third of pregnancies in the U.S. Cesarean deliveries are often performed in the absence of a perceived maternal or fetal health threat, which increases women's risk of an unnecessary surgical procedure, hence increasing the risk of maternal morbidity and mortality, especially among marginalized women. This study applied a newly developed, theoretically sound, conceptual model grounded in the social cognitive theory to identify potential areas of intervention that could reduce rates of cesarean deliveries in the U.S. The social cognitive theory's cognitive and environmental constructs assessed in this study included collective efficacy, knowledge, normative beliefs, social support, and barriers and facilitators. This cross-sectional study design used the Giving Voice to Mothers - United States data with descriptive statistics and logistic regression analyses to predict covariates associated with having a cesarean delivery vs. spontaneous vaginal delivery (n=1,876). Significant covariates were determined ( $p \leq 0.05$ ) and included the following: having a prior cesarean delivery (OR: 14.11, 95% CI: 7.99 - 24.90); more than one child (OR: 0.21,



95% CI: 0.13 - 0.35); elevated pregnancy risk (OR: 2.22 - 4.90, 95% CI: 2.22 - 4.90); doctor as perinatal care provider (OR: 2.25, 95% CI: 1.40 - 3.61); and receiving disrespectful perinatal care (OR: 2.16, 95% CI: 1.13 - 4.12). Significant covariates associated with race/ethnicity with white women as the reference group included the following: Asian women had higher odds of having a prior cesarean delivery (OR: 2.59, 95% CI: 1.31 - 5.12) and doctor as their perinatal care provider (OR: 2.31, 95% CI: 1.22 - 4.35); Black women had higher odds of having one or more child (OR: 2.15, 95% CI: 1.11 - 4.14); and Hispanic (OR: 1.89, 95% CI: 1.04 - 3.45) and Indigenous (OR: 3.17, 95% CI: 1.34 - 7.48) women had higher odds of receiving disrespectful perinatal care. Integrating the “Quality of Maternal and Newborn Care” framework into public health practice can improve individual and interpersonal factors through less medical care interventions and improved patient-provider interactions.

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	v
LIST OF TABLES.....	ix
LIST OF FIGURES .....	x
CHAPTER I.....	1
INTRODUCTION .....	1
Background.....	1
Maternal Mortality.....	1
Maternal Morbidity.....	1
Cesarean Deliveries .....	2
Perinatal Health Providers .....	3
Statement of the Problem.....	7
Purpose of the Study.....	7
Hypotheses.....	7
Conceptual Model.....	8
CHAPTER II.....	10
REVIEW OF THE LITERATURE .....	10
Theoretical Frameworks .....	10
Social Ecological Model.....	10
Social Cognitive Theory .....	12
Mode of Delivery.....	15
Vaginal Delivery.....	15
Cesarean Delivery.....	16
Place of Birth .....	20
Community Birth .....	21
Hospital Birth.....	23
Social Support.....	23
Quality of Perinatal Care .....	25
Equitable Care.....	26
Racism and Discrimination.....	26
Race or Cultural Concordance.....	34
Person-centered Care .....	36

Person-centered Decision-making.....	38
Respectful Perinatal Care.....	41
Gaps in the Literature.....	44
Rationale and Significance of the Study.....	44
Conceptual Model.....	46
Research Questions.....	47
Hypotheses.....	47
CHAPTER III .....	48
METHODOLOGY .....	48
Survey Instrument Overview .....	48
Research Design.....	50
Study Population.....	50
Recruitment.....	51
Inclusion Criteria .....	51
Exclusion Criteria .....	51
Sample Size.....	51
Measurement.....	52
Analysis.....	58
Descriptive Statistics.....	58
Logistic Regression.....	58
CHAPTER IV .....	62
RESULTS .....	62
Descriptive Statistics.....	62
Mode of Delivery.....	66
Significant Covariates.....	75
Logistic Regression.....	75
Differences in Race.....	77
Significant Factors Influencing Cesarean Delivery .....	81
CHAPTER V .....	82
DISCUSSION AND CONCLUSION .....	82
Strengths .....	88
Limitations .....	89
Implications for Future Research.....	89
Implications for Public Health Practice and Policy .....	91
Conclusion .....	95
REFERENCES .....	96
APPENDICES .....	127
Appendix A: Giving Voice to Mothers-US Adapted Survey Instrument.....	127
Appendix B: University of Louisville IRB Outcome Letter.....	138

CURRICULUM VITAE..... 139

## LIST OF TABLES

Table 1. Medical Conditions Associated with Increased Rates of Cesarean Delivery .....	18
Table 2. Descriptive Statistics (n=1,876).....	62
Table 3. Descriptive Statistics Perinatal Health Status (n=1,876).....	63
Table 4. Descriptive Statistics Place of Birth and Perinatal Care Provider (n=1,876).....	64
Table 5. Descriptive Statistics Cognitive and Environmental Factors and Mode of Delivery (n=1,876).....	65
Table 6. Descriptive Statistics Mode of Delivery and Maternal Age (n=1,876).....	67
Table 7. Descriptive Statistics Mode of Delivery and Race/Ethnicity (n=1,876) .....	67
Table 8. Descriptive Statistics Mode of Delivery, Education, and Low Socioeconomic Status (n=1,876).....	68
Table 9. Descriptive Statistics Mode of Delivery, Health Insurance Status, and Region of Residence at Birth (n=1,876).....	68
Table 10. Descriptive Statistics Mode of Delivery and Perinatal Health Status (n=1,876).....	69
Table 11. Descriptive Statistics Mode of Delivery, Place of Birth, and Perinatal Care Provider (n=1,876).....	70
Table 12. Association between Cesarean Delivery and Covariates.....	70
Table 13. Association between MADM (person-centered decision-making) and Covariates .....	73
Table 14. Adjusted Logistic Regression Model Predicting a Cesarean Delivery.....	76
Table 15. Significant Covariates Stratified by Race/Ethnicity Part 1.....	78
Table 16. Significant Covariates Stratified by Race/Ethnicity Part 2.....	79
Table 17. Crude Logistic Regression Model Predicting Significant Differences by Race/Ethnicity.....	80

## LIST OF FIGURES

Figure 1. Conceptual Model of Cognitive and Environmental Factors Influencing Mode of Delivery .....	9
Figure 2. Social Ecological Model [Adapted from Golden & Wendel, 2020] .....	12
Figure 3. Conceptual Model of Cognitive and Environmental Factors Influencing Mode of Delivery .....	46
Figure 4. Descriptive Statistics and Logistic Regression Sample Size Flowchart .....	52
Figure 5. Social Ecological Model [Adapted from Golden & Wendel, 2020] .....	92
Figure 6. Quality of Maternal and Newborn Care Framework [Adapted from Renfrew et al., 2014] .....	93

## CHAPTER I

### INTRODUCTION

#### **Background**

##### ***Maternal Mortality***

Maternal mortality is an indicator of the overall health of a population and status of women in society (Douthard et al., 2021). The maternal mortality ratio is determined by the number of maternal deaths per 100,000 live births and is readily utilized globally (Douthard et al., 2021). In the U.S., the maternal mortality ratio has increased from 12 per 100,000 live births in 1990 to 19 per 100,000 live births in 2017, the highest rates being among Blacks, American Indian, and Alaska Native women (Douthard et al., 2021; Noursi et al., 2021, Oribhabor et al., 2020). Specifically, Black women are 3-4 times more likely than white women to experience a death or complication due to childbirth (Chinn et al., 2021; Hardeman et al., 2019; Omeish & Kiernan, 2020; Oribhabor et al., 2020). Maternal mortality ratio is decreasing globally yet women in the U.S. are more likely to die from pregnancy or experience pregnancy- or delivery-related complications (Douthard et al., 2021; Johnson et al., 2019; Leonard et al., 2019a; Noursi et al., 2021; Tangel et al., 2019).

##### ***Maternal Morbidity***

Maternal morbidity consists of physical or psychological conditions that adversely affect a woman's health during or after pregnancy (Creanga et al., 2014).

Maternal morbidity can impact quality of life, with short- and long-term adverse health consequences for mothers and infants (Johnson et al., 2019; Koblinsky et al., 2012). Severe maternal morbidity affects 60,000 women annually and can be life-threatening and increase the risk of poor perinatal outcomes with subsequent pregnancies, longer recovery, and hospital lengths of stay (Creanga et al., 2014; Howell et al., 2016; Johnson et al., 2019; Korb et al., 2019; Leonard et al., 2019a; Leonard et al., 2019b; Tangel et al., 2019; Zamani-Alavijeh et al., 2017; Zuckerwise & Lipkind, 2017). Women of color are affected by severe maternal morbidity more than white women, with Black women experiencing the greatest burden (Howell et al., 2016; Leonard et al., 2019b; Omeish & Kiernan, 2020; Somer et al., 2017; Zuckerwise & Lipkind, 2017). Omeish & Kiernan (2020) suggest college educated Black women have a higher rate of severe maternal morbidity (333.0 per 10,000 deliveries) than white women who have not completed high school (137.7 per 10,000 deliveries). Racial disparities of severe maternal morbidity are present among women who deliver by cesarean delivery as well (Leonard et al., 2019b).

### ***Cesarean Deliveries***

The U.S. has one of the highest cesarean delivery rates among high-resource countries (Boyle et al., 2013; Edmonds et al., 2013; Getahun et al., 2009; Guo et al., 2021; Kawakita & Landy, 2017; Kozhimannil et al., 2013; Leonard et al., 2019a; Menacker et al., 2006; Morris et al., 2016). Cesareans are the most common major surgical procedure for women and can result in severe maternal morbidity or mortality (Boyle et al., 2013; Edmonds et al., 2013; Getahun et al., 2009; Guo et al., 2021; Kawakita & Landy, 2017; Kozhimannil et al., 2013; Leonard et al., 2019a; Menacker et al., 2006; Morris et al., 2016). Cesarean deliveries have been on the rise in the U.S. since



1996 and account for a third of pregnancies, which far exceeds the World Health Organization's recommendation of 10-15% (Boyle et al., 2013; Edmonds et al., 2013; Getahun et al., 2009; Guo et al., 2021; Keag et al., 2018; Kozhimannil et al., 2013; Leonard et al., 2019a; Martinez et al., 2020; Morris et al., 2016; Spong et al., 2012; Yee et al., 2015; Zamani-Alavijeh et al., 2017). While cesarean deliveries may be indicated when anticipating serious maternal or fetal health complications, rates above 10-15% do not improve outcomes, and can increase the risk of severe maternal morbidity and mortality for women (Desai & Tsukerman, 2021; Leonard et al., 2019a; Martinez et al., 2020; Tangel et al., 2019; Zamani-Alavijeh et al., 2017).

Cesarean delivery and perinatal outcomes vary by the mother's race and ethnicity (Bailit & Love, 2008). Black women are more likely to have a cesarean delivery compared to other racial and ethnic groups even after being adjusted for sociodemographic factors (Altman et al., 2020; Attanasio et al., 2017; Huesch & Doctor, 2015; Washington et al., 2012). A study conducted by Huesch & Doctor (2015) suggested that Black women were significantly more likely to have an elective or emergency primary cesarean delivery than any other racial/ethnic group, reflecting disparities in cesarean utilization. The type of perinatal health provider can also influence cesarean utilization in the U.S.

### ***Perinatal Health Providers***

To ensure adequate care and reduce adverse perinatal outcomes, the availability of skilled providers is key (World Health Organization [WHO], 2016). In the U.S., perinatal care providers include obstetricians, family physicians, midwives, and nurses, though availability of midwives vary by state, and across populations (Vedam et al., 2018).

Physicians provide over 90% of perinatal care, and obstetricians, family physicians, midwives, and nurses do not consistently collaborate across health settings (Akileswaran & Hutchinson, 2016; Neal et al., 2018; Vedam et al., 2018). Family physicians and certified nurse-midwives provide in hospital labor and delivery care in some regions, and certified professional midwives offer community birth options in most states. Together they can improve perinatal care by offering a diverse set of skills and care choices for childbirth (Pecci et al., 2012).

The literature has associated midwifery care with high quality of care and reduced cesarean delivery rates (Akileswaran & Hutchinson, 2016; Carlson et al., 2018; Hoopes-Bender et al., 2014; Kennedy et al., 2018a; Kozhimannil et al., 2015b; Neal et al., 2018). There are many benefits of midwifery care, but integration of midwives into the U.S. health system is lower than most other high-resource countries (Vedam et al., 2018). Therefore, efforts to enhance collaboration across perinatal care providers is imperative in improving access to quality perinatal care (Neal et al., 2018; Pecci et al., 2012). Studies conducted in the U.S. by Darlington et al. (2011), Levine et al. (2021), Nielsen et al. (2012), and Ogburn et al. (2012) on the collaboration between obstetricians and midwives when providing perinatal care revealed cesarean delivery rates were lower than the 30% national rate, which might be attributed to person-centered decision-making.

### ***Person-centered Care***

Enhancing person-centered decision-making is another aspect of ensuring quality perinatal care (Nieuwenhuijze et al., 2014, Attanasio et al., 2018; Vedam et al., 2017b). During the process of person-centered decision-making, the patient expresses their preferences, wishes, and values; yet this process can be complex when it involves women

of color, due to differences in values and power dynamics between them and their provider (Altman et al., 2019; Attanasio et al., 2018; Fersini et al., 2019; Nieuwenhuijze et al., 2014). Prior research has failed to assess cultural differences and account for how social discourse influences women's knowledge and decision-making and may hinder their decision-making capability and positive perinatal health outcomes (Regan et al., 2013, Altman et al., 2019). Understanding how culture affects women's expectations during the perinatal care period is needed to provide supportive culturally appropriate care (Fowles, 2017). Woman's social and culture norms also affect their preferences of perinatal care services, such as mode of delivery and place of birth (Coast et al., 2014; Fowles, 2017; Preis et al., 2018; Roudsari et al., 2015; Ugwu & de Kok, 2015). In some cultures, childbirth is considered sacred and vaginal delivery or home birth is more desirable (Fowles, 2017; Roudsari et al., 2015). Also, some pregnant women perceive a planned community birth that occurs in a home or birth center safer than a planned hospital birth due to the overuse of technology and medicalization (Cheyney et al., 2019; Lang et al., 2021). Decisions pregnant women make about place of birth and mode of delivery can be influenced by the social support they receive (Zamani-Alavijeh et al., 2018).

Social support is received through social integration and is considered a protective factor for health and a woman's transition into motherhood (Collins et al., 2021; Orr, 2004; Kim et al., 2014; Hetherington et al., 2015). Women with a social support network throughout the perinatal care period usually experience less stress and cesarean deliveries; decreased risk for postpartum depression; better health and well-being; and reduced effects of racism and discrimination (Collins et al., 2021; Corrigan et al., 2015;

Farrish & Roberston, 2012; Kim et al., 2014; Morikawa et al., 2015; Versteegen et al., 2021).

### ***Equitable Care***

Equitable care is care that does not differ in quality based on race or ethnicity [World Health Organization (WHO), 2016]. Racism and discrimination lead to women experiencing inequitable care; but receiving equitable care improves their quality of care throughout the perinatal care period (Altman et al., 2019; Attanasio et al., 2017). Racism is defined by Chambers et al. (2019) as “a perceived threat formed on an immutable characteristic often central to a person’s identity, resulting in unfair treatment based on a person’s physical attributes including skin color” (p. 214) and includes the concept of unequal treatment based on skin color or other individual characteristics (Alhusen et al., 2016). Racism is used interchangeably with discrimination, but there are differences between the terms, someone regardless of their race can experience discrimination and others can experience both, racism, and discrimination (Alhusen et al., 2016).

Racism and discrimination can occur both in and outside the health care setting and differences between patients and providers opinions of care can contribute to disparities in health care and barriers in patient-provider communication throughout perinatal care (Zakaria et al., 2021; Slaughter-Acey et al., 2019). Researching race and ethnicity as social constructs instead of biological constructs shifts the approach from individual level factors such as health behaviors to societal factors that influence how an individual experiences perinatal care (Dominguez, 2011; Ford & Airhihenbuwa, 2010; Hardeman et al., 2019).

## **Statement of the Problem**

The overuse of cesarean delivery is attributed to various factors known and unknown (Gregory et al., 2012). Cesarean deliveries are often performed in the absence of perceived maternal or fetal health threat, which increases women's rates of unnecessary surgical procedures, and hence, their risk of maternal morbidity and mortality, especially among Black and other marginalized racial/ethnic women (Desai & Tsukerman, 2021; Leonard et al., 2019a; Martinez et al., 2020; Tangel et al., 2019; Zamani-Alavijeh et al., 2017). Research suggest that cognitive, environmental, and structural conditions may contribute to disparities and are appropriate targets for change to address the overuse of cesarean deliveries (Attanasio et al., 2017; Bryant et al., 2009). Identifying and understanding factors influencing cesarean delivery utilization and racial disparities is a prioritize public health issue in the U.S. (Dominguez et al., 2008; Janevic et al., 2013).

## **Purpose of the Study**

The purpose of this study was to assess cognitive and environmental factors that influence mode of delivery and the differences among race/ethnicity, and to identify potential areas of intervention to reduce cesarean deliveries.

## **Research Questions**

1. How do cognitive and environmental factors influence mode of delivery?
  - a. How does this differ by race?

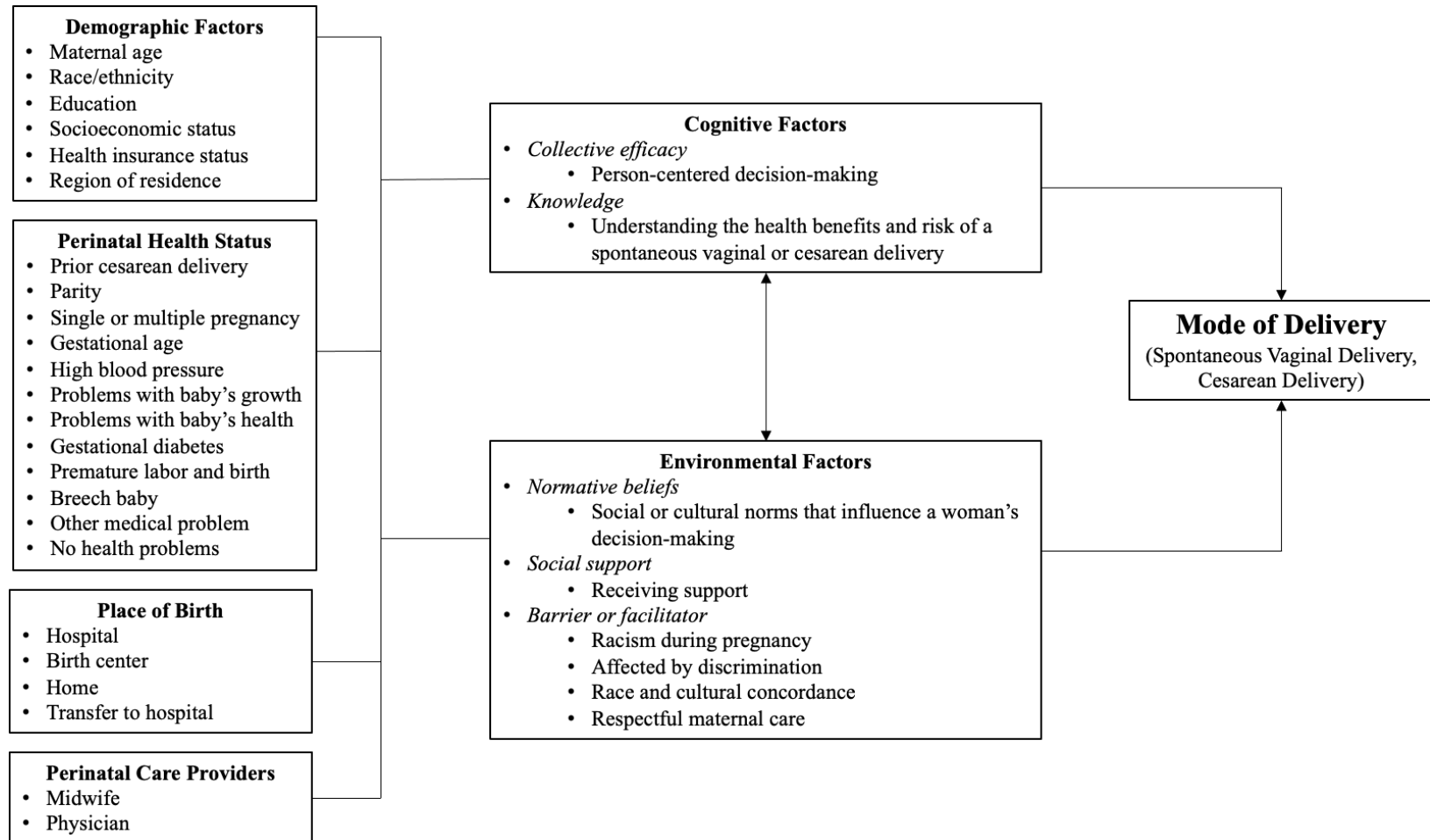
## **Hypotheses**

1. If women have lower Mothers Autonomy in Decision Making (MADM) scores, then they are more likely to have a cesarean delivery.

2. If women's social or cultural beliefs hold that birth should not be interfered with unless medically necessary, then they are less likely to experience a cesarean delivery.
3. If women experience racism during pregnancy, then they are more likely to have a cesarean delivery.
4. If women are affected by discrimination, then they are more likely to have a cesarean delivery.
5. If women receive social support during labor and birth, then they are less likely to have a cesarean delivery.
6. If women share the same race, culture, or heritage with their perinatal care provider, then they are less likely to have a cesarean delivery.
7. If women have lower Mothers on Respect index (MORi) scores, then they are more likely to have a cesarean delivery.

### **Conceptual Model**

This study incorporated constructs of the social cognitive theory to predict and explain cognitive and environmental factors that contribute to mode of delivery. These factors were conceptualized with the social ecological model, representing multiple levels of influence on mode of delivery.



