WALDEN UNIVERSITY
A higher degree. A higher purpose.

Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies

Walden Dissertations and Doctoral Studies Collection

2018

Physical and Psychological Health Outcomes of Pregnancy-Related Intimate Partner Violence

Darrlyn Waynette Cornelius-Averhart
Walden University

Follow this and additional works at: https://scholarworks.waldenu.edu/dissertations

 Part of the Public Health Education and Promotion Commons

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Darrlyn Cornelius-Averhart

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.

Review Committee
Dr. Vasileios Margaritis, Committee Chairperson, Public Health Faculty
Dr. Peter Anderson, Committee Member, Public Health Faculty
Dr. Kai Stewart, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

Physical and Psychological Health Outcomes of Pregnancy-Related Intimate Partner Violence

by

Darrlyn Cornelius-Averhart

MPH, Florida Agricultural and Mechanical University, 2001

BS, Paine College, 1999

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

Walden University

February 2019

Abstract

Intimate partner violence (IPV) is a public health issue that transcends cultures and nationalities. Women and men have been impacted by sexual violence through rape and other types of IPV. Each year, women experience IPV before and during pregnancies and are impacted by physical and psychological outcomes as a result. The purpose of the study was to examine the impact of IPV on the health outcomes of diabetes (Types 1, 2, and gestational), high blood pressure before pregnancy, and depression/anxiety among adult women before and during pregnancy. The social ecological model provided the framework for this quantitative cross-sectional study that included national data from the Pregnancy Risk Assessment Monitoring System between 2012 and 2015. A series of binary logistic regressions was conducted. Findings indicated significant predictive relationships between IPV and diabetes before pregnancy (*OR* = 1.20, 95% *CI* = 1.01-1.43), high blood pressure before pregnancy (*OR* = 1.65, 95% *CI* =1.47-1.85), and depression/anxiety before and during pregnancy, respectively (*OR* = 3.14, 95% *CI* 2.91-3.35 and *OR* = 9.03, 95% *CI* 7.37-11.05) after controlling for age, income, and race. A social change implication of this study is that results from this project may assist in increasing societal knowledge of what IPV is and its physical and psychological impacts on women before and during pregnancy.

Physical and Psychological Health Outcomes of Pregnancy-Related Intimate Partner Violence

by

Darrlyn Cornelius-Averhart

MPH, Florida Agricultural and Mechanical University, 2001

BS, Paine College, 1999

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

Walden University

February 2019

Dedication

This doctoral study is dedicated to all of my family and friends that have provided support throughout this process; those that asked, even when they may not have wanted, those that listened when they may not have wanted and those that prayed when they needed. Most of all, I'd like to dedicate this body of work to my wonderful parents that instilled the importance of education, walked the walk they talked, and prayed the prayers they prayed, Darrell and Connie Cornelius. I'd like to dedicate this body of knowledge to my husband, Altonio Kareem Averhart and my wonderful children, Jalen Tyler and Braylen Kyle Averhart. Without their love, patience, and understanding, we would have never made it to this point in our lives. Just as my parents showed me the importance of education and that it is truly one of the most important things in life that once you acquire no one can take it from you; I've dreamt of the day that I too could show my boys the same through this terminal degree. Those above have made it possible for me to see one of my main dreams and finalize one phase of my plan in life that I knew God had for me.

Lastly, I'd like to dedicate the doctoral study to anyone who has experienced any type of sexual violence. It's never too late to end violence; know your value, learn yourself and trust God. If you make one step, he'll make two.

"Take the first step in faith. You don't have to see the whole staircase, just take the first step."

Martin Luther King, Jr.

Acknowledgments

I want to extend my most heartfelt thank you to all of my family, friends, colleagues and sorority sisters that supported me through this journey. To God be the glory and I couldn't have completed this without you.

I would be remise if I did not acknowledge and thank my committee members: Dr. Vasileios Margaritis, Dr. Anderson, and Dr. Stewart. To Dr. Margaritis, my Dr. VM, thank you so much for being not only my chair, but such a wise guide who not only helped me remain on track, but providing needed wisdom for this program as I balanced being a mother, wife, daughter, student, supervisor, active community member and an active duty officer. Your timing was always perfect, your push was always needed and your support was always appreciated. For this I am very grateful and always appreciate your perspective. Dr. Anderson, thank you for offering me guidance, feedback, and support; even before being assigned to me; you provided great feedback to help me focus my area of and that initial push has helped bring me to this point. Dr. Stewart, thank you, for an excellent URR review, providing feedback in a timely fashion. Without each of you giving me exceptional guidance, I would not have finished my journey.

