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Effects of Pregnancy-Related Depression on Low Birth Weight Infants

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2019

Abstract

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by

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MPH, Walden University, 2012

BSW, University of Mary Hardin-Baylor, 2004

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

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Abstract

Maternal depression during pregnancy can have a negative impact on the developing child. Numerous studies have focused on postpartum depression and the influences on infant outcomes; however, there are limited data on pregnancy-related depression. The problem addressed in this study was the inadequacy and insufficiency of depression screening during the pregnancy period and access to quality-related health services for women. The purpose of this quantitative retrospective study was to test social cognitive theory on low birth weight and prenatal care adherence to pregnancy-related depression in women residing in Colorado. This research measured an association between pregnancy-related depression and both low birth weight prevalence and prenatal care adherence. Secondary analysis of archived data included data from Colorado vital statistics and the 2016 Colorado Pregnancy Risk Assessment Monitoring System. Data were analyzed using Chi-square analysis and multiple logistic regression. The findings showed that pregnancy-related depression was statistically significant of very low birth weight. I reported a summary of findings on p. 68. Biopsychosocial variables were significant to pregnancy-related depression. Pregnancy-related depression was significant in prenatal and postpartum depression. The implications of these findings for social change include the potential to support improved depression screening strategies during pregnancy that may contribute to transformation within the community by promoting more efficient and accessible healthcare for women.

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Dedication

This work is dedicated to my miracle daughter, Ava Grace. I am truly thankful you were brought into my life. May you always bloom where people thought you never could.

The emphasis of my study is a result of colleagues, friends, and clients in my professional life who inspired me to question fetal outcomes and further advancement in healthcare for women.

Acknowledgments

I would first like to thank the Lord Almighty for strength, knowledge, and ability to undertake this research study. Without this blessing, this achievement would not have been possible.

Thank you to my doctoral chair, Dr. Vibha Kumar, for her continuous support, motivation, and immense knowledge. She was invaluable in the formulating of the research topic. Thank you for allowing me to grow personally and professionally. Without you, I could not have completed my study. I want to thank my Committee: Dr. Egondu Onyejekwe and Dr. James Rohrer, for their insightful comments and encouragement. Each member of my Committee provided me with hard questions which inspired me to widen my research and perspectives.

I want to acknowledge the Colorado Department of Public Health and Environment for their amazing collaboration. These data were supplied by the Statistics and Evaluation Branch of the Colorado Department of Public Health and Environment, which specifically disclaims responsibility for interpretations or conclusions it has not provided.

My journey would not have been possible without my friends and family. I want to thank my husband for his love, support, sacrifice, and unending patience. Thank you for the little things you have done – providing caffeine and sugar for many long nights of writing. You are my biggest fan, and I am lucky to call you my husband and friend. I owe my deepest gratitude to my mother, father, and sister for putting up with in the challenging moments and asking questions. Thank you for expressing interest in my work

and helping to shape who I am today. Thank you to all my friends for your unwavering support and contributions to help me reach my dream. Thank you for listening, expressing multiple views, and supporting me throughout this entire process. This would not have been possible without the encouragement each of you has given me at all times.

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Section 1: Foundation of the Study and Literature Review

Introduction

The focus of maternal healthcare in the United States is shifting from an emphasis on postnatal health to preconception and antenatal wellbeing. Current researchers appeal for change by recommending improvements to care for mother and child, identifying root causes of low birth weight (LBW), and collaborating with other professionals and stakeholders to prevent LBW births (World Health Organization (WHO), 2016; Austin & Kingston, 2016). Colorado currently ranks 9th among the United States in highest rate of low birth weight infants (Centers for Disease Control and Prevention, 2017-a). In this quantitative study, I determined that there is a causal relationship between pregnancy-related depression and low birth weight and prenatal care adherence through a social cognitive theory lens.

Problem Statement

Many cultures view the relationship between of maternal and fetal health and well-being as both separate and interdependent. The influences in fetal development are seen before conception and arise from multifaceted variables, including social, behavioral, and physical determinants (Healthy People, 2014). Pregnancy-related depression (PRD) is the most widespread complication during pregnancy in Colorado, affecting 1 in 9 women (Colorado Department of Public Health and Environment, 2017). PRD is defined as "depression that occurs during pregnancy or after giving birth, including after a pregnancy loss" (Colorado Department of Public Health and Environment, 2017).

Of rising concern is the area of antenatal depression and the relational changes of the mother on the developing fetus. Research from Gawlik et al. (2013) substantiated an association between depression and low birthweight. The researchers found when a mother becomes more depressed, her body will produce more cortisol; the cortisol disrupts neuroendocrine developmental pathways that may restrict fetal development, the drive of nutrient and oxygen flow to the fetus, and impact brain development of emotional regulation (Gawlik et al., 2013). The long-term consequences of low birth weight were highlighted by the research of Singh et al. (2013) in that these children are 20–30 times more probable to develop a mental health disorder, predominantly autism spectrum disorders, and attention deficit hyperactivity disorder.

The mutually exchanged relationship between mother and child may be contingent on socioeconomic factors influencing the quality of mental health during pregnancy. The association of low birth weight and prenatal care adherence of women who experience antenatal depression has only been studied over the past 20 years (Leigh & Milgrom, 2008; Pre and Postnatal Depression Advice and Support Foundation, 2016).

In this study, I explored what association exists between low birth weight (LBW) and prenatal care adherence among women who experience pregnancy-related depression Colorado. Colorado has disproportionately high rates of low birth weight compared to the United States rate for more than 50 years (Colorado Department of Public Health and Environment, August 2000). This public health problem strains health and economic resources and decreases the quality of health for mother and child. Colorado historically does not meet Healthy People objectives for low birth weight infants. Reports from 2013

showed 8.8% of infants were born at LBW or less than 2,500 grams, and 19% of women did not receive prenatal care or received prenatal care until after the first trimester (March of Dimes, 2017; Colorado Department of Health and the Environment, 2013). Thus, a critical understanding of a possible association between low birth weight and prenatal care adherence among women experiencing pregnancy-related depression using social cognitive theory (SCT) (Bandura, 2011) was needed in this population. Self-efficacy and self-determination to seek prenatal care are affected by PRD in both length and severity. The influences of PRD hindered social and physical health creating long-term institutional and community dilemmas. Bronfenbrenner (1977) supported the idea that various environmental systems which interact with women may also impeded health and well-being. I explored social determinants to develop a description of the PRD phenomenon in Colorado.

Implications for positive social change included several outcomes. The immediate social change created by this study began dialogue on the subject of PRD. Based on this exposure, people developed emotions, attitudes, and beliefs based on PRD in Colorado. The following list discusses long-term social change outcomes. First, knowledge contributed to a reduction in the number of women with pregnancy-related depression while gravida. Second, understanding of PRD phenomenon will decrease the number of children throughout Colorado born at low birth weight and very low birth weight. This study supported an increase in the number of women who receive prenatal care within the first trimester through process improvement for a community-based referral. Lastly, this study contributed to the evolving PRD research database. Communities who understood

the prevalence of women who experience depressive and anxiety symptomology are inclined to promote supportive programs, resources, and recruit providers. These members and mothers were open-minded to receive training on depression and foster open discussions within the community. The decreased stigma lowered stress, anxiety, and foster a sense of security (Brecht et al., 2012). The skills of knowledge and self-efficacy regulated the decline of both depression and low birthweight while increasing the rate of prenatal care compliance. The most significant influence to the knowledge database was the contribution of PRD description among Colorado women. In this study, I analyzed and presented data first gathered among women in Colorado. Prior to 2016, PRD was not assessed. Therefore, this study furthered mental health and maternal quality health-related services for women.

Nature of the Study

This study was a retrospective quantitative analysis of secondary archived data. I intend to use one database to collect and analyze data. The Colorado Department of Public Health and Environment (CDPHE) Maternal and Child Health Data is the agency who collects and analyzes maternal health data in Colorado. The Pregnancy Risk Assessment Monitoring System (PRAMS), collected by CDPHE, provided information related to mental and physical health risk factors. I used the 2016 PRAMS Questionnaire. I also used birth weight gathered through public record.

The key study variables were one independent variable set as PRD, two dependent variables (low birth weight, prenatal care adherence), and mediating variables of social determinants.

The methodology was a quantitative analytical design using a retrospective cohort. I used Chi-square and multiple logistic regression in SPSS to analyze my findings. The regression analysis method of multiple logistic regression is the appropriate statistical tests given that the dependent variable for this study is categorical—that is, where it can take only two values of yes/no for PRD identifying response and explain confounding variables. I set a confidence interval at 95% and significance at $p<0.05$. I placed the statistical limitations at these boundaries due to the standard acceptability in research. I sampled only the cases of women in Colorado within the 2016 PRAMS dataset. Trochim (2006) stated nonprobability sampling was acceptable in social and psychological research where it is not feasible or viable to conduct random probability sampling. Therefore, I chose the nonprobability convenience sampling method since random participants from secondary archived data was utilized from PRAMS, but I used a convenience sample selected of only the 2016 dataset for this study. One limitation with a convenience sample was the results will only apply to the study population.

Research Questions and Hypotheses

I asked two research questions in this study.

Research Question 1 (RQ1): What association, if any, exists between pregnancy-related depression and low birthweight prevalence in Colorado?

Alternative Hypothesis (H_a1): An association exists between pregnancy-related depression and low birthweight prevalence in Colorado.

Null Hypothesis (H_01): The alternative hypothesis is false.

Research Question 2 (RQ2): What association, if any, exists between pregnancy-related depression and prenatal care adherence in Colorado?

Alternative Hypothesis (H_a2): An association exists between pregnancy-related depression and prenatal care adherence in Colorado.

Null Hypothesis (H_02): The alternative hypothesis is false.

I examined the new cases of low birth weight and antenatal care visits over time. The specific time was established based on sufficient and reliable data. Prevalence of PRD was used at attempt to estimate the number of women who report antenatal depression over a greater period (Austin & Kingston, 2016; e Couto, 2015). Researchers discovered 14—23% of women would experience antenatal depression (American Pregnancy Association, 2015). Researchers discovered women in Colorado between 15—49 years of age experience depressions during and after pregnancy at a rate of 10.5%, a statistic below the nationally estimated average (Colorado Department of Public Health and Environment, July 2014). I sampled only women from the 2016 PRAMS dataset and account for sampling errors. Using the Regression: Special (R^2 increase) in G*power calculator, a viable estimate of 89 total sample size is needed to test the hypotheses.

The independent variable was a categorical classification of pregnancy-related depression – hence, 1=yes, 0=no. I explored two dependent, categorical variables for this study. The first dependent variable was the birth of an infant at or below low birth weight—that is, the category of 0=normal birth, 1=low birth weight, and 2=very low birth weight. The second dependent categorical variable was prenatal care adherence. The categories responded to trimester in which the mother first sought health-related services

with a medical practitioner; hence, 0=no prenatal care, 1=first trimester, 2=second trimester, 3=third trimester.

I considered marital status, income level, poverty status, and environmental trauma exposure before childbirth as mediating variables. Researchers from the Colorado Department of Public Health and Environment (July 2014) found women who were divorced, separated, or widowed had higher rates of anxiety than women who were married. Women who earned less than $25,000 (14.7%) reported over twice the rates of depression than women who earn $50,000 (6.7%) (Colorado Department of Public Health and Environment, July 2014).

Research Objectives

The purpose of this retrospective study was to test the theory of SCT that associates low birth weight and prenatal care adherence to PRD in women residing in Colorado. In this study, I established meaning in shared behavior patterns among women who may contribute to the reduction of low birth weight infants, the early detection and treatment of women experiencing PRD, and an increase in prenatal care adherence among women who experience PRD.

I asserted the current health care model and public policies in Colorado provided limited health-related services and access to care for women and persons with mental health diagnoses; thus, women who experienced pregnancy-related depression may be more likely to face challenges within the health care arena. I intended to advocate for a change to current policy about mental health services to address the inclusion of comprehensive health services during pregnancy.

In this study, I appealed to a commitment for statewide strategies to support women and infant health services. Efficient and effective mental health screenings must be expanded into the antenatal period. Social change created conversation and information flow to immense PRD knowledge among people in Colorado. I intended to push for social change to foster stigma reduction among pregnant women, medical professionals, and health care facilities. According to the Colorado Department of Public Health and Environment (July 2014), "fifty-five of Colorado's 64 counties are designated as Mental Health Professional Shortage Areas; 48 counties are designated due to geographic isolation or lack of sufficient providers and seven are designated due to high populations of low-income residents." Lack of funding to promote reproductive providers in Colorado prevented women from quality care services.

I concluded that the results from this study offered enlightenment on how to better meet the challenges of women who experience pregnancy-related depression including financing and policy development for services. Based on this study, I compelled urgency within the community and the state stakeholders. This study highlighted the gravity of adequate screening pregnant women for pregnancy-related depression during each trimester. Currently, 76.6% of women in Colorado reported a health care practitioner spoke with them regarding depressive symptoms during pregnancy (Colorado Department of Public Health and Environment, July 2014). Long-term results to an increase in consistent screening were a reduction in low birth weight infants and economic strain across Colorado. Results of this study have contributed to: (a) increased medical home establishment during pregnancy; (b) increased probability for a woman to

enter pregnancy in good health; (c) healthier woman, healthier pregnancy, and healthier babies; (d) a reduction of low birth weight infants; and (e) earlier identification and referral of women experiencing PRD.

This research has contributed to the knowledge of the scholarly community. Findings from this study contributed to an increase in knowledge on the association between PRD and low birthweight through a socioecological lens. Bronfenbrenner (1977) suggested, in his socioecological perspective, individual development is impacted by the environment and constantly affecting one another. Results from this study contributed to future studies that can expand on PRD research, specifically for gravida.

This study has opened dialogue with health providers relating to health equity for women during pregnancy. Literature review revealed much current maternal research is heavily weighted in postpartum depression. However, to engage in effective health and wellness reform, one must shift the paradigm toward an equal emphasis on both prevention and treatment-based health care approaches and interventions. The implication for social change was improved health equity in women who experience prenatal depression by increasing access to maternal health care and comprehensive maternal services. Social change was affected by improvements in universal access to preventative maternal health care and creating resilient services and resilient women in Colorado.

Purpose of the Study

The purpose of this quantitative study was to test the SCT that correlates PRD to low birth weight and prenatal care compliance, mediating for social determinants. The definition of the independent variable was women age 15—49 residing in Colorado

identifying to experience depression during pregnancy. The dependent variables were defined as low birth weight, less than 2,500 grams, and prenatal care adherence as seeking antenatal care from a health care practitioner during recommended trimesters. The mediating variables were defined as social determinants of marital status, income level, poverty status, and environmental trauma exposure before childbirth.

The notion of PRD regarding the effect on infant and maternal outcomes was a novel concept. I proposed maternal mental anxiety and depression had arguably impacts on the developing fetus. Early detection of signs and symptoms of anxiety and depression could reduce the number of preterm or low birth weight infants. Medical and health professionals lacked a standardized methodology for characterizing and identifying women PRD. Failure to define a specific screening tool for PRD prevented the correct symptomology and scale of depression to which the community can understand and respond with cultural and competent resources. Results assisted with linking qualitative depressive characteristics in future studies not only in Colorado but across the United States. Instruments showing the correct diagnostic criterion must be used to indicate not only biological and psychological variables but be inclusive of psychosocial, environmental stressors as well (e Couto et al., 2016).

Specific recommendations to establish a standardized prenatal depression screening tool resulted from the outcomes of this study. Supporting studies recommended prenatal interventions to address not only medical care for the mother but also to include counseling, community networking, education, social supports, and depression management (WHO, 2013). Thus, the contributions of this study led to the advancement

of a pregnancy-related depression screening tool and raised awareness regarding the importance of maternal mental illness. Accortt, Cheadle, and Schetter (2015) argued that while an antenatal depression screening tool is warranted, the results may not be feasible to apply to long-term consequences. This movement supported a need for the continued research in early identification of women with antenatal depression and better define demographics of PRD in Colorado, present potential associations of causal relationships, and postulate suggestions for socio-ecological improvements. Coloradans will benefit in healthiness and the economy by understanding how depression during pregnancy impacts both maternal and infant outcomes.

Theoretical Basis

The theoretical foundation for this study was the social cognitive theory by Albert Bandura. Social cognitive theory (SCT) focuses on the change in three realms: environment, personal, and behaviors (Bandura, 2011). The current methods for prenatal and perinatal depression diagnoses rely on scales designed for postpartum etiology, such as the Edinburgh Postnatal Depression Scale (Zhao et al., 2015). Coloradans must consider prenatal care as an event that reciprocally influences both mother and child – the two are not mutually exclusive (Bandura, 2011). I modeled this study theory on the basis of Bandura (2011) who stated behavioral change is regarded as a result of the reciprocal relationship in the environment, personal, and behavioral attributes. Outcomes of association for prenatal care adherence were measured regarding behavioral capability, observational learning, and self-efficacy. LBW results of the association were measured regarding outcome expectations and reciprocal determinism.

Theoretical Constructs

Bandura (1999) stated the individual person behaviorally responds based on environmental stimuli and past internal foundations. In this study, I applied the individual as a pregnant mother residing in Colorado. The mother will make her health care decisions based on personal, behavioral, and environmental influences. Reciprocal causation shaped behavior and interact with the measured variables in this study. Therefore, the behavior of the mother affected the behavior of the fetus. Bandura (1999) argued the mother will create self-organizing, proactive, and self-reflective regulation from the triadic stimulations. Based on this theory, mothers with positive stimulations showed high levels of proactivity and self-efficacy toward health care compliance. In contrast, mothers who report negative stimulations showed high depressive levels and elevated rates of low birth weight infants; these mothers reported difficult inputs of proactivity, organization, and self-efficacy.

Social Cognitive Theory

The purpose of this research provided a description for PRD and to predict behaviors found within the PRD community in terms of mental and maternal health in Colorado. In accordance with Bandura (2001), SCT allowed for predictability in forethought of person; thus, researchers explained behavior and environmental impacts. Unique to SCT is the idea that people are empowered to decide on personal thoughts and actions. These behavioral choices are carried out within the environment. The mother executes and masters self-efficacy, which is the ability to control and execute her behaviors. Through this idea, she believes she can overcome the destructive

environmental influences. In turn, the helping influences were perceived as helpful or hindering. The choice was through the control of the behavior. The depressive pregnant mother has the ability and was capable of self-control. These mothers are not doomed to succumb to a depressive lifestyle nor do they become a product of the environment. Self-control component believes the mother to be capable to monitor and regulate her thoughts and emotions. For someone who suffers PRD, negative self-talk may be challenging to face and negate.

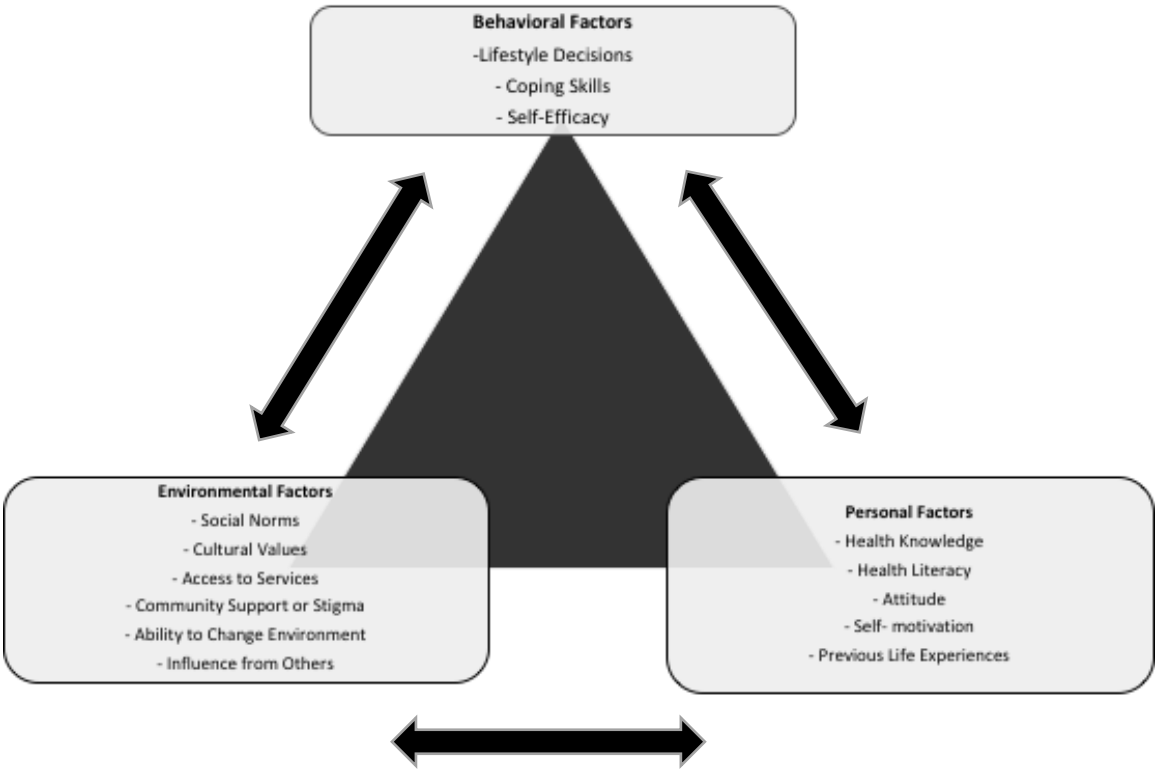

Figure 1. Social cognitive theory model.

Personal Factors. Bandura (2001) thought people provoked different environmental reactions and behaviors dependent on their physical characteristics and socially conferred attributes, roles and status. Personal factors consider the creation of events and cognitive thoughts of a person (Bandura,1978). I assessed personal factors for this study through gathering previous life experiences of pregnant women. Personal factors assessed motivation to have prenatal care within the first trimester and the matrix in which a mother sought help for depression.

Behavioral Factors. Bandura (2001) believed each person is able to interpret symbols from the environment and react to determine cognitive processes for planning and forethought. The ability to regulate emotions and prepare activities predicted functioning in a determined environment. Actions are intentional and within the capability of an influence (Bandura, 2001). When one is able to regulate emotions and interpret environmental cues, the surrounding situation begins to have purpose. The mother is then able to adapt and change within the layered "various societal subsystems and their complex interplay (Bandura, 2001)." Women learned to anticipate future consequences of actions—to understand how her actions will influence the fetus both short and long-term. This idea of forethought described how women plan and anticipate health care visits for depression and for peripartum. Research from Lepore, Wortman, and Wayment (1996) supported women who engage in sharing feelings, attitudes, and experiences decrease traumatic symptoms and gain coping skills and emotional

regulation. Description of PRD in Colorado showed how women's programs can utilize peer-to-peer support for coping and emotional support.

Environmental Factors. Despite the old adage of nature versus nurture, Bandura highlighted the duality of the systems working together to influence development. Francis, Diorio, and Meaney (1999) stated "environmental manipulation imposed during early development that alters maternal behavior can then affect the pattern of transmission in subsequent generations." Thus, the external stimuli not only influence the mother but also change the developing fetus. Stressors were evaluated and described to account for a description to the interplay the Colorado environment has on women in terms of PRD.