**Figure 1.** Conceptual Model of Cognitive and Environmental Factors Influencing Mode of Delivery

## CHAPTER II

### REVIEW OF THE LITERATURE

#### **Theoretical Frameworks**

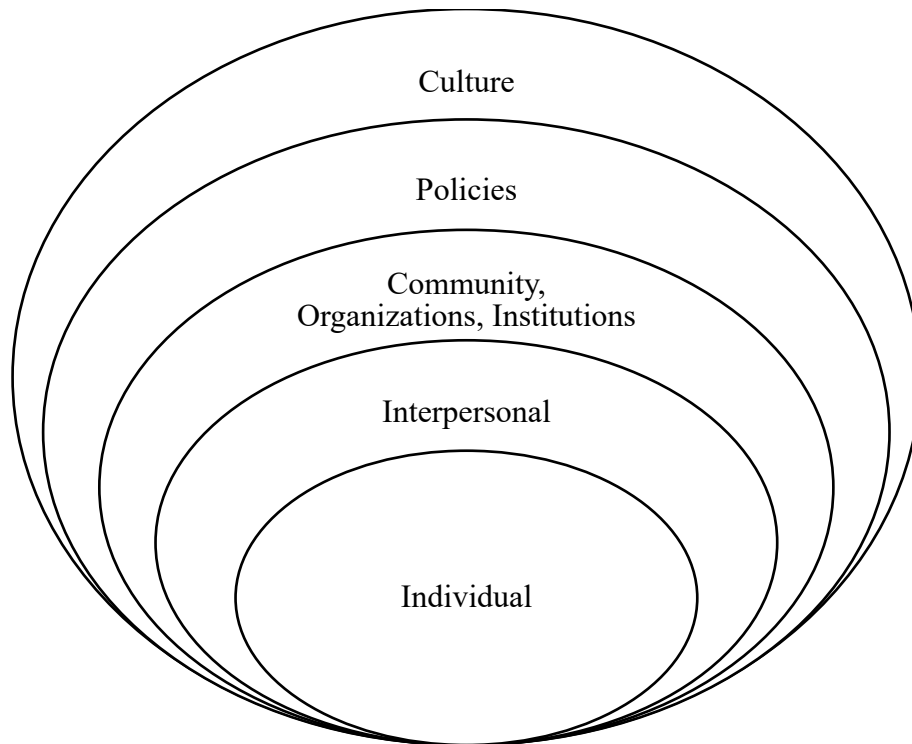
Theory is the interconnection between concepts, definitions, and propositions that provide a systematic view of situations by specifying relations among variables to explain and predict outcomes (Glanz et al., 2015). Public health researchers use theory to support research designs, answer research questions, and inform practice to improve health outcomes (Glanz et al., 2015). Health promotion research often uses theory to understand individual behaviors to create change, but this area of focus is evolving to incorporate the social ecological model in research efforts to address and improve health outcomes. Hence, health outcomes and disparities are not only attributed to individual behaviors or genetics, but are rooted in policies, structures, and systems that influence individual choices, access, and knowledge (Golden & Wendel, 2020). This shift in acknowledging factors influencing health outcomes has prompted using the social ecological model for public health research (Golden & Wendel, 2020).

#### ***Social Ecological Model***

The ecological model is a conceptual framework that focuses on behavior and the environment (McLeroy, 1988). The ecological model has evolved and is commonly referred to as the social ecological model or social ecological approach for health promotion application (Golden & Wendel, 2020; McLeroy, 1988). The social ecological



model is a useful framework to conceptualize multiple levels influencing health behaviors and outcomes (Glanz et al., 2015). This study used the social ecological model created by Golden & Wendel (2020) and descriptions of levels of influence by Golden & Wendel (2020), Rimer & Glanz (2005), and Simmons-Morton et al. (2012) which include the following five levels of influence: individual (characteristics that influence behavior including knowledge, attitudes and beliefs); interpersonal (primary groups including family and friends); community, organizations, institutions (informal or formal rules, regulations, structures, and social networks among individuals and groups); policies (institutional, local, state, federal); and culture (shared beliefs, values, behaviors, practices). This study highlighted individual, interpersonal, institution, and culture levels of influence along with the social cognitive theory (SCT) to contextualize individual and environmental levels of the theory as determinants of health behaviors and outcomes (Silveria & Motl, 2019).



**Figure 2.** Social Ecological Model [Adapted from Golden & Wendel, 2020]

### ***Social Cognitive Theory***

The SCT highlights the importance of cognitive factors in learning, understanding, and predicting behavior with a focus on collective agency where individuals operate in a reciprocal triadic model of causation, commonly referred to as reciprocal determinism (Bandura, 1999; Glanz et al., 2015). Reciprocal determinism is expressed in SCT when its' three factors: cognitive, behavioral, and environmental interact to influence human behavior (Bandura, 1999; Glanz et al., 2015).

#### **Cognitive Factors and Constructs.**

The SCT cognitive factors describe an individual's ability to process information, apply knowledge, and change preferences (Glanz et al., 2015). The cognitive factor constructs include self-efficacy, collective efficacy, outcome expectations, and knowledge (Glanz et al., 2015). Self-efficacy is a person's confidence in their ability to

perform a behavior that leads to an outcome (Glanz et al., 2015). Collective efficacy is the belief that a group of individuals can perform actions to achieve an outcome, which becomes enhanced by shared goals, communication, teamwork, and prior success (Glanz et al., 2015). Outcome expectations are possible consequences from partaking in a particular action based on individual judgement (Glanz et al., 2015). Knowledge is understanding information necessary to perform a behavior (Glanz et al., 2015).

### **Behavioral Factors and Constructs.**

The SCT behavioral factor consist of actions or tasks taken by individuals and includes the following constructs: behavioral skills, intentions, and reinforcement or punishment (Glanz et al., 2015). Behavioral skills are individual skills needed to successfully perform a behavior (Glanz et al., 2015). Behavioral capability is the ability for someone to perform a behavior by knowing the importance of conducting the behavior (knowledge) and how to conduct the behavior (behavioral skills) (Glanz et al., 2015). Intentions are goals of adding or modifying current behaviors, which is usually accomplished by goal setting and monitoring progress towards a goal (Glanz et al., 2015). Reinforcement or punishment is based on behavior being influenced by the provision or removal of rewards or punishments (Glanz et al., 2015).

### **Environmental Factors and Constructs.**

The SCT environmental factor includes physical and social aspects in an environment that affects individual behavior (Glanz et al., 2015). The environmental constructs include observational learning, normative beliefs, social support, and barriers and opportunities (Glanz et al., 2015). Observational learning is when individuals learn new information and behaviors by observing behaviors of others (Glanz et al., 2015).

Normative beliefs are culture norms and beliefs about social acceptability of a behavior (Glanz et al., 2015). Social support is encouragement and support an individual receives from their social circle, which is categorized into four criteria: emotional support, esteem support, informational support, and instrumental support to assist with carrying out a behavior (Glanz et al., 2015). Barriers and opportunities are social or physical aspects of the environment that makes performing a behavior challenging or easier to achieve (Glanz et al., 2015).

### **SCT Theory Application.**

This study examined cognitive and environmental factors and constructs (cognitive factor constructs - collective efficacy and knowledge; environmental factor constructs - normative beliefs, social support and barriers and opportunities) as potential influences on the increase in cesarean deliveries in the U.S. The social cognitive theory is seldom applied to mode of delivery research. Previous mode of delivery research has incorporated the health belief model, theory of planned behavior, or combined the behavioral intention model with the social cognitive theory. A study conducted by Kanani et al. (2015) used the behavioral intention model's subjective norms and behavior intention constructs, and the social cognitive theory's self-efficacy and outcome expectations constructs together to model the intention to choose a vaginal delivery. Studies conducted by Shahraki-Sanavi et al. (2012) and Ghasemi et al. (2017) applied all constructs of the theory of planned behavior to choosing a mode of delivery, which differed from Zamani-Alavijeh et al. (2017) who only used the normative beliefs construct. Zamani-Alavijeh et al. (2017) applied the normative belief construct with the health belief model constructs of perceived susceptibility, perceived benefits, perceived

barriers, and self-efficacy to evaluate factors influencing women's mode of delivery preferences. Hence, mode of delivery studies utilizing behavioral change theories are limited, and those that exist have not applied the social cognitive theory independently of other behavioral change theories in the U.S. Utilizing the social cognitive theory incorporates environmental constructs (e.g., social support) and cognitive constructs (e.g., collective efficacy) that provide an integration of non-individual factors that may influence a women's mode of delivery.

### **Mode of Delivery**

The delivery of a baby, either by vaginal or cesarean routes, is one of the most common reasons for hospitalizations in the U.S. (Clark & Lake, 2020, Zamani-Alavijeh et al., 2017). Vaginal delivery is the safest mode of delivery for the mother and fetus yet, cesarean delivery is performed in a third of all pregnancies with a greater likelihood of adverse health outcomes (Boyle et al., 2013; Desai & Tsukerman, 2021; Edmonds et al., 2013; Getahun et al., 2009; Guo et al., 2021; Keag et al., 2018; Kozhimannil et al., 2013; Leonard et al., 2019a; Martinez et al., 2020; Morris et al., 2016; Spong et al., 2012; Yee et al., 2015; Zamani-Alavijeh et al., 2017).

### ***Vaginal Delivery***

Vaginal delivery is either spontaneous or operative (with the assistance of forceps or vacuum) and is expected when spontaneous labor occurs or if amniotic membranes rupture during full-term pregnancies (Desai & Tsukerman, 2021; Dresang & Yonke, 2015). Spontaneous vaginal delivery is the preferred method of giving birth by most women and usually results in positive maternal and infant outcomes when compared to cesarean delivery (Clark & Lake, 2020; Dahlen et al. 2018; Declercq et al., 2014; Desai

& Tsukerman, 2021; Guo et al., 2021; Sandall et al., 2018). The benefits to the mother of a vaginal delivery include rapid recovery physically and psychologically, decreased hospital stay after childbirth, and enhanced mother-child bond and attachment (Desai & Tsukerman, 2021). Benefits for the infant include improved hormonal and endocrinological functions such as blood sugar regulation; respiratory function; temperature regulation; increase in exploratory behaviors; long-term growth, immunity, and development; and the infant being placed directly on the mother's skin (Dresang & Yonke, 2015). Immediate skin-to-skin contact, more common after vaginal birth, is associated with additional infant benefits including decreased time to the first feeding; improved breastfeeding initiation; higher blood glucose level; decreased crying; and decreased hypothermia (Dresang & Yonke, 2015).

### ***Cesarean Delivery***

Cesarean delivery is classified as either elective, unplanned, or emergency. An elective cesarean delivery is planned before labor is initiated (Benton et al., 2019). Alternatively, unplanned cesareans occur as a result of both non-urgent and acute adverse features of labor progress or fetal status during labor, and emergency cesarean delivery is a result of an acute adverse event or after the onset of labor (Benton et al., 2019). Unplanned and emergency cesarean delivery typically occurs when fetal, maternal, or placenta adverse conditions are present, but the verified incidence of these factors do not account for the increase and overuse of cesarean deliveries globally (Benton et al., 2019; Keag et al., 2018). The overuse of cesarean delivery is attributed to various factors known and unknown and primary cesarean delivery (the first delivery as cesarean delivery) has been associated with increased cesarean deliveries and declines in trials of

labor (Boyle et al., 2013; Gregory et al., 2012; Spong et al., 2012). A study conducted in 2009 by Kozhimannil et al. (2013), revealed that the primary cesarean rate in the U.S. had increased 10 times across hospitals (7.1% to 69.9%), while the cesarean rate for a low-risk pregnancy increased 15 times (2.4% to 36.5%). This is concerning due to findings from Boyle et al. (2013) and Spong et al. (2012) that reveal women in the U.S. who require a primary cesarean delivery are more than 90% likely to have a repeat cesarean delivery, which further increases the risk of maternal and fetal complications during labor and delivery and future pregnancies. Effectively assessing perinatal health status prior and during labor and delivery can help reduce primary cesarean deliveries (Barber et al., 2011).

### **Perinatal Health Status.**

Perinatal health status can lead to a pregnancy being labeled as “high risk” which increases the risk of a cesarean delivery (United States Department of Health and Human Services [HHS], 2018). There are various medical risk factors associated with increased incidence of cesarean delivery along with short- and long-term effects after delivery in Table 1 (Barber et al., 2011; Boerma et al., 2018; Getahun et al., 2009; HHS, 2018; Huesch & Doctor, 2015; Martin et al., 2019; Martinez et al., 2020; Pacher et al., 2013; Spong et al., 2012; Washington et al., 2012; Werner et al., 2012; Yee et al., 2015).

**Table 1.** Medical Conditions Associated with Increased Rates of Cesarean Delivery

<b>Maternal</b>	<b>Fetal</b>
Plurality Parity Gestational diabetes Preeclampsia Eclampsia Previous preterm birth or cesarean delivery Placenta abnormalities Hemorrhage (intraventricular or subdural) Seizure Arrest of labor Failed induction Prior shoulder dystocia Myomectomy Fistula from previous birth Sepsis	Breech presentation Intrauterine growth restriction Gestational age Small for gestational age Abnormal fetal heart rate Genetic conditions of the fetus Intrapartum asphyxia
These items can affect labor management protocols and mode of delivery.	

A study conducted by Liu et al. (2007) in Canada found that the risk of severe maternal morbidities (e.g., hemorrhage, uterine rupture, venous thromboembolism) was almost three times higher in cesarean delivery when compared to vaginal delivery. These adverse outcomes affect the mother, but also can increase the infant’s likelihood of admission to neonatal intensive care unit; perinatal death; and experiencing short- and long-term effects throughout life (Benton et al., 2019; Desai & Tsukerman, 2021; Werner et al., 2012). Short-term effects include alteration in the immune system, reduced intestinal microbiome, and increased likelihood in development of allergies and asthma (Desai & Tsukerman, 2021; Martinez et al., 2020). Long-term effects include the development of obesity, risk associated with obesity, and celiac disease (Desai & Tsukerman, 2021; Keag et al., 2018; Martinez et al., 2020). Short- and long-term risk factors have led to strategies to reduce cesarean deliveries.



### **Strategies to Reduce Cesarean Deliveries.**

Medical and non-medical strategies to reduce the risk of cesarean delivery when they are not deemed necessary consist of addressing individual, interpersonal, institutional, and hospital culture factors. Individual factors include delayed childbearing, multiple gestation, maternal obesity, and maternal request (Boyle et al., 2013). Keag et al. (2018) and VanGompel et al. (2019) highlighted interpersonal factors such as social support systems (e.g., doulas) and person-centered decision-making, while Keag et al. (2018) and Spong et al. (2012) addressed providers educating patients about the short-and long-term risk and benefits of cesarean delivery for mother, infant, and subsequent pregnancies, which is less frequently discussed. Spong et al. (2012) expressed individual factors experienced by physicians such as fatigue, workload, and anticipated sleep deprivation affecting the decision-making process for recommending a cesarean delivery. Addressing institutional/hospital culture factors such as time constraints for scheduling, staff availability, inability to support prolonged inductions, expenses for cesarean delivery being higher than vaginal delivery, providers lack of understanding factors leading to cesarean deliveries, and providers fear of litigation may also be important (Boyle et al., 2013; Spong et al., 2012; Zamani-Alavijeh et al., 2017). In addition, Betrán et al. (2018) suggests strategies to reduce cesarean deliveries by providing women with less medical care interventions through midwifery-led care due to its association with safer care, lower health care costs, and positive perinatal health outcomes. Midwives are perinatal care providers that can help reduce cesarean deliveries by the model of care they practice in comparison to doctors (Betrán et al., 2018).

## **Perinatal Care Provider**

Perinatal care providers who provide direct care throughout the perinatal care period usually consist of obstetricians, family physicians, midwives, and nurses. These providers vary across the U.S. due to availability and patient preferences. Family physicians and certified nurse-midwives provide in hospital labor and delivery care in some regions, and certified professional midwives are the primary attendants at community birth in most states. Together these primary care providers have potential to improve perinatal care by offering a diverse set of skills and care choices for childbirth (Pecci et al., 2012).

In the U.S., the literature has associated midwifery care with quality of care and positive perinatal outcomes such as low cesarean delivery rates, less reliance on oxytocin for labor induction, less analgesics, and reduced labor abnormalities and fetal distress (Akileswaran & Hutchinson, 2016; Carlson et al., 2018; Hoop-Bender et al., 2014; Kennedy et al., 2018a; Kozhimannil et al., 2015b; Neal et al., 2018). Midwifery care is person-centered care and non-interventional unless medically indicated (Akileswaran & Hutchinson, 2016; Kozhimannil et al., 2015b; Neal et al., 2018). A women's decision on place of birth can determine the model of care she receives (Lang et al., 2021).

## **Place of Birth**

Place of birth is a factor that can affect perinatal outcomes for women and infants (Vedam et al., 2017a). Selection of a birth setting may be attributed to pregnancy health status, risk perception of birth setting, family or perinatal provider influence, religious views, cultural values, or variations in access to options for place of birth (Lang et al., 2021). A community birth is a planned or unplanned birth that occurs in a home or birth

center setting (Cheyney et al., 2019; Lang et al., 2021). If complications arise during community birth, then a transfer to hospital can occur. Hospital births can be planned or unplanned too, but planned hospital births are usually the norm in the U.S. (Zielinski et al., 2015).

### ***Community Birth***

In the U.S., planned community births increased during 2004-2017 (Lang et al., 2021; MacDorman & Declercq, 2019). In 2018, community births accounted for about 1.6% of all births, which were mainly attended by midwives while physicians attended to only 4.2% of these births (Fleming et al., 2016; Lang et al., 2021). Some pregnant women perceive community birth to be safer than a planned hospital birth due to the increased rate of interventions and medicalization during birth in hospital facilities (Lang et al., 2021). Snowden et al. (2015) conducted a population-based, retrospective cohort study of all births that occurred during 2012 and 2013 in Oregon by using birth certificate data. The results of the study showed that planned community birth was associated with decreased odds of cesarean delivery. Community births are associated with the lowest rates of obstetric interventions and lower cesarean delivery rates than in planned hospital births, even lower than rates reported in low-risk pregnancies attended by midwives in a hospital setting (Lang et al., 2021; Scarf et al., 2018).

The home environment provides women with empowerment, control, emotional support, and comfort from the midwife and family (Janssen et al., 2009). In addition, a study conducted by MacDorman & Declercq (2019), revealed that women who had a planned home or birth center birth were less likely to experience a preterm birth or low birthweight infant. Birth centers are facilities that provide a home-like environment for

perinatal care for low-risk pregnancy with midwives typically providing primary care through a team approach with physicians (Jevitt et al., 2020; Lotshaw et al., 2020; Phillippi et al., 2018; Stapleton et al., 2013). Freestanding birth centers are guided in principles associated with the midwifery model of care (Jevitt et al., 2020). There are two types of birth centers that provide perinatal care, which are freestanding or in-hospital (Alliman & Phillippi, 2016). A freestanding birth center is a health facility where childbirth is planned to occur away from a woman's residence that is often licensed or otherwise certified as a facility that can provide safe prenatal care, labor and delivery, and postpartum care (Alliman & Phillippi, 2016). Stapleton et al. (2013) conducted a prospective cohort study from the American Association of Birth Centers (AABC) uniform U.S. dataset from 2007 to 2010 of women receiving perinatal care in 79 accredited birth centers in 33 states (N=15,574). The study reported on perinatal outcomes of women in labor who were transferred from a birth center to hospital, which resulted in 1,851 women and 7.5% experienced a cesarean delivery. A study by Thornton et al. (2017) used the same AABC uniform dataset but from 2006 to 2011 and supported the results of Stapleton et al. (2013) where cesarean deliveries were less common among women who planned giving birth at a birth center.

In addition, when medical conditions or factors arise during labor in a community birth setting, transfer of care to a hospital are deemed necessary yet yield lower rates of cesarean deliveries (11% for nulliparous and 1% for multiparous women) as revealed by Nethery et al. (2021), a retrospective cohort study from January 1, 2015 - June 30, 2020. Transfer to hospital from a planned community birth results in overall better birth

outcomes than planned hospital births, despite hospitals being the birth setting considered the cultural norm in the U.S. (Zielinski et al., 2015).

### ***Hospital Birth***

Women with both low- and high-risk pregnancies deliver in hospitals that are optimized for high-risk pregnancies that may require enhanced technology and staffing for monitoring and intervening where over intervening during pregnancies are linked to cesarean deliveries (Shaw et al., 2016). Snowden et al. (2015) conducted a population-based retrospective cohort study of 2012 and 2013 birth certificates of all births in Oregon, which were classified as planned community birth or planned hospital birth. According to Snowden et al. (2015) obstetrical procedures were more common among women who had a planned hospital birth in comparison to a planned community birth, resulting in 24.7% of women experiencing a cesarean delivery which revealed similar results from a systematic literature review conducted by Rossi & Prefumo (2018).

Place of birth can influence a woman's mode of delivery, which is likely due to the model of care (medical vs. midwifery) she receives in a hospital (medical model of care) or community birth (midwifery model of care). Women who receive the midwifery model of care are likely to experience more emotional support and social support is accompanied by less cesarean deliveries (Farrish & Roberston, 2012; Janssen et al., 2009).

### ***Social Support***

Social support is described as a voluntary act in how social relations that are received and filled through social integration (Kim et al., 2014; Hetherington et al., 2015; Orr, 2004). Social support can also be described as the sense of being cared for and

having someone to offer advice and provide help when necessary (Giurgescu et al., 2015). Social support can be provided by a partner, family, friend, church, societal group, or others (Kim et al., 2014; Orr, 2004). Social support is given in different forms, which are the following: informational, physical, emotional, instrumental, appraisal, and financial (Kim et al., 2014; Orr, 2004). Social support is defined and received in various ways and is considered a protective factor for health and a woman's transition into motherhood (Collins et al., 2021; Orr, 2004).

There is emerging literature that social support can improve birth outcomes (Hetherington et al., 2015). Social support and health have expanded from mortality risk to indicators of morbidity affecting pregnant women such as low-birth weight, preterm birth, and pregnancy complications (Orr, 2004). Women with a social support network throughout the perinatal care period usually experience less stress and cesarean deliveries; decreased risk for postpartum depression; and better health and well-being (Collins et al., 2021; Corrigan et al., 2015; Farrish & Roberston, 2012; Kim et al., 2014; Morikawa et al., 2015; Versteegen et al., 2021).

Many women have support from a partner, family, or friends throughout labor and delivery to comfort and encourage them through the process, but doulas are becoming more present during labor and delivery and provide physical, emotional, and informational support to women and their families by facilitating communication between them and perinatal care providers (Gruber et al., 2013). Doulas are especially helpful for women who are marginalized, without a partner, or experience cultural barriers (Gruber et al., 2013). Women who have support from doulas are more likely to avoid a cesarean delivery (Gruber et al., 2013; Thomas et al., 2017). Gruber et al. (2013)

conducted a comparative analysis of doula support for women at risk for adverse birth outcomes because of racial disparities, particularly Black, Hispanic, or low-income women and found that cesarean delivery rates were higher for women who did not have a doula present during labor and delivery, but it was not significant. Thomas et al. (2017) also conducted a comparative analysis of *Healthy Start Brooklyn* (home visiting program) that offered free doula services for in Black and Latino neighborhoods through the *By My Side Birth Support Program*, but the cesarean delivery rate for women who participated in the program was lower than women who did not participate in the program but also not statistically significant. Kozhimannil et al. (2015a) conducted similar studies as Gruber et al. (2013) and Thomas et al. (2017) by assessing marginalized and low-income women both through semi-structured focus groups to assess birth outcomes. Kozhimannil et al. (2015a) and Almanza et al. (2019) studies did not assess cesarean delivery rates, but findings suggest that women expressed a need for social support to improve their quality of perinatal care.