I would also like to thank the late Dr. Purna Mohanty, my advisor while at Paine College, who took me under his wings, helped me define my fate in public health, encouraged me to not only gain my MPH, but to chase this doctorate at Walden University. Dr. Mohanty has since left this earth, but never my heart. Lastly to those at Florida A&M University and the Centers for Disease Control and Prevention (CDC), Pregnancy Risk Assessment Monitoring System (PRAMS), I thank you.

Table of Contents

List of Tables

Section 1: Foundation of the Study and Literature Review

Introduction

Intimate partner violence (IPV), which involves actual physical or sexual violence, emotional stalking, or psychological aggression that is inflicted by a current or former intimate partner, is a preventable public health issue (Breiding et al., 2015; Centers for Disease Control and Prevention (CDC), 2008). An estimated 43.9% of women, 1 in 3, have experienced forms of sexual violence in their lifetime (Breiding et al., 2014; Smith et al., 2017). Additionally, IPV has been linked to death; 16% of victims are murdered by an intimate partner, and in addition, over 40% of female homicide victims are killed by an intimate partner (Cooper & Smith, 2011). An estimated two million injuries among women are linked to adverse health consequences that are chronic in nature and unhealthy risk behaviors that can greatly impact one's life (Black, 2011; CDC, 2008). Survivors of IPV experience mental health consequences that include depression (Warshaw, Brashler, & Gil, 2009). This is an important issue that deserves to be addressed; however, it is important to note there has been a lack of research in the past 10 years on sexual violence and IPV. Adverse health consequences exist for those who have experienced IPV, with a greater frequency, burden, and impact on women resulting in greater health outcomes (Black, 2011). Therefore, this study focused primarily on women who have experienced sexual violence and IPV.

My study focused on sexual violence, particularly IPV, related to the impact on pregnancy, including health conditions of diabetes, high blood pressure, and the mental health variable of depression before and during pregnancy. For this study purpose, I used

secondary ongoing state and population-based data from the CDC's Pregnancy Risk Assessment Monitoring System (PRAMS). The PRAMS data included state and population-based self-reported data regarding maternal behaviors and experiences, before, during, and after pregnancy (Beck et al., 2002). This study needed to be conducted to further examine the impact of IPV among women before and during pregnancy to address a gap in the research focused on chronic disease and mental health. The results of this study were used to decrease the frequency of and limit the impact of pregnancy-related IPV. Additionally, the PRAMS collected variables that directly aligned with this study.

Section 1 is comprised of 11 subsections: the research problems and issues addressed in this study, purpose of the study, two research questions (RQs) and associated hypotheses, theoretical foundation, literature strategy and review, nature of the study, including the rationale for the study design, terms used in the study, assumptions for the study, scope and delimitations addressing validity, study boundaries, and generalizability, limitations, and the study's significance. This section is also comprised of potential contributions of the study to society. Implications for positive social change will also be included in this section.

Problem Statement

The prevalence of sexual violence among young adults transcends across genders, affecting 32.1% of women and 13% of men at some point in their lives, and sexual violence impacts many females and males across their lifespan (Basile, Smith, Breiding, Black, & Mahendra, 2014). In the United States, 19.3% of women and 1.7% of men have

been raped during their lifetime (Breiding et al., 2014). Moreover, 324,000 women each year experience IPV during pregnancy (Gazmararian et al., 2000). In this study, I examined associations between IPV both before and during pregnancy among pregnant adult women. There were a number of physical and psychological outcomes resulting from IPV that included brain and nervous system, mental health outcomes, cardiovascular system, gastrointestinal system, genitourinary system, and other health outcomes and health risk behaviors (Black, 2011). I examined whether the health conditions of diabetes, high blood pressure, and the mental health variable of depression were associated with victimization before and during pregnancy. The population under study included women who have had a recent live birth. Currently, 83% of all live births are included in the study, with forty-seven states, New York City, Puerto Rico, the District of Columbia and the Great Plains Tribal Chairmen's Health Board (GPTCHB) participating in PRAMS. This information was extracted from the state's birth certificate file. Data focused on maternal attitudes and experiences before, during, and shortly after pregnancy.