Framework Model Concepts

I used the socioecological model framework to understand the findings and interpret the data (Bronfenbrenner, 1977). The socioecological model provided variables that support SCT and explored a systems' perspective to the solution through an interdependent relationship of both internal and external stimuli (Bronfenbrenner, 1977; Bandura, 2011). Socioecological variables differed within each trimester catalyzing various results among women and trimesters (Bronfenbrenner, 1977). Women who chose not to seek treatment during the first trimester were potentially lost to follow-up or lack quality of care services due to infrequent contact of health-related services. As such, early identification and intervention services brought the perspective for long-term positive consequences on multiple systems (Austin & Kingston, 2016).

Bioecological Model Framework: The PPCT Model

I acknowledged the advancement of Bronfenbrenner framework. The foundational rendition of the socio-ecological model served as the foundation to future theoretical presuppositions. Bronfenbrenner continued to study his theory and the impact son developmental processes. The continual questioning gave way to 1990 version of proximal processes. The basis of the current study used the Bronfenbrenner 1990 bioecological process model of the bioecological model. Bronfenbrenner sought to understand the methods in which a person interacts with a crisis and develops into behavior. The interrelatedness between person and environment stressed both descriptive and explanatory psychology (Derksen, 2010). Bronfenbrenner, in his 1990 model, stated the proximal environmental structure interactions and reciprocal interactions are most influential to the person (Trudge, Mokrova, Hatfield, and Karnik, 2009).

Bronfenbrenner further illustrated humans interact within their ecology both individually and collectively (Derksen, 2010). Women who experienced PRD may benefit from programs with group and individual interventions. Group participation influences social learning and adaptive behaviors. Bronfenbrenner suggested women with PRD to show improved and markedly significant outcomes within "ecological niches (Sontag, 1996)." The descriptive ecological paradigms from this study showed ecological niches specific to Colorado. Understanding specific patterns shifted program emphasis and funding for targeted and more effective treatment. The mother was interrelated to four constructs: process, person, context, and time. A visual representation is presented below.

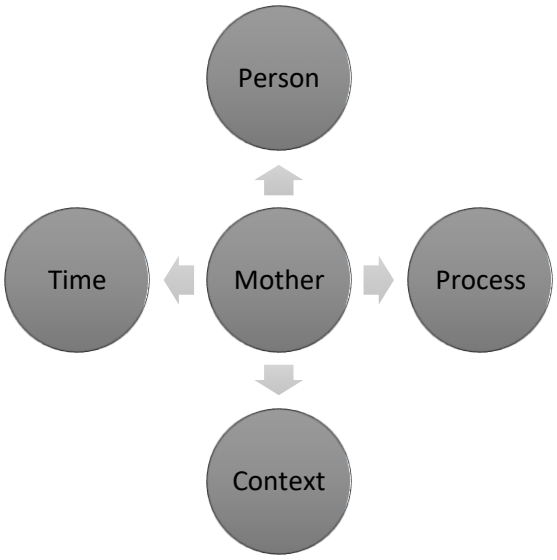

Figure 2. PPCT model.

Process.

The process construct was formulated to lay the foundation of the person, context, and time. Within the process exists the idea that the reciprocal relationship between the human and the environment is called a proximal process. Different from the biopsychosocial model, the proximal process does not solely occur over layers of an environment but also has a dimension of time. The addition of time wields variance of changes. For this, I hypothesized age of a mother will influence PRD. Time in which a mother first sought prenatal care also impacted PRD and fetal outcomes. I used time to predict social change by stating that the outcomes of the study, given time to influence society, will continue to have a developmental impact. This means that the more time the data and knowledge permeated into a society (i.e. Colorado) the people, the contexts, and future processes. Bronfenbrenner (2007) clarified process as "the connection between some aspect of the context (culture or social class, for example) or some aspect of the individual (e.g., gender) and an outcome of interest." The foundation of this research

utilized process for examining the context of PRD for women to determine a phenomenon description. The reciprocal interplay between woman and environment continues to evolve throughout time and duration of pregnancy. A woman must be able to integrate new skills and learning if she is able to overcome PRD to adjust to the surrounding environment.

Person. The person referred to variables such as age, gender, and ethnicity (Trudge, Mokrova, Hatfield, and Karnik, 2009). I assessed demand through age, gender and ethnicity. Gender was a controlled variable of female and age was selective for reproductive age, given the parameters of CDPHE. The realm of feelings and experiences, as tied to Bandura, were evaluated through this construct. Here as well, I assessed the motivation and drive for a mother to overcome depression and to attend health care visits. Mediating variables of socioeconomic status, ethnicity, race, and educational attainment supported the PRD phenomenon description in Colorado.

Context. The context of PRD referred to the multisystem that influence and relate with a woman. Here, Bronfenbrenner (2007) relied on his earlier theoretical framework to include the multisystem approach on how interaction and subcultures direct opinions of the woman. I included financial stressors and education data to understand and describe context and activities women may encounter throughout pregnancy. These discoveries underlined hinderances or benefits within each subculture.

Time. I considered steadiness and unsteadiness over longitudinal time. For this study, I compared responses of depression prior to pregnancy, during pregnancy, and postpartum to describe an associative phenomenon of depression through time.

Literature Search Strategy

I used library databases and search engines listed below to gather literature for this study:

- Walden University Library
- Academic Search Complete
- Google
- EbscoHost
- ProQuest
- PubMed
- Google Scholar, to include Google Scholar Alert and Google Alert

The key search terms and combinations of search terms that I used for this literature review were: *PRAMS, PRAMS validity, PRAMS Colorado, PRAMS maternal health, PRAMS maternal health Colorado, Colorado pregnancy-related depression, antenatal depression,prenatal depression, low birth weight,retrospective analysis, Colorado depression,peripartum depression, social cognitive theory, maternal care, maternal depression prenatal care, low birth weight depression, self-efficacy maternal depression, Bandura antenatal depression, socioeconomic antenatal depression,* and *maternal care Colorado.* I placed the search and focus on my literature terms within the current year (2016) and a 5-year range. Since antenatal depression and PRD are considered an original research topic, the review was expanded to consider a wider breadth and scope of the study. I placed no further limitations on the literature search strategy.

Literature Review Related to Key Variables and Concepts

Introduction

The approach to understanding the phenomenon and associations in this study was complex. Literature related to antenatal depression or pregnancy-related depression was sparse and developing throughout the past 20 years (Gaynes et al., 2005; Pre and Postnatal Depression Advice and Support Foundation, 2016). I based this study on the PRD phenomena in Colorado and sought to explain an association on LBW and PRD through a review of the current literature.

The Emergence of Pregnancy-Related Depression as a Public Health Problem

Mood and behavioral changes during pregnancy have long been associated with hormone imbalance (Smith, Huber, Issel, & Warren-Findlow, 2015). A woman's body undergoes chemical and physical changes that increase the risk of adverse depressive onset (Bennett, Einarson, Taddio, Koren, & Einarson, 2004). Pregnancy-related depression as a biopsychosocial concern is an emerging health concern (Smith et al., 2015; Gaynes et al., 2005). Researchers now explore PRD outcomes on mother and the infant. Maternal health issues recently begin to explore depression during pregnancy and many outcomes. Health access and quality of care for women is a critical issue. Health advocates across the United States speak out for reproductive and care rights, yet the voices of those with pregnancy-associated depression or mental health conditions received less funding and attention. The Colorado Trust (2019) found a shortage of behavioral health providers, specifically in rural areas, and voiced concerns for funding and service reimbursement. Through a greater understanding of the prevalence and

consequences of PRD, public health experts could set foundations for future health and wellness guidance.

In many cultures there is a perception that pregnancy and childbirth are meaningful and blessed events. Depressive symptoms and experiences are a phenomenon shared by many women. Researchers estimated 10%–20% of women worldwide will experience PRD symptoms (Shrivastava, Shrivastava, & Ramasamy, 2015). Earlier estimates from Gaynes et al. (2005) found 3.1% to 4.9% of women to report antenatal depression; however, more current results provided approximations of 13%—15% (Wang et al., 2016; Fairbrother et al., 2016). The statistic was supported further by Bennett, Einarson, Taddio, Koren, and Einarson (2004) who found higher PRD symptoms at a rate of one in five (20%) women while Woolhouse, Gartland, Mensah, and Brown (2015) stated almost 33% of women report PRD symptoms. More currently, Hoffman et al. (May 2017) stated PRD to impact 15%—20% of women but found the number to nearly double in at-risk populations. The variance of prevalence among global and national statistics was stark over the past 10 years; thus, research must continue regarding standardized screenings and assessments.

A longitudinal cohort study from Woolhouse, Gartland, Mensah, and Brown (2015) supported PRD as a risk for adverse long-term maternal outcomes. Using PRAMS to study PRD symptoms over a 4-year period, researchers found women with PRD symptoms to continue reporting depressive symptoms within a 4-year span (Woolhouse et al., 2015). Significantly, women reported depressive symptoms at 14.5% higher rate during the first 12 months postpartum (Woolhouse et al., 2015). Speculation exists if,

once again, a biopsychosocial shift among mothers during this period to observe the marked increase. In opposition, Hoertel et al. (2015) found no significant difference in depression among women during pregnancy periods and among the general population.

The Colorado Department of Public Health and Environment (July 2014) found approximately 20% of women of reproductive age in Colorado reported a depressive or anxiety episode eight or more days for one month. Across Colorado, the prevalence of women who experienced one or more depressive episode is: 10.4% depression, 18.9% anxiety, 43.9% comorbid depression and anxiety during pregnancy (Colorado Department of Public Health and Environment, July 2014). The actual prevalence of depression during pregnancy was difficult to identify since long time primary research focus in women is postpartum depression. Women may also find difficulty reporting conflicting emotions or feelings during pregnancy. Kopelman et al. (2008) found both real and perceived barriers within the environmental systems to be barriers to women seeking behavioral health services—primarily financial and income related barriers. Goodman (2009) supported social stigma and availability of time as barriers to pregnant women seeking behavioral health services. Regarding systematic reviews, self-report is given to bias and a lack of emphasis on the condition until within the past twenty years (Gaynes et al., 2005; Pre and Postnatal Depression Advice and Support Foundation, 2016). With nearly one in two women citing a depressive and anxious experience during pregnancy or related to her pregnancy we, community, must strive to identify and provide services to women. Therefore, PRD may be considered the most common pregnancy complication.

Depression-related complications and illness impact how many Coloradans live. Suicide is a haunting reality for many families. Suicide is the leading cause of death in Colorado for people ages 10—44 and remained rising rates since 2009 (Colorado Department of Public Health and Environment, February 2014). Among women, high risk of suicide with firearms was associated with current depressed mood (65.3%), current mental health problem (58.3%), and ever treated for a mental illness (55.8%) (Colorado Department of Public Health and Environment, February 2014). The top three circumstances strongly associated with a mental and behavioral health condition. When compared to their gender counterparts, women were more significantly likely to be impacted by a behavioral health concern than circumstances as financial problem, job problem, or intimate partner problem. Thus, the interpersonal and behavioral treatment of the individual trumped environmental modification. Early identification of characteristics may decrease not only depressive symptoms but suicidality.

The rate and length of depression impacted the mother-fetal development. Latendresse, Wong, Dyer, Wilson, Baksh, and Hogue, (2015) reviewed the Centers for Disease Control and Prevention (CDC) and Utah Phase VI PRAMS questionnaire for maternal depression duration against neonatal outcomes. Researchers identified a positive correlation between length of maternal depression to postpartum depression and neonatal intensive care unit stay (Latendresse et al., 2015). Martini et al. (2010) found a correlation between mothers with mental health diagnoses and children with anxiety diagnoses as long-term consequences. The strongest predictor of PRD was perceived stress and anxiety, depressive symptoms within early pregnancy, or in the first 12 months

postpartum, are a risk factor for long-term depression (Staneva, Bogossian, Pritchard, & Wittkowski, 2015). The research did not, however, correlate long-term anxiety diagnosis with low birth weight. Cunha et al. (2017) argued it is not only the duration, nor the event, or PRD but the severity of which one experiences or perceives stressors to influences depression. Stakeholders in Colorado must understand how mental health influences LBW and create equitable access and health care for women to improve birth outcomes.

A review of current and previous CDC PRAMS core and standard questionnaires exposed a shift in prevention emphasis. In 2016, the CDC recognized the need to include and gather PRD data from all states. The CDC Phase 8 Core Questionnaire contained PRD questions for mandatory state data retrieval (Centers for Disease Control and Prevention, 2017). Colorado implemented changes to the 2016 PRAMS Questionnaire to investigate PRD in mothers. Before 2016, questions about PRD were included in standard questions, or optional for states to ask mothers. As a result, Colorado chose not to include PRD questions in PRAMS questionnaires. I discovered the standard to assess pregnancy-related depression encouraged a position that PRD may not solely be based on hormonal imbalances. The inclusion promoted data analysis of PRD within states, such as Colorado, that did not previously include PRD questions on PRAMS questionnaires. The Colorado PRAMS 2016 Questionnaire included the first data of PRD in Colorado. Therefore, this study was novel to the new PRD data gathered in the updated questionnaire. This study was one of the first to assess and interpret results from the 2016 Colorado PRAMS questionnaire. Results from this study contributed to PRD analysis and

knowledge exchange within Colorado. Data and analysis continued to provide knowledge for quality health services for women and infants in Colorado. This research contributed to the insight to the phenomenon of PRD prevalence in Colorado.

The Burden of Low Birth Weight Infants

The health and well-being of infants, even the health of a developing fetus, must be vital for the future. Long-term consequences World Health Organization (WHO) (2016) stated that LBW currently accounts for between 60% and 80% of all neonatal death. This grave problem affects a significant number of children throughout the United States. Brecht, Shaw, St. John, and Horwitz (2012) found that the United States is seeing a significant increase in LBW infants over the past 40 years.

Colorado historically did not meet the objectives outlines by Healthy People 2010 or Healthy People 2020. Despite lack of goal achievement, Colorado aspired to decrease LBW and improve maternal significantly and child health outcomes. This objective was a significant public health concern for the state. Women with particular health characteristics were at a higher probability of delivering LBW infants and are thus screened for medical conditions; conversely, the same emphasis on screening for mental health was not given, a condition which may influence birth weight (Harvey et al., 2016; Lawrence-Wood et al., 2016; Pre and Postnatal Depression Advice and Support Foundation, 2016).

The impact of PRD on low birth weight had a mixed association in literature. Liou, Wang, and Cheng (2016) found mental distress before 30 weeks' gestation to be a predictor of preterm birth while distress after 30 weeks to be a predictor of low birth

weight. In opposition, other researchers stated antenatal depression is not demonstrated as a risk factor for low birth weight (Accortt, Cheadle, & Schetter, 2015; Dunkel Schetter, 2011).

Gentile (2017) found differences in fetal and newborn outcomes associated with PRD. In terms specific to fetal growth and development, infants exposed to maternal stress were at risk for slow growth early on but at higher risk for adipose tissue development throughout age (Gentile, 2017). Fetal development was marked by cardiovascular abnormalities and hyperactivity while newborns display "increased cortisol and norepinephrine levels, decreased dopamine levels, altered EEG patterns, reduced vagal tone, stress/depressive-like behaviors, and increased rates of premature deaths and Neonatal Intensive Care Unit admission" (Gentile, 2017; Stone et al., 2015). Shrivastava, Shrivastava, and Ramasamy (2015) supported PRD association with "childhood conduct problems, suicidal ideation in the kids, early onset of adult depression, infant and child neurodevelopment and behavior," and developmental delays. Grigoriadis et al. (2016) supported an association between antenatal depression and low birthweight but advise further exploration into the phenomenon.

Bennett, Einarson, Taddio, Koren, and Einarson, (2004) described the relationship among infant outcomes and trimester of depression onset. Pregnancy-related depression was 7.4%, 12.8%, and 12.0% in each respective trimester (Bennet et al., 2004). Researchers hypothesized these results coincide with the increasing social, physical, and biological demands a mother confronts as she progresses through each trimester (Bennet et al., 2004). Trimesters brought new stresses in the environment and on the body.

Women faced challenges or stigma to seeking mental health services, specifically in the first and third trimester. The rate of PRD reported by Bennet et al. began to divulge the prevalence of PRD within trimesters; however, further research was warranted. Conversely, Smith et al. (2015) found no correlation between PRD and adverse infant outcomes specifically in the white, non-Hispanic, educated women. Birth weight was not the individual adverse neonate outcome. According to Mahmoodi et al. (2017) disparity existed among social status and stated women of the lower class to have PRD at a rate of 16% while women of high socioeconomic status to display PRD symptoms at 10%. Researchers and public health professionals must account for social determinant influences related to PRD and low birth weight. Exposure period of depression and anxiety was critical to neonatal development as well as the duration of stressors. For this reason, access to comprehensive maternal health services was essential for changing the future of health in Colorado.

Depression Related to Access to Care

Early treatment is best. The moment a woman receives a confirmatory pregnancy or human chorionic gonadotropin (hCG) test she considers what and who a provider will be. Women face challenges deciding on the type of frequency of treatment for PRD during pregnancy (Ride & Lancsar, 2016). The ability for providers and practitioners to meet unique needs of women and communities may lead to an increase in visit adherence. Lim et al. (2016) argue while women may prefer seeking treatment from a mental health provider, access may be limited; therefore, many women received mental health treatment from a primary care or women's health provider. Training for primary care

practitioners on screening tools and reporting led to an increase in true prevalence and an increase in quality health services.

To date, the most common screening tool was a postpartum tool, the Edinburgh Postpartum Depression Scale (Staneva, Bogossian, Pritchard, & Wittkowski, 2015). The United States pursued maternal health improvements during 2016. Antenatal depression received attention and established treatment guidelines in 2016 by the U.S. Preventative Task Force; yet, the initiative to screen women did not meet general standards (Winbush, 2017). This initiative substantiated the use of the Edinburgh Postpartum Depression Scale as an effective screening tool (Winbush, 2017). Other screening instruments and communications methods have also been assessed. Kading (2016) evaluated the use of a provider screening tool to use for antenatal depression in a clinical setting and encouraged the importance of provider competence in tool use and resource referral.

Many solutions to PRD were based on clinical judgment and lack stakeholder involvement (DeCou & Vidai, 2017). Practitioners must be skilled in the identification of depressive symptoms through effective screening methods and patient communication. Health care professionals must ascertain the emotional and mental status of peripartum women. Colorado is working to be a leader in maternal health services. Colorado aspires to "by 2020, increase to 80 percent the number of mothers who report a healthcare provider talked to them about what to do if they felt depressed during pregnancy (Colorado Department of Public Health and Environment, July 2014)." Despite this goal, researchers found as of 2011 only 76.6 percent of pregnant women reported speaking with a health practitioner during a prenatal visit regarding depression symptoms

(Colorado Department of Public Health and Environment, July 2014). Providers and professionals who discussed mental health with women may drastically improve not only maternal health but also suicide rates in Colorado. Many women in Colorado during pregnancy and into the first-year postpartum engaged in self-harm and commit suicide (Hoffman et al., May 2017). The low report and challenges reported by women in Colorado are resonated by Castro, Place, Allen-Leigh, Rivera-Rivera, and Billings (2016) shows 37.1% of clinics support maternal mental health services. Also, providers reported limited interactions and discussions with patients related to depression during pregnancy and reported a lack of hospital/clinic policy to incentivize discussions (Castro et al., 2016). Infrastructure and internal policy changes must support comprehensive and quality pregnancy-based services which address holistic well-being. Practitioners trained to identify and meet mental health needs of women during pregnancy impacted mother and infant outcomes. Colorado must campaign to change the current state of mental health services and resources. Lack of emphasis and attention to improving behavioral and mental health influenced the rate of suicide and depression—causing Colorado to have the 8th highest rate of suicide in the United States (Keeney, 2014). Researchers noted a higher rate of suicide among the northwest Colorado and the central front range while lower rates of suicide in Weld and Douglas counties (Keeney, 2014). To intensify this assertion, CDPHE (August 2000) found women residing at higher elevations to have greater risk for pregnancy complications and greater risk for low birth weight infants. In addition, with each rise of 1,000 feet in elevation the researchers found a decrease of approximately one ounce in birth weight (CDPHE, August 2000). Supportive correlations

defended medical and psychological disruptions along the front range as compared to rural plains areas. Geographic and county demographics were considered for descriptive analysis of PRD symptoms and associations to the variables. Socioeconomic variables causing or related to depressive symptoms were examined as part of the exploration procedure.

Means of several methods delivered health care for women in Colorado are available but may not be made known to women. One such advancement was funding through Title X clinics. Goldthwaite, Duca, Johnson, Ostendorf, and Sheeder, (2015) explored low birth weight and preterm birth among Title X clinics in Colorado using long-acting reversible contraceptive (LARC) care. Researchers found that Title X clinic services are protective for preterm birth and even showed a statistical decrease of 12% for preterm birth; yet no statistical evidence supported an association between services and LBW (Goldthwaite et al., 2015). Further research to understand rural associations in family planning services and maternal health care delivery should guide state and county resource allocation and service accessibility. Another solution recently implemented by Colorado was the introduction of the Integrated Behavioral Health program. The Integrated Behavioral Health (IBH) program maximized an interdisciplinary approach to meet perinatal mood and anxiety challenges on several dimensions (Hoffman et al., May 2017). Long-term consequences to encourage both women and numerous health professionals to screen and treat the multi-faceted issues during each period showed an increase in health and wellness (Hoffman et al., May 2017). The shift in philosophy

bridged gaps including social, psychological, and emotional needs. Screening for PRD produced quality health services to women through a holistic medical treatment.

Pregnancy-Related Depression and Systems Thinking

To support the social cognitive theory, social determinants of health were considered as mediating variables influencing PRD. The most thematic determinant seen in literature was race. Racial minorities were significantly more likely to give birth to low birth weight infants and experience PRD than non-racial minorities (Sparks, 2009). Yet, research from CDPHE (August 2000) found Colorado to rate second in the United States for low birth weight infants to Caucasian mothers. Burris, Collins, and Wright, (2011) claimed that socioeconomic status was related to environmental risks of air pollutant exposure which impacted preterm birth and birth outcomes. Donovan, Spracklen, Schweizer, Ryckman, and Saftlas (2016) stated stress related to intimate partner violence is correlated with low birth weight; thus, the environment a woman resides in during her pregnancy has been associated with birth outcomes. Determinants unique to Colorado were found to be marital status, poverty status, stressors before childbirth, and income status (Colorado Department of Public Health and Environment, July 2014). The determinants unique to Colorado were considered in this study as they were more probable for statistically significant to the research variables.