### **Quality of Perinatal Care**

Quality of care is recognized globally as an aspect to improve maternal and neonatal outcomes (WHO, 2016). According to Bhutta et al. (2014), Mannava et al., 2015, and WHO (2016), effective and high-quality care can assist in preventing and managing complications during pregnancy and childbirth and reduce the rate of maternal and neonatal mortality. Therefore, World Health Organization (WHO) developed a framework to improve quality of care for mothers and newborns during childbirth (WHO, 2016). WHO (2016) defined quality of care as “the extent to which health care services provided to individuals and patient populations improve desired health outcomes” (p.14).

To achieve these outcomes, health care must be safe (care that minimizes risk and harms); effective (care based on scientific knowledge and evidence-based guidelines); timely (providing and receiving care with reduced delays); efficient (care that maximizes resources and avoids waste); equitable (care that does not differ in quality based on race, ethnicity, gender, socioeconomic status, or geographical location); and person-centered (care that accounts for individual preferences based on their culture and community) to achieve quality of care (WHO, 2016).

### ***Equitable Care***

Equitable care is care that does not differ in quality based on race or ethnicity (WHO, 2016). Inequitable care received throughout the perinatal care period due to race and ethnicity is a form of racism and discrimination that affects a woman's quality of care (Altman et al., 2019; Attanasio et al., 2017). The U.S. is a race-conscious society, therefore, understanding race as a social construct and not as a biological factor can provide context to factors contributing to poor perinatal outcomes affecting women of color (Altman et al., 2019; Attanasio & Hardeman, 2019; Owens & Fett, 2019; Slaughter-Acey et al., 2013).

### **Racism and Discrimination.**

Race is a social construct based on individual physical characteristics (Malat & Hamilton, 2006; Slaughter-Acey et al., 2019). This social construct leads to social classification that impacts individual life experiences, opportunities, and choices (Slaughter-Acey et al., 2019). Racism is defined by Chambers et al. (2019) as “a perceived threat formed on an immutable characteristic often central to a person's identity, resulting in unfair treatment based on a person's physical attributes including



skin color” (p. 214). Definitions of racism vary and are used interchangeably with discrimination, but commonality amongst the definitions include the concept of unequal treatment based on skin color or other individual characteristics (Alhusen et al., 2016).

There are multiple forms of racism, and it is experienced by some individuals at multiple levels, these levels include intrapersonal (internalized), interpersonal, and structural (Alhusen et al., 2016). Intrapersonal racism is the acceptance of negative attributes and worth among marginalized individuals (Alhusen et al., 2016). Interpersonal racism refers to prejudice and discrimination that results in differential assumptions about the capabilities and motives of others based on their race (perceived racism) (Alhusen et al., 2016; Julian et al., 2020). Structural racism is a term that refers to policies, institutional practices, and cultural representation that unequally allocate access to goods, opportunities, and services in society by racial groups (Chambers et al., 2019; Taylor, 2020). Racism is used interchangeably with discrimination which is defined as differential treatment of others based on their race (Alhusen et al., 2016). Even though Alhusen et al. (2016) uses racism and discrimination interchangeably, there are differences between the terms, someone regardless of their race can experience discrimination and others can experience both, racism, and discrimination. The literature is growing in describing experiences of discrimination among women of color while receiving perinatal care (Attanasio & Hardeman, 2019). Societal factors such as racism and discrimination within the health care system and life course contributes to how women of color access and experience perinatal care, which can influence adverse outcomes to the mother and infant (Altman et al., 2019).

### ***Structural Racism.***

Structural racism is a form of racism studied in perinatal health research to better understand disparities in perinatal outcomes (Chambers et al. 2021). Structural racism is defined in the article by Julian et al. (2020) as “policies and practices across political sectors that award white people with unearned access to opportunities and resources denied to communities of color on a sole basis of racial identity” (p. 2). Studies have shown that exposure to structural racism is associated with adverse birth outcomes among Black women in comparison to white women when individual level factors are controlled (Chambers et al., 2019). Structural racism negatively affects health and well-being of individuals of color through chronic stressors that are present at the intrapersonal, interpersonal, and structural levels that systematically perpetuate health disparities (Chambers et al., 2019; Julian et al., 2020). Chambers et al. (2021) conducted a qualitative study of focus groups with 32 Black women throughout the reproductive lifespan to conceptualize structural racism and its potential impact on maternal and infant health outcomes. Nine domains of structural racism were revealed in the study (Chambers et al., 2021). Medical care was one of the domains and the sub-domains included inadequate reproductive health care and lack of patient-provider concordance (Chambers et al., 2021). There is evidence of known associations between structural racism, health outcomes, and health care experiences, but knowledge around the impact of structural racism on perinatal and reproductive health inequity is lacking among perinatal health care providers (Julian et al., 2020). Understanding historical and present influences of structural racism is needed to address the inequities.

### ***Historical Oppression.***

Structural racism affects maternal health due to historical systems of oppression that have devalued women of color and is still present today in health care policies and practices (Taylor, 2020). Legal and medical attention to enslaved women's bodies shaped the poor perinatal outcomes experienced by Black women (Owens & Fett, 2019). François Marie Prevost, a surgeon and slave holder pioneered cesarean delivery on enslaved women's bodies through repeated experimentation (Owens & Fett, 2019). Women are living longer, and the effects of racism are embedded in their lives and the lives of their children (Owens & Fett, 2019). This stressor has harmed Black women physiologically and genetically (Owens & Fett, 2019). The health care system in the U.S. disregards the detrimental health effects that daily racial discrimination has on Black women and researchers suggest that new frameworks are needed to understand this phenomenon and improve perinatal outcomes.

### ***Racial and Ethnic Perinatal Health Disparities.***

Racial and ethnic disparities in obstetrics may be due to an overlap in economics, biology, and discrimination, which makes understanding the racial and ethnic disparities in obstetrics complex (Bailit & Love, 2008). Despite the complexity and uncertainty of the mechanisms associated with race and ethnicity, perinatal outcomes are used to measure the quality of obstetric care (Bailit & Love, 2008). Research suggests patients of color are more likely than white patients to experience discrimination or unfair treatment due to race in health care settings (Attanasio & Hardeman, 2019). The Listening to Mothers III survey conducted in the U.S. among women who gave birth in 2011 and 2012 revealed that 13% of participants experienced discrimination due to race, ethnic,

language, or culture when they were hospitalized during childbirth (Declercq et al., 2014). In addition, Black and Hispanic participants were more likely to experience discrimination in comparison to white participants (Attanasio & Hardeman, 2019). A justification for these disparities is due to implicit unconscious or automatic racial biases and explicit racial stereotypes among white health care providers (Attanasio & Hardeman, 2019). According to Attanasio & Hardeman (2019), implicit racial biases are not unconscious or automatic and health care providers can reject negative ideas and images of marginalized groups but are hindered due to a worldview that constantly stereotypes these individuals. Julian et al. (2020) expresses that these outcomes are attributed to physician-centered models of care that rarely address structural, social, and clinical factors in environments to mediate racial disparities in perinatal outcomes.

### ***Exposure to Chronic Stressors and Perinatal Health.***

There have been advances in medical care and technology, but racial disparities in perinatal outcomes persist in the U.S. (Zhang et al., 2013). Social determinants of health and stress contribute to perinatal care and outcomes (Zhang et al., 2013). Blacks experience more life events, distress, and stress than any other racial or ethnic group (Dominguez et al., 2008). Studies suggest that experiences of racism and chronic life stressors increases the risk of poor perinatal outcomes such as preterm birth, low birthweight, and very low birthweight among marginalized women due to higher lifetime exposure to chronic stressors (Alhusen et al., 2016; Collins et al., 2004; Chambers et al., 2021; Dominguez, 2011; Rosenthal & Lobel., 2011; Slaughter-Acey et al., 2013). Chronic stress has been associated with elevated basal cortisol levels and exaggerated hypothalamic-pituitary-adrenal (HPA) response to natural or experimental stressors (Lu

et al., 2010). Chronic stress leads to elevated cortisol levels which may also lead to immune suppression and immune-inflammatory dysregulation (Lu et al., 2010). This pathway suggest why Black women are at an increased risk for preterm birth and low birthweight (Lu et al., 2010). Exposure to stress during pregnancy has the potential to cause Geronimus’s concept of “weathering” (when an individual is consistently exposed to stressors such as racial discrimination overtime which then increases their risk for disease) over the life course, which results in greater allostatic load and poor perinatal outcomes (Alhusen et al., 2016; Lu et al., 2010).

### ***Addressing Racism and Discrimination in Perinatal Health.***

The decline in reproductive health status of Black women has been attributed to racism and social disadvantages (Dominguez, 2011). Slaughter-Acey et al. (2019) have suggested that racism or racial discrimination occurs in and outside a health care setting, which can hinder women to seek perinatal care. Researching race and ethnicity as social constructs instead of biological constructs can provide useful information about how environmental and cultural factors can affect someone’s health (Ford & Airhihenbuwa, 2010; Hardeman et al., 2019). This approach shifts from individual level factors such as health behaviors to societal factors that influence how an individual experiences life (Dominguez, 2011).

### **Normative Beliefs.**

Natural birth is a physiologic process that is influenced by a woman’s culture (Fowles, 2017). The definition of culture varies but Coast et al. (2014) refers to the culture as aspects of shared norms, beliefs, expectations, language, and behavioral customs. There are different levels of culture that are explicit and implicit (Coast et al.,

2014). Explicit culture is usually the perceptions or known culture factors of others outside a given culture such as language, rituals, and dress (Coast et al., 2014). Implicit culture are norms that are known to members of a particular culture that are not shared with others that are not within the same cultural context (Coast et al., 2014). Most societies represent more than one culture (e.g., ethnic groups, religious groups, social classes, attitudes to illness and health, diet, wealth, power, gender, education) (Coast et al., 2014). This is important because when women's social and cultural norms about perinatal care do not align with their perinatal care providers' recommendation, disarticulation can result in poor quality of care.

Study results from Vedam et al. (2019) reported percentages of mistreatment among women who declined care during pregnancy or birth (19.4%); pressured into medical interventions or procedures (37.9%); and had differences in opinion from their perinatal care providers (78.8%). This study also reported disparities in mistreatment where Indigenous, Hispanic, and Black women are more likely to experience mistreatment than white women (Vedam et al., 2019). In addition, women with lower socioeconomic status (SES); women who decided to give birth in a hospital; and women who had an unplanned cesarean delivery, experienced higher rates of mistreatment (Vedam et al., 2019).

### ***Social and Cultural Norms.***

Childbirth is usually influenced by social and culture norms that affects women's use of perinatal care services, such as mode of delivery and place of birth (Coast et al., 2014; Fowles, 2017; Preis et al., 2018; Roudsari et al., 2015; Ugwu & de Kok, 2015). By some cultures, childbirth is considered sacred based on women's religious beliefs, which

vaginal delivery or home birth is desirable (Fowles, 2017; Roudsari et al., 2015). In addition, many societies have social structures that define roles of men and women, which are usually rooted in religious, tribal, and social traditions (Osamor & Grady, 2016). Gendered and religious socio-cultural factors can limit a women's capacity to make health related decisions such as accepting a cesarean delivery even when life-threatening complications arise (Farrish & Roberston, 2012; Osamor & Grady, 2016; Ugwu & de Kok, 2015). Ugwu & de Kok (2015) conducted a mixed-method study in Nigeria and results from the semi-structured interviews revealed that vaginal delivery is the "proper" mode of delivery; "true" women do not give birth through cesarean; and beliefs vaginal delivery can be achieved through faith and divine intervention. Roudsari et al. (2015) conducted an ethnographic approach study to explore beliefs, values, and traditions on women's preferred mode of delivery in North Iran. Results from Roudsari et al. (2015) demonstrated that women viewed vaginal birth as a symbol of power and ability and a sign of God's power and scared phenomenon. Findings from Roudsari et al. (2015) align with mode of delivery and religious findings from Ugwu & de Kok (2015) despite the studies occurring in different countries. Cultural difference can lead to insensitivity or incompetence of health care providers, which can cause poor quality of care among patients (Coast et al., 2014). Therefore, WHO has expressed a need for "culturally-appropriate" health facilities and a mandate on "health for all" (Coast et al., 2014).

### ***Culturally Appropriate Care.***

Culturally appropriate care is important in perinatal care because childbirth is influenced by cultural norms and expectations (Ottani, 2002). Attitudes and values

influence women's behaviors throughout the perinatal care period (Ottani, 2002). The WHO provided recommendations to support culturally appropriate perinatal care services to improve maternal and newborn health (Jones et al., 2017). Perinatal care providers that lack cultural competence, have differences in cultural practices and preferences of perinatal care services, which can affect women and their family's decision on the use of perinatal care services (Jones et al., 2017). Understanding how culture affect women's expectations during the perinatal care period is needed to provide culturally appropriate care that supports women (Fowles, 2017). A means to improving culturally appropriate care is through the effects of race and cultural concordance.

#### **Race or Cultural Concordance.**

Cultural and racial concordance is having a shared identity between a patient and health care provider (Shen et al., 2018; Weng & Landes, 2016). The race concordance concept has started to emerge to understand health disparities (Meghani et al., 2009). The race concordance concept is used to determine if individuals can identify, relate, understand, and interact more with health care providers that share their values and culture (Meghani et al., 2009). Cultural differences between patients and physicians often contribute to disparities in health care and barriers in patient-physician communication (Zakaria et al., 2021). Therefore, Saha et al. (2003) and Almanza et al. (2019) suggest exploring barriers in cross-cultural patient-provider relationships as a contributing factor to quality of care.

Studies are limited on provider's perspectives of race and cultural concordance, but Almanza et al. (2019) researches the perspectives of midwives due to lack of racial and ethnic representation in the U.S. There are only 5.8% of midwives of color that are



certified by the Midwifery Certification Board and five Black-owned birth centers in the U.S., which makes it difficult for women of color to experience perinatal care in a setting with providers that share their identity. Almanza et al. (2019) conducted a qualitative study of semi-structured interviews of midwives who identified as African American in an African American-owned birth center in Minneapolis, Minnesota. Themes were derived from the interviews by using an inductive grounded theory approach (Almanza et al., 2019). The three themes derived from Almanza et al. (2019) included: “1) offering racially concordant care to the community; 2) racial justice as a primary motivation in their work; and 3) providing physically and emotionally safe care” (p. 601). The subtheme of “providing physically and emotionally safe care” highlighted that racially concordant care is needed to provide safe and integrated care between community and hospital births and build meaningful relationships with patients (Almanza et al., 2019).

The Almanza et al. (2019) study provides the provider’s perspective of the importance of racial and culture concordance, while several studies have been conducted to understand patient preferences in providers based on shared identity. A systematic literature review of 27 publications was conducted by Meghani et al. (2009) and the results revealed that patient-provider concordance was associated with positive health outcomes for marginalized individuals in nine studies (33%). Eight studies (30%) did not find an association of race concordance and findings from ten studies (37%) were mixed.

A survey-based study conducted by Chen et al. (2005) in the U.S. found that 22% of Blacks preferred a Black physician, 65% did not have a racial preference, and 13% preferred a non-Black physician. Blacks who preferred a Black physician had stronger beliefs about racial discrimination in health care in comparison to Blacks who did not

have a preference in provider (Chen et al., 2005). An additional study conducted by the Kaiser Family Foundation found that 20.7% of Blacks preferred a health care provider that shared their race, 12.6% preferred a different race health care provider, and 66.7% did not have a race preference in their health care provider (Malat & Hamilton, 2006). Participants (57.4%) felt that discrimination occurs somewhat or very often when there are differences in race between the patient and health care provider and suggested that Blacks might prefer same-race health care providers to avoid discrimination in receiving care (Malat & Hamilton, 2006). This finding is consistent with other studies that have suggested that Black patients are more likely to prefer physicians of their own race/ethnicity and rate those physicians as providing better health care than other physicians with a different race (Chen et al., 2005; Saha et al., 2003). The Chen et al. (2005) race concordance study in the U.S. yields similar results as Olayemi et al. (2009) that studied ethnic concordance in Nigeria. Olayemi et al. (2009) Nigerian study, determined that pregnant African women of various ethnic backgrounds who shared their perinatal care provider's ethnicity experienced less painful labor than perinatal care providers who were of a different ethnicity. Therefore, understanding patient preferences of sharing race or cultural concordance with their providers is important in achieving quality perinatal care in the U.S. where race and cultural concordance research is limited.

### ***Person-centered Care***

Achieving quality of care through person-centered care increases the likelihood of improved health outcomes, but the U.S. experiences challenges with supporting person-centered care (Attanasio & Kozhimannil, 2015; Koblinsky et al., 2016; Tunçalp et al., 2015). Areas of person-centered care include patient-provider communication and

patient-involvement in decision-making, which are associated with higher levels of patient satisfaction, provider trust, better treatment adherence, and health outcomes (Attanasio & Kozhimannil, 2015; Dahlem et al., 2014). Therefore, there is a need to understand factors that influence health care interactions, since poor interactions (e.g., lack of person-centered decision-making) may contribute to perinatal care disparities due to limited research on efforts to improve perinatal person-centered care and perceived discrimination based on patient race/ethnicity (Altman et al., 2019). Hence, the influence of quality of care among racial and ethnic marginalized women is a growing area of research (Janevic et al., 2013).

Health care discrimination is a barrier to person-centered care and perceived discrimination is associated with worse communication in clinical encounters, lower patient ratings of care, less treatment adherence, and poor health outcomes (Attanasio & Kozhimannil, 2015). Health care providers stereotypes and patient perceptions of stereotypes affect the experience of quality of care for marginalized groups (Altman et al., 2019). Results from a survey-based study conducted by Attanasio & Kozhimannil (2015) found that Black and Hispanic women had higher odds of discrimination due to race, language, or culture during perinatal care. While results from a qualitative study (interviews) by Altman et al. (2020) provided recommendations from the perspectives of women of color to improve perinatal care within health systems and among health care providers. At the health system level, recommendations included continuity of care, racial concordance with providers, supportive health care system structures, and implicit bias training to reduce discrimination (Altman et al., 2020). Recommendations at the health care provider level suggest that providers should spend quality time, build meaningful

connections, provide individualized person-centered care, and develop partnerships in decision-making during the perinatal care period (Altman et al., 2020).

### **Person-centered Decision-making.**

Person-centered decision-making is a component of person-centered care, under the larger realm of quality of care (Attanasio et al., 2018; Vedam et al., 2017b). Person-centered decision-making is an approach where the provider and patient share suggestions of care while the provider supports the patient in considering options to make informed decisions (Nieuwenhuijze et al., 2014). During this process, the patient and provider should express their preferences, wishes, and values together to determine a solution for any situation that arises (Attanasio et al., 2018; Fersini et al., 2019; Nieuwenhuijze et al., 2014). This process can be complex due to differences in values and power dynamics associated with providers and patients, especially among women of color (Altman et al., 2019; Fersini et al., 2019).

Person-centered decision-making has been suggested as an approach to making health care decisions since the early 1980s and to protect the autonomy of patients but has been undermined by unequal power dynamics between patients and providers during perinatal care (Attanasio et al., 2017; Shay & Lafata, 2015). The U.S. health care system is built on creating a power dynamic that has resulted in inequitable treatment among marginalized women by race, which is an underlying and unconscious norm of health care delivery where patients are more impacted by structural and interpersonal racism, do not feel empowered, and experience less agency throughout their care (Altman et al., 2019; Attanasio et al., 2017). These effects of power dynamics in person-centered

decision-making become more pronounced and challenging during labor and delivery including the decision-making process for cesarean delivery (Nieuwenhuijze et al., 2014).

### ***Decision-making and Cesarean Delivery.***

Panda et al. (2018) conducted a systematic literature review and meta-synthesis to assess factors that may influence the decision-making process for cesarean delivery.

Themes derived from the study included: personal beliefs, cesarean delivery being a safe option; lack of cooperation and trust); health care systems; characteristics (convenience, demographics, confidence, and skills); and beliefs in relation to maternal request for cesarean delivery (ambiguous vs. clear clinical reasons) (Panda et al., 2018). An individual factor such as maternal request for cesarean delivery from the patient perspective might be due to life experiences such as trauma; violence; poor obstetric outcomes; anxiety about the birth process; fear of pain during childbirth; being able to predict their delivery; and perceived decrease in risk to their infant and pelvic floor (Munro et al., 2009). In addition, maternal request for cesarean delivery accounts for less than 2.5% of women who give birth in the U.S. and does not explain the rise in cesarean deliveries (Attanasio et al., 2017; Panda et al., 2018). This outcome is supported by a systematic literature review and meta-analysis study conducted by Mazzone et al. (2011) who determined that only 15.6% of women in low- mid- and high-resource countries, expressed their preference for cesarean delivery. Therefore, maternal request for cesarean delivery is not increasing the cesarean delivery rate, but the expression of women not being informed about their obstetric procedures and treatments and not having autonomy in decision-making about the perinatal care they receive in the U.S. (Stevens & Miller, 2012).

Attanasio et al. (2018) conducted a study that assessed data of women who participated in the “First Baby Study”, which included a cohort of 3,006 women who gave birth to a singleton infant in a Pennsylvania hospital during 2009-2011. They revealed that 69% of women with spontaneous vaginal deliveries, 61% of women with assisted vaginal deliveries, and 51% of women with cesarean deliveries experienced a high level of person-centered decision-making (Attanasio et al., 2018). In addition, Black women had lower odds of person-centered decision-making if they delivered by cesarean in comparison to white women (Attanasio et al., 2018). The Altman et al. (2019) study determined that patient-provider interactions during perinatal care were influenced by structural components of the health care system, which included lack of information for women to make decisions about their care and women of color felt powerless in trying to make care decisions and would like the opportunity to have an active role in care decision-making.

Cesarean delivery is influenced by a complex interplay of factors such as the hospital environment, culture beliefs, health care providers’ practices, patient-provider interactions, and women preferences and attitudes (Attanasio et al., 2017). According to Regan et al. (2013), prior research has failed to assess cultural aspects of birth and account for how social discourse influences women’s knowledge of birth and decision-making. Therefore, person-centered decision-making is essential for women to feel supported while receiving perinatal care, which can improve health outcomes (Altman et al., 2019).