Santanularia et al. (2014) found a higher prevalence of health risk behaviors among women who ever experienced sexual assault compared to women who did not. These chronic issues included disability and asthma, joint disease, activity limitation, and mental health conditions of depression, anxiety, and suicidal ideation. Women who reported IPV during their lifetime were more likely to report similar health issues of disability, heart disease, diabetes, cancer, stroke, and asthma; and behaviors of drinking, obesity, smoking, hypertension, and high cholesterol (Breiding et al., 2008; Delara, 2016;

Smith et al., 2017; WHO, 2012). IPV is a known public health problem that can negatively impact millions of people in the United States each year in terms of immediate harm as well as through negative long-term health impacts (Breiding et al., 2014). Forms of violence, such as physical, emotional and sexual can lead to serious short- and long-term consequences including physical injury, poor mental health, and chronic physical health problems (Black et al., 2011; Coker et al., 2000; Delara, 2016; WHO, 2012).

Black et al. (2011) found that depression was more likely to be experienced by those who have experienced IPV. Furthermore, frequently occurring IPV has been linked to depression and hypertension (Go et al., 2013; Kendall-Tackett, 2007). Because of the relationship with IPV, it was important to further examine the relationship between IPV and hypertension. Hypertension or high blood pressure involves the force of blood that pushes against the walls of the arteries, carrying blood from the heart to other parts of the body (CDC, 2017). Hypertension increases the risk for heart disease for Americans (Yoon, Fryar, & Carroll, 2015). Heart disease is the leading cause of one in four deaths for women in the United States (Xu et al., 2016). Because high blood pressure continues into adulthood from adolescence, it is important to examine the link between IPV and the incidence of hypertension in women. Greater rates of hypertension and type 2 diabetes) are linked with childhood violence and physical health outcomes (Riley, 2010; Rich-Edwards et al., 2010).

Purpose of the Study

The purpose of this quantitative research was to address sexual violence, particularly IPV and its impact on the mental health variable of depression/anxiety and

the health conditions of diabetes and high blood pressure before and during pregnancy among pregnant adult women surveyed in the PRAMS Phase 7 from 2012 to 2015. The health status of women before and during pregnancy may be unique, with health needs that differ from the larger population of women. This study could facilitate discussion in this area of violence against women and fill a gap in the literature for IPV and pregnant women.

Research Questions and Hypotheses

RQ1- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between (IPV) experienced before getting pregnant and the occurrences of the health conditions of diabetes and high blood pressure after controlling for age, income, and race of adult women before pregnancy?

$H_0$1: There is no association between IPV occurrences and the health condition of diabetes and high blood pressure amongst adult women, before getting pregnant, surveyed in the PRAMS Phase 7 from 2012 to 2015.

H_a1: There is an association between IPV occurrences and the health condition of diabetes and high blood pressure amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ2- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV experienced before getting pregnant and the occurrences of the health condition of depression/anxiety after controlling for age, income, and race of adult women before pregnancy?

$H_0$2: There is no association between IPV occurrences and the health condition of depression/anxiety amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 before getting pregnant, surveyed in the PRAMS, Phase 7 between 2012 and 2015.

H_a2: There is an association between IPV occurrences and the health condition depression/anxiety amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ3-Quantititve: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcome of gestational diabetes, controlling for age, income, and race of adult women while pregnant?

$H_0$3: There is no association between IPV occurrences during pregnancy and the physical health outcome of diabetes amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

H_a3: There is an association between IPV occurrences during pregnancy and the physical health outcome of diabetes amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ4-Quantititve*:* Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcomes of depression/anxiety after controlling for age, income, and race of adult women while pregnant?

$H_0$4: There is no association between IPV occurrences during pregnancy and the physical health outcomes of depression/anxiety amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

H_a4: There is an association between IPV occurrences during pregnancy and the physical health outcomes of depression/anxiety amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

Theoretical Foundations for the Study

The theoretical framework used during this research was Bandura's social ecological model (SEM). There were a number of variations of SEMs beginning with the perceptions of environments to emphasis on direct effects of environments on behavior (Lewin & Cartwright, 1951; Barker, 1968). Brofenbrenner's (1979) described the effects of a person's ecological environment describing levels of micro, meso, and exo environment approach fostering societal attitudes that valued work at all levels. Whereas McLeroy et al (1988) focused on the five sources of influence and For the purpose of this study, SEM has been selected to depict the multifaceted nature of IPV and pregnant adult women. The five levels of influence of the SEM are intrapersonal, interpersonal, organizational, community, and public policy levels (Glanz, Rimmer, & Viswanath, 2008). The intrapersonal level pertains to the individual characteristics of the pregnant adult female (Glanz, Rimmer, & Viswanath, 2008). The interpersonal level is centered on the social network of the pregnant adult female (Glanz, Rimmer, & Viswanath, 2008). The organizational level concerns institutions and organizations impacting the pregnant adult female (Institute of Medicine, IOM, 2003). The community level is related to the

environment of the pregnant adult women and community norms (Institute of Medicine, IOM, 2003). SEM assists in identifying needed behaviors for change in terms of reduction of IPV and pregnancy-related health outcomes (Gazmararian et al., 2005; Green, Richard, & Potvin, 1996).