The diverse challenges faced by women combined with unique environmental situations created a myriad of influencing factors. Stigma, fear, social support, social and cultural norms, and perceptions were associated with a woman's self-efficacy in treatment, care, and prognosis (Colorado Department of Public Health and Environment,

July 2014). Risk-factors to PRD from a systems theory included socio-economic status, poor provider communication, lack of knowledge in childbirth, marital status, intimate partner violence, and prior diagnoses (Shrivastava, Shrivastava, & Ramasamy, 2015). The biopsychosocial stress of the environment was supported by research from Mahmoodi, Dolatian, Mirabzadeh, Majd, Moafi, and Ghorbani, (2017) stating health professionals who address education, social supports, and perceptive needs will have a positive correlation on maternal mental health. Deprivation of support, on the other hand, deteriorated wellbeing, physical, and physiological symptoms. Similarly, the outcomes of PRD were seen on a complex level. PRD resulted in depressive symptoms of fathers, lower work productivity, and disturbances in social circles (Shrivastava, Shrivastava, & Ramasamy, 2015). Further validation from Stone et al. (2015) found Massachusetts PRAMS data to support life stressors and events to influence PRD. Of note, women who are involved in intimate partner stress events were less likely to discuss depression or to seek help from a provider (Stone et al., 2015). Traumatic events hindered psychosocial development and influenced self-determination and self-efficacy (Lawrence-Wood et al., 2016).

However, the solutions were just as complex as the problem. Lavender, Ebert, Jones (2016) stated that while further research is needed in the area of antenatal depression, maternal care may benefit from the use of particular type of psychological interventions to address stressors which accompany pregnancy. These authors suggested the use of skills-based training and resources for women to improve self-efficacy. Many women, across cultures and status, had comorbid diagnoses in addition to supportive needs

(Adhikari Dahal, Premji, Patel, Williamson, Peng, & Metcalfe, 2017) For this reason, a further understanding of social cognitive theory as applied to PRD shed descriptive information to support resource development, community involvement, and policy planning.

Summary

Pregnancy-related depression is a public health concern that is coming forward as professionals identify short- and long-term outcomes related to depressive symptoms. The biopsychosocial shifts occurred during pregnancy are common among women yet find variance among social determinants. Research continues to develop to describe the phenomenon between PRD and low birth weight plus how PRD influences prenatal care. Greater understanding of the prevalence of PRD in Colorado impacted maternal mental health, maternal physical health, and neonatal outcomes. The use of a SCT lens further illustrated strengths, weaknesses, and opportunities throughout Colorado to drive social change and promote health access for women.

Operational Definitions

Childbearing age was considered as 15—49 years old. The sample was retrieved through convenience sampling methods. Faul, Erdfelder, Buchner, and Lang (2009) recommended G-power calculator for sample size. I determined my sample size using G-power calculator through Multiple Regression: Special (R^2 increase) and found an estimate of 89 total sample size is needed to test the hypotheses.

I used the following definitions as operational definitions throughout this study.

Depression: a diagnosis of Major Depression set by the American Psychiatric Association (2013) the meet five or more of the following criteria during the same 2-week period and represent a change from previous functioning: at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. 1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, hopeless) or observation made by others (e.g., appears tearful) 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation.) 3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. 4. Insomnia or hypersomnia nearly every day. 5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down). 6. Fatigue or loss of energy nearly every day. 7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick). 8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others). 9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

Low Birth Weight: an infant born weighing less than or equal to 2,500 grams or 5.5 pounds as set by the World Health Organization. (United Nations Children's Fund and World Health Organization, 2014).

Postnatal Depression: depression diagnosis or symptoms during the period from childbirth and twelve months post-childbirth as defined by the Colorado Department of Public Health and Environment (June 2013).

Pregnancy Loss: pregnancy termination to include still birth and miscarriage.

Pregnancy-Related Depression: a "depression that occurs during pregnancy or after giving birth, including after pregnancy loss" as defined by the Colorado Department of Public Health and Environment (2017).

Prenatal Care: any form of medical or health services sought by a pregnant woman and rendered by a health care professional as set by the United States Department of Health and Human Services (U. S. Department of Health and Human Services, Office on Women's Health., 2012).

Prenatal Care Adherence: the trimester at which a mother first sought prenatal care. The categories of prenatal care adherence for this study were 0=no prenatal care, 1=first trimester, 2=second trimester, 3=third trimester

Prenatal, or Maternal, Depression: depression that occurs from conception until pregnancy termination or birth.

Woman: a biological female 15—49 years of age.

Assumptions

Assumptions in the study, while out of control, were considered relevant and addressed in this segment of the proposal. Assumptions were an essential principle to research to support the hypotheses within the study (Leedy and Ormrod, 2010). Thus, I stated and justified the probability of each assumption occurrence by this study. Two

specific assumptions in this study were methodology and epistemology. Women responded to a telephone or mail-in survey through the PRAMS questionnaire. Assumptions in this study included: (a) participants answered any pregnancy-related depression screening tool honestly; (b) my sample was representative of women in Colorado and the results could be generalized to this population to make inferences; (c) the PRAMS Colorado 2016 Questionnaire was an accurate measure of pregnancy-related depression and given variables in each environmental exposure will be controlled; (d) primary data from the Colorado Department of Health and Environment through PRAMS Colorado 2016 Questionnaire were gathered in a manner consistent with confidential and ethical practices; (e) participants answered health service questions honestly; (f) primary data from the Colorado Department of Health and Environment through vital statistics were gathered in a manner consistent with confidential and ethical practices.

Scope

The scope of this study was a combination of variables that the research did and did not have control over (Simon, 2011). Simon (2011) stated the quantitative statistical model predicted a correlation among the variables, not causation. Therefore, I predicted a relationship between the variables and not a causation. Furthermore, the study looked at the prevalence of the phenomenon over time and was dependent on multiple conditions occurring similarly at each snapshot in time as well as the internal and external variables occurring and existing equally.

Limitations

Simon (2011) stated limitations are variables and conditions that place restrictions on the researcher and the methodology. Limitations of this study included persons may not be truthful when answering the EPDS due to the stigma associated with mental health. I stated limitations as follow: (a) secondary analysis of archived data was used to meet time and financial constraints; (b) convenience sampling was used from the secondary data; (c) the phenomenon may not be replicated or applicable to other geographic, cultural, or sociodemographic areas.

Delimitations

According to Simon (2011), delimitations are methodology choices and boundaries the researcher placed on a study. Delimitation criteria in this study clarified the participant selection criteria, geographical region, and theoretical basis. I stated my delimitations as follows: (a) inclusion criteria to study women in Colorado was selected to understand a phenomenon of higher low birth weight rates; (b) social determinants were considered as mediating variables to provide a detailed scope and alignment with social cognitive theory; (c) construct of prevalence were selected to observe measurable changes in the dependent variables over time.

Summary

Equitable health services require a change in theory, practice, and protocol. Understanding the foundational need for change is pivotal to clarifying associations between the variables. Once the phenomenon is better understood, over time and through comparison of literature review, can we consider recommendations for change? In the

next section, I report current literature associated with the key variables and translate how the literature conducts the present study.

Section 2: Research Design and Data Collection

Introduction

The purpose of this retrospective study was to test the theory of SCT that associates low birth weight and prenatal care adherence to PRD in women residing in Colorado. In this section, I will discuss the research design, research methodology, operationalization, threats to validity, and ethical concerns.

Research Design and Rationale

I used a retrospective quantitative analysis design based on secondary analysis of an existing database. I further used a correlational strategy to describe the phenomenon between the selected variables. Heaton (2008, p. 35) stated secondary analysis of archived data design allowed the researcher to "investigate new or additional research questions…[and] verify the findings of previous research." Church (2001) stated secondary analysis of archived data was an efficient method to analyze and present large quantities of data in summation while maintaining low-cost and time constraints. Therefore, I selected secondary analysis of archived data methodology to explore a new research question and add to current scholarly knowledge regarding PRD.

The independent variable was a categorical classification of depression with yes or no answers. I explored two dependent, categorical variables for this study. The first dependent variable was the birth of an infant at or below low birth weight—that is, the category of 0=normal birth, 1=low birth weight, and 2=very low birth weight. The second dependent categorical variable was prenatal care adherence. I placed the prenatal care adherence variable categories on the trimester in which the mother first sought health-

related services with a medical practitioner; hence, 0=no prenatal care, 1=first trimester, 2=second trimester, 3=third trimester. I set the mediating variables definition as social determinants of marital status, income level, poverty status, and environmental trauma exposure before childbirth.

Population

The target population was women between the ages of 15—49 years throughout Colorado. Due to the nature of this study, I included all counties in Colorado. Faul, Erdfelder, Buchner, and Lang (2009) recommended the G-power calculator to determine power for regression analyses. Therefore, I determined my population size and power using G-power calculator. Using the Multiple Regression: Special (R_2 increase), the estimate of 89 total sample size was needed to test the hypotheses.

Sampling and Sampling Procedures

I used data from the Pregnancy Risk Assessment Monitoring System (PRAMS) collected through CDPHE for measures on mental and physical health risk factors. I sought approval from CDPHE and use public data.

To request access to the data set, I went to the CDPHE Maternal and Child Health data and reports website. I emailed a request for access to the Pregnancy Risk Assessment Monitoring (PRAMS) data set through CDPHE. Vital statistics data relating to birth weight was a public record available on the Colorado Health and Environmental Data website.

Once data were procured, I used the use the following sampling methods. PRAMS sampling was based on the random collection. From this sample, I used a

convenience sample from only the 2016 questionnaire. Only 13 questions in the questionnaire were selected: 2j, 10, 18, 19i, 28c, 41, 44, 64, 65i, 67, 68, 69, and 70. I selected the identified questions for this study because each question gave data to support the research hypotheses. This questionnaire was the first PRAMS questionnaire to query women about depression during pregnancy. According to Frankfort-Nachmias, and Nachmias (2008), researchers are permitted to stratify a sample to achieve probability sampling and make general inferences related to the population. I stratified the inclusion criteria. First, women were included based on the diagnosis of depressive symptoms. Next, women were grouped into categories of birth weight. Finally, I analyzed women based on the category of trimester when she first received, if ever, prenatal care. Women who did not experience prenatal depression or anxiety symptoms were excluded from this study. Vital statistics on low birth weight were merged with this data. All information was gathered through Department of Public Health and Environment through public and private methods.

According to Faul, Erdfelder, Buchner, and Lang (2009), I determined my sample size using G-power calculator. Using the Multiple Regression: Special (R_2 increase), the estimate of 89 total sample size was needed to test the hypotheses. The alpha level was set at p less than or equal to 0.05 with the beta level as 0.95. The effect size (f_2) was set to 0.15. These levels and values were set as they are the standard agreed upon values in research for statistical significance and error protection rate.

Instrumentation and Operationalization of Constructs

I identified depression during pregnancy through the use of the Colorado PRAMS 2016 Questionnaire. The Centers for Disease Control and Prevention (CDC) (2017, 2016) set guidance on how to gather PRAMS data through a survey composed of multiple questions to complete through the mail or over the telephone. Colorado follows CDC guidance on using PRAMS surveys. CDPHE was the program that administered PRAMS surveys. Questionnaires were sent to mothers, along with two additional follow-ups for nonresponses, as well as telephone interviews for a final follow-up (CDC, 2016). Each survey spanned a grant period with the survey changing each period slightly. CDPHE used the 2016 PRAMS to ask questions to relate to both behavior, environment, and emotional characteristics of the mother.

Operationalization

As stated in the previous section, I used the following operational definitions throughout this study.

Depression: a diagnosis of Major Depression set by the American Psychiatric Association (2013) the meet five or more of the following criteria during the same 2-week period and represent a change from previous functioning: at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. 1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, hopeless) or observation made by others (e.g., appears tearful) 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation.) 3. Significant

weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. 4. Insomnia or hypersomnia nearly every day. 5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down). 6. Fatigue or loss of energy nearly every day. 7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick). 8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others). 9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

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Pregnancy Loss: pregnancy termination to include still birth and miscarriage.

Pregnancy-Related Depression: a "depression that occurs during pregnancy or after giving birth, including after pregnancy loss" as defined by the Colorado Department of Public Health and Environment (2017).

Prenatal Care: any form of medical or health services sought by a pregnant woman and rendered by a health care professional as set by the United States

Department of Health and Human Services (U. S. Department of Health and Human Services, Office on Women's Health., 2012).

Prenatal Care Adherence: the trimester at which trimester a mother first sought prenatal care. The categories of prenatal care adherence for this study were 0=no prenatal care, 1=first trimester, 2=second trimester, 3=third trimester

Prenatal, or Maternal, Depression: depression that occurs from conception until pregnancy termination or birth.

Woman: a biological female 15—49 years of age.

Data Analysis Plan

I used IBM SPSS statistical analysis software to analyze the data. I first conducted a descriptive statistical analysis of the data. UCLA Institute for Digital Research and Education (n.d.) recommended multiple logistic regression analysis and Chi-square analysis. Therefore, I conducted multiple logistic regression, Chi-square analysis, and assessed for confounding variables. I performed quality control to assess for outliers and missing data.

Research Questions and Hypotheses

I asked two research questions in this study.

Research Question 1 (RQ1): What association, if any, exists between pregnancy-related depression and low birthweight prevalence in Colorado?

Alternative Hypothesis (H_a1): An association exists between pregnancy-related depression and low birthweight prevalence in Colorado.

Null Hypothesis ($H_0 1$): The alternative hypothesis is false.

Research Question 2 (RQ2): What association, if any, exists between pregnancy-related depression and prenatal care adherence in Colorado?

Alternative Hypothesis (H_a2): An association exists between pregnancy-related depression and prenatal care adherence in Colorado.

Null Hypothesis (H_02): The alternative hypothesis is false.

The multiple logistic regression predicted an outcome variable and Chi-square described if an association can be made between the variables. UCLA Institute for Digital Research and Education (n.d.) provided that these tests were appropriate because the independent variables are greater than one in number and were non-parametric, categorical measures and the test has one dependent variable. I interpreted the results by the goodness of fit, degrees of freedom (*F* distribution), confidence interval, and predictive significance. I tested a subset of the independent variables to test for significance in explaining the association between each independent variables and confounding variables against the dependent variable. I tested the null hypothesis against each independent variable to explore for the probability of relationship due to chance.

Threats to Validity

The current research study described and addressed the following threats to internal validity:

Maturation

I could not confirm the depression screenings were administered at the same point in time and same pregnancy trimester for each woman in the study. Also, the women being studied were at different ages, and I could not control physiological maturation

(Creswell, 2009). To address maturation of associations in depression and trimester of care, I stratified women when she first sought care by trimester.

Selection

I selected participants from a convenience sample; thus, they were inclined to the variable of PRD. Creswell (2009) suggested random selection was appropriate to control for selection. Therefore, I performed a random selection from the convenience sample to account for generalizability.

Testing

The participants had multiple births or previous births. As such, the participants were exposed previously to any depression screenings and know the questions. Also, the tool may have been administered several times through the pregnancy duration.

I described and addressed the following threats to external validity:

Interaction of Selection

In this research study, I analyzed participants with particular characteristics. Creswell (2009) stated generalizations are limited to the sample population. Thus, I stated I was limited to generalizations among the target population and Colorado. Additional research was conducted to affirm findings among other populations and geographic areas.

Interaction of Setting

According to Creswell (2009), environment and external stimuli varied among women limiting inferences. I included analysis of mediating variables of social determinants to understand how the interaction of settings influences the variables.

Construct validity was addressed through attention to face validity and content validity (Trochim, 2006), so I ensured the sampling and operationalization methods are true.

Ethical Procedures

I received permission from Colorado Department of Public Health and Environment for access to the datasets. Data were de-identified to protect the confidentiality of human participants. I submitted and obtained IRB approval through Walden. I was the sole manager for the data and viewed the data only while at home. The data set will be deleted from the system once analysis and study was completed.

Summary

This research design and analysis was foundational to the integrity of this study. Data were collected from CDPHE through PRAMS 2016 questionnaire and vital statistics public records. I performed quantitative analyses to assess the research questions and hypotheses. I conducted research with procedures for the protection of human participants. From this basis, I presented the results and findings that contributed to public health knowledge.

Section 3: Presentation of the Results and Findings

Introduction

The purpose of this quantitative retrospective study was to test SCT that correlates low birth weight and prenatal care adherence to pregnancy-related depression in women residing in Colorado. [I asked two research questions in this study.

Research Question 1 (RQ1): What association, if any, exists between pregnancy-related depression and low birthweight prevalence in Colorado?

Alternative Hypothesis (H_a1): An association exists between pregnancy-related depression and low birthweight prevalence in Colorado.

Null Hypothesis (H_01): The alternative hypothesis is false.

Research Question 2 (RQ2): What association, if any, exists between pregnancy-related depression and prenatal care adherence in Colorado?

Alternative Hypothesis (H_a2): An association exists between pregnancy-related depression and prenatal care adherence in Colorado.

Null Hypothesis (H_02): The alternative hypothesis is false.

I chose this rationale for the current study to explain the PRD phenomenon among women in Colorado. I justified the suitability for this study to contribute the knowledgebase of PRD in Colorado. I discussed methods of data collection and present results of statistical findings in this chapter.

Data Collection of Secondary Data Set

I used multiple logistic regression and a Chi-squared analysis for this study. The independent and dependent variables were categorical measure. Chi-squared yielded

independence in the relational variables. Multiple logistic regression exposed predictive assumptions of variables Results showed if the variables exist independently or dependently of each other as well as the predictive strength.

Timeframe, Recruitment and Response Rates

In 2016, the Colorado Department of Public Health and Environment received the PRAMS questionnaire from 1,625 women. Colorado Birth Statistics from 2016 recorded a total of 66,540 live births in women 15—49 years (CDPHE, n.d.). For this study, I assumed a response rate for the PRAMS questionnaire as 2.44%. Colorado reported the following for 2015 births: 66,566 live births (Colorado Department of Public Health and Environment: Vital Statistics Program, 2016). I adjusted for missing data; therefore, the sample size was 1,579 women assessed for PRD.

Discrepancies in the use of Secondary Data Set

The response rate for 2016 was 90.28% of the 1800 randomly sampled women. The results of this study applied only to women in Colorado. Self-reporting of mental health conditions may skew results; women may not self-admit to experiencing depression or depressive symptoms. This study presents new data; thus, there was no comparison data in Colorado.

Baseline Descriptives and Demographics

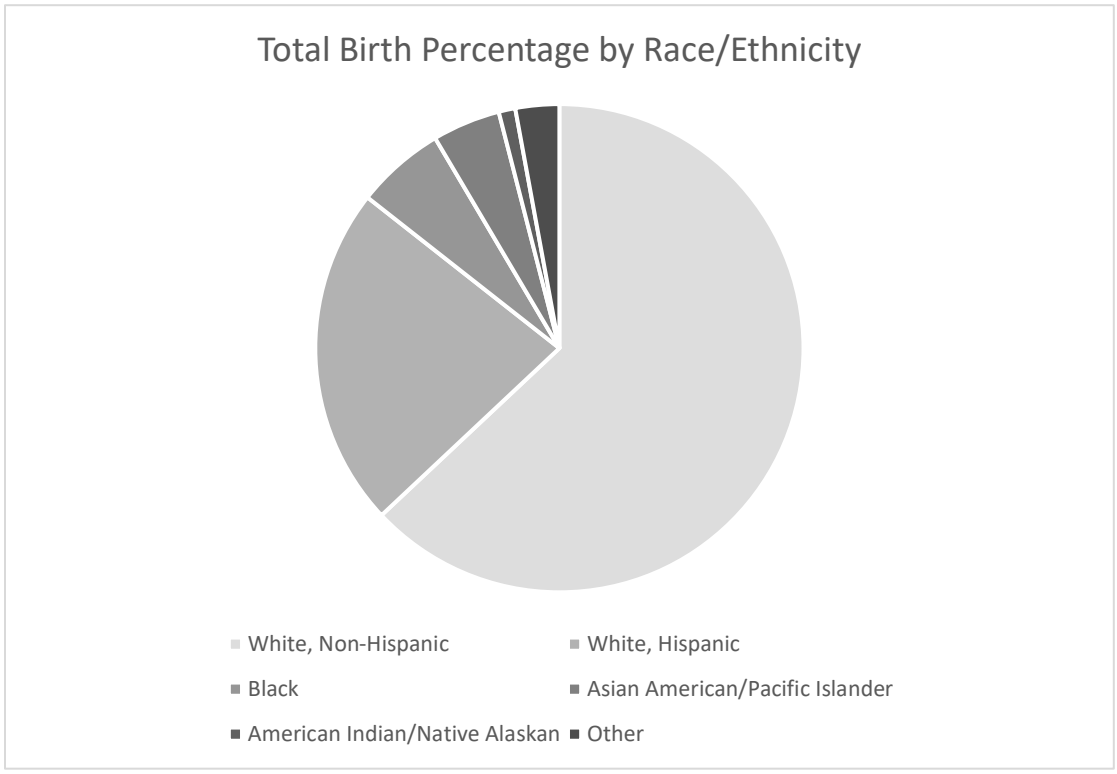

Figure 3.. Total birth percentage by race/ethnicity. Colorado Department of Public Health and Environment: Vital Statistics Program. (2016).

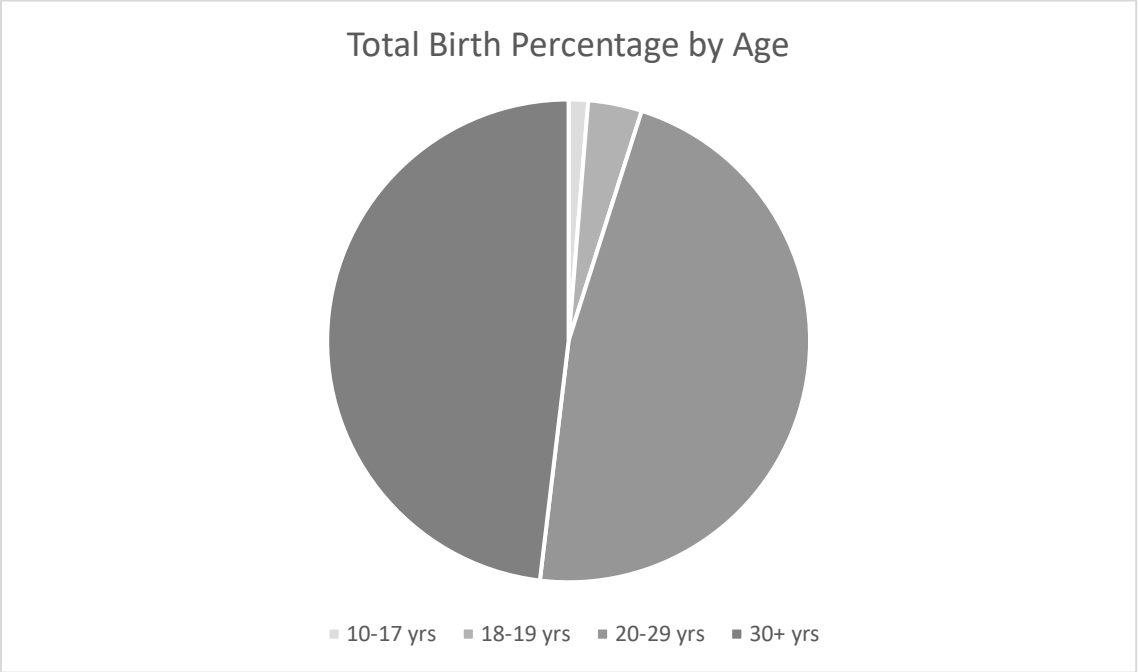

Figure 4. Total birth percentage by age. Colorado Department of Public Health and Environment: Vital Statistics Program. (2016).