### ***Decision-making and Health Outcomes.***

There have been mixed results of the effects of person-centered decision-making on health outcomes in the U.S. Attanasio et al. (2018) suggest that person-centered decision-making in perinatal care could improve outcomes in the realm of reducing decisional conflict; increasing delivery experience satisfaction, positive feelings, and fewer depressive symptoms; and increasing person-centered care. These outcomes are important because decisions made during the perinatal period often affect the health and well-being of women and infants (Nieuwenhuijze et al., 2014). According to Nieuwenhuijze et al. (2014), women want to be involved in the decision-making process, while Vedam et al. (2017b) suggest that patients who prefer not to participate in the person-centered decision-making process still benefit from positive perinatal health outcomes. The issue is that women have the inability to participate in the decision-making process throughout their perinatal care, which is likely due to minimal information about best practices for person-centered decision-making responsibilities and implementation of these practices (Loke et al., 2019; Nieuwenhuijze et al., 2014; Vedam et al., 2017b). The inability for women to participate in decision-making is influenced by another aspect of person-centered care, respectful perinatal care, which can affect women of color and mode of delivery outcomes.

### **Respectful Perinatal Care.**

Respectful perinatal care is a growing area of research mostly focused on low-, mid-resource countries, resulting in poor quality and respectful care (Mannava et al., 2015; Vedam et al., 2017c). If women, and especially women of color do not receive respectful care from their health care providers such as physicians or midwives, then they

are more likely to experience dissatisfaction with health care systems and are less likely to seek further perinatal care (Altman et al., 2020; Mannava et al., 2015). Women of color can share insightful knowledge about their health and care experiences to assist in improving perinatal care experiences and outcomes (Altman et al., 2020).

Mannava et al. (2015) conducted a systematic literature review of perinatal health provider's attitudes and behaviors towards patients with most of the studies taking place in Africa and Asia from January 1990 - December 2014. Findings from the study revealed that verbal abuse (scolding, shouting, or insulting language) and rude behavior from perinatal care providers were common. Perinatal care providers were also prejudice towards women with lower socioeconomic status and education attainment, residing in rural areas, or an ethnic minority.

Altman et al. (2019) and Niles et al. (2021) conducted qualitative analysis of data from high-resource countries to assess the effects of care among women, which differs from Mannava et al. (2015). Altman et al. (2019) conducted a constructivist grounded theory of semi-structured interviews with 22 women in San Francisco, CA from September 2015 - December 2017 to explore perinatal care experience of women of color with a focus on respectful and disrespectful care. Interview transcripts were analyzed by dimensional analysis and situational mapping (Altman et al., 2019). Women reported on respect and disrespect in various forms throughout the perinatal period. Women felt a lack of respect for bodily autonomy, when they did not receive information during interactions with their provider and did not feel heard or respected if they had long wait times with short appointments (Altman et al., 2019). In contrast, they felt more respected if they had more education where they explicitly communicated their level of education



with their provider. Niles et al. (2021) conducted a qualitative content analysis of childbearing women in British Columbia (n=892). Niles et al. (2021) did not solely focus on women of color as Altman et al. (2019), but they were represented in the sample size (7.3% women of color) along with assessing respectful perinatal care and its influence on cesarean delivery. The content analysis revealed four themes and two of the themes highlighted the influence of refusing care and cesarean delivery which included:

*Knowledge as control or as power: "Like I was a dim girl"* and *Morbid threats: "Do you want your baby to die?"* (Niles et al., 2021). The theme *Knowledge as control or as power: "Like I was a dim girl"* an obstetrician insisted that a woman have a cesarean delivery because she was overweight and due to her size, the baby was probably going to be too large (Niles et al., 2021). The same obstetrician wanted her to schedule a cesarean delivery to save herself from a long labor and an inevitable emergency cesarean delivery (Niles et al., 2021). The women declined the cesarean delivery, and the obstetrician made her feel less than wise for not accepting the request, but she successfully had a vaginal delivery (Niles et al., 2021). The theme *Morbid threats: "Do you want your baby to die?"* revealed that a women experienced morbid threats with manipulative tactics into receiving a cesarean delivery when a staff member provided her with a consent form for cesarean delivery (Niles et al., 2021). The patient refused the cesarean delivery and advocated for a vaginal delivery but was taken to the operating room for a cesarean delivery (Niles et al., 2021). Providing respectful perinatal that supports patient autonomy and values is important in achieving quality perinatal care and reducing the cesarean delivery rate in the U.S.

## **Gaps in the Literature**

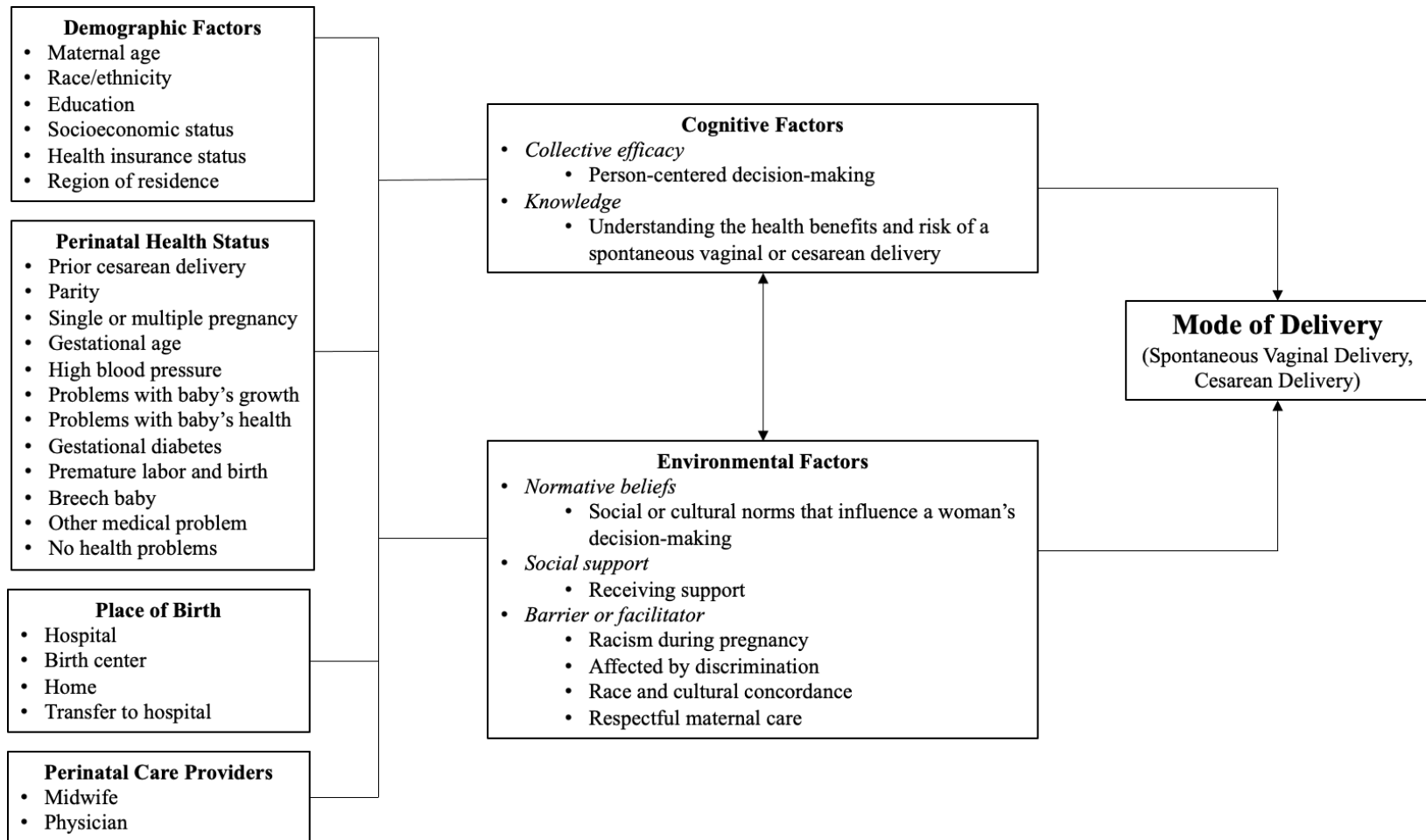
Decades of attention have been placed on cesarean deliveries, but the national rate has failed to decrease significantly, especially among Black women (Clark & Lake, 2020). Public health efforts to address perinatal outcome disparities have primarily focused on increasing access to prenatal care, which has improved perinatal outcomes, but more research is needed to understand factors influencing the increase in cesarean deliveries (Lu et al., 2010). Studies suggest additional research is needed to understand factors that influence patient-provider interactions, which may further contribute to disparities in perinatal care among marginalized women while recognizing historical oppression and racism in the U.S. (Altman et al., 2019; Ford & Airhihenbuwa, 2010; Hardeman et al., 2019). Understanding social and cultural norms has the potential to improve quality of care and factors contributing to mode of delivery and place of birth decisions, but research on these aspects of perinatal care have been limited in the U.S. (Coast et al., 2014; Fowles, 2017; Preis et al., 2018; Roudsari et al., 2015; Ugwu & de Kok, 2015). Understanding how culture affects women's expectations during the perinatal care period is needed to improve interactions between the patient and provider and care decisions throughout the perinatal care period (Fowles, 2017; Jones et al., 2017).

## **Rationale and Significance of the Study**

The childbirth experience is complex due to individual, medical, and socio-cultural factors that interact to influence women's experiences and outcomes (Rowlands & Redshaw, 2012). To improve quality perinatal care, new paradigms and theoretical frameworks are needed to address factors influencing the cesarean delivery rate in the U.S., especially among Black and other marginalized women. This study addressed part

of this complexity by applying a newly developed, theoretically sound, conceptual model (Figure 3) grounded in the social cognitive theory to identify potential areas of intervention that could reduce rates of cesarean deliveries in the U.S.

## Conceptual Model



**Figure 3.** Conceptual Model of Cognitive and Environmental Factors Influencing Mode of Delivery

## **Research Questions**

1. How do cognitive and environmental factors influence mode of delivery?
  - a. How does this differ by race?

## **Hypotheses**

1. If women have lower Mothers Autonomy in Decision Making (MADM) scores, then they are more likely to have a cesarean delivery.
2. If women's social or cultural beliefs hold that birth should not be interfered with unless medically necessary, then they are less likely to experience a cesarean delivery.
3. If women experience racism during pregnancy, then they are more likely to have a cesarean delivery.
4. If women are affected by discrimination, then they are more likely to have a cesarean delivery.
5. If women receive social support during labor and birth, then they are less likely to have a cesarean delivery.
6. If women share the same race, culture, or heritage with their perinatal care provider, then they are less likely to have a cesarean delivery.
7. If women have lower Mothers on Respect index (MORi) scores, then they are more likely to have a cesarean delivery.

## CHAPTER III

### METHODOLOGY

This cross-sectional study design used the Giving Voice to Mothers - United States (GVtM-US) survey data to determine potential associations of differential factors influencing cesarean deliveries among women by race in a secondary analysis. The GVtM study was approved by the Behavioral Research Ethics Board at the University of British Columbia (H15–01524) and all participants provided informed consent before the online survey was administered (Vedam et al., 2019). This study was approved by the University of Louisville Institutional Review Board (IRB Number: 22.0191, Reference Number: 741640).

#### **Survey Instrument Overview**

In 2016, a multi-stakeholder team consisting of community members, clinicians, community health service leaders, and researchers launched the GVtM-US study (Vedam et al., 2019). This community-based participatory study was designed to address a gap in measures assessing quality perinatal care experiences, specifically among marginalized women. Previous national studies were limited to women with planned hospital births, had limited information on perinatal care experiences by race, and lacked mistreatment in perinatal care measures (Vedam et al., 2019). Therefore, the GVtM-US Steering Council recruited community agency leaders and service providers to develop a survey instrument on perinatal care experiences for the U.S., which was adapted from a previous study conducted in the British Columbia, Canada (Vedam et al., 2019). After consultation with

community partners, additional items from the literature that assessed non-consensual care, disparities in access to care, social determinants of health, and institutional racism (Vedam et al., 2019). In addition, some items in the GVtM-US survey included measures of disrespect and abuse in low-resource countries which were adapted for use in the U.S. (Vedam et al., 2019). The GVtM-US survey instrument draft was reviewed by 57 women from community agencies who represented the target population (Vedam et al., 2019). After the draft instrument was reviewed, 31 community members who represented the target population served as experts to validate the GVtM-US survey instrument through content validation (Vedam et al., 2019). Each survey item was rated on a 4-point ordinal scale to provide clarity, relevance, and importance through dialogue (Vedam et al., 2019). The GVtM study team retained, revised, or discarded survey items based on content validation best practices (Vedam et al., 2019). In addition, community members included the following validated measures MADM (autonomy) and MORi (respect) (Vedam et al., 2019). The Perceptions of Racism scale was also adapted to for the study's target population (Vedam et al., 2019). After content validation, the final GVtM-US survey instrument included 218 items with Likert responses and open-ended questions for participants to provide experiences about their care in the realm of preferences and access to care, patient-provider interactions, and autonomy in decision-making (Vedam et al., 2019).

Internal consistency reliability, using Cronbach's alpha was used to assess reliability of MADM, MORi, and adapted Perceptions of Racism scale. Cronbach's alpha for MADM is 0.96 (n=2,285), MORi is 0.94 (n=2,105), and adapted Perceptions of Racism scale is 0.92 (n=1,669) (Vedam et al., 2017b; Vedam et al., 2017c). Cronbach's

alpha for all the scales were  $\geq 0.80$  which is a satisfactory level of internal consistency (Taber, 2018). Items from the GVtM-US study were selected to assess cognitive and environmental factors associated with mode of delivery to identify potential areas of intervention that could reduce cesarean delivery rates (Appendix A).

## **Research Design**

### ***Cross-sectional Design***

A cross-sectional design was used for this study and reflects data collected at one point in time and measures differences between or among different individuals (e.g., race, ethnicity, age, gender), variety of factors (e.g., socioeconomic status, health risk), or phenomena associated with the outcome variable (Salazar et al., 2015). Most survey research uses a cross-sectional design and is deemed the best method for understanding characteristics (e.g., individual thoughts, behaviors) of a population (Salazar et al., 2015). Data analysis for cross-sectional surveys includes descriptive statistics (frequencies or percentages), odds ratios, chi-squared test, and correlation coefficients (Salazar et al., 2015). This study utilized descriptive statistics to provide a representation of the study population and logistic regression to assess factors influencing mode of delivery using Stata/IC 15.1. Prior to analyses, all variables were reviewed for any inconsistency and missing values; and other-specify responses were assessed by creating new categories or adding them to already defined categories (Nguyen et al., 2017; Ruel et al., 2016).

### **Study Population**

The GVtM-US validated survey was administered in 2016 to women who experienced at least one pregnancy in the U.S. between 2010 and 2016 or were pregnant during the time of survey administration (March 2016-March 2017) (Vedam et al., 2019).



## **Recruitment**

Study participants were recruited for the GVtM-US study using venue-based sampling; social networking; agencies that served marginalized women; and survey cafés that provided computers for participants to take the survey (Vedam et al., 2019). If participants needed assistance in these venues, there were trained peers (data doulas) who assisted participants with their data entry (Vedam et al., 2019).

## **Inclusion Criteria**

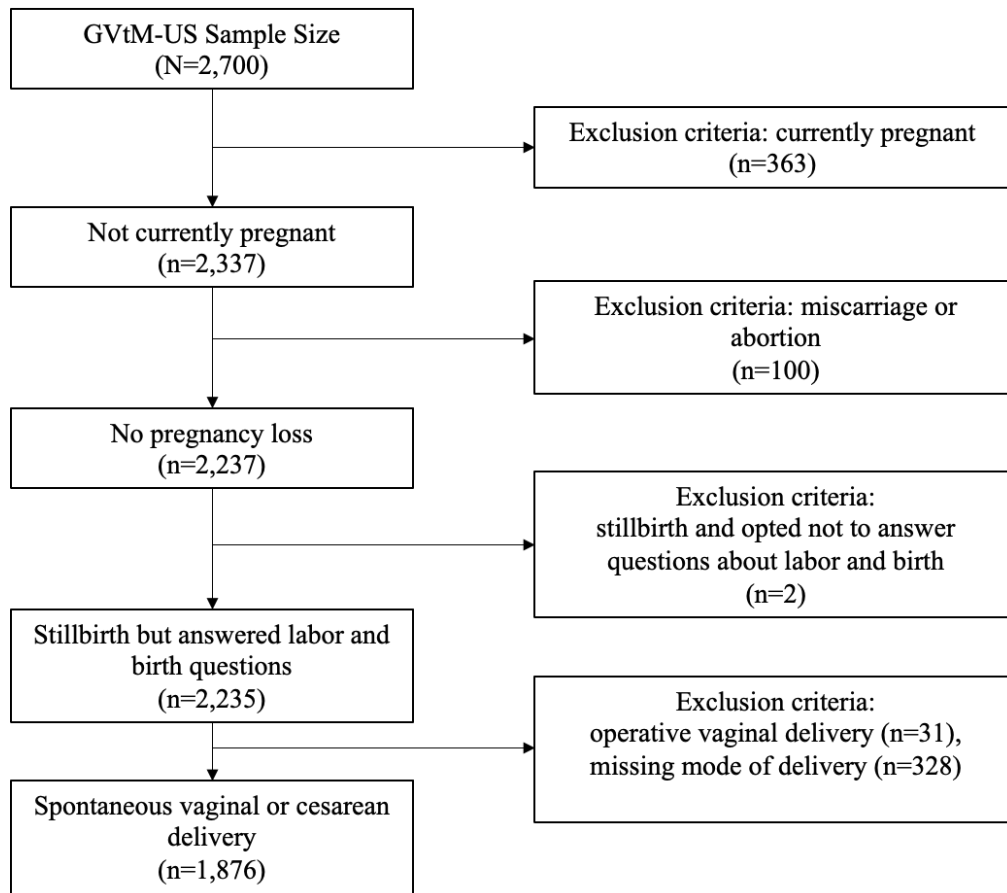
- Women who were not currently pregnant; did not have a miscarriage, abortion, or stillbirth and opted to answer questions about labor and birth; and had a spontaneous vaginal delivery or cesarean delivery.

## **Exclusion Criteria**

- Women who were currently pregnant; had a miscarriage, abortion, or stillbirth and opted not to answer questions about labor and birth; and had an operative vaginal delivery.

## **Sample Size**

This study was based on a secondary quantitative data analysis of the GVtM-US study (N=2,700). Quantitative data analysis of this study included descriptive statistics (n=1,876) and logistic regression (n=1,876). Figure 4 depicts how the sample size was derived for the descriptive statistics and logistic regression analyses.



**Figure 4.** Descriptive Statistics and Logistic Regression Sample Size Flowchart Measurement

This study focused on measures aligned with the conceptual model (Figure 3) for descriptive statistics and logistic regression from the GVtM-US survey.

### ***Maternal Age***

Maternal age was reported by the year the participant was born. To convert the year the participant was born into a numerical age, the year the survey was taken was subtracted from the year the participant was born. After the numerical age was determined, age was categorized as follows: 17-24, 25-30, 31-39, and  $\geq 40$  years. The age categories for maternal age are based on analysis conducted by Vedam et al. (2019) that utilized the GVtM-US data set.

### ***Race/Ethnicity***

The survey used self-reported race and ethnicity, rather than the U.S. Census Bureau race/ethnicity categories to capture race/ethnicity lived experiences (Vedam et al., 2019). The survey included 13 pre-defined race/ethnicity categories where participants could select multiple descriptors and Vedam et al. (2019) coded maternal race by the following framework: Black (Black or African in any race field); Indigenous (Native American, Native Alaskan, Native Hawaiian, Indigenous to Mexico or South America in any of the race fields but not Black or African); Asian (Asian in any race field but not Black, African, Indigenous); Hispanic (any race field but not Black/African/Indigenous/Asia); other person of color; and White (White in any race field that were not allocated to Black, Indigenous, Asian, Hispanic, or other person of color) (Vedam et al., 2019). This study used the same racial/ethnicity categories as Vedam et al. (2019).

Educational attainment was measured by responses from the following survey question: *What was the highest level of education you had completed at the beginning of your most recent pregnancy?* Responses were coded into the following three categories: 1) No College Education: primary school, some high school, high school or equivalent (e.g., GED); 2) College Education: associate degree; college; some college, but no degree; some graduate school, but no degree; 3) Graduate or Professional Education: graduate degree (e.g., MS, PhD), professional school (e.g., MD, JD).

### ***Socioeconomic Status***

Socioeconomic status (SES) was measured using a comprehensive composite index used in the Vedam et al. (2019) study utilizing the GVtM-US data set that

accounted for participants with a family income below the federal poverty level (before tax family income and household size); had heat or electricity turned off (in the year before pregnancy or during); inability to buy enough food or meet financial obligations; and received a housing subsidy; assistance from Indian Health Services or a state health plan; Temporary Assistance for Needy Families (TANF); food stamps; Women, Infants and Children (WIC) food vouchers or money to purchase food. Participants who experienced  $\geq 1$  indicator was categorized as “low SES” (Vedam et al., 2019).

### ***Health Insurance Status***

Health insurance status of respondents was measured. The “Insured” category included the following: Medicaid or Children’s Health Insurance Program (CHIP); Indian Health Services; TriCare/United Healthcare for Active-Duty Service Members; other government. The “Not Insured/Other” category included the following: out-of-pocket, not sure, other.

### ***Region of Residence***

Region of residence was measured by the following survey question: *In what state did you give birth?* Prior to categorizing regions, Armed Forces Asia, Europe, and Pacific and Puerto Rico responses were omitted and the 50 states and District of Columbia was categorized into one of the four regions determined by the U.S. Census Bureau: 1) Northeast: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania; 2) Midwest: Indiana, Illinois, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; 3) South: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee,

Arkansas, Louisiana, Oklahoma, Texas; 4) West: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming, Alaska, California, Hawaii, Oregon, Washington (United States Census Bureau, 2010a).

### ***Perinatal Health Status***

Perinatal health status was measured by parity (having none or more than one child), having a prior cesarean delivery (yes, no), and “elevated pregnancy risk” using a comprehensive composite index used in Vedam et al. (2019) study utilizing the GVtM-US data set that grouped pregnancy risk factors as follows: pre-pregnancy body mass index (BMI)  $\geq 40$ ; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced  $\geq 1$  indicator was categorized as “elevated pregnancy risk.”

### ***Place of Birth***

Place of birth was measured using the survey question: *Where was your baby born?* Prior to categorizing place of birth, the following responses: *home, unplanned, accidental, or en-route to the hospital and home, planned unassisted* were omitted to capture the following categories to provide insight into care they received: 1) hospital birth: birth center inside hospital; hospital and planned hospital birth and 2) planned community birth: freestanding birth center outside hospital; planned in a home with midwife or physician present; transfer to hospital from planned home birth after labor started; and transfer to hospital from freestanding birth center after labor started.

### ***Type of Provider***

Type of provider utilized the survey question prior to responses for person-centered decision-making that was measured with the MADM scale, which included: *My answer in this section describes my conversations or experiences with a...* where the responses were categorized into 1) midwife and 2) physician: family doctor, obstetrician/OB-GYN doctor.