SEM has been used to depict the multifaceted nature of multiple public health issues, in particular violence prevention (CDC, 2018). The CDC (2018) uses the SEM as a framework for prevention, taking into account interactions between individual, relationship, community, and societal factors. IPV is an interpersonal issue that impacts diabetes, high blood pressure, and depression. There is a complex relationship between adult pregnant females who experience IPV and community and societal factors that impact diabetes, high blood pressure, and depression. The Washington Coalition of Sexual Assault Programs (2018) used the SEM as a behavior change model, noting the complexity of sexual violence due to various life influences, providing a framework for understanding different influences and their relationship to one another. Within this study the relationships of how factors interrelate were important and existed within the context of the model, which further align the research questions identified. Using SEM, this research further described the influencing factors at each level of SEM to consider when trying to encourage the elimination and prevention of IPV factors that were especially relevant to pregnant adult women (Willis & Jozkowski, 2018).

Additional use of SEM has been shown nationally and internationally to further understand partner violence. From a national framework CDC, used the four level SEM to gain a cleared understanding of the relationship between external factors to further

understand and prevent violence (Dahlberg & Krug, 2002). Internationally, Gashaw, Schei, and Magnus (2018) said that IPV in pregnancy was not only prevalent among Ethiopian women but associated with multiple social ecological factors. For the purpose of this study, diabetes, high blood pressure, and depression were discussed to examine SEM, its factors, and relationships that may put adult pregnant females at risk for or protect them from experiencing IPV.

SEM allowed for an understanding of IPV and the multiple levels of interactions within a social system of IPV and those impacted. Dooris et al. (2007) said SEM was a holistic approach for development of supportive and protective measures. SEM was used to further examine the relationships and range of factors as to how factors influenced other levels. More specifically, this study explored diabetes, high blood pressure, and depression, with research identifying mental illnesses and depression as a condition associated with these chronic diseases that resulted in morbidity and mortality (Reeves et al., 2011).

Relationships could connect SEM and IPV through the interrelated linkages amid multiple factors or those determinants that affected health (IOM, 2003). For example, learning processes included learning behavior from social interactions and experiences (Powers et al., 2017). The SEM aligns with IPV in that research has shown that the importance of both physical and social environments could shape patterns of disease and injury and play a part in individuals' responses to them within their life (Fielding, Teutsch, & Breslow, 2010; Wharf Higgins, Begoray, & MacDonald, 2009). Additionally, SEM was a comprehensive framework that allowed for a thorough

exploration of the causal process of applying and addressing IPV from an ecological approach providing a framework, if needed, to develop strategies to influence multiple levels and determinants of health (Frieden, 2010 & IOM, 2003).

Nature of the Study

In this cross-sectional quantitative study, I used secondary data collected via questionnaire from PRAMS, developed in 1987 that covered an extensive list of topics. PRAMS is an ongoing state- and population-based surveillance system that collects data regarding a selected number of maternal behaviors before, during, and after pregnancy, representing about 75% of all live births in the United States (CDC, 2008). This approach aligned with the problem statement in that it helped to further examine whether any health outcomes were related to the occurrence of IPV experiences and the impact on public health. The independent screening determinants in this proposal and independent variables were (a) adult women before getting pregnant surveyed who experienced IPV and (b) adult pregnant women surveyed who experienced IPV. The dependent screening determinants in this proposal and dependent variables included (a) the health condition of (Type 1, Type 2, and gestational diabetes), (b) the health condition of high blood pressure or hypertension (only before pregnancy), and (c) the health condition of psychological health outcomes of depression/anxiety. The control screening determinants in this proposal and covariates were age, income, and race.

The population surveyed included a sample of women who have had a recent live birth based on information from the state's birth certificate file. Of the 47 participating states and New York City, Puerto Rico, the District of Columbia, and the Great Plains

Tribal Chairmen's Health Board (GPTCHB), between 1,300 and 3,400 women per year are invited to participate in PRAMS. Oversampling was used for higher risk populations to ensure adequate data (CDC, 2017).

According to the World Health Organization, (WHO), (2012), women who experienced IPV had more health needs and more often sought health services than the general population, and the use of these services rose as the frequency and severity of violence increased. Additionally, these women are less likely to seek preventive care, such as mammograms, cholesterol and blood pressure checks, and cancer screening, resulting in significant implications for the overall health of these women, and healthcare costs.