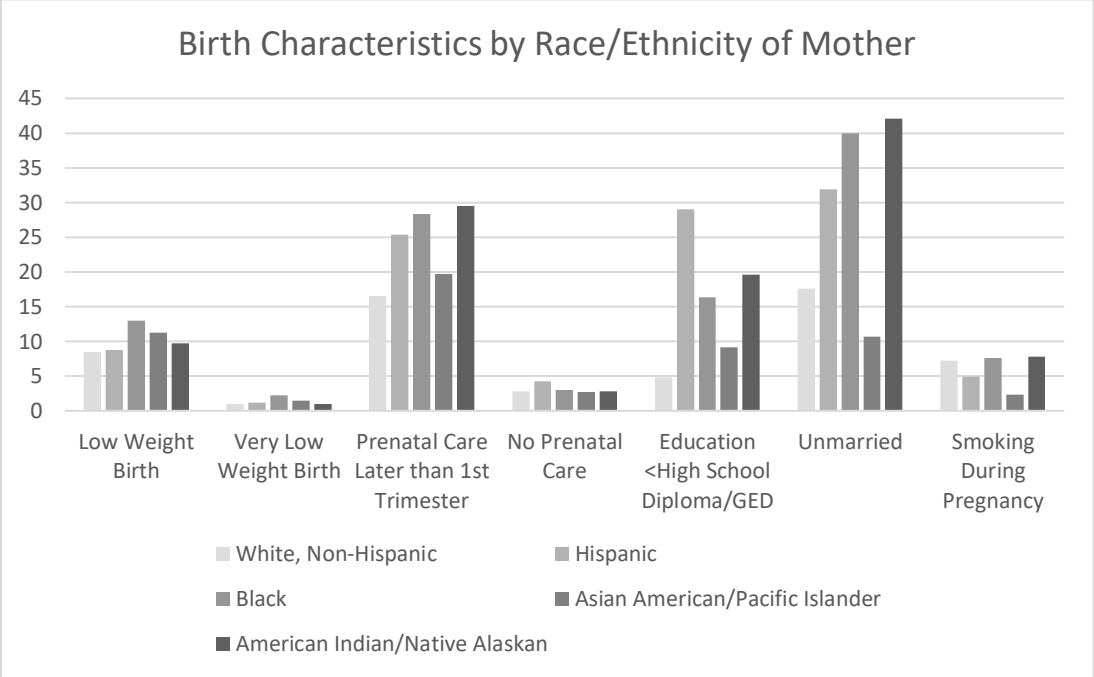

Figure 5. Birth characteristics by race/ethnicity of mother. Colorado Department of Public Health and Environment: Vital Statistics Program. (2016).

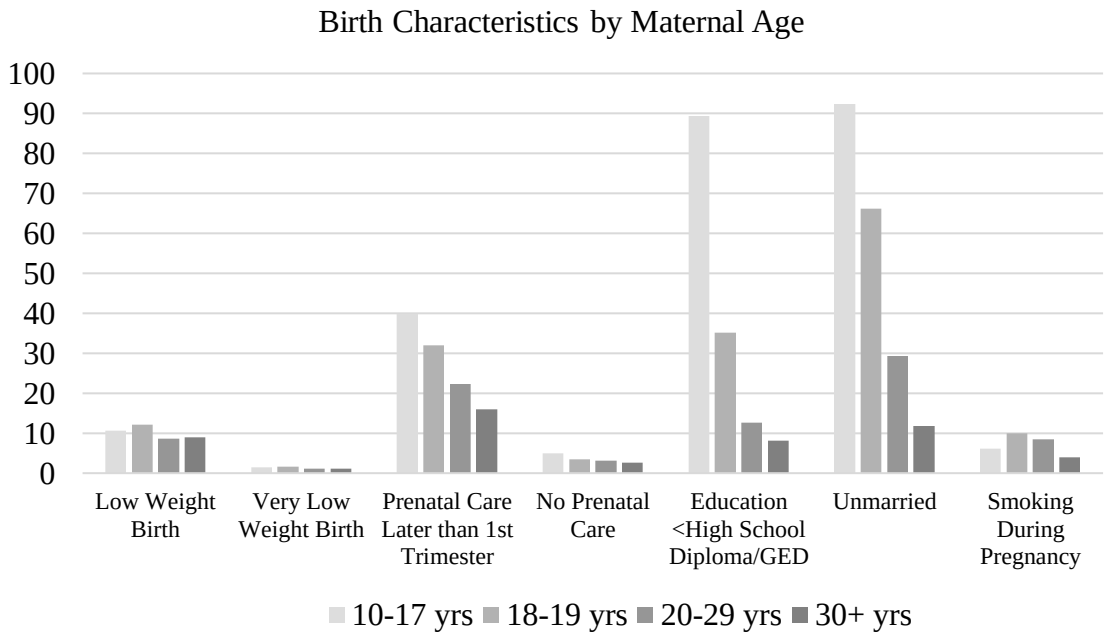

Figure 6. Birth characteristics by maternal age. Colorado Department of Public Health and Environment: Vital Statistics Program. (2016).

Table 1

Birth Weight Category to No Prenatal Care

			Insurance paid by - no PNC		
			1	2	Total
Birth Weight Category	Normal Weight	Count	934	15	949
		% within Birth weight Category	98.4%	1.6%	100.0%

Table 1 (continued)

	% within Insurance paid by - no PNC	59.9%	50.0%	59.7%
	% of Total	58.7%	0.9%	59.7%
Low birth weight	Count	541	15	566
	% within Birth weight Category	97.3%	2.7%	100.0%
	% within Insurance paid by - no PNC	34.7%	50.0%	35.0%
	% of Total	34.0%	0.9%	35.0%
Very low birth weight	Count	85	0	85
	% within Birth weight Category	100.0%	0.0%	100.0%

Table 1 (continued)

	% within Insurance paid by - no PNC	5.4%	0.0%	5.3%
	% of Total	5.3%	0.0%	5.3%
Total	Count	1560	30	1590
	% within Birth weight Category	98.1%	1.9%	100.0%
	% within Insurance paid by - no PNC	100.0%	100.0%	100.0%
	% of Total	98.1%	1.9%	100.0%

Table 2

Chi-Square Test *Birth Weight Category to No Prenatal Care*

	Value	*df*	Asymptomic Significance	Exact Significance	Exact Significance
Pearson Chi-Square	4.091	2	0.129		

Table 2 (continued)

Likelihood Ratio	5.492	2	0.064
Linear-by Linear Association	0.162	1	0.687
N of Valid Cases	1590		
Fisher's Exact	NA		

The calculations show no statistically significant relationship between the birthweight category and no prenatal insurance (Chi-Square with 2-degrees of freedom = 4.092, $p = 0.129$).

Results

The following were the descriptive statistics for the sample population. A total of 1,625 births occurred in Colorado in 2016. The PRAMS data presented a sample of 1,579 women with pregnancy-related depression. The responses showed a total of 641 children were born at low birth weight among the population. When asked about depression during pregnancy, results from the 1,579 sample showed 13.0% ($n = 205$) of women responded "yes" and 87.0% ($n = 1374$) of women responded "no." The calculations report showed that 13.0% ($n = 205$) of women in 2016 responded to experiencing depression during pregnancy. The 2016 average of positive responses to depression during pregnancy matched the expectations of a worldwide average between 10%—20%. Previously stated, CDPHE in 2014 found a 10.5% positive response to depression.

The data from this study supported an increase in depressive symptoms in Colorado, yet not outside of the worldwide average. The response rate for the sample of pregnancy-related depression was consistent with a national and worldwide average of pregnancy-related depression population. The results from the 2016 year were slightly higher than the 2014 report from CDPHE. Women were stating positive response to PRD with a mean of 1.13 and a standard deviation of .336.

Descriptive Statistics

I performed descriptive statistics to summarize the data. I presented the following figures and tables to describe the sample.

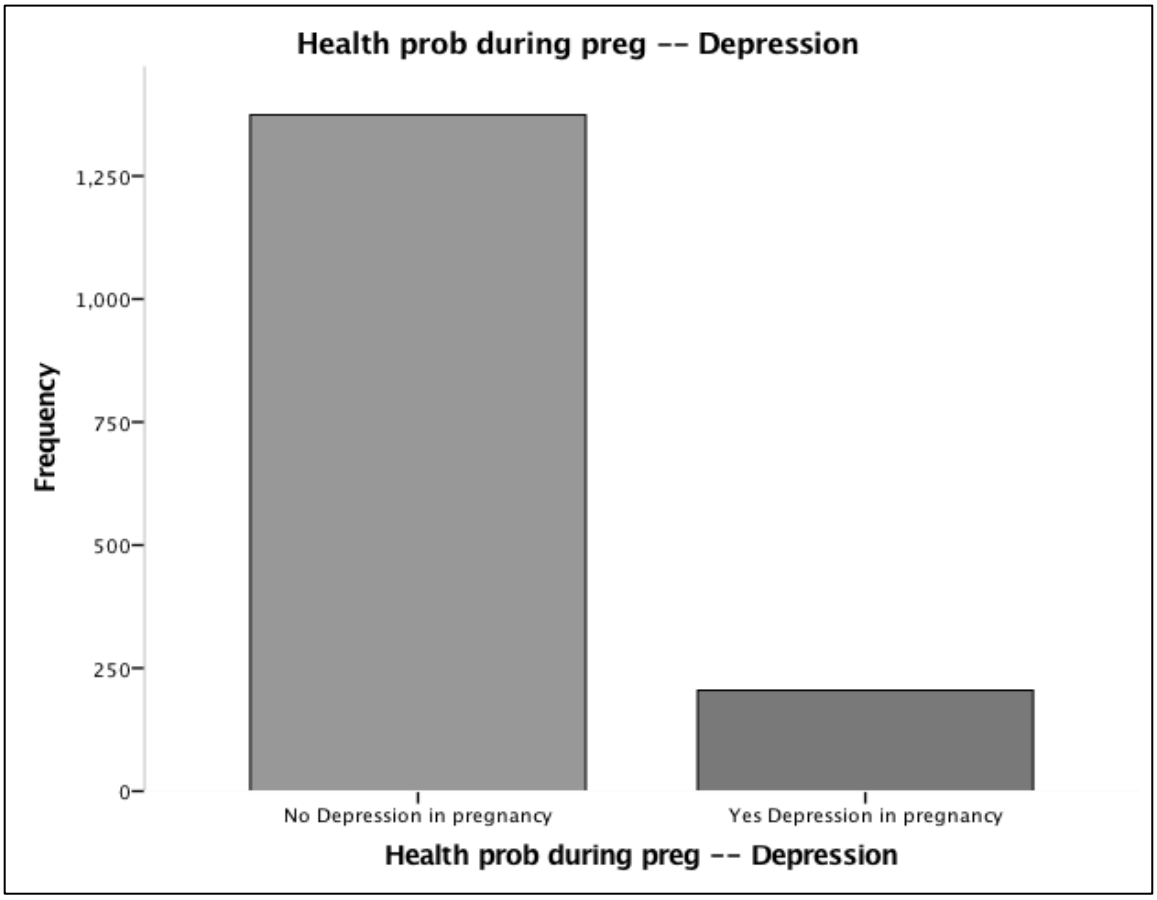

Figure 7. PRD frequency.

Table 3

Descriptives: Birth Weight Category by Population

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal weight	951	59.7	59.7	59.7
	Low birth weight	556	34.9	34.9	94.7
	Very low birth weight	85	5.3	5.3	100.0
	Total	1592	99.9	100.0	
Missing	System	1	.1		
Total		1593	100.0		

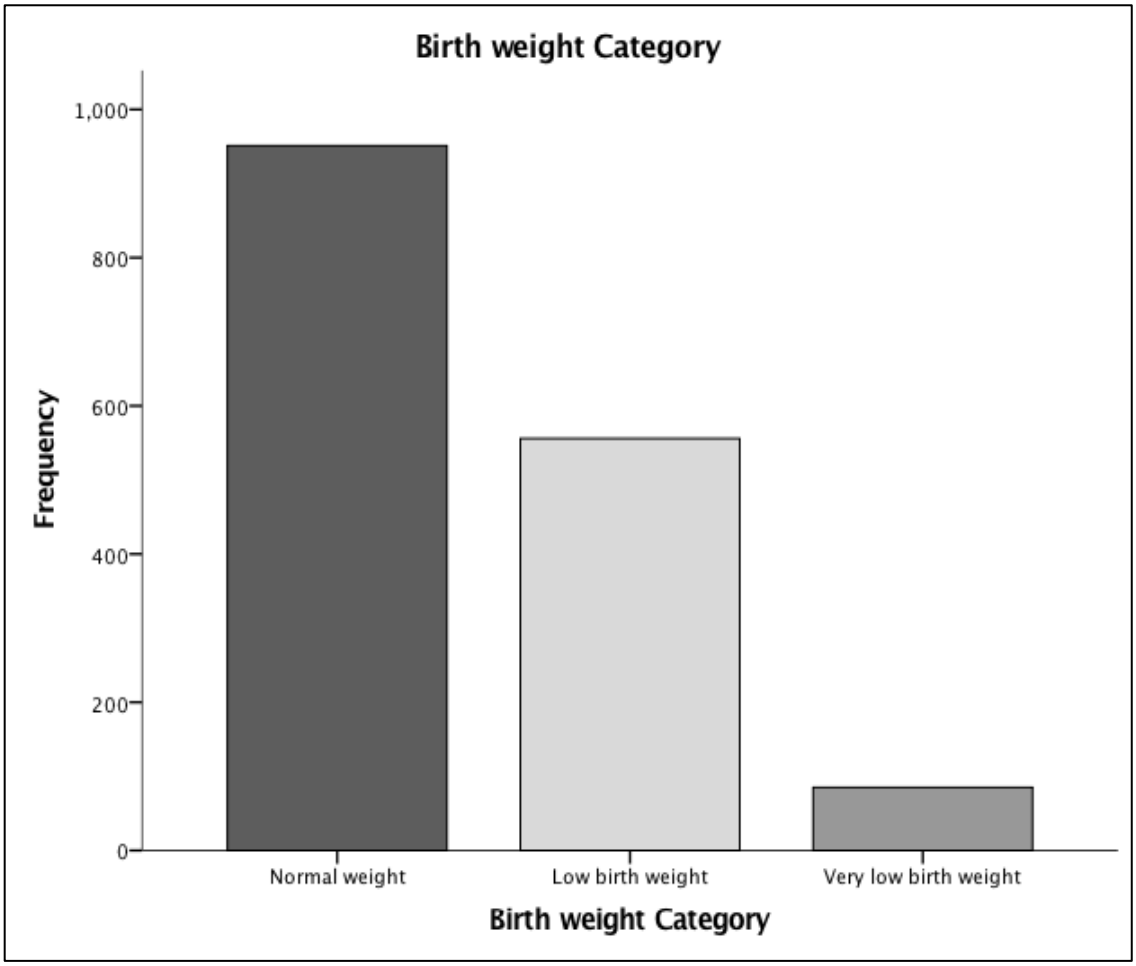

Figure 8. Population birth weight frequency.

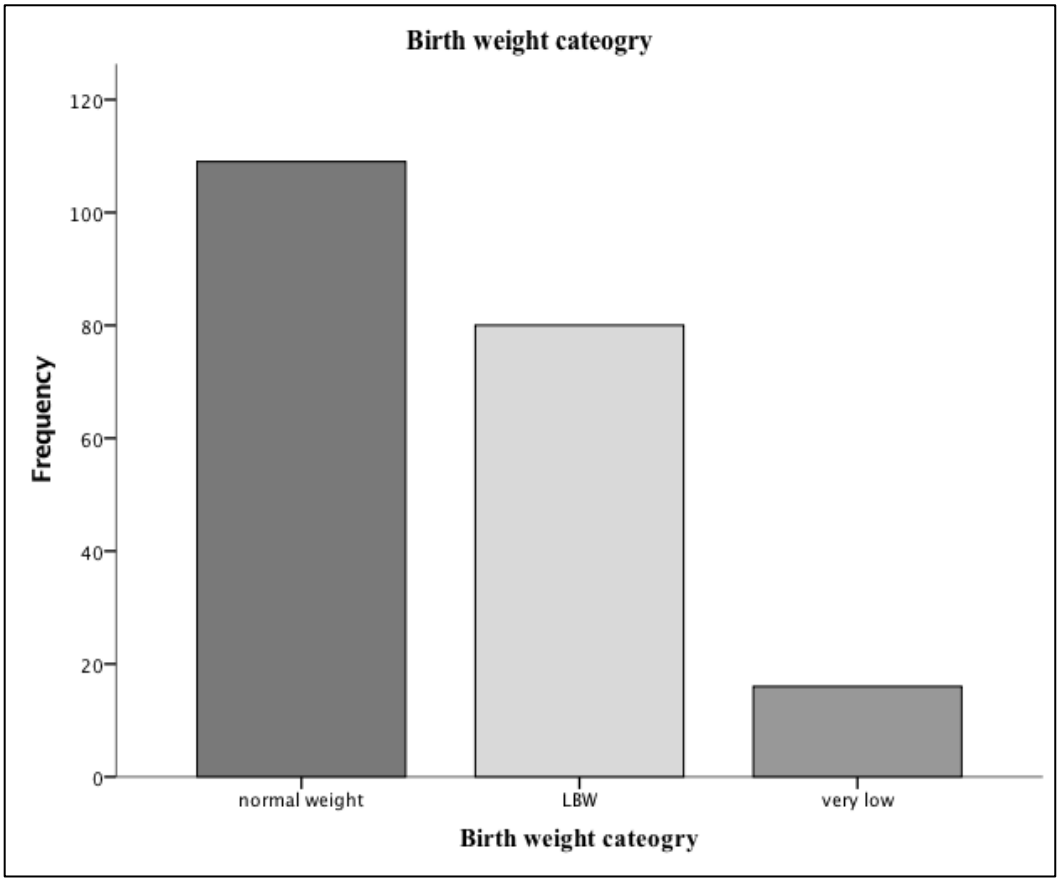

Figure 9. PRD and birth weight frequency.

I identified birthweight in three categories: normal weight (0), low birth weight (1), very low birth weight (2). The population sample represented normal weight (*n* = 951; 59.7%), low birth weight (*n* = 556, 34.9%), and very low birth weight (*n* = 85; 5.3%) exists among women in the representative population. Therefore, 59.7% (*n* = 951) of women in Colorado during 2016 gave birth to a normal weight child and a cumulative of 40.3% (*n* = 641) of women birth to a low or very low birth weight child. A total of women who reported PRD (*n* = 205) showed normal weight (*n* = 109; 53.2%), low birth weight (*n* = 80; 39.0%), and very low birth weight (*n* = 16; 7.8%) existed among women with pregnancy-related depression. Overall, 53.2% (*n* = 109) of women with pregnancy-

related depression gave birth to a normal weight child, and a cumulative of 46.8% (*n* = 96) of women with pregnancy-related depression gave birth to a child in a category of low birth weight.

I presented confounding variables for PRD included biopsychosocial stressors in Table 4. I took took the stressors from the 2016 PRAMS data.

Table 4

Biopsychosocial Stressors

Biopsychosocial stressor
Stress - Family member ill
Stress - Divorce
Stress - Moved
Stress - Homeless
Stress - Husband or partner lost job
Stress - Mom lost job
Stress - Husband/partner/self reduced work or pay
Stress - Apart from husband or partner work related
Stress - Argue lots
Stress - Husband or partner did not want pregnancy
Stress - Unable to pay bills

Table 4 (continued).

Stress - Husband/partner/self in jail
Stress - Others around using drugs
Stress - Others close died
Abuse - During pregnancy, by husband or partner
Abuse - During pregnancy, by ex-husband or ex-partner

Evaluation of Statistical Assumptions

Table 5

Multiple Logistic Regression Analysis of Variables

Regression Hypothesis Test	Sig.	*df*	B	Exp(B)	Odds Ratio
Pregnancy-Related Depression					
to Birth Weight Category	0.077	2			
Low Birth Weight	0.109	1	0.253	1.288	(.945, 1.756)
Very Low Birth Weight	0.048	1	0.586	1.796	(1.006, 3.208)
Pregnancy-Related Depression					
to Prenatal Care Adherence	0.239	2	.		
Trimester 2	0.081	1	0.390	1.477	(.954, 2.289)
Trimester 3	0.996	1	0.005	0.995	(.122, 8.137)

Reference: Normal weight, prenatal care 1st trimester

A multiple logistic regression analysis was performed to predict low birth weight based on pregnancy-related depression and to predict prenatal care adherence based on pregnancy-related depression. The calculations showed pregnancy-related depression was a predictor of very low birth weight birth. The calculations showed no statistically significant relationship between pregnancy-related depression and low birth weight. The calculations showed no statistically significant relationship between pregnancy-related depression and prenatal care adherence. I failed to reject the null hypothesis and stated the result as statistically nonsignificant. Therefore, the variables are independent of each other and I could make no prediction from the variables.

Statistical Analysis Findings

The confidence interval (CI) was 95%. I placed the statistical limitation at this boundary due to the standard acceptability in research. The alpha level was *p* less than or equal to 0.05 with the beta level as 0.95. The effect size (f2) was to 0.15. These levels and values were the standard agreed upon values in research for statistical significance and error protection rate.

Power recalculation achieved through G*power was as follows.

χ^2 tests - Goodness-of-fit tests: Contingency tables

Analysis: Post hoc: Compute achieved power

Input:	Effect size w	=	0.3
	α err prob	=	0.05
	Total sample size	=	1579

	Df	=	2
Output:	Noncentrality parameter λ	=	142.11
	Critical χ^2	=	5.9914645
	Power (1-β err prob)	=	1.0000000

Results of Post-Hoc

Post-analysis was calculated using Fisher's exact test. Both hypotheses receive no post-hoc analysis calculations; however, Fisher's exact test was used for confounding variables. I performed Fisher's test due to the sample size and categorical variables in this research.

Additional Statistical Tests that Emerged from the Analysis of the Main Hypothesis

I analyzed biopsychosocial environmental stressors against PRD and birthweight category. This analysis will show the significance of any dimension of the biopsychosocial model in regards to the tested variables.