### ***Person-centered Decision-making***

The 7-item MADM scale was used to measure a service users' role and level of agency and autonomy that they experienced when they interacted with providers while making decisions around options for perinatal care (Vedam et al., 2017b; Vedam et al., 2018). Higher scores indicated that women had greater autonomy in decision-making (Vedam et al., 2017b; Vedam et al., 2018). The scale scores range from 7-42 and to measure women who experienced the least autonomy in decision-making was determined by women who scored in the bottom 10<sup>th</sup> percentile. The 10<sup>th</sup> percentile indicator is based on the reporting of MORi scores in the Vedam et al. (2017c) study and how MORi scores were reported in this study, therefore, MADM scores were reported in the same manner for consistency.

### ***Normative Beliefs***

Normative beliefs were measured using a 6-point Likert type scale with responses ranging from strongly disagree to strongly agree. The statement to assess normative beliefs was: *Giving birth is a process that should not be interfered with unless medically necessary.*

### ***Social Support***

Social support during labor and birth was measured from the survey question: *During labor and birth, some women get support from someone who is present to make them more comfortable and explain what is happening. Who if anyone, gave you this type of support when you were in labor?* Two categories were created as follows: 1) received support: my partner/husband, another family member, my friend, a doula or trained labor assistant, a midwife, a nurse, or a doctor; 2) did not receive support: I did not receive this type of support.

### ***Racism and Discrimination***

Racism and discrimination were measured by two items in the survey with a 6-point Likert type scale with responses ranging from strongly disagree to strongly agree. The statement about racism during pregnancy is *I experienced racism during my pregnancy* and the statement about discrimination is *I am not affected by discrimination*.

### ***Race and Cultural Concordance***

Race and cultural concordance were measured as yes/no for the following survey question: *The midwife or doctor who cared for me during my most recent pregnancy shared my race, culture, or heritage.*

### ***Respectful Perinatal Care***

Respectful perinatal care was measured with the 14-item MORi scale to assess patient-provider interactions in the realm of comfort, coercion, discrimination and/or autonomy (Vedam et al., 2017c). The scale scores (14-84) were calculated by the proportion of women who scored in the bottom 10<sup>th</sup> percentile, which included women who experienced the least respectful care (Vedam et al., 2017c).

### ***Mode of Delivery***

Mode of delivery was measured by the survey question followed by three responses, *My most recent birth was a:* followed by three responses: vaginal birth; cesarean birth; or vaginal birth with forceps or vacuum. Operative vaginal delivery (vaginal birth with forceps or vacuum) was omitted from analyses, which made this outcome variable dichotomous (spontaneous vaginal birth, cesarean birth).

### **Analysis**

#### ***Descriptive Statistics***

Descriptive statistics was determined for all variables present in the conceptual model (Figure 3) which consisted of demographic factors; perinatal health status; place of birth; perinatal care provider; cognitive factor (person-centered decision-making); environmental factors (normative beliefs; social support; racism during pregnancy; discrimination; race or cultural concordance); and mode of delivery. All variables were summarized in table format capturing frequencies (Ruel et al., 2016).

#### ***Logistic Regression***

Logistic regression is an analysis used to examine relationships between a dichotomous dependent variable and independent variables where the predictors can be continuous or categorical (Maroof, 2012; Ruel et al., 2016). The purpose of logistic regression is to predict the probability of study participants likelihood of experiencing the determined outcome in logarithmic terms, odds ratio (Maroof, 2012). To determine the true effect of results presented in a logistic regression, a univariate analysis was conducted among covariates and exposure variable and covariates and outcome variable



at a significance criterion of  $\leq 0.20$  before variables were entered into the final logistic regression model (Lee, 2013; Pourhoseingholi et al., 2012).

### **Person-centered Decision-making as an Exposure Variable.**

An exposure variable is associated with an outcome of interest and applies to other variables such as covariates present in a conceptual model (Lee & Pickard, 2013). This study assessed person-centered decision-making as an exposure variable with the MADM scale since it is a non-medical risk factor that can influence the mode of delivery outcome (Altman et al., 2019; Attanasio et al., 2017; Panda et al., 2018).

### **Selecting Covariates for Logistic Regression Models.**

Covariates are variables that reveal the true effect between the exposure and outcome variables (Lee, 2013; Pourhoseingholi et al., 2012). Multivariate models can account for multiple covariates that can be used in a logistic regression model (Pourhoseingholi et al., 2012). Logistic regression models produce odds ratios that can control for confounding variables (Pourhoseingholi et al., 2012). This outcome is referred to as adjusted odds ratio because the value has been adjusted for the covariates and covariates provided in the model (Pourhoseingholi et al., 2012). Identifying covariates are useful to depict a causal relationship between the exposure, outcome, and potential confounder (Lee & Burstyn, 2016). To determine a potential confounder in a univariate analysis, either Fisher's exact test or Pearson's chi-squared test is conducted for each variable (Bursac et al., 2008). Fisher's exact test is used for smaller sample sizes while Pearson's chi-squared test is used for larger sample sizes (Ruel et al., 2016). This study utilized Pearson's chi-squared test based on the sample size ( $n=1,876$ ). Significance criterion is used with p-value cutoffs of  $\leq 0.20$  or  $\leq 0.05$  based on the univariate

assessment results (Bursac et al., 2008; Lee & Burstyn, 2016). According to Bursac et al. (2008), covariates with p-values that were not deemed significant from the  $\leq 0.20$  or  $\leq 0.05$  cutoffs were removed from the model and not considered a confounder (Bursac et al., 2008). Bursac et al. (2008) and Lee & Burstyn (2016) suggest assessing p-values at the  $\leq 0.20$  cutoff since the  $\leq 0.05$  cutoff fails to identify important variables for analysis.

### **Statistical Analysis Models.**

Three models were conducted to determine associations between mode of delivery (dependent variable), person-centered decision-making (exposure variable), and covariates (independent variables) which included the following: demographic factors; perinatal health status; place of birth; perinatal care providers; normative beliefs; receiving social support; racism during pregnancy; affected by discrimination; race and cultural concordance; and respectful maternal care. A fourth statistical model was conducted to determine how significant covariates in statistical model 3 differed by race.

#### ***Statistical Analysis Model 1.***

Statistical analysis model 1 used Pearson's chi-squared test to assess potential associations between mode of delivery (outcome) and covariates. P-values  $\leq 0.20$  from this test was not included in the final model for analysis.

#### ***Statistical Analysis Model 2.***

Statistical analysis model 2 used Pearson's chi-squared test to assess potential associations between person-centered decision-making (exposure) and covariates. P-values  $\leq 0.20$  from this test were not included in the final model for analysis.

### ***Statistical Analysis Model 3.***

Statistical analysis model 3 included mode of delivery (outcome), decision-making (exposure), and covariates (p-values  $\leq 0.20$ ) from the Pearson's chi-squared test. Logistic regression analysis was conducted for these variables and odds ratios were reported in table format. Significant results were determined at the 95% confidence interval (p-value  $\leq 0.05$ ) which is used to determine a significant association for logistic regression (Ruel et al. 2016).

### ***Statistical Analysis Model 4.***

Statistical analysis model 4 used crude logistic regression by taking each significant covariate determined in statistical analysis 3 and making it the dependent variable and pairing it with the race/ethnicity variable and significant criteria was assessed at p-value  $\leq 0.05$  to determine how the significant covariates differed by race (Getahun et al., 2009).

## CHAPTER IV

### RESULTS

#### Descriptive Statistics

##### *Maternal Age, Race/Ethnicity, Education, Low SES, Health Insurance Status and Region of Residence at Birth*

Descriptive statistics were first conducted to summarize the study population (n=1,876). Most of the population was white (66%) followed by other women of color (Hispanic, Asian, Indigenous, and Biracial women of color) (17%) and Black (15%) (Table 2). Over 50% of women were 31-39 years. Over 60% of women had college or graduate/professional education attainment and over 60% of women did not have low socioeconomic status (Table 2). Over 70% of women were insured and almost half of respondents gave birth in the northeast region (Table 2)

**Table 2.** Descriptive Statistics (n=1,876)

Variable	n (%)
<b>Demographics</b>	
<b>Maternal Age</b>	
17-24	93 (4.96)
25-30	540 (28.78)
31-39	1,020 (54.37)
≥ 40	119 (6.34)
Missing	104 (5.54)
<b>Race/Ethnicity</b>	
Black	272 (14.50)
White	1,246 (66.42)
Hispanic	161 (8.58)
Asian	81 (4.32)
Indigenous	58 (3.09)
Biracial Women of Color	18 (0.96)

Variable	n (%)
Missing	40 (2.13)
<b>Education</b>	
No College	578 (30.81)
College	675 (35.98)
Graduate/Professional	532 (28.36)
Missing	90 (4.80)
<b>Low Socioeconomic Status<sup>a</sup></b>	
No	1,227 (65.41)
Yes	649 (34.59)
Missing	0 (0.00)
<b>Health Insurance Status</b>	
Not Insured	431 (22.97)
Insured	1,375 (73.29)
Missing	70 (3.73)
<b>Region of Residence at Birth</b>	
Northeast	777 (41.89)
Midwest	260 (14.02)
South	441 (23.77)
West	360 (19.41)
Missing	17 (0.92)

<sup>a</sup> Low socioeconomic status: family income below the federal poverty level (before tax family income and household size); had heat or electricity turned off (in the year before pregnancy or during); inability to buy enough food or meet financial obligations; and received a housing subsidy; assistance from Indian Health Services or a state health plan; Temporary Assistance for Needy Families (TANF); food stamps; Women, Infants and Children (WIC) food vouchers or money to purchase food. Participants who experienced  $\geq 1$  indicator was categorized as “low socioeconomic status.”

### ***Perinatal Health Status***

For perinatal health status, over 80% of women did not have a prior cesarean delivery, over 60% of women had  $\geq 1$  child, and over 75% of women did not have an elevated pregnancy risk (Table 3).

**Table 3.** Descriptive Statistics Perinatal Health Status (n=1,876)

<b>Perinatal Health Status</b>	
<b>Prior Cesarean Delivery</b>	
No	1,626 (86.67)
Yes	229 (12.21)
Missing	21 (1.12)
<b>Parity</b>	

None	672 (35.82)
≥ 1	1,202 (64.07)
Missing	2 (0.11)
<b>Elevated Pregnancy Risk<sup>b</sup></b>	
No	1,477 (78.73)
Yes	399 (21.27)
Missing	0 (0.00)

<sup>b</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI) ≥ 40; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced ≥ 1 indicator was categorized as “elevated pregnancy risk.”

### ***Place of Birth and Perinatal Care Provider***

For place of birth, over 75% of women had a hospital birth and over 65% of women had a midwife as their perinatal care provider (Table 4).

**Table 4.** Descriptive Statistics Place of Birth and Perinatal Care Provider (n=1,876)

<b>Place of Birth</b>	
Hospital	798 (76.66)
Planned Community Birth	238 (22.86)
Missing	5 (0.48)
<b>Perinatal Care Provider</b>	
Doctor	553 (29.56)
Midwife	1,289 (68.89)
Missing	29 (1.55)

### ***Cognitive and Environmental Factors and Mode of Delivery***

About 10% of women did not have autonomy in person-centered decision-making (Table 5). Over 90% of women agreed with the following normative belief statement: “giving birth is a process that should not be interfered with unless medically necessary (Table 5). Over 90% of women received social support during labor and birth (Table 5). About 11% of women experienced racism during pregnancy and over 40% of women were affected by discrimination (Table 5). About 8% of women experienced disrespectful

perinatal care (Table 5). Over 60% of women had race or cultural concordance and about 14% of women had a cesarean delivery (Table 5).

**Table 5.** Descriptive Statistics Cognitive and Environmental Factors and Mode of Delivery (n=1,876)

<b>Cognitive Factor</b>	
Person-centered Decision-making: MADM bottom 10 <sup>th</sup> percentile	
No	1,626 (86.67)
Yes	184 (9.81)
Missing	66 (3.52)
<b>Environmental Factors</b>	
Normative Belief: “Giving birth is a process that should not be interfered with unless medically necessary”	
Disagree	145 (7.73)
Agree	1,724 (91.90)
Missing	7 (0.37)
Received Social Support during Labor/Birth	
No	96 (5.12)
Yes	1,780 (94.88)
Missing	0 (0.00)
Experienced Racism During Pregnancy	
Disagree	1,548 (82.52)
Agree	196 (10.45)
Missing	132 (7.04)
Affected by Discrimination	
Disagree	940 (50.11)
Agree	818 (43.60)
Missing	118 (6.29)
Disrespectful Perinatal Care: MORi bottom 10 <sup>th</sup> percentile	
No	1,557 (83.00)
Yes	161 (8.58)
Missing	158 (8.42)
Race or Cultural Concordance: Sharing heritage, race, ethnic or cultural background with provider	
No	651 (34.70)
Yes	1,204 (64.18)
Missing	21 (1.12)
<b>Mode of Delivery</b>	
Cesarean Delivery	269 (14.34)
Spontaneous Vaginal Delivery	1,607 (85.66)
Missing	0 (0.00)

### ***Mode of Delivery***

Descriptive statistics of women having a cesarean delivery (outcome variable) and covariates were assessed to further examine the sample. The majority of women who had a cesarean delivery were  $\geq 31$  years; women of color (Black, Hispanic, Asian, Indigenous, and Biracial women of color); low socioeconomic status; insured; an elevated pregnancy risk; gave birth in the northeast or south regions of the U.S.; did not have a prior cesarean delivery; gave birth in a hospital (excluding transfer from planned community birth to hospital); had a doctor as their perinatal care provider; shared race or cultural concordance with their provider; received social support; agreed to the normative belief statement that “giving birth is a process that should not be interfered with unless medically necessary”; did not experience racism during pregnancy; and did not score in the bottom 10<sup>th</sup> percentile for MADM (autonomy in person-centered decision-making) and MORi (disrespectful perinatal care). Participants’ education was dispersed with a third having either no college, college, or graduate/professional degree, while about half of the population had  $\geq 1$  child and was affected by discrimination.

#### **Maternal Age.**

To determine differences in mode of delivery outcomes, frequencies of cesarean and spontaneous vaginal delivery were compared. More women had a cesarean delivery than a spontaneous vaginal delivery if they were 17-24 and  $\geq 40$  years (Table 6).



**Table 6.** Descriptive Statistics Mode of Delivery and Maternal Age (n=1,876)

<b>Demographics</b>				
Maternal Age				
	17-24	25-30	31-39	≥ 40
Cesarean Delivery (n=269) n (%)	16 (6.23)	76 (29.57)	147 (57.20)	18 (7.00)
Spontaneous Vaginal Delivery (n=1,607) n (%)	77 (5.08)	464 (30.63)	873 (57.62)	101 (6.67)

**Race/Ethnicity.**

Women who identified as Black, Hispanic, Asian, or Indigenous had more cesarean deliveries and less spontaneous vaginal deliveries than white women (Table 7).

**Table 7.** Descriptive Statistics Mode of Delivery and Race/Ethnicity (n=1,876)

<b>Demographics</b>						
Race/Ethnicity						
	Black	White	Hispanic	Asian	Indigenous	Biracial Women of Color
Cesarean Delivery (n=269) n (%)	54 (20.07)	150 (55.76)	30 (11.15)	15 (5.58)	11 (4.09)	1 (0.37)
Spontaneous Vaginal Delivery (n=1,607) n (%)	218 (13.57)	1,096 (68.20)	131 (8.15)	66 (4.11)	47 (2.92)	17 (1.06)

**Education and Low SES.**

Education attainment and low SES did not differ much by mode of delivery, with a third of women representing each education category and about 65% of women with low SES having either a cesarean delivery or spontaneous vaginal delivery (Table 8).

**Table 8.** Descriptive Statistics Mode of Delivery, Education, and Low Socioeconomic Status (n=1,876)

Demographics					
	Education			Low Socioeconomic Status <sup>a</sup>	
	No College	College	Graduate/ Professional	No	Yes
Cesarean Delivery (n=269) n (%)	84 (33.47)	84 (33.47)	83 (33.07)	177 (65.80)	92 (34.20)
Spontaneous Vaginal Delivery (n=1,607) n (%)	494 (32.18)	591 (38.50)	449 (29.25)	1,050 (65.34)	557 (34.66)

<sup>a</sup> Low socioeconomic status: family income below the federal poverty level (before tax family income and household size); had heat or electricity turned off (in the year before pregnancy or during); inability to buy enough food or meet financial obligations; and received a housing subsidy; assistance from Indian Health Services or a state health plan; Temporary Assistance for Needy Families (TANF); food stamps; Women, Infants and Children (WIC) food vouchers or money to purchase food. Participants who experienced  $\geq 1$  indicator was categorized as “low socioeconomic status.”

### Health Insurance Status and Region of Residence at Birth.

Most women were insured regardless of mode of delivery and more women had a cesarean delivery than a spontaneous vaginal delivery if they gave birth in the South region (Table 9).

**Table 9.** Descriptive Statistics Mode of Delivery, Health Insurance Status, and Region of Residence at Birth (n=1,876)

Demographics						
	Health Insurance Status		Region of Residence at Birth			
	Not Insured	Insured	Northeast	Midwest	South	West
Cesarean Delivery (n=269) n (%)	24 (9.96)	217 (90.04)	90 (35.57)	39 (15.42)	76 (30.04)	51 (20.16)

Spontaneous Vaginal Delivery (n=1,607) n (%)	79 (10.45)	677 (89.55)	302 (38.92)	117 (15.08)	199 (25.64)	158 (20.36)
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**Perinatal Health Status.**

Over 60% of women who had a prior cesarean delivery had a cesarean delivery (Table 10). Over 65% of women who had more than one child had a spontaneous vaginal delivery (Table 10). In addition, about half of women who had an elevated pregnancy risk had a cesarean delivery (Table 10).

**Table 10.** Descriptive Statistics Mode of Delivery and Perinatal Health Status (n=1,876)

<b>Perinatal Health Status</b>						
	Prior Cesarean Delivery		Parity		Elevated Pregnancy Risk <sup>b</sup>	
	No	Yes	None	≥ 1	No	Yes
Cesarean Delivery (n=269) n (%)	171 (63.81)	97 (36.19)	137 (51.12)	131 (48.88)	131 (48.70)	138 (51.30)
Spontaneous Vaginal Delivery (n=1,607) n (%)	1,455 (91.68)	132 (8.32)	534 (33.25)	1,072 (66.75)	1,346 (83.76)	261 (16.24)

<sup>b</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI) ≥ 40; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced ≥ 1 indicator was categorized as “elevated pregnancy risk.”

**Place of Birth and Perinatal Care Provider.**

Most women gave birth in a hospital regardless of mode of delivery, but over 25% of women who had a spontaneous vaginal delivery had a planned community birth (Table 11). Women who had a planned community birth and cesarean delivery included

women who experienced a transfer from a planned community birth setting to a hospital (Table 11).

**Table 11.** Descriptive Statistics Mode of Delivery, Place of Birth, and Perinatal Care Provider (n=1,876)

<b>Place of Birth and Perinatal Care Provider</b>				
	Place of Birth		Perinatal Care Provider	
	Hospital	Planned Community Birth	Doctor	Midwife
Cesarean Delivery (n=269) n (%)	217 (85.10)	38 (14.90)	172 (68.25)	80 (31.75)
Spontaneous Vaginal Delivery (n=1,607) n (%)	569 (72.48)	216 (27.52)	332 (42.67)	446 (57.33)

#### **Association between Cesarean Delivery and Covariates**

To determine associations between cesarean delivery (outcome variable) and covariates, chi-squared test was conducted with significant criteria assessed at  $p \leq 0.20$  (Table 12). Race/ethnicity, region of residence, prior cesarean delivery, parity, elevated pregnancy risk, place of birth, perinatal care provider, person-centered decision making (MADM bottom 10<sup>th</sup> percentile), normative beliefs: “giving birth is a process that should not be interfered with unless medically necessary”, received social support during labor/birth, and disrespectful perinatal care (MORi bottom 10<sup>th</sup> percentile) were significant ( $p \leq 0.20$ ).

**Table 12.** Association between Cesarean Delivery and Covariates

Variable	Chi-squared Estimate	p-value
<b>Demographics</b>		
Maternal Age		
17-24	0.14	0.71
25-30	0.42	0.52
31-39	0.05	0.83

Variable	Chi-squared Estimate	p-value
≥ 40	1.43	0.23
<b>Race/Ethnicity</b>		
Black	0.87	0.35
White	3.96	0.05*
Hispanic	0.85	0.36
Asian	2.50	0.11*
Indigenous	0.59	0.44
Biracial Women of Color	1.10	0.30
<b>Education</b>		
No College	0.47	0.49
College	0.74	0.39
Graduate/Professional	0.05	0.82
<b>Low Socioeconomic Status <sup>a</sup></b>		
	0.05	0.82
<b>Health Insurance Status</b>		
	0.05	0.83
<b>Region of Residence at Birth</b>		
Northeast	0.90	0.34
Midwest	0.02	0.90
South	1.88	0.17*
West	0.00	0.95
<b>Perinatal Health Status</b>		
Prior Cesarean Delivery	112.13	0.00*
<b>Parity</b>		
None	5.56	0.02*
≥ 1	5.40	0.02*
<b>Elevated Pregnancy Risk <sup>b</sup></b>		
	73.14	0.00*
<b>Place of Birth</b>		
Hospital, Planned Community Birth	16.59	0.00*
<b>Perinatal Care Provider</b>		
Doctor, Midwife	49.84	0.00*
<b>Cognitive Factor</b>		

Variable	Chi-squared Estimate	p-value
Person-centered Decision-making: MADM bottom 10 <sup>th</sup> percentile	15.37	0.00*
<b>Environmental Factors</b>		
Normative Belief: “Giving birth is a process that should not be interfered with unless medically necessary”	2.99	0.08*
Received Social Support during Labor/Birth	12.45	0.00*
Experienced Racism During Pregnancy	0.00	0.97
Affected by Discrimination	0.11	0.74
Disrespectful Perinatal Care: MORi bottom 10 <sup>th</sup> percentile	24.88	0.00*
Race or Cultural Concordance	1.29	0.26

\*p-values  $\leq 0.20$

<sup>a</sup> Low socioeconomic status: family income below the federal poverty level (before tax family income and household size); had heat or electricity turned off (in the year before pregnancy or during); inability to buy enough food or meet financial obligations; and received a housing subsidy; assistance from Indian Health Services or a state health plan; Temporary Assistance for Needy Families (TANF); food stamps; Women, Infants and Children (WIC) food vouchers or money to purchase food. Participants who experienced  $\geq 1$  indicator was categorized as “low socioeconomic status.”

<sup>b</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI)  $\geq 40$ ; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced  $\geq 1$  indicator was categorized as “elevated pregnancy risk.”

### **Association between MADM (person-centered decision-making) and Covariates**

To determine associations between MADM (exposure variable) and covariates, chi-squared test were conducted with significant criteria assessed at  $p \leq 0.20$  (Table 13). Race/ethnicity, low socioeconomic status, health insurance status, region of residence at birth, parity, elevated pregnancy risk, place of birth, perinatal care provider, received

social support during labor/birth, experienced racism during pregnancy, affected by discrimination, disrespectful perinatal care, and race or cultural concordance were significant.

**Table 13.** Association between MADM (person-centered decision-making) and Covariates

Variable	Chi-squared Estimate	p-value
<b>Demographics</b>		
Maternal Age		
17-24	1.14	0.29
25-30	0.25	0.61
31-39	1.47	0.23
≥ 40	0.22	0.64
Race/Ethnicity		
Black	13.04	0.00*
White	15.92	0.00*
Hispanic	2.66	0.10*
Asian	12.48	0.00*
Indigenous	0.27	0.60
Biracial Women of Color	1.64	0.20*
Education		
No College	0.25	0.62
College	0.08	0.77
Graduate/Professional	0.66	0.42
Low Socioeconomic Status <sup>a</sup>		
	7.38	0.01*
Health Insurance Status		
	1.98	0.16*
Region of Residence at Birth		
Northeast	1.03	0.31
Midwest	0.93	0.34
South	4.18	0.04*
West	0.04	0.85
<b>Perinatal Health Status</b>		
Prior Cesarean Delivery	0.00	0.99
Parity		
None	4.97	0.03*

Variable	Chi-squared Estimate	p-value
$\geq 1$	4.86	0.03*
Elevated Pregnancy Risk <sup>b</sup>	1.84	0.17*
<b>Place of Birth</b>		
Hospital, Planned Community Birth	3.86	0.05*
<b>Perinatal Care Provider</b>		
Doctor, Midwife	39.52	0.00*
<b>Environmental Factors</b>		
Normative Belief: “Giving birth is a process that should not be interfered with unless medically necessary”	0.96	0.33
Received Social Support during Labor/Birth	27.07	0.00*
Experienced Racism During Pregnancy	22.29	0.00*
Affected by Discrimination	8.79	0.00*
Disrespectful Perinatal Care: MORi bottom 10 <sup>th</sup> percentile	283.40	0.00*
Race or Cultural Concordance	10.99	0.00*

\*p-values  $\leq 0.20$

<sup>a</sup> Low socioeconomic status: family income below the federal poverty level (before tax family income and household size); had heat or electricity turned off (in the year before pregnancy or during); inability to buy enough food or meet financial obligations; and received a housing subsidy; assistance from Indian Health Services or a state health plan; Temporary Assistance for Needy Families (TANF); food stamps; Women, Infants and Children (WIC) food vouchers or money to purchase food. Participants who experienced  $\geq 1$  indicator was categorized as “low socioeconomic status.”

<sup>b</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI)  $\geq 40$ ; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced  $\geq 1$  indicator was categorized as “elevated pregnancy risk.”



## **Significant Covariates**

Significant covariates determined by the chi-squared test included the following: race/ethnicity, low socioeconomic status, health insurance status, region of residence at birth, prior cesarean delivery, elevated pregnancy risk, place of birth, perinatal care provider, normative beliefs: “giving birth is a process that should not be interfered with unless medically necessary”, received social support during labor/birth, experienced racism during pregnancy, affected by discrimination, disrespectful perinatal care: MORi bottom 10<sup>th</sup> percentile, and race or cultural concordance. These covariates were included in the logistic regression.

## **Logistic Regression**

Logistic regression was conducted to predict covariates associated with women having a cesarean delivery vs. spontaneous vaginal delivery by determining the odds ratio with significant criteria assessed at  $p \leq 0.05$  (Table 14). Significant covariates associated with cesarean delivery included the following: having a prior cesarean delivery ( $p = 0.00$ ); more than one child (parity) ( $p = 0.00$ ); elevated pregnancy risk ( $p = 0.00$ ); a doctor as their perinatal care provider ( $p = 0.00$ ); and receiving disrespectful care (MORi bottom 10<sup>th</sup> percentile) ( $p = 0.02$ ). Women who had a prior cesarean delivery were 14 times more likely to have cesarean delivery than women who did not have a prior cesarean delivery (OR: 14.11, 95% CI: 7.99 - 24.90). Women who had more than one child had an increased odds of having a cesarean delivery than women who did not have a prior child (OR: 0.21, 95% CI: 0.13 - 0.35). Women who had an elevated pregnancy risk were 3.3 times more likely to have a cesarean delivery than women who did not have an elevated pregnancy risk (OR: 2.22 - 4.90, 95% CI: 2.22 - 4.90). Women who received

perinatal care from a doctor were 2.25 times more likely to have a cesarean delivery than women who received perinatal care from a midwife (OR: 2.25, 95% CI: 1.40 - 3.61). Women who received disrespectful perinatal care by scoring in MORi bottom 10<sup>th</sup> percentile were 2.16 times more likely to have a cesarean delivery than women who did not receive disrespectful care (OR: 2.16, 95% CI: 1.13 - 4.12). Further analysis was conducted to determine how these significant covariates differed by race/ethnicity.

**Table 14.** Adjusted Logistic Regression Model Predicting a Cesarean Delivery

Variable	Odds Ratio	95% Confidence Interval	z-score	p-value
<b>Demographics</b>				
Race/Ethnicity (ref. White)				
Black	1.08	0.42 - 2.75	0.15	0.88
Hispanic	0.91	0.42 - 2.00	-0.23	0.82
Asian	0.87	0.35 - 2.15	-0.31	0.76
Indigenous	1.16	0.38 - 3.58	0.26	0.79
Biracial Women of Color	0.26	0.03 - 2.39	-1.19	0.23
Low Socioeconomic Status (ref. No) <sup>a</sup>				
Yes	0.86	0.56 - 1.33	-0.68	0.50
Health Insurance Status (ref. Insured)				
Not Insured	1.39	0.68 - 2.82	0.91	0.37
Region of Residence at Birth (ref. Northeast)				
Midwest	0.87	0.50 - 1.54	-0.47	0.64
South	1.06	0.65 - 1.72	0.22	0.83
West	0.94	0.56 - 1.59	-0.24	0.81
<b>Perinatal Health Status</b>				
Prior Cesarean Delivery (ref. No)				
Yes	14.11	7.99 - 24.90	9.13	0.00*
Parity (ref. none)				
≥ 1	0.21	0.13 - 0.35	-6.26	0.00*
Elevated Pregnancy Risk (ref. No) <sup>b</sup>				
Yes	3.30	2.22 - 4.90	5.93	0.00*
<b>Place of Birth</b>				
Place of Birth (ref. Planned Community Birth)				
Hospital	1.19	0.65 - 2.19	0.57	0.57
<b>Perinatal Care Provider</b>				
Perinatal Care Provider (ref. Midwife)				
Doctor	2.25	1.40 - 3.61	3.36	0.00*
<b>Cognitive Factor</b>				

Variable	Odds Ratio	95% Confidence Interval	z-score	p-value
Person-centered Decision-making: MADM bottom 10 <sup>th</sup> percentile (ref. No)				
Yes	1.00	0.53 - 1.88	0.00	0.10
<b>Environmental Factors</b>				
Normative Beliefs: “Giving birth is a process that should not be interfered with unless medically necessary” (ref. Disagree)				
Agree	0.65	0.36 - 1.19	-1.59	0.17
Received Social Support during Labor/Birth (ref. No)				
Yes	0.50	0.21 - 1.18	-1.39	0.10
Experienced Racism During Pregnancy (ref. Disagree)				
Agree	1.12	0.59 - 2.14	0.35	0.73
Affected by Discrimination (ref. Disagree)				
Agree	1.06	0.70 - 1.61	0.30	0.76
Race or Cultural Concordance (ref. No)				
Yes	1.24	0.77 - 1.98	0.90	0.37
Disrespectful Perinatal Care: MORi bottom 10 <sup>th</sup> percentile (ref. No)				
Yes	2.16	1.13 - 4.12	2.34	0.02*

\*p-values  $\leq 0.05$

<sup>a</sup> Low socioeconomic status: family income below the federal poverty level (before tax family income and household size); had heat or electricity turned off (in the year before pregnancy or during); inability to buy enough food or meet financial obligations; and received a housing subsidy; assistance from Indian Health Services or a state health plan; Temporary Assistance for Needy Families (TANF); food stamps; Women, Infants and Children (WIC) food vouchers or money to purchase food. Participants who experienced  $\geq 1$  indicator was categorized as “low socioeconomic status.”

<sup>b</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI)  $\geq 40$ ; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced  $\geq 1$  indicator was categorized as “elevated pregnancy risk.”

### ***Differences in Race***

#### **Descriptive Statistics.**

Significant covariates yield by the adjusted logistic regression model were stratified by race/ethnicity and presented as descriptive statistics to determine women who were more affected by factors influencing cesarean delivery.

**Perinatal Health Status.**

Over 20% of Black and Asian women had a prior cesarean delivery while white, Hispanic, Indigenous, and Biracial women of color experienced a lower frequency (Table 15). Black women (63.21%), more than any other racial/ethnic group, had more than one child (Table 15). All women of color (Black, Hispanic, Asian, Indigenous, and Biracial women of color) had a higher elevated pregnancy risk than white women (Table 15).

**Table 15.** Significant Covariates Stratified by Race/Ethnicity Part 1

<b>Perinatal Health Status</b>						
	Prior Cesarean Delivery		Parity		Elevated Pregnancy Risk <sup>a</sup>	
	No	Yes	None	≥ 1	No	Yes
Black n (%)	155 (79.90)	39 (20.10)	71 (36.79)	122 (63.21)	132 (67.69)	63 (32.31)
White n (%)	553 (86.14)	89 (13.86)	293 (44.66)	363 (55.34)	474 (72.26)	182 (27.74)
Hispanic n (%)	76 (86.36)	12 (13.64)	46 (51.69)	43 (48.31)	61 (68.54)	28 (31.46)
Asian n (%)	31 (70.45)	13 (29.55)	25 (55.56)	20 (44.44)	30 (66.67)	15 (33.33)
Indigenous n (%)	26 (86.67)	4 (13.33)	15 (50.00)	15 (50.00)	18 (60.00)	12 (40.00)
Biracial Women of Color n (%)	9 (90.00)	1 (10.00)	6 (60.00)	4 (40.00)	7 (70.00)	3 (30.00)

<sup>a</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI) ≥ 40; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced ≥ 1 indicator was categorized as “elevated pregnancy risk.”

**Perinatal Care Provider and Disrespectful Perinatal Care.**

Over 50% of white and Indigenous women had a midwife as their provider and over 60% of Black, Asian, Hispanic, and Biracial women of color had a doctor as their provider (Table 16). Disrespectful perinatal care was the most pronounced among Indigenous, Hispanic, and Black women (Table 16).

**Table 16.** Significant Covariates Stratified by Race/Ethnicity Part 2

	Perinatal Care Provider		Environmental Factor	
	Perinatal Care Provider		Disrespectful Perinatal Care: MORi bottom 10 <sup>th</sup> percentile	
	Midwife	Doctor	No	Yes
Black n (%)	72 (37.70)	119 (62.30)	143 (81.25)	33 (18.75)
White n (%)	369 (56.86)	280 (43.14)	531 (88.80)	67 (11.20)
Hispanic n (%)	40 (45.98)	47 (54.02)	67 (80.72)	16 (19.28)
Asian n (%)	16 (36.36)	28 (63.64)	38 (86.36)	6 (13.64)
Indigenous n (%)	17 (56.67)	13 (43.33)	20 (71.43)	8 (28.57)
Biracial Women of Color n (%)	2 (20.00)	8 (80.00)	8 (88.89)	1 (11.11)

**Crude Logistic Regression.**

To provide more context to these descriptive statistics and significant logistic regression results, a crude logistic regression model was conducted by each significant covariate becoming the dependent variable and pairing it with the race/ethnicity variable with significant criteria assessed at  $p \leq 0.05$  (Table 17).

The crude logistic regression yields significant results for prior cesarean delivery and Asian women ( $p = 0.00$ ); parity  $\geq 1$  and Black women ( $p = 0.02$ ); perinatal care provider as a doctor and Asian women ( $p = 0.01$ ); and disrespectful perinatal care (MORi bottom 10<sup>th</sup> percentile) for Hispanic and Indigenous women. Asian women were 2.59 times more likely to have a prior cesarean delivery (OR: 2.59, 95% CI: 1.31 - 5.12) and 2.31 times more likely to have a doctor as their perinatal care provider (OR: 2.31, 95% CI: 1.22 - 4.35) than white women. Black women were 2.15 times more likely to have one or more child (OR: 2.15, 95% CI: 1.11 - 4.14) than white women. Hispanic (OR:

1.89, 95% CI: 1.04 - 3.45) and Indigenous (OR: 3.17, 95% CI: 1.34 - 7.48) women had higher odds of receiving disrespectful perinatal care (scoring in MORi bottom 10<sup>th</sup> percentile) than white women.

**Table 17.** Crude Logistic Regression Model Predicting Significant Differences by Race/Ethnicity

Variable	Odds Ratio	95% Confidence Interval	z-score	p-value
<b>Perinatal Health Status</b>				
Prior Cesarean Delivery: Yes (ref. White)				
Black	0.62	0.30 - 1.28	-1.30	0.20
Hispanic	0.99	0.52 - 1.90	-0.02	0.98
Asian	2.59	1.31 - 5.12	2.73	0.00*
Indigenous	0.98	0.33 - 2.87	-0.04	0.97
Biracial Women of Color	0.71	0.09 - 5.65	-0.33	0.75
Parity ≥ 1 (ref. White)				
Black	2.15	1.11 - 4.14	2.28	0.02*
Hispanic	0.75	0.48 - 1.18	-1.25	0.21
Asian	0.65	0.35 - 1.19	-1.41	0.16
Indigenous	0.81	0.39 - 1.68	-0.57	0.57
Biracial Women of Color	0.54	0.15 - 1.92	-0.95	0.34
Elevated Pregnancy Risk: Yes (ref. White) <sup>a</sup>				
Black	0.95	0.48 - 1.90	-0.13	0.90
Hispanic	1.20	0.74 - 1.93	0.73	0.47
Asian	1.30	0.68 - 2.48	0.80	0.42
Indigenous	1.74	0.82 - 3.68	1.44	0.15
Biracial Women of Color	1.11	0.29 - 4.36	0.16	0.87
<b>Perinatal Care Provider</b>				
Doctor (ref. White)				
Black	0.94	0.48 - 1.86	0.87	0.87
Hispanic	1.55	0.99 - 2.43	0.06	0.06
Asian	2.31	1.22 - 4.35	0.01	0.01*
Indigenous	1.01	0.48 - 2.11	0.98	0.98
Biracial Women of Color	5.27	1.11 - 25.02	0.03	0.07
<b>Environmental Factor</b>				
Disrespectful Perinatal Care: MORi bottom 10 <sup>th</sup> percentile (ref. White)				
Black	1.46	0.57 - 3.74	0.79	0.43
Hispanic	1.89	1.04 - 3.45	2.08	0.04*

Asian	1.25	0.51 - 3.07	0.49	0.62
Indigenous	3.17	1.34 - 7.48	2.64	0.00*
Biracial Women of Color	0.99	0.12 - 8.04	-0.01	0.99

\*p-values  $\leq 0.05$

<sup>a</sup> Elevated pregnancy risk: pre-pregnancy body mass index (BMI)  $\geq 40$ ; multiple gestation with twins; or experienced high blood pressure, gestational diabetes, or other pregnancy complications such as breech baby, problems with baby’s growth or health, and preterm labor. Participants who experienced  $\geq 1$  indicator was categorized as “elevated pregnancy risk.”

### **Significant Factors Influencing Cesarean Delivery**

These analyses were designed to test how cognitive and environmental factors influence mode of delivery and differences by race. The environmental factor, disrespectful perinatal care was supported by the adjusted logistic regression model as significant and supported the null hypothesis: “if women have lower MORi scores, then they are more likely to have a cesarean delivery.” To determine differences in race, the crude logistic regression model resulted in significance of Hispanic and Indigenous women being more likely to receive disrespectful perinatal care (lower MORi scores) than white women.

## CHAPTER V

### DISCUSSION AND CONCLUSION

The purpose of this study was to assess cognitive and environmental factors that influenced mode of delivery outcomes and the differences among race/ethnicity grounded in the study's conceptual model. The conceptual model determined key findings on factors influencing cesarean deliveries to provide levels of influence from the social ecological model to intervene, address strengths and limitations, and implications for policy, practice, and future research.

#### **Respectful Perinatal Care**

The statistically significant environmental factor assessed in this study was respectful perinatal care which is a component of quality care. Respectful perinatal care was measured in this study by MORi bottom 10<sup>th</sup> percentile, which represents women who experienced disrespectful perinatal care. Women were 14 times more likely to experience disrespectful perinatal care if they had a cesarean delivery in comparison to a spontaneous vaginal delivery. Quantitative studies assessing respectful perinatal care are limited in the U.S. and have mostly occurred in Africa and Asia (Mannava et al., 2015). Qualitative studies conducted in the U.S. by Altman et al. (2019) and Niles et al. (2021) revealed that women who had cesarean deliveries experienced disrespectful perinatal care where women refused care and felt insulted and manipulated by their provider.



## **Perinatal Health Status, Place of Birth, and Perinatal Care Provider**

This study also yields non-cognitive and environmental statistically significant factors associated with cesarean deliveries, which included women who had a prior cesarean delivery, parity  $\geq 1$ , elevated pregnancy risk, and a doctor as their provider. Perinatal health status in this study included prior cesarean delivery, parity, and elevated pregnancy risk, which are factors associated with mode of delivery and can determine if a pregnancy is low or high risk (HHS, 2018). Parity and prior cesarean delivery are factors associated with increased rates of cesarean delivery but were not included in the elevated pregnancy risk composite index to maintain consistency with other studies utilizing the GVtM study and elevated pregnancy risk composite index (Boyle et al., 2013; Gregory et al., 2012; Spong et al., 2012).

Having a prior cesarean delivery follows a precedent for subsequent cesarean deliveries where 51.1% of women in this study had a primary cesarean delivery. This is usually consistent with other studies for primary cesarean deliveries, which has been associated with increasing the cesarean delivery rate in the U.S. by 10 times (7.1% to 69.9%) and 15 times (2.4% to 36.5%) for low-risk pregnancies (Boyle et al., 2013; Spong et al., 2012). Some medical factors arise during the perinatal period, but over intervening when it is not medically necessary increases the risk of cesarean deliveries in hospital settings (Shaw et al., 2016).

Women who have a hospital birth are more likely to have a doctor as their provider, which might be due to them over intervening in care or being the only provider licensed to perform a cesarean delivery (Shaw et al., 2016; VanGompel et al., 2018). The results of this study showed that women who gave birth in a hospital or had a doctor as

their provider increased their odds of having a cesarean delivery. Women with low- and high-risk pregnancies delivered in hospitals, which are optimal for high-risk pregnancies that may require enhanced technology and staffing for monitoring and intervening, but over intervening during pregnancies are linked to cesarean deliveries (Shaw et al., 2016). Place of birth and type of provider can influence a woman's mode of delivery, which is likely due to the model of care she receives from her provider because midwifery care and planned community births are associated with higher quality of care and lower cesarean delivery rates (Akileswaran & Hutchinson, 2016; Carlson et al., 2018; Hoopes-Bender et al., 2014; Kennedy et al., 2018a; Kozhimannil et al., 2015b; Neal et al., 2018). Quality of care and its influence on cesarean deliveries can also differ based on someone's race/ethnicity.

### **Differences in Race/ethnicity**

Differences by race/ethnicity on how cognitive and environmental factors influenced mode of delivery yield the following statistically significant factors: disrespectful perinatal care (environmental factor), perinatal health status factors, and perinatal care provider. Statistically significant associations for race/ethnicity as white women as the reference group included Asian women being more likely to have a prior cesarean delivery and doctor as their perinatal care provider; Black women being more likely to have one or more child; and Hispanic and Indigenous women being more likely to receive disrespectful perinatal care. In addition, race/ethnicity was not a significant factor in this study, but Black, Hispanic, Asian, and Indigenous women had a higher rate of having a cesarean delivery than white women.

This finding is supported by the literature where marginalized women are more likely to experience cesarean deliveries (Altman et al., 2020; Attanasio et al., 2017; Bailit & Love, 2008; Huesch & Doctor, 2015; Washington et al., 2012). There are numerous inequities present in perinatal outcomes experienced by marginalized women that are driven by historical and structural injustices that can be remedied through a shift in power within relationships (Hardeman et al., 2019). Patient-centered care places marginalized pregnant women as the experts regarding their own bodies with their provider as the expert in medical diagnoses and care (Hardeman et al., 2019). A focus on patient-centered care could reduce the experiences of racism and discrimination during perinatal care.

### **Racism and Discrimination**

Racism and discrimination were environmental factors that were not statistically significant factors influencing cesarean delivery in this study, but some women were affected by these factors. There were about 11% of women who experienced racism during pregnancy for each mode of delivery category. Women were affected by discrimination regardless of mode of delivery. The Listening to Mothers III study conducted in the U.S. revealed that 13% of women experienced racial, ethnic, language, or culture discrimination during labor and birth in a hospital (Declercq et al., 2014). The Listening to Mothers III study did not assess the associations between racism or discrimination and its influence on cesarean deliveries. The Listening to Mothers III study participants experienced less discrimination in comparison to this study, but women who experienced discrimination was lower than discrimination present in this study

(Declercq et al., 2014). Race and culture concordance may be an avenue where representation can reduce racism or discrimination throughout perinatal care.

### **Race and Culture Concordance**

Fewer women experienced race and culture concordance for cesarean delivery (57.1%) in comparison to women who had a spontaneous vaginal delivery (66.2%). This suggests that women who have a cesarean delivery receive less representation during labor and birth, which could potentially influence their mode of delivery. This deprives a woman's social support network where some women receive social support from their perinatal care provider.

### **Social Support**

Women who received social support decreased from 95.5% (spontaneous vaginal delivery) to 91.1% (cesarean delivery). Previous studies suggested that women who receive social support throughout the perinatal care period experience fewer cesarean deliveries (Collins et al., 2021; Corrigan et al., 2015; Farrish & Roberston, 2012; Kim et al., 2014; Morikawa et al., 2015; Versteegen et al., 2021). Gruber et al. (2013) studied doula support as a form of social support during the perinatal care period, but doula support was categorized as "receiving social support" and not analyzed individually as a form of social support. Gruber et al. (2013) also found that cesarean delivery rates were higher for Black women who did not have a doula present during labor and birth, but it was not significant. A social support network can help women advocate for care options by respecting their normative beliefs.