A. Pregnancy-related depression and biopsychosocial stressors.

Table 6

Chi-Square Test: Pregnancy-Related Depression to Biopsychosocial Stressor

Biopsychosocial stressor	*df*	Value	Asymptomatic Significance
Stress - Family member ill	1	3.323	$p > .05$
Stress - Divorce	1	30.643	$p < .05$

Stress - Moved	1	13.361	$p < .05$

Table 6 (continued)

Stress - Homeless	1	22.373	$p < .05$
Stress - Husband or partner lost job	1	14.199	$p < .05$
Stress - Mom lost job	1	24.422	$p < .05$
Stress - Husband/partner/self reduced work or pay	1	11.76	$p < .05$
Stress - Apart from husband or partner work related	1	2.603	$p > .05$
Stress - Argue lots	1	97.843	$p < .05$
Stress - Husband or partner did not want pregnancy	1	23.043	$p < .05$
Stress - Unable to pay bills	1	56.714	$p < .05$
Stress - Husband/partner/self in jail	1	26.777	$p < .05$
Stress - Others around using drugs	1	36.921	$p < .05$
Stress - Others close died	1	7.499	$p < .05$
Abuse - During pregnancy, by husband or partner	1	9.816	$p < .05$
Abuse - During pregnancy, by ex-husband or ex-partner	1	1.990	p > .05

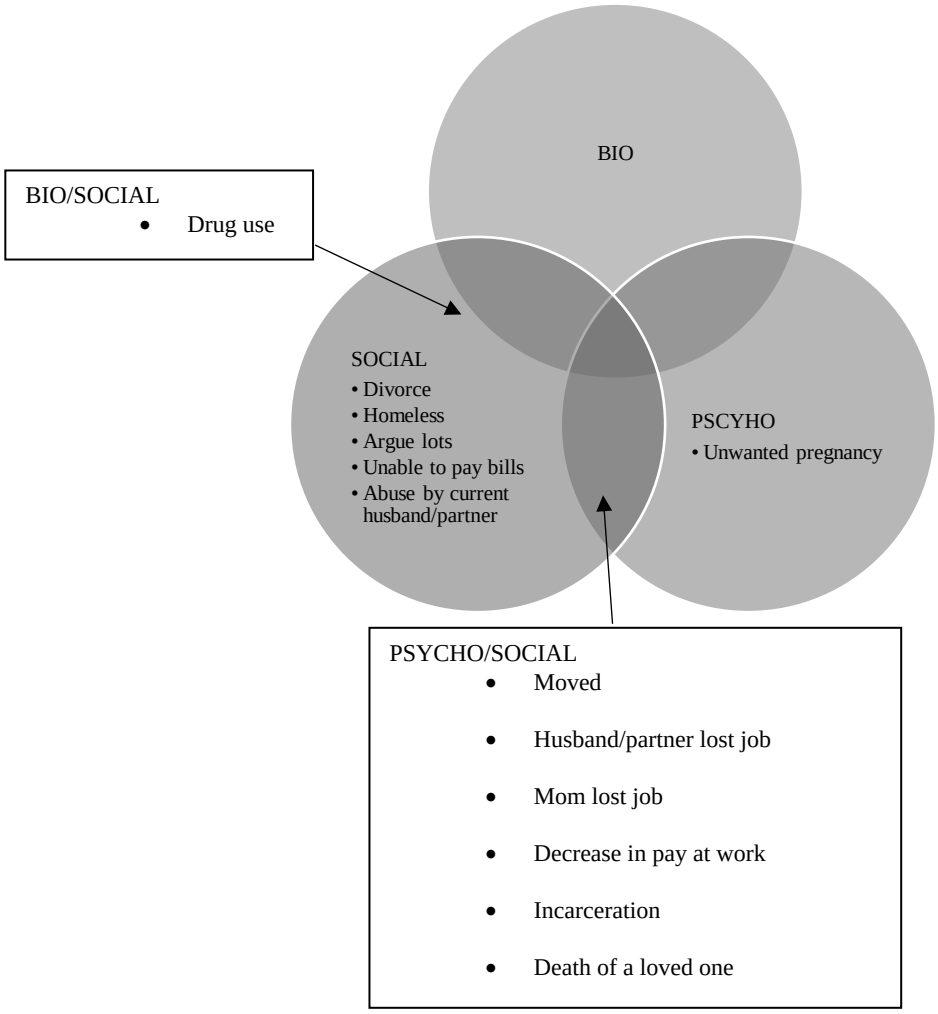

Figure 10. Biopsychosocial model of environmental stressors to pregnancy-related depression with significance.

B. Low Birth Weight and Environmental Stressors

Table 7

Chi-Square Test: Low Birth Weight to Biopsychosocial Stressor

Biopsychosocial stressor	*df*	Value	Asymptomatic Significance

Table 7 (continued)

Stress - Family member ill	2	0.266	$p > .05$
Stress - Divorce	2	2.537	$p > .05$
Stress - Moved	2	0.115	$p > .05$
Stress - Homeless	2	2.163	$p > .05$
Stress - Husband or partner lost job	2	4.741	$p > .05$
Stress - Mom lost job	2	11.345	$p < .05$
Stress - Husband/partner/self reduced work or pay	2	2.671	$p > .05$
Stress - Apart from husband or partner work related	2	3.842	$p > .05$
Stress - Argue lots	2	0.195	$p > .05$
Stress - Husband or partner did not want pregnancy	2	3.526	$p > .05$
Stress - Unable to pay bills	2	9.895	$p < .05$
Stress - Husband/partner/self in jail	2	2.059	$p > .05$
Stress - Others around using drugs	2	2.241	$p > .05$
Stress - Others close died	2	0.020	$p > .05$
Abuse - During pregnancy, by husband or partner	2	4.099	$p > .05$
Abuse - During pregnancy, by ex-husband or ex-partner	2	0.477	$p > .05$

The calculations showed a statistically significant relationship between low birth weight and both inability to pay bills and a mother losing her job.

C. Pregnancy Related Depression Implications

Table 8

Chi-Square Test: Pregnancy-Related Depression Outcomes

Depression Outcome		*df*	Value	Asymptomatic Significance
Pre-pregnancy depression				
	Feeling down/depressed	1	56.731	$p < .05$
	Depressed since birth	4	261.096	$p < .05$
Mental Health				
	No interest since birth	4	148.176	$p < .05$
	After birth told depressed	1	310.412	$p < .05$

Table 9

Chi-Square Test: Pre-Pregnancy Depression Outcomes

Depression Outcome		*df*	Value	Asymptomatic Significance
Mental Health				
	Depressed since birth	4	10.988	$p < .05$

Table 9 (continued)

No interest since birth	4	3.986	$p > .05$
After birth told depressed	1	17.322	$p > .05$

The calculations showed pregnancy-related depression is statistically significant to pre-pregnancy and postpartum depression outcomes. Pre-pregnancy depression was statistically significant to depression after birth.

Summary of Analysis

I represented a summary of findings in Table 10. I stated significance for each assessment.

Table 10

Summary of Analyses

Test	Finding
Hypothesis 1: Pregnancy-Related Depression and Birth Weight Category	Significant only in very low birth weight
Hypothesis 2: Pregnancy-Related Depression and Prenatal Care Adherence	Not Significant
Pregnancy-Related Depression and Stress	
Family Member Ill	Not Significant
Divorce	Significant
Moved	Significant

Table 10 (continued)

Homeless	Significant
Husband or Partner Lost Job	Significant
Mom Lost Job	Significant
Husband/Partner/Self Reduced Work or Pay	Significant
Apart from Husband or Partner Work Related	Significant
Argue Lots	Significant
Husband or Partner did not want Pregnancy	Significant
Unable to Pay Bills	Significant
Husband/Partner/Self in Jail	Significant
Others around using Drugs	Significant
Others Close Died	Significant
Pregnancy-Related Depression and Abuse	
During Pregnancy, by Husband or Partner	Significant
During Pregnancy, by Ex-Husband or Ex-Partner	Not Significant
Birth Weight and Stess	
Family Member Ill	Not Significant
Divorce	Not Significant
Moved	Not Significant
Homeless	Not Significant

Table 10 (continued)

Husband or Partner Lost Job	Not Significant
Mom Lost Job	Significant
Husband/Partner/Self Reduced Work or Pay	Not Significant
Apart from Husband or Partner Work Related	Not Significant
Argue Lots	Not Significant
Husband or Partner did not want Pregnancy	Not Significant
Unable to Pay Bills	Significant
Husband/Partner/Self in Jail	Not Significant
Others around using Drugs	Not Significant
Others Close Died	Not Significant
Birth Weight and Abuse	
During Pregnancy, by Husband or Partner	Not Significant
During Pregnancy, by Ex-Husband or Ex-Partner	Not Significant
Pregnancy-Related Depression to Pre-Pregnancy Depression – Feeling Down/Depressed	Significant
Pregnancy-Related Depression to Depressed Since Birth	Significant
Pregnancy-Related Depression to No Interest Since Birth	Significant

Table 10 (continued)

Pregnancy-Related Depression to After Birth Told Depressed	Significant
Pre-Pregnancy Depression to Depressed Since Birth	Significant
Pre-Pregnancy Depression to No Interest Since Birth	Not Significant
Pre-Pregnancy Depression to After Birth Told Depressed	Significant

Summary

This study found a statistical significance between the pregnancy-related depression (PRD) and very low birth weight. No significance was found between PRD and prenatal care adherence and low birth weight. PRD was statistically significant in depression before birth and postpartum depression. PRD was statistically significant among several biopsychosocial environmental stressors: divorce, moving, homelessness, husband/partner losing a job, mom losing a job, decrease pay or work, arguing, unwanted pregnancy by husband/partner, unable to pay bills, incarceration, drugs, death of a loved one, and abuse by current husband/spouse. Two environmental stressors were significant with LBW: mom losing a job, unable to pay bills. Therefore, the most significant influencers of maternal-fetal outcomes were a mother who loses her job and the inability to pay bills.

Pregnancy-related depression was a predictive variable of very low birth weight category only; however, the variables are independent of each other and do not occur as a dependent relationship. I rejected the null hypothesis and stated statistical significance for PRD and very low birth weight. PRD and prenatal care adherence are independent of each other and do not happen as a dependent relationship. I failed to reject the null hypothesis and state no statistical significance between the variables in this hypothesis.

Based on the findings of this research, I established several implications for social change. I presented recommendations to improve maternal-fetal care and maternal mental health in Colorado in the next chapter. I provided implications for social change among health care for women who experience pregnancy-related depression.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this quantitative retrospective study was to test SCT as it correlates low birth weight and prenatal care adherence to pregnancy-related depression in women residing in Colorado. The results of this study partially supported SCT. Specifically, I found this study supported environmental influences among maternal-fetal outcomes. I identified constructs not addressed or supported as self-efficacy, self-regulation and observational learning. Focusing on women residing Colorado, I addressed an association, if any, between pregnancy-related depression and low birth weight prevalence and between pregnancy-related depression and prenatal care adherence. These findings supported Mirabzadeh, Majd, Moafi, and Ghorbani, (2017) as well as Shrivastava, Shrivastava, and Ramasamy (2015) whom stressed biopsychosocial stressors as a correlation to maternal mental health. In addition, a health professionals and practitioners who addressed not only maternal-fetal health but also social supports, education, and beliefs may have a positive correlation to PRD. I conducted a quantitative research method under a SCT framework and PPCT design.

Interpretation of the Findings

This study extended knowledge in public health for pregnancy-related depression. The results of this study contributed to the knowledge-base of pregnancy-related depression in Colorado. The first study of this kind, the findings are used as a launch for further hypotheses. This research found PRD to be predictive of very low birth weight. This study also found an association between PRD and biopsychosocial factors. PRD was

statistically significant among numerous biopsychosocial stressors with the most prominent being the mother losing a job and being unable to pay bills. The two stressors were also significant among PRD and very low birth weight outcomes, thus significant influencers of maternal-fetal outcomes.

In this study, I concluded 13% of women in Colorado during 2016 as identifying with PRD. This rate validated Colorado PRD to both national and worldwide rates of depression between 10-20% (Wang et al., 2016; Fairbrother et al., 2016; Shrivastava, Shrivastava, and Ramasamy, 2015; Bennett, Einarson, Taddio, Koren, and Einarson, 2004). The rates of PRD in Colorado validated a substantial need to improve access to and quality of health services for women. The prevalence confirmed pregnancy-related depression as a public health concern. Moreover, multiple logistic regression showed a significant relationship between PRD and very low birth weight ($p < .05$). By bettering a health infrastructure, Colorado would improve not only quality mental health services but improve availability of such services to women. Sufficient supply of programs and providers prevented further disparity among women in Colorado. Pregnancy-related depression was statistically significant in depression prior to birth and postpartum.

I proposed PRD as a mediating variable between depression prior to pregnancy and post-partum depression. Furthermore, PRD was significant among both prior depression diagnosis and post-partum depression. The National Coalition for Maternal Mental Health (n.d.) stated while 1 in 7 women suffer from mental health concerns during pregnancy, PRD was underdiagnosed primarily related to "a shortage of and the inability for screening providers to easily find, qualified healthcare providers who can

provide necessary treatment." Colorado must increase accessibility of mental health services to women by adding qualified practitioners and providers. Expanding mental health screenings and professionals must become more accurate to effectively report pregnancy-related depression prevalence.

Theoretical Framework Analysis

I chose the SCT to explore the environmental and personal controls in pregnancy-related depression. Overall, contributions to research supported reciprocal determinism among women and her environment. Thus, the pregnancy-related depression symptoms and diagnosis were influenced by the environment (Bandura, 2011). Significantly, depression during pregnancy impacted fetal birth outcomes. Alfred Bandura stressed the importance of the reciprocal determinism between person and environment. Hence, the results of this study show statistical significance between PRD and several environmental variables to show the importance of addressing biopsychosocial factors.

Depression during pregnancy should be understood through a biopsychosocial lens. This study confirmed that while a woman experiences PRD, the environmental influences, not necessarily her biology, might explain causation of symptoms. As a result, change gave emphasis to environmental variables. Communities willing to alter and increase supports for pregnant women could support improved maternal-fetal outcomes. Moreover, strategies shifted focus to preventive interventions which foster equity in health services.

The following image depicts significant environmental impacts by the SCT constructs of biological, social, and psychological:

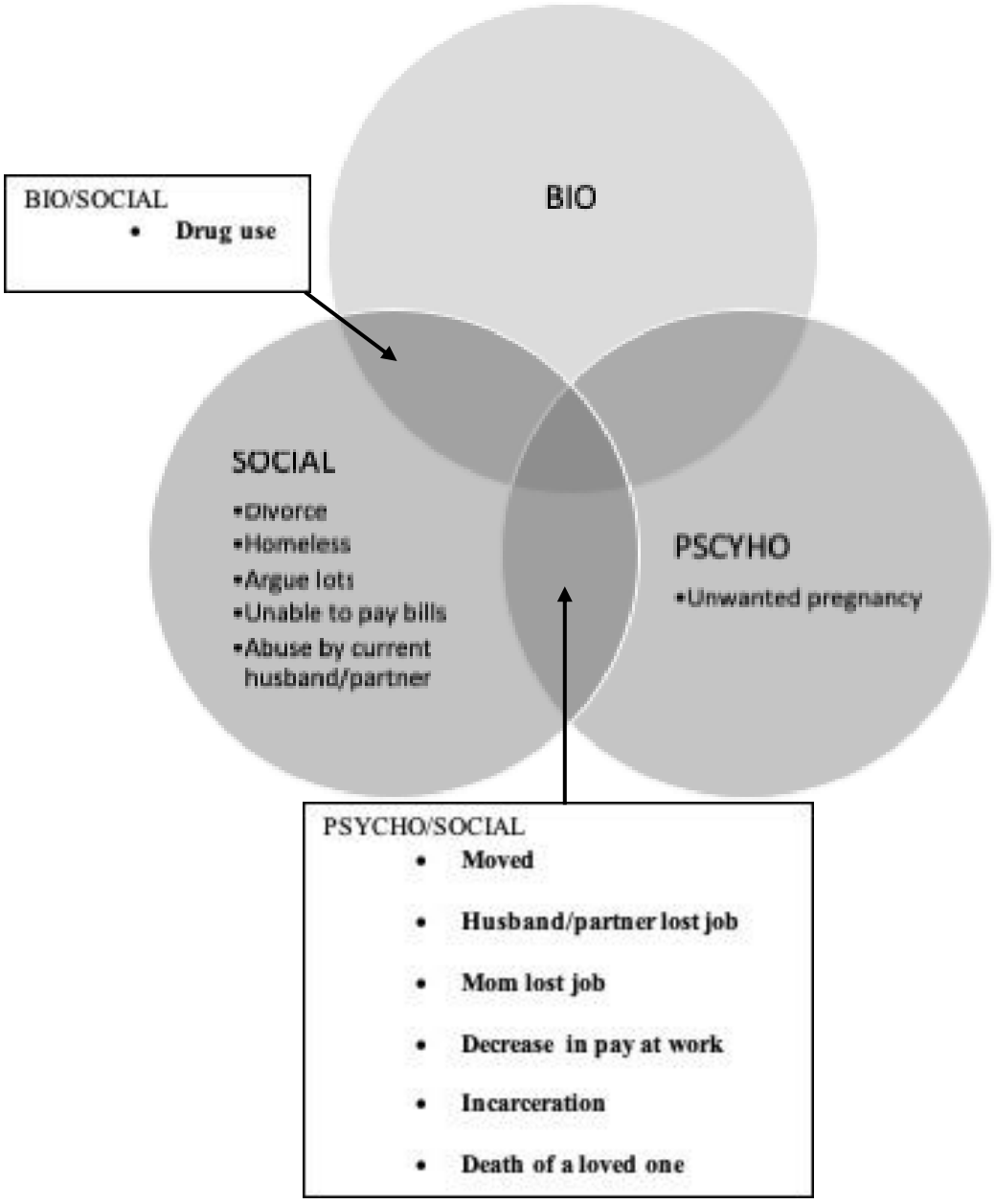

Figure 11. Biopsychosocial model of environmental stressors to pregnancy-related depression with significance.

The greatest variable significance was found in the psycho-social construct. Therefore, access to community support, cultural beliefs, and reinforcements should be supported by the government and local community in order to decrease rate of

pregnancy-related depression. I proposed that as Colorado communities transform environmental and social supports, PRD and very low birth weight may present improved outcomes. As stated in the Literature Review, the Colorado Department of Public Health and Environment (July 2014) argued social determinants of marital status, poverty status, income, and prior environmental stressors impact depression. This study confirmed unique social determinants measured by PRAMS to have an association with depression. Additionally, this study supported Staneva et al. (2015) that pregnancy-related depression may predict postpartum depression. Thus, this study emphasized programs and policies to raise awareness of PRD and a preventive health solution. Transforming communities to provide available mental health resources and transforming health infrastructure to support access to services might possibly generate social change.

Self-efficacy, unique to SCT, measured the ability of a woman to accomplish goals in her pregnancy. For this study, no statistical significance is seen among depression and when a woman sought prenatal care. However, a qualitative analysis of the environmental influences might show coping mechanisms and lifestyle choices that influence self-efficacy among women with PRD. Women must approach prenatal health with a belief to succeed in pregnancy and delivery. The obstacle of depression and anxiety might highlight limitations or coping behaviors. Thus, goals of provider and stakeholder involvement were key to success. Women should be encouraged to speak openly about depressive symptoms and environmental stressors; however, 76.6% of women in Colorado affirmed speaking with a health practitioner during pregnancy about depression (Colorado Department of Public Health and Environment, July 2014).

Cognitive planning and forethought to predict financial distress influenced behavioral outcomes. Since women are reciprocally influenced by the environment (Bandura, 2011), I proposed looking at health outcomes as both actual and perceived stress versus actual or perceived stresses.

Process, Person, Context, Time Framework Analysis

The geographical area specifics of women in Colorado who experience pregnancy-related depression was not assessed at this time. No zip code information was assessed. I recommended research to assess geographical areas women experience depression during pregnancy. While this specific study used only data in the state of Colorado, greater response rates may give insight to phenomenon description in specific locations in Colorado. Based on Colorado Department of Public Health and Environment: Vital Statistics Program. (2016), the at-risk population was estimated as minority women, less than 20 years of age. Low and very low birth weight was highest among Black and Asian American/Pacific Islanders and women less than 20 years. Later or no prenatal care occurred most frequently in Black, Hispanic, and American Indian/Native Alaskan women, less than 20 years of age. Women of minority status in Colorado were at the greatest risk for poor fetal outcomes. At-risk women required greater depression screening measures and community supports. Further research must be conducted to understand what targeted interventions among at-risk women created social change. Pregnancy-related depression in Colorado was statistically significant between both depression prior and after birth. Additional research should be completed to understand a

timeframe during pregnancy that women most experience depression. Colorado health professionals should proceed with further research to pinpoint at-risk trimesters.

Limitations of the Study

A significant limitation to this study was that the results were generalized only to the women of Colorado. This study made no association or impact derivation to women outside of Colorado. The low sample rate impacted the power of this study. The PRAMS questionnaire required mothers to self-identify as experiencing depression in pregnancy. Respondent's ability to identify personal bias in depression was another limitation of this study. I excluded specific health factors from this study; however, biological and lifestyle variables could correlate to PRD. Since this is the first study, no correlations or assumptions could be made from previous findings in Colorado. I noted secondary data analysis emphasized what I as a researcher felt as significant

Recommendations for Action

In deciding recommendations for actions to take, it was important to explore which strategies are best, who can benefit from the recommended actions, and how to best implement strategies for the Colorado community. I found the most noteworthy supports to emphasize access to maternal-fetal care and social supports. I proposed several strategies for social change in women who experience PRD in Colorado.

Enhance Patient-Provider Communications

A significant recommendation for action was to improve patient-provider communication during pregnancy visits. As previously stated, provider-patient interactions were limited and often lack mental health reviews. Castro, Place, Allen-

Leigh, Rivera-Rivera, and Billings (2016) showed 37.1% of health clinics have an infrastructure or policy to incorporate mental health services and screening. Additionally, women should feel empowered to initiate emotional and behavioral health discussions. Depressive and anxious symptoms may relate to self-identify as an evolving mother, and these imposed identities can create complexity within cultural and community norms (Staneva and Wigginton, 2018). To assist provider discussions, a standardized questionnaire to target pregnancy-related depression. Moore Simas and Byatt (2018) conclude while improvements in screening may be a start to change, medical professionals must know resources to support diagnosis and treatment. Furthermore, communities must establish systems which promote trust and access to services. Providers, both primary care and OB/GYN, should establish PRD screening guidelines and referral processes. Advancements in depression screenings must identify anxiety and distress of women and lead to continuity of referral management (Staneva, Bogossian, Pritchard, and Wittkowski, 2015). Since this study substantiated an association between very low birth weight and PRD, Staneva, Bogossian, Pritchard, and Wittkowski (2015) argued stress and depression may be perceived or health practitioners may not screen women causing results to skew.

Communication with patients could not occur without availability of providers. Staff shortages hindered the number of provider accessible to women, not only for screenings but for mental illness treatment. The Kaiser Family Foundation (2019) found only 30.15% of Colorado meet mental health care needs. Over 131 psychiatrists alone were required to eliminate a health provider shortage in Colorado (Kaiser Family Foundation,

2019). Colorado should encourage providers skilled in mental illness to integrate into maternal care. Furthermore, community resources must be in place for providers who identify concerns.

Improved Maternal-Fetal Care

Mental health services should be easily accessible to women in Colorado. Local environmental supports were required to address and acknowledge services to pregnant women. However, without knowledge of perceived stressors of pregnant women, Colorado could not properly plan assistance. To further understand the extent of pregnancy-related depression in Colorado, PRAMS should query to a greater extent depression-related questions during pregnancy. Colorado selected to query one depression-related questions on the 2016 Colorado PRAMS screening. Asking additional probing question might help understand the true prevalence of PRD phenomenon. Screenings which included depression influencers indicated geographical and biopsychosocial deficits that require further intervention strategies.

Re-address Maternity Leave

The findings from this study confirmed the most significant stressor among women in Colorado to be both actual and perceived financial stress. As of this date, Colorado does not have a law to govern medical leave related to pregnancy (Colorado Department of Labor and Employment, 2019). Women in Colorado lacked legal grounds for covered maternity leave, to include payed and unpaid benefits. Laws which require access to protective benefits decreased stress during pregnancy; thus, environmental financial support may lower PRD. Maternity leave benefits lowered financial strain for women

through both financial support and impact the need for mental illness interventions. Furthermore, expanding access and availability of maternity leave supported women who chose to return to their employers. Paid maternity leave was correlated with more desirable maternal-fetal outcomes and stress management (Jou, Kozhimannil, Abraham, Blewett, and McGovern, 2018). Paid family leave laws would be administered through respective state and federally funded disability programs. Support structures at local and national Colorado levels addressed real and emotional events of the mother and social stressors.

Recommendations for Further Research

Many of the findings in this study were relevant and could significantly influence best practices in a healthcare setting to facilitate change in maternal-fetal care. Most studies create questions that can be pursued more fulling in the future. I made five recommendations below for further research on pregnancy-related depression:

1. A study should be conducted to gain insight into the phenomenon from a different method of analysis. For example, the current research examined the depth of information through a quantitative lens to address the maternal-fetal depressive impact in Colorado. Therefore, a qualitative study could be used to further explain pregnancy-related depression and environmental/community initiatives in Colorado.
2. A study should be conducted to evaluate an association between pregnancy-related depression and supplementary fetal outcomes. Since this research showed a statistical significance between birth weight and

pregnancy-related depression, research on additional fetal health variables may contribute expand the scope on knowledge among short and long-term consequences.

3. New research should be completed in different geographical locations. The results from this study could be compared and applied to different populations and regions.
4. A study should be conducted to clarify socioeconomic determinants on pregnancy-related depression. This study did not analyze factors such as race, ethnicity, educational attainment, Colorado zip code, nor income achievement. Hence, a probing study could highlight marginalized women who would best benefit from mental health interventions.
5. Since this is a novel study, continued research into pregnancy-related depression was recommended. Additional depression questions from CDC PRAMS should be added to the Colorado PRAMS to help understand incidence and prevalence of PRD.

Implications for Professional Practice and Social Change

I became aware of the PRD outcomes during this study. I had a baby during the process and became an integral part of the communication and interaction supporting PRD. My personal experience helped me in understanding the significance of PRD to Colorado women. The results from this study could help medical professionals implement improved depression screenings strategies during pregnancy that could contribute to positive social change within the community. Socil change could be created

by promoting healthcare that is more efficient, equitable, and accessible. Public health remained committed to the health and well-being of all persons to advance preventive care.

Early Depression Identification

Early identification of depressive symptoms in Colorado women might lead to early identification of health system gaps. In particular, marginalized women were most at-risk for poorer fetal outcomes; however, the impact of PRD is not known among at-risk women. Moore Simas and Byatt (2018) estimate early identification of depression to have a cost savings of $22,000 per year for each mother and baby pair. I found 205 women to have a positive PRD response; therefore, I estimate the saving for Colorado in 2016 as approximately $4.5 million/year. Mental illness screenings during pregnancy must be paramount to improve health access. According to the American College of Obstetricians and Gynecologists (2018) recommended (1) screening pregnant women with no previous history at least once for depression and anxiety, (2) screening once during postpartum with a standardized tool, (3) close monitoring and assessment of women with previous mental illness diagnosis, and (4) ensure follow-up and referrals. Practice systems should offer electronic records which track women throughout each of the recommendations.

At the time of this study, Colorado Department of Public Health and Environment "draw a stratified random sample of approximately 150 women who delivered two months before (A. Juhl, personal communication, May 28, 2019)." Thus, 150 random women sampled each month equaled a total yearly sample of 1,800 participants. In 2016,

a total of 66,540 live births were recorded making 1,800 just 2.71% of women and birth data. Transformation in women's health issues might occur if a greater sample size is evaluated by the PRAMS questionnaire in Colorado. A stronger sample might help connect gaps in physical and behavioral health for Colorado women. Colorado Department of Public Health and Environment should increase the analysis of depressive symptoms during pregnancy. To support social change for maternal care access, more than one pregnancy-related question should be asked of women. At the time of this study, the Department selected one question to ask women after birth regarding depressive symptoms during pregnancy. Thoroughly assessing pregnancy-related depression might spearhead equitable health services and a community of resources and personnel.

Conclusion

The study called attention to a quantitative retrospective study which tested the theory of SCT that correlates low birth weight and prenatal care adherence to pregnancy-related depression in women residing in Colorado. The research questions address an association, if any, between pregnancy-related depression and low birth weight prevalence and between pregnancy-related depression and prenatal care adherence. Of significance, the calculations showed pregnancy-related depression as a predictive variable to very low birth weight outcomes. The calculations showed pregnancy-related depression significant among postpartum depression and depression prior to pregnancy. The calculations showed no significant relationship between pregnancy-related depression and prenatal care adherence. Additionally, several biopsychosocial variables were significant between pregnancy-related depression.

The results indicated the importance of community resources and maternal health benefits in Colorado. Based on these conclusions, practitioners should consider increasing provider-patient mental health communications, including advancements in pregnancy-related depression screenings. I proposed expanding depression and anxiety questioning on the Colorado PRAMS and increasing sample size to more thoroughly evaluate pregnancy-related depression among women in Colorado. This research addressed original contribution to existing literature for pregnancy-related depression.

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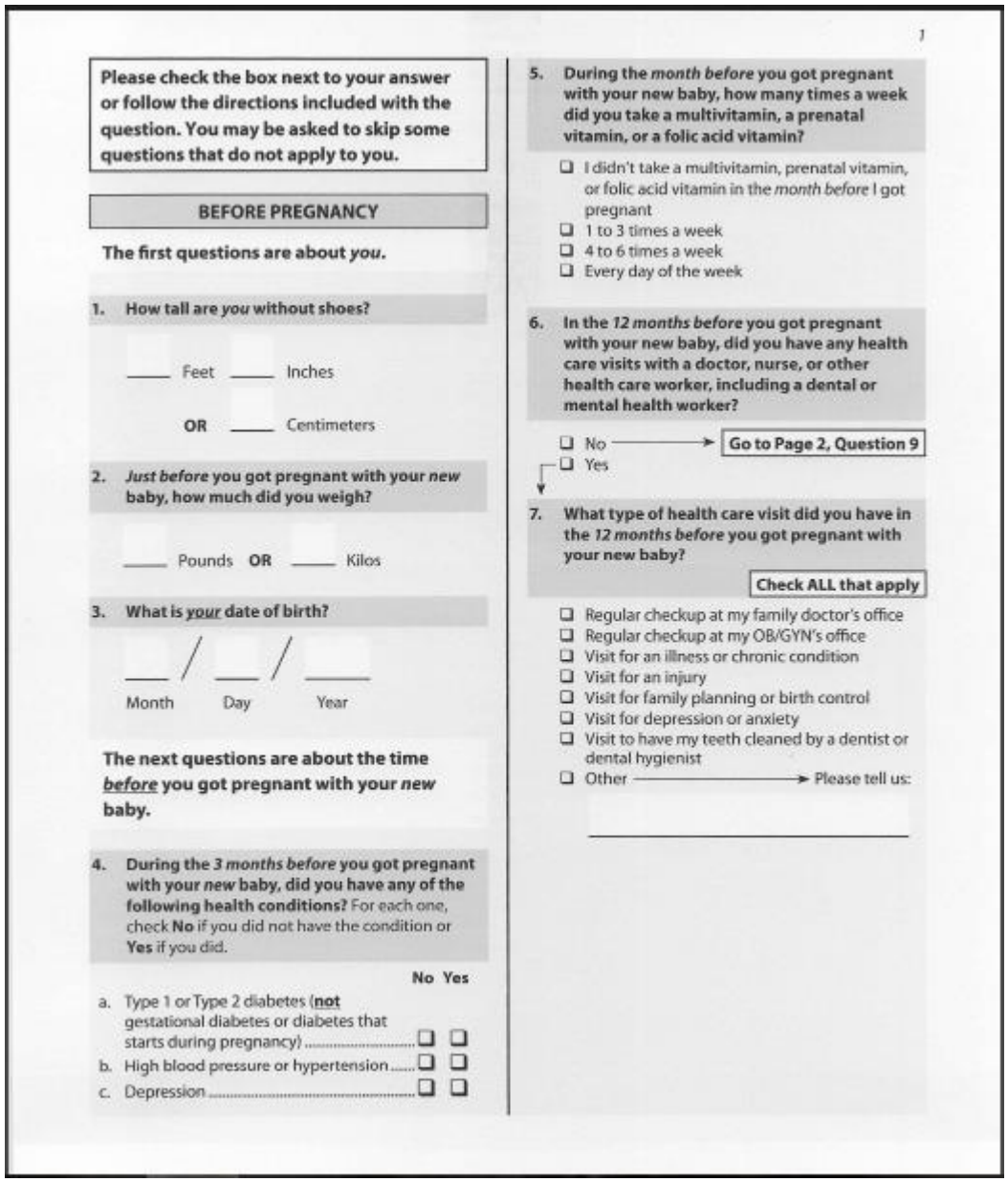
Appendix A: Colorado PRAMS 2016 Questionnaire



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Please check the box next to your answer or follow the directions included with the question. You may be asked to skip some questions that do not apply to you.

BEFORE PREGNANCY

The first questions are about *you*.

1. How tall are *you* without shoes?

____ Feet ____ Inches

OR ____ Centimeters

2. *Just before* you got pregnant with your *new* baby, how much did you weigh?

____ Pounds **OR** ____ Kilos

3. What is *your* date of birth?

____ / ____ / ____

Month Day Year

The next questions are about the time *before* you got pregnant with your *new* baby.

4. During the *3 months before* you got pregnant with your *new* baby, did you have any of the following health conditions? For each one, check **No** if you did not have the condition or **Yes** if you did.

	No	Yes
a. Type 1 or Type 2 diabetes (**not** gestational diabetes or diabetes that starts during pregnancy)	❑	❑
b. High blood pressure or hypertension	❑	❑
c. Depression	❑	❑

5. During the *month before* you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?

- ❑ I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the *month before* I got pregnant
- ❑ 1 to 3 times a week
- ❑ 4 to 6 times a week
- ❑ Every day of the week

6. In the *12 months before* you got pregnant with your new baby, did you have any health care visits with a doctor, nurse, or other health care worker, including a dental or mental health worker?

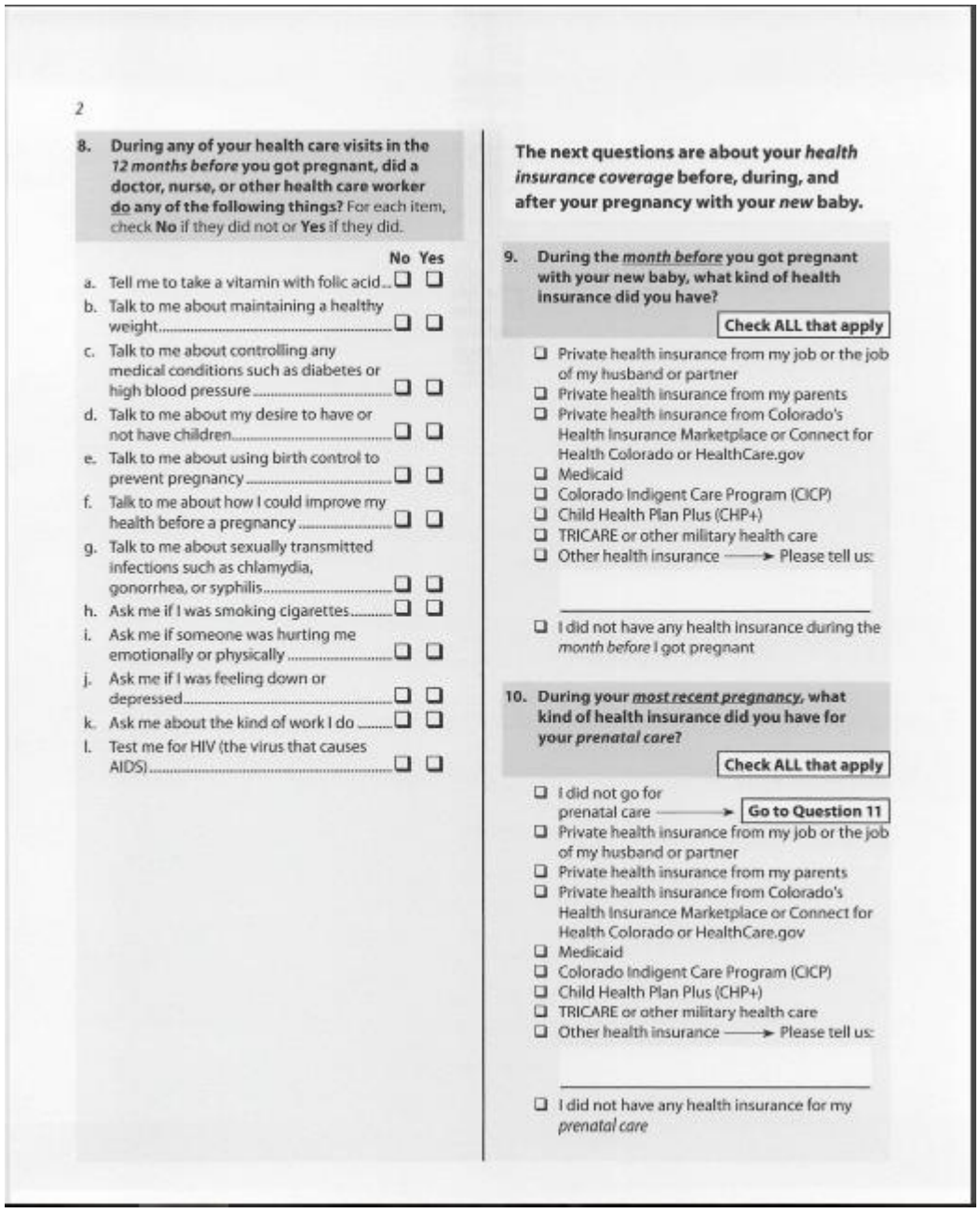
- ❑ No → **Go to Page 2, Question 9**
- ❑ Yes

7. What type of health care visit did you have in the *12 months before* you got pregnant with your new baby?

Check ALL that apply

- ❑ Regular checkup at my family doctor's office
- ❑ Regular checkup at my OB/GYN's office
- ❑ Visit for an illness or chronic condition
- ❑ Visit for an injury
- ❑ Visit for family planning or birth control
- ❑ Visit for depression or anxiety
- ❑ Visit to have my teeth cleaned by a dentist or dental hygienist
- ❑ Other → Please tell us:

_____



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8. During any of your health care visits in the *12 months before* you got pregnant, did a doctor, nurse, or other health care worker do any of the following things? For each item, check **No** if they did not or **Yes** if they did.

	No	Yes
a. Tell me to take a vitamin with folic acid	❑	❑
b. Talk to me about maintaining a healthy weight	❑	❑
c. Talk to me about controlling any medical conditions such as diabetes or high blood pressure	❑	❑
d. Talk to me about my desire to have or not have children	❑	❑
e. Talk to me about using birth control to prevent pregnancy	❑	❑
f. Talk to me about how I could improve my health before a pregnancy	❑	❑
g. Talk to me about sexually transmitted infections such as chlamydia, gonorrhea, or syphilis	❑	❑
h. Ask me if I was smoking cigarettes	❑	❑
i. Ask me if someone was hurting me emotionally or physically	❑	❑
j. Ask me if I was feeling down or depressed	❑	❑
k. Ask me about the kind of work I do	❑	❑
l. Test me for HIV (the virus that causes AIDS)	❑	❑

The next questions are about your *health insurance coverage* before, during, and after your pregnancy with your *new* baby.

9. During the *month before* you got pregnant with your new baby, what kind of health insurance did you have?

Check ALL that apply

- ❑ Private health insurance from my job or the job of my husband or partner
- ❑ Private health insurance from my parents
- ❑ Private health insurance from Colorado's Health Insurance Marketplace or Connect for Health Colorado or HealthCare.gov
- ❑ Medicaid
- ❑ Colorado Indigent Care Program (CICP)
- ❑ Child Health Plan Plus (CHP+)
- ❑ TRICARE or other military health care
- ❑ Other health insurance → Please tell us: _____
- ❑ I did not have any health insurance during the *month before* I got pregnant

10. During your *most recent pregnancy*, what kind of health insurance did you have for your *prenatal care*?

Check ALL that apply

- ❑ I did not go for prenatal care → **Go to Question 11**
- ❑ Private health insurance from my job or the job of my husband or partner
- ❑ Private health insurance from my parents
- ❑ Private health insurance from Colorado's Health Insurance Marketplace or Connect for Health Colorado or HealthCare.gov
- ❑ Medicaid
- ❑ Colorado Indigent Care Program (CICP)
- ❑ Child Health Plan Plus (CHP+)
- ❑ TRICARE or other military health care
- ❑ Other health insurance → Please tell us: _____
- ❑ I did not have any health insurance for my *prenatal care*

11. What kind of health insurance did you have to pay for your *delivery*?

Check ALL that apply

- ❑ Private health insurance from my job or the job of my husband or partner
- ❑ Private health insurance from my parents
- ❑ Private health insurance from Colorado's Health Insurance Marketplace or Connect for Health Colorado or HealthCare.gov
- ❑ Medicaid
- ❑ Colorado Indigent Care Program (CICP)
- ❑ Child Health Plan Plus (CHP+)
- ❑ TRICARE or other military health care
- ❑ Other health insurance → Please tell us:

_____

- ❑ I did not have any health insurance to pay for my *delivery*

12. What kind of health insurance do you have *now*?

Check ALL that apply

- ❑ Private health insurance from my job or the job of my husband or partner
- ❑ Private health insurance from my parents
- ❑ Private health insurance from Colorado's Health Insurance Marketplace or Connect for Health Colorado or HealthCare.gov
- ❑ Medicaid
- ❑ Colorado Indigent Care Program (CICP)
- ❑ Child Health Plan Plus (CHP+)
- ❑ TRICARE or other military health care
- ❑ Other health insurance → Please tell us:

_____

- ❑ I do not have health insurance *now*

13. Thinking back to *just before* you got pregnant with your new baby, how did you feel about becoming pregnant?

Check ONE answer

- ❑ I wanted to be pregnant later
- ❑ I wanted to be pregnant sooner
- ❑ I wanted to be pregnant then
- ❑ I didn't want to be pregnant then or at any time in the future

→ **Go to Question 15**

- ❑ I wasn't sure what I wanted

14. How much longer did you want to wait to become pregnant?

- ❑ Less than 1 year
- ❑ 1 year to less than 2 years
- ❑ 2 years to less than 3 years
- ❑ 3 years to 5 years
- ❑ More than 5 years

15. When you got pregnant with your new baby, were you trying to get pregnant?

- ❑ No
- ❑ Yes → **Go to Page 4, Question 18**

16. When you got pregnant with your new baby, were you or your husband or partner doing anything to keep from getting pregnant?
Some things people do to keep from getting pregnant include having their tubes tied, using birth control pills, condoms, withdrawal, or natural family planning.

- ❑ No → **Go to Page 4, Question 18**
- ❑ Yes

Go to Page 4, Question 17

17. What method of birth control were you using when you got pregnant?

Check ALL that apply

- ❑ Birth control pills
- ❑ Condoms
- ❑ Shots or injections (Depo-Provera®)
- ❑ Contraceptive implant in the arm (Nexplanon® or Implanon®)
- ❑ Contraceptive patch (OrthoEvra®) or vaginal ring (NuvaRing®)
- ❑ IUD (including Mirena®, ParaGard®, Liletta®, or Skyla®)
- ❑ Natural family planning (including rhythm method)
- ❑ Withdrawal (pulling out)
- ❑ Other → Please tell us:

_____

DURING PREGNANCY

The next questions are about the prenatal care you received during your most recent pregnancy. Prenatal care includes visits to a doctor, nurse, or other health care worker before your baby was born to get checkups and advice about pregnancy. (It may help to look at the calendar when you answer these questions.)

18. How many weeks or months pregnant were you when you had your first visit for prenatal care?

_____ Weeks **OR** _____ Months

❑ I didn't go for prenatal care → **Go to Question 22**

Go to Question 19

19. *During any of your prenatal care visits*, did a doctor, nurse, or other health care worker talk with you about any of the things listed below? *Please count only discussions, not reading materials or videos.* For each item, check **No** if no one talked with you about it or **Yes** if someone did.

	No	Yes
a. How smoking during pregnancy could affect my baby	❑	❑
b. Breastfeeding my baby	❑	❑
c. How drinking alcohol during pregnancy could affect my baby	❑	❑
d. Using a seat belt during my pregnancy	❑	❑
e. Medicines that are safe to take during my pregnancy	❑	❑
f. How using illegal drugs could affect my baby	❑	❑
g. Doing tests to screen for birth defects or diseases that run in my family	❑	❑
h. The signs and symptoms of preterm labor (labor more than 3 weeks before the baby is due)	❑	❑
i. What to do if I feel depressed during my pregnancy or after my baby is born	❑	❑
j. Physical abuse to women by their husbands or partners	❑	❑

20. *During any of your prenatal care visits*, did a doctor, nurse, or other health care worker ask you any of the things listed below? For each item, check **No** if they did not ask you about it or **Yes** if they did.

	No	Yes
a. If I knew how much weight I should gain during pregnancy	❑	❑
b. If I was taking any prescription medication	❑	❑
c. If I was smoking cigarettes	❑	❑
d. If I was drinking alcohol	❑	❑
e. If someone was hurting me emotionally or physically	❑	❑
f. If I was feeling down or depressed	❑	❑
g. If I was using drugs such as marijuana, cocaine, crack, or meth	❑	❑
h. If I wanted to be tested for HIV (the virus that causes AIDS)	❑	❑
i. If I planned to breastfeed my new baby	❑	❑
j. If I planned to use birth control after my baby was born	❑	❑

If a doctor, nurse, or other healthcare worker did <u>not</u> tell you how much weight you should gain during your most recent pregnancy, go to Question 22.

21. How much weight did your doctor, nurse, or other health care worker tell you to gain during *your most recent* pregnancy?

Check ONE answer and fill in blank if needed

❑ Between _____ Pounds and _____ Pounds

❑ Between _____ Kilos and _____ Kilos

❑ Exactly _____ Pounds **OR** _____ Kilos

❑ I don't remember

22. During the 12 months *before the <u>delivery</u>* of your new baby, did a doctor, nurse, or other health care worker *offer* you a flu shot or *tell* you to get one?