Normative belief was measured by the following statement "giving birth is a process that should not be interfered with unless medically necessary" where 93.1% of

women who had a spontaneous vaginal delivery agreed with the statement but decreased to 86.9% for women who had a cesarean delivery. This decline shows that women who have a cesarean delivery are less likely to agree with the statement. There is limited literature assessing normative beliefs and perinatal care in the U.S., where most studies have typically occurred in Nigeria and Iran and used different normative belief measures (Roudsari et al., 2015; Ugwu & de Kok, 2015). The U.S. is a diverse society of shared and different norms, beliefs, expectations, languages, and behavioral customs (Coast et al., 2014; Fowles, 2017). This is important because when women's social and cultural norms about perinatal care do not align with their perinatal care provider's recommendations can result in poor person-centered decision-making.

### **Person-centered Decision-making**

The cognitive factor assessed for this study was person-centered decision-making which was measured by MADM. Low autonomy in person-centered decision-making did not independently emerge from the multivariate analysis and this could possibly be attributed to MADM and MORi interacting since experiencing low autonomy in decision-making is receiving disrespectful care. Although person-centered decision-making was not a predictor, more women experienced low autonomy if they had a cesarean delivery (20.8%) than women who had a spontaneous vaginal delivery (8.3%). In comparison to a study conducted by Attanasio et al. (2018) women who had a cesarean delivery with high level of autonomy in person-centered decision-making was 51.0% and this study, 79.2%. The measures for person-centered decision-making in this study was measured by MADM while Attanasio et al. (2018) measured it by the Delivery Decision Making Scale (DDMS). Person-centered decision-making is measured differently for

each instrument based on the number of items, statements, and response options. The 7-item MADM scale was used to measure a service users' role and level of agency and autonomy when they interacted with providers while making decisions around perinatal care options with Likert responses (Vedam et al., 2017b; Vedam et al., 2018). The 6-item DDMS measures women's perceptions of involvement and satisfaction with the perinatal care decision-making process with true or false responses (Attanasio et al., 2018).

### **Strengths**

Strengths of this study includes an overall large sample size that provides the best estimates and frequencies of cognitive and environmental factors influencing mode of delivery. The study population was closely aligned to the 2010 U.S. Census racial/ethnic demographics but provided greater representation among Black and Indigenous women which gave more context into their experiences of care (United States Census Bureau, 2010b). A third of pregnancies in the U.S. are by cesarean delivery and in this study, less than 15% of women experienced a cesarean delivery (Boyle et al., 2013; Edmonds et al., 2013; Getahun et al., 2009; Guo et al., 2021; Keag et al., 2018; Kozhimannil et al., 2013; Leonard et al., 2019a; Martinez et al., 2020; Morris et al., 2016; Spong et al., 2012; Yee et al., 2015; Zamani-Alavijeh et al., 2017). This was most likely due to women experiencing the midwifery model of care by having a planned community birth or midwife as their provider. In addition, this is the first study applying SCT cognitive and environmental factors and the following constructs: collective efficacy and knowledge (person-centered decision-making); normative beliefs; social support; and barriers and facilitators (racism experienced during pregnancy, affected by discrimination, race or cultural concordance, and respectful perinatal care) to predict its influence on mode of

delivery. This study also used validated and reliable MORi (respect) and MADM (autonomy) instruments to measure respectful perinatal care and autonomy in person-centered decision-making, which has not been previously applied to mode of delivery research. Strengths of this study are followed by a few limitations.

### **Limitations**

Definitions for the terms discrimination and experiencing racism during pregnancy were not defined which led to the participants own interpretation, where these terms can sometimes be used interchangeably. Further determining terms and forms of discrimination could help clarify the experiences of the participants. Overall, measures for person-centered decision-making, social support, racism, discrimination, normative belief, and respectful perinatal care are not consistent with previous studies, but this study can provide a basis for future research.

### **Implications for Future Research**

Future research can address limitations of this study by utilizing consistent measures, terminology, and definitions for perinatal health research and referring to women/mothers as birthing people or individual to be inclusive of everyone. The measure for person-centered decision-making (i.e., MADM) differed from previous studies (e.g., DDMS). Providing a direct comparison of autonomy and cesarean delivery can better determine means to improve person-centered care. Previous studies assessing social support and the impact on cesarean deliveries only focused on one form of social support (i.e., doula) while this study focused on any form of social support received. Having a consistent way to report social support, whether individually or overall, social support received should be considered in future studies.

The terms racism and discrimination are sometimes used interchangeably, and clear definitions are needed to effectively assess the influence these factors have on cesarean delivery outcomes. Any form of racism or discrimination present during the perinatal care period is problematic due to historical systems of oppression that affect health care systems, policies, and practices that are negatively impacting the health of women (Taylor, 2020). Studies have not been conducted specifically applying the critical race theory (CRT) to perinatal health research, but the literature provides approaches on the use of CRT in this field. Research has suggested using CRT to address root causes of health disparities by developing solutions and interventions that address gaps in cesarean deliveries among marginalized women (Ford & Airhihenbuwa, 2018; Hardeman et al., 2019).

There is limited research on the effects of race and culture concordance and more focus is needed on the perspectives of the patients and not providers to determine if representation can influence person-centered decision-making, respectful perinatal care, provider social support, and normative beliefs. Over 85% of women who had a cesarean delivery agreed to the following normative belief statement: “giving birth is a process that should not be interfered with unless medically necessary”, further determining if the cesarean delivery was medically necessary can provide context to their normative belief being respected. Measuring respectful perinatal care is limited and MORi helped address the gap, but more studies should utilize MORi to further determine initiatives to improve respectful perinatal care and reduce cesarean delivery rates in the U.S.

Future research can further determine and explore factors influencing cesarean deliveries by using a mixed methods sequential explanatory design (Creswell et al.,

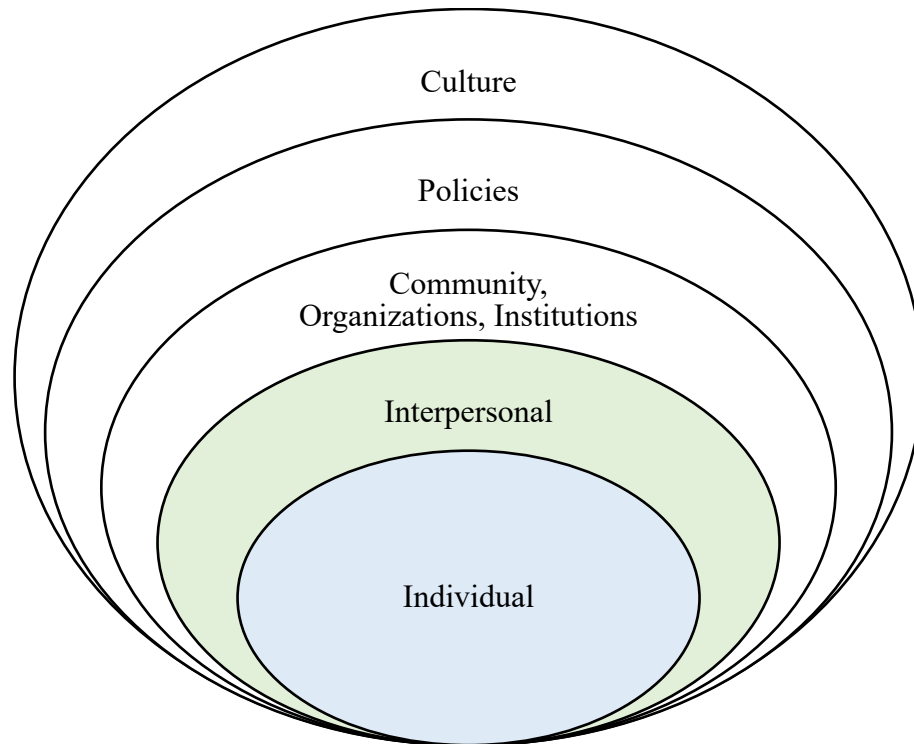


2003). This study design can allow for the incorporation of utilizing consistent measures, terminology, and definitions and current measures highly effective in measuring person-centered decision-making (MADM) and respectful perinatal care (MORi) through quantitative data collection and analysis (e.g., surveys). This will allow for further exploration of the experiences of women who had a cesarean delivery through qualitative data collection and analysis (e.g., interviews) to provide greater depth to quantitative results. In addition to future research, public health practice and policy can assist with improving quality perinatal care and reducing cesarean deliveries in the U.S.

### **Implications for Public Health Practice and Policy**

This study used the social ecological model to conceptualize levels of influence being studied and to identify levels of influence to intervene. The statistically significant factors influencing cesarean delivery (i.e., parity, prior cesarean delivery, elevated pregnancy risk, having a doctor as a provider, and disrespectful perinatal care), especially among marginalized women to address a need for interventions at the individual and interpersonal levels of influence (Figure 5). Parity, prior cesarean delivery, elevated pregnancy risk represents the individual level of influence, while having a doctor as a provider and disrespectful perinatal care represents the interpersonal level of influence. For the context of this study and utilization of the social ecological model, the individual level of influence represents women obtaining knowledge from respectful perinatal care providers (interpersonal level of influence) about their perinatal health status to make informed decisions about mode of delivery. Therefore, to intervene at these levels of influence, perinatal care needs to shift from an over interventionist medical model of

care to a model of care focused on quality of care with emphasizes on person-centered and equitable care.



**Figure 5.** Social Ecological Model [Adapted from Golden & Wendel, 2020]

### ***Quality Maternal and Newborn Care Framework***

The quality of maternal and newborn care (QMNC) framework is a model of care centered on quality perinatal care (Figure 6). The QMNC framework was developed to describe multiple components of care affecting outcomes for women, newborns, and families throughout the perinatal period due to growing concerns of the overuse of medical interventions to manage complications if they arise (Renfrew et al., 2014). Public health professionals have deemed that midwifery care is imperative to utilize for assurance of high-quality perinatal care due to its focus on person-centered and low-intervention approach to care (Akileswaran & Hutchinson, 2016; Kozhimannil et al.,

2015b; Neal et al., 2018; Renfrew et al., 2014). The QMNC framework addresses the role and integration of perinatal care providers and health systems to provide quality perinatal care, which was derived from a systematic review of methods, results, and lessons learned in low-, middle-, and high-income countries (Renfrew et al., 2014). The QMNC framework is especially applicable for public health practice and policy in the U.S. to assess quality perinatal care; workforce development that focuses on teamwork and collaboration of perinatal health professionals; resource allocation; educational curriculum; or identify gaps for future research (Renfrew et al., 2014). The framework is also intended for individualized demands of identified populations (e.g., marginalized populations) and political, social, and cultural context within a health care system (Renfrew et al., 2014).

	For all childbearing women and infants			For childbearing women and infants with complications	
Practice categories	Education Information Health promotion	Assessment Screening Care planning	Promotion of processes, prevention of complications	First-line management of complications	Medical obstetric neonatal services
Organization of care	Available, accessible, acceptable, good-quality services, adequate, and competent workforce				
Values	Continuity, services, integrated across community and facilities				
Philosophy	Respect, communication, community knowledge, and understanding Care tailored to women's circumstances and needs				
Care providers	Optimizing biological, psychological, social, and cultural processes; strengthening woman's capabilities				
	Practitioners who combine clinical knowledge and skills with interpersonal and cultural competence				
	Division of roles and responsibilities based on need, competencies, and resources				

**Figure 6.** Quality of Maternal and Newborn Care Framework [Adapted from Renfrew et al., 2014]

The QMNC framework can be applied to this study through public health practice by addressing statistically significant individual factors: a prior cesarean delivery, parity  $\geq 1$ , and elevated pregnancy risk through the following “practice categories”: anti-racist and culturally aware education, information, and health promotion; and promotion of normal process and prevention of complications so women can assess the benefits and harms associated with their care by their provider in order to achieve person-centered and equitable care (Crear-Perry et al., 2020; Kennedy et al., 2018b). In addition, these individual factors are represented by “philosophy” through optimizing biological, psychological, social, and cultural processes that strengthen women by only medically intervening when necessary (Renfrew et al., 2014). The interpersonal statistically significant factor: disrespectful perinatal care aligns with the QMNC framework’s categories of “values” by providing respectful perinatal care through communication and tailoring care that suits women’s needs and circumstances; and “care providers” where perinatal care providers combine clinical knowledge and skills with interpersonal and cultural competence and care for women based on need, competencies, and resources (Renfrew et al., 2014). Addressing the statistically significant factors and disparities among Black, Asian, Indigenous, and Hispanic women in this study by integrating the QMNC framework into practice has the potential to influence change among perinatal care providers and health care systems delivery of care.

To integrate this model of care, the QMNC framework should be presented to perinatal care providers; medical, midwifery, and hospital organizations/societies; other perinatal care stakeholders; and decision-makers to inform policy for health care institutions and for perinatal care workers to practice. This model of care has the potential

to improve quality of perinatal care through person-centered and equitable care and reduce the U.S. cesarean delivery rate.

## **Conclusion**

Cesarean deliveries account for a third of pregnancies in the U.S., which is above WHO recommendation of 10-15% cesarean deliveries (Boyle et al., 2013; Edmonds et al., 2013; Getahun et al., 2009; Guo et al., 2021; Keag et al., 2018; Kozhimannil et al., 2013; Leonard et al., 2019a; Martinez et al., 2020; Morris et al., 2016; Spong et al., 2012; Yee et al., 2015; Zamani-Alavijeh et al., 2017). This study aimed to provide insight into this phenomenon by determining cognitive and environmental factors that influence mode of delivery and how they differ by race/ethnicity by addressing gaps in the literature. This study addressed gaps in the literature by assessing patient-provider interactions through person-centered decision-making and respectful perinatal care and normative beliefs that can affect women's decisions in their care and mode of delivery. Results of this study indicated that perinatal health risk factors and quality of care experienced by women are areas that need to receive greater attention to reduce the cesarean delivery rate in the U.S. Integration of the QMNC framework has the potential to reduce cesarean deliveries by improving quality of care through less medical care interventions and improved patient-provider interactions.

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APPENDICES

**Appendix A: Giving Voice to Mothers-US Adapted Survey Instrument**

Survey Question #	Survey Questions and Scales	Survey Responses
Demographic Factors		
Q1	What is your year of birth?	<ul style="list-style-type: none"> <li>• 1940 1970 2000</li> <li>• 1941 1971 2001</li> <li>• 1942 1972 2002</li> <li>• 1943 1973 2003</li> <li>• 1944 1974 2004</li> <li>• 1945 1975 2005</li> <li>• 1946 1976 2006</li> <li>• 1947 1977</li> <li>• 1948 1978</li> <li>• 1949 1979</li> <li>• 1950 1980</li> <li>• 1951 1981</li> <li>• 1952 1982</li> <li>• 1953 1983</li> <li>• 1954 1984</li> <li>• 1955 1985</li> <li>• 1956 1986</li> <li>• 1957 1987</li> <li>• 1958 1988</li> <li>• 1959 1989</li> <li>• 1960 1990</li> <li>• 1961 1991</li> <li>• 1962 1992</li> <li>• 1963 1993</li> <li>• 1964 1994</li> <li>• 1965 1995</li> <li>• 1966 1996</li> <li>• 1967 1997</li> <li>• 1968 1998</li> <li>• 1969 1999</li> </ul>

Q2	To help us to describe the communities that have contributed to this important national survey, please tell us how you describe your own race, ethnicity, or cultural heritage?	<ul style="list-style-type: none"> <li>• Alaska Native</li> <li>• Black</li> <li>• East Asian</li> <li>• Central Asian</li> <li>• Latina or Hispanic</li> <li>• Middle Eastern</li> <li>• Native American</li> <li>• Native Hawaiian or Other Pacific Islander</li> <li>• African</li> <li>• South Asian</li> <li>• South East Asian</li> <li>• White/Caucasian</li> <li>• Biracial (please specify below)</li> <li>• Other Race/Ethnicity/Heritage (please specify)</li> </ul>
Q3	What was the highest level of education you had completed at the beginning of your most recent pregnancy?	<ul style="list-style-type: none"> <li>• Primary school</li> <li>• Some high school</li> <li>• High school or equivalent (e.g., GED)</li> <li>• Some college, but no degree</li> <li>• Associate degree</li> <li>• College (e.g., B.A., B.S.)</li> <li>• Some graduate school, but no degree</li> <li>• Graduate degree (e.g., M.S., M.D., Ph.D.)</li> <li>• Professional school (e.g., MD, JD)</li> <li>• Other (please specify)</li> </ul>
Q4	Including yourself, how many people AGE 18 AND OLDER live in your household? If you live in more than one household, please answer for only one of the households. (Select one option)	<ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> <li>• 8</li> <li>• 9</li> <li>• 10</li> <li>• 11</li> <li>• 12</li> <li>• 13</li> <li>• 14</li> </ul>

		<ul style="list-style-type: none"> <li>• 15</li> <li>• 16</li> <li>• 17</li> <li>• 18</li> <li>• 19</li> <li>• 20</li> </ul>
Q5	Including yourself, how many people YOUNGER THAN 18 live in your household? If you live in more than one household, please answer for only one of the households. (Select one option)	<ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> <li>• 8</li> <li>• 9</li> <li>• 10</li> <li>• 11</li> <li>• 12</li> <li>• 13</li> <li>• 14</li> <li>• 15</li> <li>• 16</li> <li>• 17</li> <li>• 18</li> <li>• 19</li> <li>• 20</li> </ul>
Q6	Which of the following best describes your total household income before taxes last year?	<ul style="list-style-type: none"> <li>• Under \$9,999</li> <li>• \$10,000 to \$19,999</li> <li>• \$20,000 to \$29,999</li> <li>• \$30,000 to \$39,999</li> <li>• \$40,000 to \$49,999</li> <li>• \$50,000 to \$69,999</li> <li>• \$70,000 to \$99,999</li> <li>• \$100,000 to \$119,999</li> <li>• \$120,000 to \$139,999</li> <li>• \$140,000 to \$159,999</li> <li>• \$160,000 to \$179,999</li> <li>• \$180,000 to \$199,999</li> <li>• \$200,000 to \$219,999</li> <li>• \$220,000 to \$239,999</li> <li>• \$240,000 and over</li> <li>• Decline to Answer</li> </ul>

Q7	At any point during your pregnancy or the year before your pregnancy did you experience...? (Please check all that apply)	<ul style="list-style-type: none"> <li>• Inability to buy enough food</li> <li>• Lack of health insurance</li> <li>• Health or electricity turned off</li> <li>• Inability to meet financial obligations</li> <li>• Inability to find work</li> <li>• Involvement of Child and Family Services</li> <li>• Housing instability</li> <li>• Depression</li> <li>• Smoking (tobacco)</li> <li>• Problems with drug dependency</li> <li>• Daily alcohol use</li> <li>• Police violence, yourself or someone in your family</li> <li>• Imprisonment, yourself or partner</li> <li>• Intimate partner violence</li> <li>• Not enough support from family or friends</li> <li>• None of the above</li> </ul>
Q8	During your recent pregnancy, did you feel you needed any of the following services?	<p><i>Response: Yes, No</i></p> <ul style="list-style-type: none"> <li>(a) Food stamps, WIC food vouchers, or money to buy food (Select on option)</li> <li>(b) State health plan (Select on option)</li> <li>(c) Assistance from Indian Health Services (Select on option)</li> <li>(d) Temporary Assistance for Needy Families (TANF) (Select on option)</li> <li>(e) Housing subsidies or assistance (Select on option)</li> <li>(f) Drug/Alcohol treatment program (Select on option)</li> <li>(g) Public child-care subsidies (Select on option)</li> <li>(h) Treatment for depression (Select on option)</li> <li>(i) Help to quit smoking (Select on option)</li> </ul>



		<p>(j) Counseling for nutrition (Select on option)</p> <p>(k) Counseling for mental health (Select on option)</p> <p>(l) Safe house or shelter from abuse (Select on option)</p> <p>(m) None of the above (Select on option)</p>
Q9	What was the main source of payment for all of your maternity care services (doctor or midwife, lab tests, hospital bills, etc.)?	<ul style="list-style-type: none"> <li>• Medicaid or CHIP</li> <li>• Indian Health Services</li> <li>• TriCare/United Healthcare for Active Duty service members</li> <li>• Other government program</li> <li>• Private insurance</li> <li>• Paid for it myself/ourselves (out-of-pocket)</li> <li>• Not sure</li> <li>• Other (Please specify)</li> </ul>
Q10	In what state did you give birth?	<ul style="list-style-type: none"> <li>• Alabama</li> <li>• Alaska</li> <li>• Arizona</li> <li>• Arkansas</li> <li>• Armed Forces Asia</li> <li>• Armed Forces Europe</li> <li>• Armed Forces Pacific</li> <li>• California</li> <li>• Colorado</li> <li>• Connecticut</li> <li>• Delaware</li> <li>• District of Columbia</li> <li>• Florida</li> <li>• Georgia</li> <li>• Hawaii</li> <li>• Idaho</li> <li>• Illinois</li> <li>• Indiana</li> <li>• Iowa</li> <li>• Kansas</li> <li>• Kentucky</li> <li>• Louisiana</li> <li>• Maine</li> <li>• Maryland</li> </ul>

		<ul style="list-style-type: none"> <li>• Massachusetts</li> <li>• Michigan</li> <li>• Minnesota</li> <li>• Mississippi</li> <li>• Missouri</li> <li>• Montana</li> <li>• Nebraska</li> <li>• Nevada</li> <li>• New Hampshire</li> <li>• New Jersey</li> <li>• New Mexico</li> <li>• New York</li> <li>• North Carolina</li> <li>• North Dakota</li> <li>• Ohio</li> <li>• Oklahoma</li> <li>• Oregon</li> <li>• Pennsylvania</li> <li>• Rhode Island</li> <li>• South Carolina</li> <li>• South Dakota</li> <li>• Tennessee</li> <li>• Texas</li> <li>• Utah</li> <li>• Vermont</li> <li>• Virginia</li> <li>• Washington</li> <li>• West Virginia</li> <li>• Wisconsin</li> <li>• Wyoming</li> <li>• Puerto Rico</li> <li>• Other, please tell us where.</li> <li>• If this is different from where you live, please tell us why.</li> </ul>
<b>Perinatal Health Status</b>		
Q11	Before your most recent pregnancy, did you ever have a cesarean birth?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
Q12	How many times have you been pregnant in your life? (Select one option)	<ul style="list-style-type: none"> <li>• 0</li> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> </ul>