❑ No

❑ Yes

23. During the 12 months *before the <u>delivery</u>* of your new baby, did you *get* a flu shot?

Check ONE answer

❑ No

❑ Yes, before my pregnancy

❑ Yes, during my pregnancy

24. During *your most recent* pregnancy, did you have your teeth cleaned by a dentist or dental hygienist?

❑ No

❑ Yes

25. This question is about other care of your teeth *<u>during</u> your most recent* pregnancy. For each item, check **No** if it is not true or does not apply to you or **Yes** if it is true.

	No	Yes
a. I knew it was important to care for my teeth and gums during my pregnancy	❑	❑
b. A dental or other health care worker talked with me about how to care for my teeth and gums	❑	❑
c. I had insurance to cover dental care during my pregnancy	❑	❑
d. I <u>needed</u> to see a dentist for a **problem**	❑	❑
e. I <u>went</u> to a dentist or dental clinic about a **problem**	❑	❑

26. Did any of the following things make it hard for you to go to a dentist or dental clinic during *your most recent* pregnancy? For each item, check **No** if it was not something that made it hard for you or **Yes** if it was.

	No	Yes
a. I could not find a dentist or dental clinic that would take pregnant patients	❑	❑
b. I could not find a dentist or dental clinic that would take Medicaid patients	❑	❑
c. I did not think it was safe to go to the dentist during pregnancy	❑	❑
d. I could not afford to go to the dentist or dental clinic	❑	❑

27. During *your most recent* pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

- ❑ No
- ❑ Yes

28. During *your most recent* pregnancy, did you have any of the following health conditions? For each one, check **No** if you did not have the condition or **Yes** if you did.

	No	Yes
a. Gestational diabetes (diabetes that **started** during *this* pregnancy)	❑	❑
b. High blood pressure (that **started** during *this* pregnancy), pre-eclampsia or eclampsia	❑	❑
c. Depression	❑	❑

29. During *your most recent* pregnancy, did a doctor, nurse, or other health care worker give you a series of weekly shots of a medicine called progesterone, Makena®, or 17P (17 alpha-hydroxyprogesterone) to try to keep your new baby from being born too early?

- ❑ No
- ❑ Yes
- ❑ I don't know

The next questions are about smoking cigarettes around the time of pregnancy (before, during, and after).

30. Have you smoked any cigarettes in the *past 2 years*?

- ❑ No → **Go to Question 34**
- ❑ Yes

31. In the *3 months before* you got pregnant, how many cigarettes did you smoke on an average day? A pack has 20 cigarettes.

- ❑ 41 cigarettes or more
- ❑ 21 to 40 cigarettes
- ❑ 11 to 20 cigarettes
- ❑ 6 to 10 cigarettes
- ❑ 1 to 5 cigarettes
- ❑ Less than 1 cigarette
- ❑ I didn't smoke then

32. In the *last 3 months* of your pregnancy, how many cigarettes did you smoke on an average day? A pack has 20 cigarettes.

- ❑ 41 cigarettes or more
- ❑ 21 to 40 cigarettes
- ❑ 11 to 20 cigarettes
- ❑ 6 to 10 cigarettes
- ❑ 1 to 5 cigarettes
- ❑ Less than 1 cigarette
- ❑ I didn't smoke then

33. How many cigarettes do you smoke on an average day *now*? A pack has 20 cigarettes.

- ❑ 41 cigarettes or more
- ❑ 21 to 40 cigarettes
- ❑ 11 to 20 cigarettes
- ❑ 6 to 10 cigarettes
- ❑ 1 to 5 cigarettes
- ❑ Less than 1 cigarette
- ❑ I don't smoke now

The next questions are about using other tobacco products around the time of pregnancy.

E-cigarettes (electronic cigarettes) and other electronic nicotine products (such as vape pens, e-hookahs, hookah pens, e-cigars, e-pipes) are battery-powered devices that use nicotine liquid rather than tobacco leaves, and produce vapor instead of smoke.

A **hookah** is a water pipe used to smoke tobacco. It is not the same as an e-hookah or hookah pen.

34. Have you used any of the following products in the *past 2 years*? For each item, check **No** if you did not use it or **Yes** if you did.

	No	Yes
a. E-cigarettes or other electronic nicotine products	❑	❑
b. Hookah	❑	❑

If you used e-cigarettes or other electronic nicotine products in the *past 2 years*, go to Question 35. Otherwise, go to Question 37.

35. During the *3 months before* you got pregnant, on average, how often did you use e-cigarettes or other electronic nicotine products?

- ❑ More than once a day
- ❑ Once a day
- ❑ 2-6 days a week
- ❑ 1 day a week or less
- ❑ I did not use e-cigarettes or other electronic nicotine products then

36. During the *last 3 months* of your pregnancy, on average, how often did you use e-cigarettes or other electronic nicotine products?

- ❑ More than once a day
- ❑ Once a day
- ❑ 2-6 days a week
- ❑ 1 day a week or less
- ❑ I did not use e-cigarettes or other electronic nicotine products then

The next questions are about drinking alcohol around the time of pregnancy.

37. Have you had any alcoholic drinks in the *past 2 years*? A drink is 1 glass of wine, wine cooler, can or bottle of beer, shot of liquor, or mixed drink.

- ❑ No → **Go to Page 8, Question 41**
- ❑ Yes

38. During the *3 months before* you got pregnant, how many alcoholic drinks did you have in an average week?

- ❑ 14 drinks or more a week
- ❑ 8 to 13 drinks a week
- ❑ 4 to 7 drinks a week
- ❑ 1 to 3 drinks a week
- ❑ Less than 1 drink a week
- ❑ I didn't drink then → **Go to Page 8, Question 40**

Go to Page 8, Question 39

39. During the *3 months before* you got pregnant, how many times did you drink 4 alcoholic drinks or more in a 2 hour time span?

- ❑ 6 or more times
- ❑ 4 to 5 times
- ❑ 2 to 3 times
- ❑ 1 time
- ❑ I didn't have 4 drinks or more in a 2 hour time span

40. During the *last 3 months* of your pregnancy, how many alcoholic drinks did you have in an average week?

- ❑ 14 drinks or more a week
- ❑ 8 to 13 drinks a week
- ❑ 4 to 7 drinks a week
- ❑ 1 to 3 drinks a week
- ❑ Less than 1 drink a week
- ❑ I didn't drink then

Pregnancy can be a difficult time. The next questions are about things that may have happened *before* and *during* your most recent pregnancy.

41. This question is about things that may have happened during the *12 months before* your new baby was born. For each item, check **No** if it did not happen to you or **Yes** if it did. (It may help to look at the calendar when you answer these questions.)

	No	Yes
a. A close family member was very sick and had to go into the hospital	❑	❑
b. I got separated or divorced from my husband or partner	❑	❑
c. I moved to a new address	❑	❑
d. I was homeless or had to sleep outside, in a car, or in a shelter	❑	❑
e. My husband or partner lost their job	❑	❑
f. I lost my job even though I wanted to go on working	❑	❑
g. My husband, partner, or I had a cut in work hours or pay	❑	❑
h. I was apart from my husband or partner due to military deployment or extended work-related travel	❑	❑
i. I argued with my husband or partner more than usual	❑	❑
j. My husband or partner said they didn't want me to be pregnant	❑	❑
k. I had problems paying the rent, mortgage, or other bills	❑	❑
l. My husband, partner, or I went to jail	❑	❑
m. Someone very close to me had a problem with drinking or drugs	❑	❑
n. Someone very close to me died	❑	❑

42. During the *12 months before* your new baby was born, did you ever eat less than you felt you should because there wasn't enough money to buy food?

- ❑ No
- ❑ Yes

43. In the *12 months before you got pregnant* with your new baby, did any of the following people push, hit, slap, kick, choke, or physically hurt you in any other way? For each person, check **No** if they did not hurt you during this time or **Yes** if they did.

	No	Yes
a. My husband or partner	❑	❑
b. My ex-husband or ex-partner	❑	❑

44. During *your most recent pregnancy*, did any of the following people push, hit, slap, kick, choke, or physically hurt you in any other way? For each person, check **No** if they did not hurt you during this time or **Yes** if they did.

	No	Yes
a. My husband or partner	❑	❑
b. My ex-husband or ex-partner	❑	❑

AFTER PREGNANCY

The next questions are about the time since your new baby was born.

45. When was your new baby born?

___ / ___ / 20___

Month Day Year

46. After your baby was delivered, how long did he or she stay in the hospital?

- ❑ Less than 24 hours (less than 1 day)
- ❑ 24 to 48 hours (1 to 2 days)
- ❑ 3 to 5 days
- ❑ 6 to 14 days
- ❑ More than 14 days
- ❑ My baby was not born in a hospital
- ❑ My baby is still in the hospital → **Go to Question 49**

Go to Question 47

47. Is your baby alive now?

- ❑ No → *We are very sorry for your loss.* **Go to Page 11, Question 61**
- ❑ Yes

48. Is your baby living with you now?

- ❑ No → **Go to Page 11, Question 61**
- ❑ Yes

49. *Before or after your new baby was born*, did you receive information about breastfeeding from any of the following sources? For each one, check **No** if you did not receive information from this source or **Yes** if you did.

	No	Yes
a. My doctor	❑	❑
b. A nurse, midwife, or doula	❑	❑
c. A breastfeeding or lactation specialist	❑	❑
d. My baby's doctor or health care provider	❑	❑
e. A breastfeeding support group	❑	❑
f. A breastfeeding hotline or toll-free number	❑	❑
g. Family or friends	❑	❑
h. Other	❑	❑

Please tell us:

50. Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?

- ❑ No → **Go to Page 10, Question 55**
- ❑ Yes

51. Are you currently breastfeeding or feeding pumped milk to your new baby?

- ❑ No
- ❑ Yes → **Go to Page 10, Question 53**

Go to Page 10, Question 52

52. How many weeks or months did you breastfeed or feed pumped milk to your baby?

- ❑ Less than 1 week

____ Weeks **OR** ____ Months

If your baby was not born in a hospital, go to Question 54.

53. This question asks about things that may have happened at the hospital where your new baby was born. For each item, check **No** if it did not happen or **Yes** if it did.

		No	Yes
a.	Hospital staff gave me information about breastfeeding	❑	❑
b.	My baby stayed in the same room with me at the hospital	❑	❑
c.	I breastfed my baby in the hospital	❑	❑
d.	Hospital staff helped me learn how to breastfeed	❑	❑
e.	I breastfed in the first hour after my baby was born	❑	❑
f.	My baby was placed in skin-to-skin contact within the first hour of life	❑	❑
g.	My baby was fed only breast milk at the hospital	❑	❑
h.	Hospital staff told me to breastfeed whenever my baby wanted	❑	❑
i.	The hospital gave me a breast pump to use	❑	❑
j.	The hospital gave me a gift pack with formula	❑	❑
k.	The hospital gave me a telephone number to call for help with breastfeeding	❑	❑
l.	Hospital staff gave my baby a pacifier	❑	❑

54. How old was your new baby the first time he or she had liquids other than breast milk (such as formula, water, juice, or cow's milk)?

____ Weeks **OR** ____ Months

- ❑ My baby was less than 1 week old
- ❑ My baby has not had any liquids other than breast milk

55. How old was your new baby the first time he or she ate food (such as baby cereal, baby food, or any other food)?

____ Weeks **OR** ____ Months

- ❑ My baby was less than 1 week old
- ❑ My baby has not eaten any foods

If your baby is still in the hospital, go to Question 61.

56. In which *one* position do you *most often* lay your baby down to sleep now?

Check ONE answer

- ❑ On his or her side
- ❑ On his or her back
- ❑ On his or her stomach

57. In the *past 2 weeks*, how often has your new baby slept alone in his or her own crib or bed?

- ❑ Always
- ❑ Often
- ❑ Sometimes
- ❑ Rarely
- ❑ Never → **Go to Question 59**

58. When your new baby sleeps alone, is his or her crib or bed in the same room where *you* sleep?

- ❑ No
- ❑ Yes

59. Listed below are some more things about how babies sleep. How did your new baby *usually* sleep in the *past 2 weeks*? For each item, check **No** if your baby did not *usually* sleep like this or **Yes** if he or she did.

	No	Yes
a. In a crib, bassinet, or pack and play	❑	❑
b. On a twin or larger mattress or bed	❑	❑
c. On a couch, sofa, or armchair	❑	❑
d. In an infant car seat or swing	❑	❑
e. In a sleeping sack or wearable blanket	❑	❑
f. With a blanket	❑	❑
g. With toys, cushions, or pillows, including nursing pillows	❑	❑
h. With crib bumper pads (mesh or non-mesh)	❑	❑

60. Did a doctor, nurse, or other health care worker tell you any of the following things? For each thing, check **No** if they did not tell you or **Yes** if they did.

	No	Yes
a. Place my baby on his or her back to sleep	❑	❑
b. Place my baby to sleep in a crib, bassinet, or pack and play	❑	❑
c. Place my baby's crib or bed in my room	❑	❑
d. What things should and should not go in bed with my baby	❑	❑

61. Are you or your husband or partner doing anything *now* to keep from getting pregnant? Some things people do to keep from getting pregnant include having their tubes tied, using birth control pills, condoms, withdrawal, or natural family planning.

❑ No
❑ Yes → **Go to Question 63**

Go to Question 62

62. What are your reasons or your husband's or partner's reasons for not doing anything to keep from getting pregnant *now*?

Check ALL that apply

- ❑ I want to get pregnant
- ❑ I am pregnant now
- ❑ I had my tubes tied or blocked
- ❑ I don't want to use birth control
- ❑ I am worried about side effects from birth control
- ❑ I am not having sex
- ❑ My husband or partner doesn't want to use anything
- ❑ I have problems paying for birth control
- ❑ Other → Please tell us:

If you or your husband or partner is <u>not doing</u> anything to keep from getting pregnant *now*, go to Page 12, Question 64.

63. What kind of birth control are you or your husband or partner using *now* to keep from getting pregnant?

Check ALL that apply

- ❑ Tubes tied or blocked (female sterilization or Essure®)
- ❑ Vasectomy (male sterilization)
- ❑ Birth control pills
- ❑ Condoms
- ❑ Shots or injections (Depo-Provera®)
- ❑ Contraceptive patch (OrthoEvra®) or vaginal ring (NuvaRing®)
- ❑ IUD (including Mirena®, ParaGard®, Liletta®, or Skyla®)
- ❑ Contraceptive implant in the arm (Nexplanon® or Implanon®)
- ❑ Natural family planning (including rhythm method)
- ❑ Withdrawal (pulling out)
- ❑ Not having sex (abstinence)
- ❑ Other → Please tell us:

64. ***Since your new baby was born,*** **have you had a postpartum checkup for yourself?** A postpartum checkup is the regular checkup a woman has about 4-6 weeks after she gives birth.

- ❑ No → **Go to Question 66**
- ❑ Yes

65. ***During your postpartum checkup,*** **did a doctor, nurse, or other health care worker do any of the following things?** For each item, check **No** if they did not do it or **Yes** if they did.

	No	Yes
a. Tell me to take a vitamin with folic acid	❑	❑
b. Talk to me about healthy eating, exercise, and losing weight gained during pregnancy	❑	❑
c. Talk to me about how long to wait before getting pregnant again	❑	❑
d. Talk to me about birth control methods I can use after giving birth	❑	❑
e. Give or prescribe me a contraceptive method such as the pill, patch, shot (Depo-Provera®), NuvaRing®, or condoms	❑	❑
f. Insert an IUD (Mirena®, ParaGard®, Liletta®, or Skyla®) or a contraceptive implant (Nexplanon® or Implanon®)	❑	❑
g. Ask me if I was smoking cigarettes	❑	❑
h. Ask me if someone was hurting me emotionally or physically	❑	❑
i. Ask me if I was feeling down or depressed	❑	❑
j. Test me for diabetes	❑	❑

66. ***Since your new baby was born,*** **have you been tested for diabetes or high blood sugar?**

- ❑ No
- ❑ Yes

67. ***Since your new baby was born,*** **how often have you felt down, depressed, or hopeless?**

- ❑ Always
- ❑ Often
- ❑ Sometimes
- ❑ Rarely
- ❑ Never

68. ***Since your new baby was born,*** **how often have you had little interest or little pleasure in doing things you usually enjoyed?**

- ❑ Always
- ❑ Often
- ❑ Sometimes
- ❑ Rarely
- ❑ Never

69. ***Since your new baby was born,*** **has a doctor, nurse, or other health care worker *told you that you had* depression?**

- ❑ No → **Go to Question 71**
- ❑ Yes

70. ***Since your new baby was born,*** **have you taken prescription medicine for your depression?**

- ❑ No
- ❑ Yes

OTHER EXPERIENCES

The next questions are on a variety of topics.

If you did not smoke at any time during the *3 months before* you got pregnant, go to Question 72.

If you did not get prenatal care, go to Question 73.

71. Listed below are some things about smoking that a doctor, nurse, or other health care worker might have done during any of your prenatal care visits. For each thing, check **No** if it did not apply to you during any of your prenatal care visits or **Yes** if it did.

***During any of your prenatal care visits*, did a doctor, nurse, or other health care worker—**

	No	Yes
a. Spend time with you discussing how to quit smoking	❑	❑
b. Suggest that you set a specific date to stop smoking	❑	❑
c. Refer you to counseling for help with quitting	❑	❑
d. Ask if a family member or friend would support your decision to quit	❑	❑
e. Refer you to a national or state quit line	❑	❑
f. Discuss making your home smoke-free	❑	❑
g. Discuss making your car smoke-free	❑	❑

72. During any of your prenatal care visits or after your most recent delivery, did a doctor, nurse, or other health care worker talk with you about how secondhand smoke could affect your baby after birth?

- ❑ No
- ❑ Yes, during my prenatal care visits
- ❑ Yes, after my delivery
- ❑ Yes, both times

If your baby was not born in a hospital, go to Question 74.

73. This question is about pacifier use in the hospital. For each statement, check **No** if it did not apply or **Yes** if it did.

My baby used a pacifier —

	No	Yes
a. For calming	❑	❑
b. During a painful medical procedure	❑	❑

74. Did you receive a Tdap vaccination *before, during, or after* your most recent pregnancy? A Tdap vaccination is a shot that protects against tetanus, diptheria, and pertussis (or whooping cough). Tdap was new in 2005.

Check ONE answer

- ❑ No
- ❑ Yes, I received Tdap *before* my pregnancy
- ❑ Yes, I received Tdap *during* my pregnancy
- ❑ Yes, I received Tdap *after* my pregnancy
- ❑ I don't know

75. During any of the following time periods, did you use marijuana or hash in any form? For each time period, check **No** if you did not use then or **Yes** if you did.

	No	Yes
a. During the 3 months before I got pregnant	❑	❑
b. During the first 3 months of my pregnancy	❑	❑
c. During the last 3 months of my pregnancy	❑	❑
d. At any time during my most recent pregnancy	❑	❑
e. Since my new baby was born	❑	❑

If your baby is not alive or is not living with you, go to Question 77.

76. Since your new baby was born, have you participated in any of the following? For each one, check **No** if you did not participate or **Yes** if you did.

	No	Yes
a. Parenting classes	❑	❑
b. Home visitation sessions	❑	❑
c. Counseling for depression or anxiety	❑	❑
d. Support group for depression or anxiety	❑	❑

The last questions are about the time during the *12 months before* your new baby was born.

77. During the *12 months before* your new baby was born, what was your yearly total household income before taxes? Include your income, your husband's or partner's income, and any other income you may have received. *All information will be kept private* and will not affect any services you are now getting.

- ❑ $0 to $16,000
- ❑ $16,001 to $20,000
- ❑ $20,001 to $24,000
- ❑ $24,001 to $28,000
- ❑ $28,001 to $32,000
- ❑ $32,001 to $40,000
- ❑ $40,001 to $48,000
- ❑ $48,001 to $57,000
- ❑ $57,001 to $60,000
- ❑ $60,001 to $73,000
- ❑ $73,001 to $85,000
- ❑ $85,001 or more

78. During the *12 months before* your new baby was born, how many people, *including yourself*, depended on this income?

_____ People

79. What is today's date?

___ / ___ / 20___

Month Day Year

A family medical history is a record of health information about a person and his or her close relatives. The following questions are about your family history of ovarian and breast cancer.

C1. Have any of your family members listed below who are related to you by blood had ovarian cancer? For each family member, check **No** if she has not had ovarian cancer, **Yes** if she has, or **DK** if you don't know.

Family member	Had Ovarian Cancer No	Yes	DK
a. My mother	❑	❑	❑
b. My mother's mother	❑	❑	❑
c. My father's mother	❑	❑	❑

C2. Have any of your other family members who are related to you by blood had ovarian cancer? For each family member, check **No** if she has not had ovarian cancer, **Yes** if she has, **DK** if you don't know, or **NA** if the option does not apply to you.

Family member	Had Ovarian Cancer No	Yes	DK	NA
a. Sister(s)	❑	❑	❑	❑
IF YES, how many have had ovarian cancer? _____				
b. Aunt(s)	❑	❑	❑	❑
IF YES, how many have had ovarian cancer? _____				
c. Female cousin(s)	❑	❑	❑	❑
IF YES, how many have had ovarian cancer? _____				

C3. Have any of your family members listed below who are related to you by blood had breast cancer? For each family member, check **No** if they have not had breast cancer, **Yes** if they have, or **DK** if you don't know.

Family member	Had Breast Cancer No	Yes	DK
a. My mother	❑	❑	❑
b. My mother's mother	❑	❑	❑
c. My father's mother	❑	❑	❑
d. My father	❑	❑	❑
e. My mother's father	❑	❑	❑
f. My father's father	❑	❑	❑

C4. Have any of your <u>other</u> family members who are related to you by blood had breast cancer? For each family member, check **No** if they have not had breast cancer, **Yes** if they have, **DK** if you don't know, or **NA** if the option does not apply to you.

Family member	Had Breast Cancer No	Yes	DK	NA
a. Sister(s)	❑	❑	❑	❑
IF YES, how many have had breast cancer? _____				
b. Brother(s)	❑	❑	❑	❑
IF YES, how many have had breast cancer? _____				
c. Aunt(s)	❑	❑	❑	❑
IF YES, how many have had breast cancer? _____				
d. Uncle(s)	❑	❑	❑	❑
IF YES, how many have had breast cancer? _____				
e. Cousin(s)	❑	❑	❑	❑
IF YES, how many have had breast cancer? _____				

C5. Has any woman in your family who is related to you by blood had breast cancer *at age 50 or younger*?

- ❑ No
- ❑ Yes
- ❑ I don't know

C6. Has any woman in your family who is related to you by blood had both breast AND ovarian cancer?

- ❑ No
- ❑ Yes
- ❑ I don't know

C7. Have <u>any</u> of your family members related to you by blood had bilateral breast cancer (breast cancer on both sides)?

- ❑ No
- ❑ Yes
- ❑ I don't know

C8. Do you have Ashkenazi Jewish heritage?

- ❑ No
- ❑ Yes
- ❑ I don't know

The next questions are about talking to a genetic counselor about your <u>cancer risk</u>. A genetic counselor is a trained professional who talks with you about the chances of having a health condition based on your family medical history.

C9. Have you ever talked to a genetic counselor about your risk for <u>cancer</u> based on your family history?

- ❑ No → **Go to end**
- ❑ Yes

Go to Page 16, Question C10

C10. What was the MAIN reason you talked to a genetic counselor about your risk for cancer?

Check ONE answer

- ❑ My doctor recommended it
- ❑ I requested it
- ❑ A family member suggested it
- ❑ I heard or read about it in the news
- ❑ Other → Please tell us:

_____

C11. Thinking about your MOST RECENT visit to a genetic counselor for cancer risk, what kind of cancer was it for?

Check ALL that apply

- ❑ Breast cancer
- ❑ Ovarian cancer
- ❑ Other → Please tell us:

_____

Thank you for answering these questions!

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Please use this space for any additional comments you would like to make about your experiences around the time of your pregnancy or the health of mothers and babies in Colorado.

Appendix B: CDC PRAMS Phase 8 Core Questionnaire

Pregnancy Risk Assessment Monitoring System (PRAMS)

Phase 8 Core Questionnaire
06/03/16

Phase 8 Core Mail Questionnaire
June 2016

Please check the box next to your answer or follow the directions included with the question. You may be asked to skip some questions that do not apply to you.

BEFORE PREGNANCY

The first questions are about *you*.

1. **How tall are *you* without shoes?**

   [BOX] Feet **[BOX]** Inches
   OR [BOX] Centimeters

2. ***Just before* you got pregnant with your *new* baby, how much did you weigh?**

   [BOX] Pounds **OR [BOX]** Kilos

3. **What is *your* date of birth?**

[BOX]	**/[BOX]**	**/[BOX]**
Month	Day	Year

The next questions are about the time *before* you got pregnant with your *new* baby.

Insertion point for Previous Pregnancy Outcomes Series: FF5-FF7 [former Core 4-6], FF4, K1
Insertion point for Standard question L26 [former Core 7]
Insertion point for Standard question L10

4. **During the *3 months before* you got pregnant with your *new* baby, did you have any of the following health conditions?** For each one, check **No** if you did not have the condition or **Yes** if you did.

	No	**Yes**
a. Type 1 or Type 2 diabetes (**not** gestational diabetes or diabetes that starts during pregnancy)	☐	☐
b. High blood pressure or hypertension	☐	☐
c. Depression	☐	☐
d. *State-added options from Standard question L11*	☐	☐

Insertion point for Standard question L11 (add as options to Core 4)

5. **During the *month before* you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?**

I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the *month before* I got pregnant
1 to 3 times a week
4 to 6 times a week
Every day of the week

Insertion point for Standard question G8

6. In the *12 months before* you got pregnant with your new baby, did you have any health care visits with a doctor, nurse, or other health care worker, including a dental or mental health worker?

No → **Go to Question** [Core 9]
Yes

Insertion point for Standard question J5

7. What type of health care visit did you have in the *12 months before* you got pregnant with your new baby? Check ALL that apply

Regular checkup at my family doctor's office
Regular checkup at my OB/GYN's office
Visit for an illness or chronic condition
Visit for an injury
Visit for family planning or birth control
Visit for depression or anxiety
Visit to have my teeth cleaned by a dentist or dental hygienist
Other → Please tell us: _____

8. During any of your health care visits in the *12 months before* you got pregnant, did a doctor, nurse, or other health care worker do any of the following things? For each item, check **No** if they did not or **Yes** if they did.

		No	Yes
a.	Tell me to take a vitamin with folic acid	☐	☐
b.	Talk to me about maintaining a healthy weight	☐	☐
c.	Talk to me about controlling any medical conditions such as diabetes or high blood pressure	☐	☐
d.	Talk to me about my desire to have or not have children	☐	☐
e.	Talk to me about using birth control to prevent pregnancy	☐	☐
f.	Talk to me about how I could improve my health before a pregnancy	☐	☐
g.	Talk to me about sexually transmitted infections such as chlamydia, gonorrhea, or syphilis	☐	☐
h.	Ask me if I was smoking cigarettes	☐	☐
i.	Ask me if someone was hurting me emotionally or physically	☐	☐
j.	Ask me if I was feeling down or depressed	☐	☐
k.	Ask me about the kind of work I do	☐	☐

l. Test me for HIV (the virus that causes AIDS) ☐ ☐

Insertion point for Standard questions L27, L18

The next questions are about your *health insurance coverage* before, during, and after your pregnancy with your *new* baby.

9. During the *month before* you got pregnant with your new baby, what kind of health insurance did you have? Check ALL that apply

Private health insurance from my job or the job of my husband or partner
Private health insurance from my parents
Private health insurance from the *<State>* Health Insurance Marketplace or *<state website>* or HealthCare.gov
Medicaid (required: *state Medicaid name*)
State-specific option (Other government plan or program such as SCHIP/CHIP)
State-specific option (Other government plan or program not listed above such as MCH program, indigent program or family planning program)
State-specific option (TRICARE or other military health care)
State-specific option (IHS or tribal)
Other health insurance → Please tell us: _____
I did not have any health insurance during the *month before* I got pregnant

Insertion point for Standard questions DD4, DD5, DD6, DD7

10. During your *most recent pregnancy*, what kind of health insurance did you have for your *prenatal care*? Check ALL that apply

I did not go for prenatal care → **Go to Question** [Core 11]
Private health insurance from my job or the job of my husband or partner
Private health insurance from my parents
Private health insurance from the *<State>* Health Insurance Marketplace or *<state website>* or HealthCare.gov
Medicaid (required: *state Medicaid name*)
State-specific option (Other government plan or program such as SCHIP/CHIP)
State-specific option (Other government plan or program not listed above such as MCH program, indigent program or family planning program)
State-specific option (TRICARE or other military health care)
State-specific option (IHS or tribal)
Other health insurance → Please tell us: _____
I did not have any health insurance for my *prenatal care*

Insertion point for Standard questions DD8, DD9, DD10, DD11
Insertion point for Standard questions DD12, DD13, DD14, DD15, DD16

11. What kind of health insurance do you have *now*? Check ALL that apply

Private health insurance from my job or the job of my husband or partner
Private health insurance from my parents
Private health insurance from the *<State>* Health Insurance Marketplace or *<state website>* or HealthCare.gov
Medicaid (required: *state Medicaid name*)
State-specific option (Other government plan or program such as SCHIP/CHIP)
State-specific option (Other government plan or program not listed above such as MCH program, indigent program or family planning program)
State-specific option (TRICARE or other military health care)
State-specific option (IHS or tribal)
Other health insurance ➔ Please tell us: _____
I do not have health insurance *now*

Insertion point for Standard questions DD17, DD18, DD19, DD20, DD21

12. Thinking back to *just before* you got pregnant with your new baby, how did you feel about becoming pregnant? Check ONE answer

I wanted to be pregnant later
I wanted to be pregnant sooner
I wanted to be pregnant then
I didn't want to be pregnant then or at any time in the future
I wasn't sure what I wanted

Insertion point for Standard question Q4 [former Core 13]
Insertion point for Preconception Contraception Series E5, E6, E7 [former Core 14-16] & E3
Insertion point for Fertility & Fertility Treatment Series E5, Q7, A1–A2, A4, A5

DURING PREGNANCY

The next questions are about the prenatal care you received during your most recent pregnancy. Prenatal care includes visits to a doctor, nurse, or other health care worker before your baby was born to get checkups and advice about pregnancy. (It may help to look at the calendar when you answer these questions.)

Insertion point for Standard question R19

13. How many weeks *or* months pregnant were you when you had your first visit for prenatal care?

[BOX] Weeks **OR [BOX]** Months

I didn't go for prenatal care ➔ **Go to Question** [Core 15]

Insertion point for Standard questions R20, R21
Insertion point for Standard question R15
Insertion point for Standard questions R22 [former Core 19], R6, R7, R8, R9, R10, R11, R12, R14, R16

14. ***During any of your prenatal care visits*****, did a doctor, nurse, or other health care worker ask you any of the things listed below?** For each item, check **No** if they did not ask you about it or **Yes** if they did.

		No	Yes
a.	If I knew how much weight I should gain during pregnancy	☐	☐
b.	If I was taking any prescription medication	☐	☐
c.	If I was smoking cigarettes	☐	☐
d.	If I was drinking alcohol	☐	☐
e.	If someone was hurting me emotionally or physically	☐	☐
f.	If I was feeling down or depressed	☐	☐
g.	If I was using drugs such as marijuana, cocaine, crack, or meth	☐	☐
h.	If I wanted to be tested for HIV (the virus that causes AIDS)	☐	☐
i.	If I planned to breastfeed my new baby	☐	☐
j.	If I planned to use birth control after my baby was born	☐	☐

Insertion point for Standard questions R17, R18, R13, K4
Insertion point for Standard question R1
Insertion point for HIV Testing Series: I8 [former Core 20], I9, I3
Insertion point for Standard questions G5, G1-G4

15. During the 12 months *before the delivery* of your new baby, did a doctor, nurse, or other health care worker *offer* you a flu shot or *tell* you to get one?

No
Yes

16. During the 12 months *before the delivery* of your new baby, did you *get* a flu shot? Check ONE answer

No
Yes, before my pregnancy
Yes, during my pregnancy

Insertion point for Standard questions L19, L14, L15, L24

17. During *your most recent* pregnancy, did you have your teeth cleaned by a dentist or dental hygienist?

No
Yes

Insertion point for Oral Health Series: , Y7 [former Core 24], Y5, Y8, Y6
Insertion point for Childbirth Class & Home Visitation Series: R23 [former Core 25], V21 [former Core 26], V13, V14, V15, V20
Insertion point for Standard questions B12 [former Core 27], B8, B7, B4

18. During *your most recent* pregnancy, did you have any of the following health conditions? For each one, check **No** if you did not have the condition or **Yes** if you did.

		No	Yes
a.	Gestational diabetes (diabetes that **started** during *this* pregnancy)		

b. High blood pressure (that **started** during *this* pregnancy), pre-eclampsia or eclampsia
c. Depression
d. *State added options*

Insertion point for Standard questions N6, N7, M4, M9, M8
Insertion point for Standard questions N9, N8b, N8c, N1-N4
Insertion point for Standard questions N5, EE3

The next questions are about smoking cigarettes around the time of pregnancy (before, during, and after).

19. Have you smoked any cigarettes in the *past 2 years*?

No → **Go to Question** [Core 23]
Yes

20. In the *3 months before* you got pregnant, how many cigarettes did you smoke on an average day?
A pack has 20 cigarettes.

41 cigarettes or more
21 to 40 cigarettes
11 to 20 cigarettes
6 to 10 cigarettes
1 to 5 cigarettes
Less than 1 cigarette
I didn't smoke then

21. In the *last 3 months* of your pregnancy, how many cigarettes did you smoke on an average day?
A pack has 20 cigarettes.

41 cigarettes or more
21 to 40 cigarettes
11 to 20 cigarettes
6 to 10 cigarettes
1 to 5 cigarettes
Less than 1 cigarette
I didn't smoke then

Insertion point for Standard questions AA1, AA3
Insertion point for Standard questions AA2, AA12, AA6, AA10

22. How many cigarettes do you smoke on an average day *now*? A pack has 20 cigarettes.

41 cigarettes or more
21 to 40 cigarettes
11 to 20 cigarettes
6 to 10 cigarettes
1 to 5 cigarettes
Less than 1 cigarette

I don't smoke now

Insertion point for Standard questions AA8, AA5
Insertion point for Standard questions AA9, AA7, U1, U2

The next questions are about using other tobacco products around the time of pregnancy.

E-cigarettes (electronic cigarettes) and other electronic nicotine products (such as vape pens, e-hookahs, hookah pens, e-cigars, e-pipes) are battery-powered devices that use nicotine liquid rather than tobacco leaves, and produce vapor instead of smoke.

A **hookah** is a water pipe used to smoke tobacco. It is not the same as an e-hookah or hookah pen.

23. Have you used any of the following products in the *past 2 years*? For each item, check **No** if you did not use it or **Yes** if you did.

		No	Yes
a.	E-cigarettes or other electronic nicotine products ☐ ☐		
b.	Hookah	☐	☐
c.	*State added option (Chewing tobacco, snuff, snus, or dip)*	☐	☐
d.	*State added option (Cigars, cigarillos, or little filtered cigars)*	☐	☐

If you used e-cigarettes or other electronic nicotine products in the *past 2 years*, go to Question [Core 24]**. Otherwise, go to Question** [Core 26]**.**

24. During the *3 months before* you got pregnant, on average, how often did you use e-cigarettes or other electronic nicotine products?

More than once a day
Once a day
2-6 days a week
1 day a week or less
I did not use e-cigarettes or other electronic nicotine products then

25. During the *last 3 months* of your pregnancy, on average, how often did you use e-cigarettes or other electronic nicotine products?

More than once a day
Once a day
2-6 days a week
1 day a week or less
I did not use e-cigarettes or other electronic nicotine products then

Insertion point for Standard questions AA13, AA14

Phase 8 Core Mail Questionnaire
June 2016

The next questions are about drinking alcohol around the time of pregnancy.

26. Have you had any alcoholic drinks in the *past 2 years*? A drink is 1 glass of wine, wine cooler, can or bottle of beer, shot of liquor, or mixed drink.

No ➔ **Go to Question** [Core 28]
Yes

27. During the *3 months before* you got pregnant, how many alcoholic drinks did you have in an average week?

14 drinks or more a week
8 to 13 drinks a week
4 to 7 drinks a week
1 to 3 drinks a week
Less than 1 drink a week
I didn't drink then

Insertion point for Standard questions JJ1, JJ3 [former Core 35], JJ2

Pregnancy can be a difficult time.. The next questions are about things that may have happened *before* and *during* your most recent pregnancy.

Insertion point for Standard questions P19 [former Core 36], P14, P17, P15, P16
Insertion point for Standard questions BB1, Z7

28. In the *12 months before you got pregnant* with your new baby, did any of the following people push, hit, slap, kick, choke, or physically hurt you in any other way? For each person, check **No** if they did not hurt you during this time or **Yes** if they did.

	No	Yes
a. My husband or partner	☐	☐
b. My ex-husband or ex-partner	☐	☐
c. *State option (Another family member)*	☐	☐
d. *State option (Someone else)*	☐	☐

Insertion point for Standard question Z14

29. During *your most recent pregnancy*, did any of the following people push, hit, slap, kick, choke, or physically hurt you in any other way? For each person, check **No** if they did not hurt you during this time or **Yes** if they did.

	No	Yes
a. My husband or partner	☐	☐
b. My ex-husband or ex-partner	☐	☐
c. *State option (Another family member)*	☐	☐
d. *State option (Someone else)*	☐	☐

Insertion point for Standard question Z1

Phase 8 Core Mail Questionnaire
June 2016

AFTER PREGNANCY

The next questions are about the time since your new baby was born.

Insertion point for Standard questions K13, K14, K5

30. When was your new baby born?

[BOX]	/[BOX]	/20___[BOX]
Month	Day	Year

Insertion point for Labor Interventions Series: K9, K10, K8, K3, K7, K6
Insertion point for Standard questions K15, II1 [former Core 40]
Insertion point for Standard question K16 [former Core 41]

31. After your baby was delivered, how long did he or she stay in the hospital?

Less than 24 hours (less than 1 day)
24 to 48 hours (1 to 2 days)
3 to 5 days
6 to 14 days
More than 14 days
My baby was not born in a hospital
My baby is still in the hospital → **Go to Question** [Core 34]

Insertion point for Standard questions K11, K12

32. Is your baby alive now?

No → *We are very sorry for your loss.* **Go to Question** [Core 43]
Yes

33. Is your baby living with you now?

No → **Go to Question** [Core 43]
Yes

Insertion point for Standard question B9

34. ***Before or after your new baby was born*****, did you receive information about breastfeeding from any of the following sources?** For each one, check **No** if you did not receive information from this source or **Yes** if you did.

	No	**Yes**
a. My doctor		
b. A nurse, midwife, or doula		
c. A breastfeeding or lactation specialist		

d. My baby's doctor or health care provider
e. A breastfeeding support group
f. A breastfeeding hotline or toll-free number
g. Family or friends
h. Other → Please tell us: _____

35. Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?

No → **Go to Question** [Core 38]
Yes

Insertion point for Standard question B1
Insertion point for Standard question B13

36. Are you currently breastfeeding or feeding pumped milk to your new baby?

No
Yes → **Go to Question** [Core 38]

37. How many weeks or months did you breastfeed or feed pumped milk to your baby?

Less than 1 week

[BOX] Weeks **OR** **[BOX]** Months

Insertion point for Standard questions B2, B14-B16
Insertion point for Standard questions B3, B10, B11, B5, B6
Insertion point for Standard questions H2, H6, H7, H5, H1, H3, H4
Insertion point for Standard question S13

If your baby is still in the hospital, go to Question [Core 43]**.**

38. In which *one* position do you *most often* lay your baby down to sleep now? Check ONE answer

On his or her side
On his or her back
On his or her stomach

39. In the *past 2 weeks*, how often has your new baby slept alone in his or her own crib or bed?

Always
Often
Sometimes
Rarely
Never → **Go to Question** [Core 41]

Insertion point for Standard question F4

40. When your new baby sleeps alone, is his or her crib or bed in the same room where *you* sleep?

No
Yes

41.
Listed below are some more things about how babies sleep. How did your new baby *usually* sleep in the *past 2 weeks*? For each item, check **No** if your baby did not *usually* sleep like this or **Yes** if he or she did.

		No	Yes
a.	In a crib, bassinet, or pack and play	☐	☐
b.	On a twin or larger mattress or bed	☐	☐
c.	On a couch, sofa, or armchair	☐	☐
d.	In an infant car seat or swing	☐	☐
e.	In a sleeping sack or wearable blanket	☐	☐
f.	With a blanket	☐	☐
g.	With toys, cushions, or pillows, including nursing pillows	☐	☐
h.	With crib bumper pads (mesh or non-mesh)	☐	☐

42. Did a doctor, nurse, or other health care worker tell you any of the following things? For each thing, check **No** if they did not tell you or **Yes** if they did.

		No	Yes
a.	Place my baby on his or her back to sleep		
b.	Place my baby to sleep in a crib, bassinet, or pack and play		
c.	Place my baby's crib or bed in my room		
d.	What things should and should not go in bed with my baby		

Insertion point for Infant Well Care Visit Series: X10, X6, X9, X7, X8, X1, X4, X2, X3, X5, X11, X12
Insertion point for Infant Sick Care Series: T4, T5, T1, T2, T3, T8, T6, T7
Insertion point for Postpartum Home Visitation Series: V22 [former Core 49], V16, V17, V18, V19

43. Are you or your husband or partner doing anything *now* to keep from getting pregnant? Some things people do to keep from getting pregnant include having their tubes tied, using birth control pills, condoms, withdrawal, or natural family planning.

No
Yes → **Go to Question** [Core 45]

44. What are your reasons or your husband's or partner's reasons for not doing anything to keep from getting pregnant *now*? Check ALL that apply

I want to get pregnant
I am pregnant now

I had my tubes tied or blocked
I don't want to use birth control
I am worried about side effects from birth control
I am not having sex
My husband or partner doesn't want to use anything
I have problems paying for birth control
Other → Please tell us: _____

If you or your husband or partner is <u>not doing</u> anything to keep from getting pregnant *now*, go to Question [Core 46].

45. What kind of birth control are you or your husband or partner using *now* to keep from getting pregnant? Check ALL that apply

Tubes tied or blocked (female sterilization or Essure®)
Vasectomy (male sterilization)
Birth control pills
Condoms
Shots or injections (Depo-Provera®)
Contraceptive patch (OrthoEvra®) or vaginal ring (NuvaRing®)
IUD (including Mirena®, ParaGard®, Liletta®, or Skyla®)
Contraceptive implant in the arm (Nexplanon® or Implanon®)
Natural family planning (including rhythm method)
Withdrawal (pulling out)
Not having sex (abstinence)
Other → Please tell us: _____

46. *Since your new baby was born,* have you had a postpartum checkup for yourself? A postpartum checkup is the regular checkup a woman has about 4-6 weeks after she gives birth.

No → **Go to Question** [Core 48]
Yes

<u>Insertion point for Standard questions J3, J2</u>

47. *During your postpartum checkup,* did a doctor, nurse, or other health care worker <u>do</u> any of the following things? For each item, check **No** if they did not do it or **Yes** if they did.

		No	Yes
a.	Tell me to take a vitamin with folic acid	☐	☐
b.	Talk to me about healthy eating, exercise, and losing weight gained during pregnancy	☐	☐
c.	Talk to me about how long to wait before getting pregnant again	☐	☐
d.	Talk to me about birth control methods I can use after giving birth	☐	☐
e.	Give or prescribe me a contraceptive method such as the pill, patch,		

	shot (Depo-Provera®), NuvaRing®, or condoms	☐	☐
f.	Insert an IUD (Mirena®, ParaGard®, Liletta®, or Skyla®) or a contraceptive implant (Nexplanon® or Implanon®)	☐	☐
g.	Ask me if I was smoking cigarettes	☐	☐
h.	Ask me if someone was hurting me emotionally or physically	☐	☐
i.	Ask me if I was feeling down or depressed	☐	☐
j.	Test me for diabetes	☐	☐

Insertion point for Standard question J4
Insertion point for Standard questions O4-O6, O1-O3, L28, L29

48. *Since your new baby was born*, how often have you felt down, depressed, or hopeless?

Always
Often
Sometimes
Rarely
Never

49. *Since your new baby was born*, how often have you had little interest or little pleasure in doing things you usually enjoyed?

Always
Often
Sometimes
Rarely
Never

Insertion point for Standard questions M6, M5, M11, M10
Insertion point for Standard questions M12, M21, M15, M16, M20, M19
Insertion point for Standard questions Z13, Z2

OTHER EXPERIENCES

The next questions are on a variety of topics.

[STATE-SPECIFIC SECTION]

The last questions are about the time during the *12 months before* your new baby was born.

Insertion point for Standard Question: P18

50. During the *12 months before* your new baby was born, what was your yearly total household income before taxes? Include your income, your husband's or partner's income, and any other income you may have received. *All information will be kept private* and will not affect any services you are now getting.

$0 to $16,000
$16,001 to $20,000
$20,001 to $24,000
$24,001 to $28,000
$28,001 to $32,000
$32,001 to $40,000
$40,001 to $48,000
$48,001 to $57,000
$57,001 to $60,000
$60,001 to $73,000
$73,001 to $85,000
$85,001 or more

(Note: *States can add additional categories as long as the categories are collapsible back to the existing core categories.*)

51. During the *12 months before* your new baby was born, how many people, *including yourself*, depended on this income?

[BOX] People

52. What is today's date?

[BOX]	**/[BOX]**	**/20___[BOX]**
Month	Day	Year

Appendix C: G*Power Analysis