		<ul style="list-style-type: none"> <li>• 6</li> <li>• 7</li> <li>• 8 or more</li> </ul>
Q13	In your most recent pregnancy, did you give birth to a single baby or more than one? (Select one option)	<ul style="list-style-type: none"> <li>• Single baby</li> <li>• Twins</li> <li>• Triplets</li> <li>• Other</li> </ul>
Q14	During this pregnancy I experienced: (please check all that apply)	<ul style="list-style-type: none"> <li>• No health problems</li> <li>• High blood pressure</li> <li>• Problems with baby's growth</li> <li>• Problems with baby's health, please specify</li> <li>• Gestational diabetes</li> <li>• Premature labor and birth</li> <li>• Breech baby</li> <li>• Other medical problem, please specify</li> </ul>
Q15	Please explain [Answer this question only if answer to Q #14 is Problems with baby's health, please specify]	<ul style="list-style-type: none"> <li>• Other specify response</li> </ul>
Q16	Please specify [Answer this question only if answer to Q #14 is Other medical problem, please specify]	<ul style="list-style-type: none"> <li>• Other specify response</li> </ul>
Q17	As best you can remember, what was your weight just before you became pregnant? If you are not sure, your best estimate will do. (Select one option)	<ul style="list-style-type: none"> <li>• Not sure</li> <li>• Decline to answer</li> <li>• I was ____ pounds ____</li> </ul>
Q18	How tall are you?	<ul style="list-style-type: none"> <li>(a) Feet</li> <li>(b) Inches</li> <li>(c) Centimeters</li> </ul>
<b>Place of Birth</b>		
Q19	Where was your baby born? (Please read ALL THE OPTIONS before selecting the BEST answer) (Select one option)	<ul style="list-style-type: none"> <li>• Birth center INSIDE hospital</li> <li>• Birth center INSIDE hospital</li> <li>• Home, planned in a home with midwife or physician present</li> <li>• Home, unplanned, accidental, or en-route to the hospital</li> <li>• Home, planned unassisted</li> <li>• Hospital, planned hospital birth</li> <li>• Hospital, transfer from planned home birth after labor started</li> <li>• Hospital, transfer from freestanding birth center after labor started</li> </ul>

		<ul style="list-style-type: none"> <li>• Other (please specify)</li> </ul>
<b>Perinatal Care Providers</b>		
Q20	My answer in this section (for Q#21) describe my conversations or experiences with a... (Select one option)	<ul style="list-style-type: none"> <li>• Family Doctor</li> <li>• Obstetrician/OB-GYN doctor</li> <li>• Midwife</li> </ul> <p>Not applicable, did not have a doctor or midwife</p>
<b>Cognitive Factors</b>		
<i>Collective Efficacy and Knowledge</i>		
Q21 a-g	Mothers Autonomy in Decision Making (MADM) Scale (7-item)	<p><i>Response: Strongly Disagree, Disagree, Somewhat Agree, Agree, Strongly Agree</i></p> <p>(a) My doctor or midwife asked me how involved in decision making I wanted to be (Select one option)</p> <p>(b) My doctor or midwife told me that there are different options for my maternity care (Select one option)</p> <p>(c) My doctor or midwife explained the advantages/disadvantages of the maternity care options (Select one option)</p> <p>(d) My doctor or midwife helped me understand all the information (Select one option)</p> <p>(e) I was given enough time to thoroughly consider the different care options (Select one option)</p> <p>(f) I was able to choose what I considered to be the best care options (Select one option)</p> <p>(g) My doctor or midwife respected my choices (Select one option)</p>
<b>Environmental Factors</b>		
<i>Normative Beliefs</i>		
Q22	Do you agree or disagree with the following statement? "Giving birth is a process that should not be interfered	<ul style="list-style-type: none"> <li>• Completely Disagree</li> <li>• Strongly Disagree</li> <li>• Somewhat Disagree</li> </ul>

	with unless medically necessary." (Select one option)	<ul style="list-style-type: none"> <li>• Somewhat Agree</li> <li>• Strongly Agree</li> <li>• Completely Agree</li> </ul>
<i>Social Support</i>		
Q23	During labor and birth, some women get support from someone who is present to make them more comfortable and explain what is happening. Who if anyone, gave you this type of support when you were in labor? (Please choose all that apply).	<ul style="list-style-type: none"> <li>• My partner/husband</li> <li>• Another family member</li> <li>• My friend</li> <li>• A doula or trained labor assistant</li> <li>• A midwife</li> <li>• A nurse</li> <li>• A doctor</li> <li>• I did not receive this type of support</li> <li>• Other</li> </ul>
<i>Barrier or Facilitator</i>		
<i>Racism or Discrimination</i>		
Q24	I experienced racism during my pregnancy. (Select one option)	<ul style="list-style-type: none"> <li>• Strongly Disagree</li> <li>• Disagree</li> <li>• Somewhat Disagree</li> <li>• Somewhat Agree</li> <li>• Agree</li> <li>• Strongly Agree</li> </ul>
Q25	I am not affected by discrimination. (Select one option)	<ul style="list-style-type: none"> <li>• Strongly Disagree</li> <li>• Disagree</li> <li>• Somewhat Disagree</li> <li>• Somewhat Agree</li> <li>• Agree</li> <li>• Strongly Agree</li> </ul>
<i>Respectful Perinatal Care</i>		
Q26 a-g Q27 a-d Q28 a-c	Mothers on Respect Index (MORi) (14 item)	<p><i>Response: Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree</i></p> <p><b>Q33 a-g:</b> Overall while making decisions about my pregnancy or birth care...</p> <p>(a) I felt comfortable asking questions (Select one option)</p> <p>(b) I felt comfortable declining care that was offered (Select one option)</p>

	<p>(c) I felt comfortable accepting the options for care that my doctor or midwife recommended (Select one option)</p> <p>(d) I felt pushed into accepting the options my doctor or midwife suggested (Select one option)</p> <p>(e) I chose the care options that I received (Select one option)</p> <p>(f) My personal preferences were respected (Select one option)</p> <p>(g) My cultural preferences were respected (Select one option)</p> <p><i>Response: Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree</i></p> <p><b>Q34 a-d:</b> During my pregnancy I felt that I was treated poorly by my doctor or midwife BECAUSE of...</p> <p>(a) My race, ethnicity, cultural background or language (Select one option)</p> <p>(b) My sexual orientation and/or gender identity (Select one option)</p> <p>(c) My type of health insurance or lack of insurance (Select one option)</p> <p>(d) A difference in opinion with my caregivers about the right care for myself or my baby (Select one option)</p> <p><i>Response: Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree</i></p>
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		<p><b>Q35 a-c:</b> During my pregnancy I held back from asking questions or discussing concerns BECAUSE...</p> <p>(a) My doctor or midwife seemed rushed (Select one option)</p> <p>(b) I wanted maternity care that differed from what my doctor or midwife recommended (Select one option)</p> <p>(c) I thought my doctor or midwife might think I was being difficult (Select one option)</p>
<i>Race and Culture Concordance</i>		
Q29	Finding a midwife or doctor who shared my heritage, race, ethnic or cultural background was important to me. (Select one option)	<ol style="list-style-type: none"> <li>1. Strongly Agree</li> <li>2. Agree</li> <li>3. Neither</li> <li>4. Disagree</li> <li>5. Strongly Disagree</li> </ol>
<i>Mode of Delivery</i>		
Q30	My most recent birth was a: (Select one option)	<ul style="list-style-type: none"> <li>• Vaginal birth</li> <li>• Vaginal birth with forceps or vacuum</li> <li>• Cesarean birth</li> </ul>

## Appendix B: University of Louisville IRB Outcome Letter

### University of Louisville

Human Subjects Protection Program Office  
300 East Market Street, Suite 380  
Louisville, Ky 40202  
P: 502. 852.5188 E: [hsppofc@louisville.edu](mailto:hsppofc@louisville.edu)

<b>DATE:</b>	March 07, 2022
<b>TO:</b>	Muriel J Harris, PhD, MPH
<b>FROM:</b>	The University of Louisville Institutional Review Board
<b>IRB NUMBER:</b>	22.0191
<b>STUDY TITLE:</b>	<b>Person-centered Decision-making and Socio-cultural Contexts Influencing Cesarean Deliveries: A National Analysis</b>
<b>REFERENCE #:</b>	741640
<b>DATE OF REVIEW:</b>	03/07/2022
<b>CONTACT FOR QUESTIONS:</b>	Sarah Foster Merrill, MPH, <a href="mailto:swfost01@louisville.edu">swfost01@louisville.edu</a>

An IRB member has reviewed your submission, and determined the project described does not meet the "Common Rule" definition of human subjects' research. The IRB has classified this project as Non-Human Subjects Research (NHSR). The project may proceed.

Any changes to this project or the focus of the investigation must be submitted to the IRB to ensure that the IRB determination above still applies.

Amendments for personnel changes or study closures are not required.

Thank you,



Sarah Foster Merrill, MPH, IRB Analyst, Institutional Review Board, Member

We value your feedback; let us know how we are doing: <https://www.surveymonkey.com/r/CCLHXRP>



## CURRICULUM VITAE

Alice M. Story  
678-525-1122  
[amstory11@gmail.com](mailto:amstory11@gmail.com)

### EDUCATION

- May 2022 (Expected) Doctor of Philosophy, Public Health Sciences, Health Promotion and Behavioral Sciences, University of Louisville, Louisville, KY
- May 2014 Juris Master in Health Law, Emory University, Atlanta, GA
- May 2013 Master of Public Health in Health Policy and Management, University of Arkansas for Medical Sciences, Little Rock, AR
- May 2011 Bachelor of Science in Biology, Spelman College, Atlanta, GA

### PROFESSIONAL EXPERIENCE

- Aug. 2018 - Present **Graduate Research Assistant**  
University of Louisville, School of Public Health and Information Sciences, Louisville, KY
- Duties: Conduct perinatal health, global health, and health equity primary and secondary quantitative and qualitative research. Participate in program planning and evaluation. Conduct literature reviews. Submit Institutional Review Board (IRB) proposals. Prepare research for peer-reviewed journals.
- Jan. - May 2021 **Instructor**  
University of Louisville, School of Public Health and Information Sciences, Louisville, KY
- Duties: Taught the undergraduate course PHPB 305-01: Public Health Education Principles and Strategies for Spring 2021 semester.
- Aug. - Dec. 2020 **Co-Instructor**  
University of Louisville, School of Public Health and Information Sciences, Louisville, KY

Duties: Co-taught the undergraduate course PHPB 305-01: Public Health Education Principles and Strategies for Fall 2020 semester.

Jan. - May 2019

**Teaching Assistant**

University of Louisville, School of Public Health and Information Sciences, Louisville, KY

Duties: Served as a teaching assistant for the undergraduate course PPHH 401-01: Public Health and Health Policy.

Feb. - Jul. 2018

**Post Award Research Administrator III**

Emory University, Research Administration Services, School of Medicine, Brain Health and Surgery, Atlanta, GA

Duties: Managed the Urology Department and Clinical Research Unit financial portfolio and 60 projects within the Brain Health (Neurology and Psychiatry) financial portfolio. Reconciled and projected federal, state, clinical trials, and foundation award finances for Principal Investigators (PIs). Communicated with PIs regularly regarding their financial portfolio. Ensured financial terms and conditions of awards were in compliance. Prepared monthly, annually, and end of the award period financial reports. Ensured the PIs effort was allocated appropriately among all awards. Initiated annual conflict of interest certification. Submitted request for no cost extensions, budget revisions, carryover, and other award changes. Reviewed and approved requisitions, payment request, expense reports, and sub-contractor invoices.

Mar. 2017 - Feb. 2018

**Post Award Research Administrator II**

Emory University, Research Administration Services, School of Medicine, Brain Health, Atlanta, GA

Duties: Managed a total of 60 projects within the Brain Health (Neurology and Psychiatry) financial portfolio. Reconciled and projected federal, state, clinical trials, and foundation award finances for PIs. Communicated with PIs regularly regarding their financial portfolio. Ensured financial terms and conditions of awards were in compliance. Prepared monthly, annually, and end of the award period financial reports. Ensured the PIs effort was allocated appropriately among all awards. Initiated annual conflict of interest certification. Submitted request for no

cost extensions, budget revisions, carryover, and other award changes. Reviewed and approved requisitions, payment request, expense reports, and sub-contractor invoices.

Aug. 2015 - Mar. 2017

**Grants Coordinator**

Arkansas Department of Health, Family Health Branch, Little Rock, AR

Duties: Managed the Health Resources and Services Administration's (HRSA) Maternal, Infant, and Early Childhood Home Visiting (MIECHV) \$6.9 million FY15 competitive grant award contracted with Arkansas Children's Hospital. Managed grant-writing team by providing timelines and assignments, data compilation, and editing for HRSA's MIECHV \$7.1million FY16 formula grant. Managed the statewide Continuous Quality Improvement (CQI) program and provided technical assistance. Evaluated the effectiveness of programs and provided recommendations for program improvement. Developed operating budgets for grant applications, monitored and evaluated expenditures, and provided feedback on budget adjustments and spend down. Prepared and submitted contracts. Conducted programmatic and fiscal site reviews with contractor and sub-contractors. Procured internal and external agreements and contracts.

Jun. 2014 - Aug. 2015

**Youth and Schools Coordinator**

Arkansas Department of Health, Tobacco Prevention and Cessation Program, Little Rock, AR

Duties: Coordinated youth and schools' programs at elementary, secondary, and post-secondary levels through program management, technical assistance, surveillance, and evaluation. Collaborated with entities related to youth and schools as it pertained to youth-based tobacco control initiatives. Monitored sub-grantees progress toward deliverables and provided recommendations for field improvement. Prepared, submitted, and analyzed reports, budgets, grant proposals, and requests for applications. Developed youth messaging for social media, website design, and tobacco prevention projects.

Jan. - May 2013

**Capstone**

University of Arkansas for Medical Sciences, College of Public Health, Little Rock, AR

Duties: Collected and analyzed data on the food vending environment at the University of Arkansas for Medical Sciences with respect to the percentage of healthiest, healthier, and unhealthy contents determined by the survey instrument. Provided recommendations to the University of Arkansas for Medical Sciences staff based on key findings to expand access to healthier vending options aligned with national and city guidelines.

Aug. - Dec. 2012

**Preceptorship**

Arkansas Children’s Hospital Research Institute, Little Rock, AR

Duties: Conducted process evaluation to analyze whether strategies were implemented as planned for the “Delta Garden Study.” Assisted with program development for GardenCorps members through the “Delta Garden Study” to assist with sustainability of school and community gardens in Arkansas. Interviewed Child Nutrition Directors under the “Arkansas Grow Healthy Study” regarding the incorporation of fresh fruits and vegetables into school lunch.

Jun. - Aug. 2010

**Intern**

Health Career Connection, Mentoring in Medicine and Science Berkeley/Oakland, CA

Duties: Developed asthma and sexual health presentations and modules for the Mentoring in Medicine and Science “Healthy Ambassador” program. Participated in community outreach activities designed to promote healthier lifestyles and choices by bringing awareness to stroke, hypertension, and heart disease. Mentored underserved youth to achieve higher education.

**SKILLS**

Proficient in Microsoft Office and Stata. Experience with SPSS, R Project for Statistical Computing, Qualtrics, and Dedoose. Skilled in program planning and evaluation. Strong organizational, written, communication, analytical, problem-solving, and interpersonal skills.

**TRAININGS**

Jun. - Aug. 2020

Teaching Lab, Department of Health Promotion and Behavioral Sciences, School of Public Health and Information Sciences, University of Louisville

May - Jun. 2020	Teaching Seminar, Department of Health Promotion and Behavioral Sciences, School of Public Health and Information Sciences, University of Louisville
Jan. - Feb. 2020	Instructional Strategies in Health Professions Education Course, Health Professions Education Program, University of Louisville School of Medicine and College of Education and Human Development
Oct. - Dec. 2019	Teaching and Learning in Health Professions Education Course, Health Professions Education Program, University of Louisville School of Medicine and College of Education and Human Development

#### **LEADERSHIP/MEMBERSHIP ACTIVITIES**

Feb. 2020 - Present	Sub-committee Member, Strategic Plan Implementation - Learn Strategy L3, University of Louisville
Oct. 2019 - Present	Member, Mindfulness Meditation Club, University of Louisville
Oct. 2019 - Present	Member, Multicultural Association of Graduate Students, University of Louisville
Sept. 2019 - May 2020	Member, United Nations Association - Women at the University of Louisville
Sept. 2019 - May 2020	Committee Member, Global Maternal Health Symposium, United Nations Association - Women at the University of Louisville
May 2016 - Mar. 2017	Memory Screener, Emory University Alzheimer's Disease Research Center
Aug. 2015 - Mar. 2017	Health Administration Section Member, Arkansas Public Health Association
Aug. 2015 - Mar. 2017	State Lead, Home Visiting Collaborative Improvement and Innovation Network
Aug. 2015 - Mar. 2017	MIECHV Leadership Team
Aug. 2015 - Mar. 2017	CQI Chair, MIECHV/CQI Planning Group

Aug. 2015 - Mar. 2017	AHVN National Advisory Board Member
Aug. 2013 - May 2014	Advisory Committee Member, AHVN Training Institute
Aug. 2013 - May 2014	Vice President of Programming, Juris Master Society, Emory University School of Law
Aug. 2013 - May 2014	Student Advisory Committee Member, Global Health Institute, Emory University
Aug. 2012 - May 2013	Secretary, College of Public Health Student Council, University of Arkansas for Medical Sciences
<b>AWARDS/HONORS</b>	
Jan. 2022 - Present	Doctoral Dissertation Completion Award Spring 2022
May 2019 - Present	University of Louisville, Health Sciences Center, Health and Social Justice Scholars Program 4 <sup>th</sup> Cohort Recipient
Dec. 2020 - May 2021	Spelman College Sister2Sister Alumnae-Students Professional Mentoring Program, Mentor Recipient
Aug. 2018 - May 2020	University of Louisville, Dean's Scholar and List
Mar. 2020	Phi Kappa Phi Honor Society, top 10% of University of Louisville Graduate Students
Jan. 2020	Fulbright U.S. Student Program Canada, Semi-finalist
Apr. 2019	University of Louisville, Office of Study Abroad and International Travel, Roberson Fund for African Studies Recipient, Obuasi, Ghana
Jul. 2018	Aspiring Leaders at Emory University Program, selected for July 2018 Cohort
Oct. 2016 - May 2017	AHVN Leadership Academy 1 <sup>st</sup> Cohort Recipient
Aug. 2012	University of Arkansas for Medical Sciences Non-resident Diversity Scholarship Recipient
Aug. 2012	Health Resources and Services Administration Scholarship for Disadvantaged Students Recipient
May 2012	U.S. Department of Veterans Affairs Student Career Experience Program Recipient

- Apr. 2011                      Society for Molecular Biology and Evolution Undergraduate Mentoring Program Award Recipient, Kyoto, Japan, selected among 10 students globally
- Mar. 2011                      Undergraduate Diversity at Evolution Travel Award Recipient, Norman, OK
- May 2009 - May 2011        Minority Biomedical Research Support - Research Initiative for Scientific Enhancement Development Program Affiliate

## PRESENTATIONS

- Fisher, B., Brown, A., **Story, A.** *In My Hood: Using Photovoice to Understand Youth Perceptions of Structure and Agency in their Communities.* Abstract selected for the 2021 Society for the Study of Social Problems in Pursuit of Social Justice. Virtual
- **Story, A.**, Elmore, S., Stoll, K. Harris, M., Vedam, S. *Race, Nationality Decision-Making & Respectful Maternity Care: The Effects on Preterm Birth.* Abstract selected for the 2020 American Public Health Association Annual Meeting and Expo. Virtual
- **Story, A.**, Elmore, S., Stoll, K. Harris, M. *Race, Nationality & Respectful Maternity Care: The Effects on Preterm Birth.* Abstract selected for the 2020 Xavier University of Louisiana College of Pharmacy 13<sup>th</sup> Health Disparities Conference. New Orleans, LA
- **Story, A.**, Elmore, S., Harris, M. *Examining Drinking Water Sources, Access, and Sanitation in Obuasi, Ghana.* Oral presentation at the 2020 University of Louisville Graduate Student Regional Research Conference. Louisville, KY
- Brown, A., **Story, A.**, Bailey-Ndiaye, S., Smith, J. *The Role of Culturally Responsive Camps: A Look into the Seven Generations African Heritage Camp.* Poster presentation at the 2020 American Camp Association National Conference. San Diego, CA
- **Story, A.**, Elmore, S., Harris, M. *Examining Drinking Water Sources, Access, and Sanitation in Obuasi, Ghana.* Oral and poster presentations at the 2019 Afro-European Medical and Research Network. United Nations, Geneva, Switzerland
- Elmore, S., **Story, A.**, Brown, A. *The Impact of Race/Ethnicity on Homeownership and Health.* Poster presentation at the 2019 Xavier University of Louisiana College of Pharmacy 12<sup>th</sup> Health Disparities Conference. New Orleans, LA

- Prewitt, T.E., Sanders, S., **Story, A.**, Moore, P. *Availability and Price of Selected Food and Beverages in SNAP Authorized Dollar Stores: A Pilot Survey*. Poster presentation at the 2017 American Public Health Association Annual Meeting and Expo. Atlanta, GA
- Pillow-Price, K., **Story, A.** *Shaping a Better Future by Improving Your Program*. Co-presented orally in 2017 at the Southern Early Childhood Association Conference. Biloxi, MS
- Pillow-Price, K., **Story, A.** *Shaping a Better Future by Improving Your Program with Continuous Quality Improvement*. Co-presented orally in 2016 at the Home Instruction for Parents of Preschool Youngsters USA National Leadership Conference. Orlando, FL
- **Story, A.** *Quality Improvement: Developing Strong SMART Aim Statements*. Presented orally in 2015 at the Home Visiting Collaboration Improvement and Innovation Network Learning Session. Chicago, IL
- **Story, A.**, Montgomery, C., Qin. *The Interconnection of Molecular Evolution, Gene Network, and Cellular Aging*. Poster presented in 2011 at the Society for Molecular Biology and Evolution Annual Conference. Kyoto, Japan
- **Story, A.**, Blackmon, A., Pai, A. *The Benefit of Mate Choice in Tribolium castaneum Male Beetles*. Poster presented in 2011 at the Undergraduate Diversity at Evolution Conference. Norman, OK
- **Story, A.**, Blackmon, A., Pai, A. *The Benefit of Mate Choice in Tribolium castaneum Male Beetles*. Presented orally in 2011 at the Southeastern Ecology and Evolution Conference. Auburn, AL
- **Story, A.**, Montgomery, C., Qin, H. *The Interconnection of Molecular Evolution, Gene Network, and Cellular Aging*. Poster presented in 2011 at the Southeastern Ecology and Evolution Conference. Auburn, AL
- **Story, A.**, Blackmon, A., Pai, A. *The Benefit of Mate Choice in Tribolium castaneum Male Beetles*. Presented orally in 2011 at Spelman College Research Day. Atlanta, GA
- **Story, A.**, Montgomery, C., Qin, H. *Robustness and Cellular Aging in Saccharomyces cerevisiae*. Poster presented in 2011 at Spelman College Research Day. Atlanta, GA