Literature Search Strategy

Five databases (Ovid/Medline, Scopus, EMBASE, PsycINFO, and CINAHL), two libraries (CDC and Walden University), and Google Scholar were examined to locate scholarly journal articles. Key words were used to assist in finding and seeking relevant literature. Key words were, but not limited to *sexual violence*, *domestic violence*, *intimate partner violence*, *partner abuse*, *pregnancy*, *physical*, *psychological public health impacts*, *chronic disease*, *depression*, *stress*, *diabetes*, *diabetes mellitus*, *hypertension*, *high blood pressure*, and *Social Ecological Model (SEM)*. The research was initially limited to articles published in the past 5 years, but key information was extracted from articles as far back as 2002.

Literature Review Related to Key Variables and/or Concepts

In this subsection, I examined literature on sexual violence, IPV, and health consequences of IPV. The health consequences were depression, diabetes, and high blood pressure. I also described gaps in the literature related to outcomes of IPV.

Sexual Violence

Sexual violence is very prevalent in our society and the health consequences can be chronic and long-lasting (Santanularia et al., 2014; WHO, 2012). Sexual violence is a broad category that encompasses unwanted sexual acts while IPV focuses on close personal relationships. Both sexual violence and IPV have close associations in the literature and research, which will be discussed in this section. Black et al., (2011) reported that nearly one out 10 women have been raped by an intimate partner, with approximately one in six women experiencing sexual violence in their lifetime; moreover, 35.6% women in the United States have experienced IPV at some point in their lifetime (Black et al., 2011).

Consequences of sexual violence present in both physical and psychological terms have negative mental and physical health outcomes (Choudhary, Smith, & Bossart, 2012; Cornelius, Close, & Thompson-Robinson, 2003; WHO, 2012). I conducted an investigation of sexual violence that focuses solely on IPV and physical health outcomes related to gestational diabetes, hypertension, and depression among pregnant adult women. The study will also focus on IPV and physical health outcomes related to diabetes, hypertension, and depression before pregnancy.

IPV

IPV is one type of sexual violence. It can also be referred to as domestic violence, family violence, or spousal abuse. IPV has been deemed a significant public health issue. It has been linked to common health issues of 3-13% of pregnancy studies across the world (Black et al., 2011; Campbell, 2002; CDC, 2017). National databases were limited in terms of recent data being readily available, with only the National Violence against Women Survey (NISVS) from 2010, 1996 to 1995, regardless, the public health discussion has continued regarding the significance of IPV and how to address the violence. The NISVS is a comprehensive national and state level, ongoing survey that collects data on intimate partner violence, sexual violence and stalking victimization in the United States. Breiding et al. (2014) found from the NISVS that 43.9% of women experienced sexual violence, 15.8% experienced IPV, and 31.5% experienced physical violence by an intimate partner in their lifetime. Because IPV was viewed as a private matter and typically occurred in private setting, occurrences may not have been reported. I focused on the IPV epidemic's impact on pregnant adult women who have experienced IPV before and during pregnancy as national information and data has been limited.

Health Consequences of IPV

IPV experiences can have an intense effect on health conditions and risk factors (Smith & Breiding, 2011). Adverse experiences included sexual abuse and have been found to be linked to physical conditions. Huang et al. (2015) found an association of elevated risk of type 2 diabetes among those who experienced IPV, while Campbell,

Walker and Egede (2016) found increased risk for diabetes and heart disease associations.

Women with a history of IPV report 60% higher rates related to chronic health problems than women with no history of abuse (Campbell et al. 2002). The WHO (2012) reported there to be significant health consequences as a result of IPV, which can be physical, mental, and behavioral as well as acute or chronic. Santaularia et al., (2014) conducted a study using secondary data from the Kansas BRFSS, to identify sexual violence, health risk behaviors and chronic disease conditions. Significantly high prevalence of chronic diseases and health behaviors, smoking, excessive alcohol use, Human Immunodeficiency Virus (HIV), asthma, high cholesterol, and heart disease have been linked to experiences of nonconsensual sex for men and women (Smith & Breiding, 2011).

Linkages have been found across research confirming that IPV and health consequences exist. Mathew et al. (2013) addressed infectious and chronic disease based on the impact of IPV. Breiding and Armour (2015) focused on the association between disability and IPV in the United States through a nationally representative sample of U.S. women and men. Health consequences of IPV are not always acute injuries, but can present physically with chronic diseases or psychologically with mental health issues (Sugg, 2015). Findings from these studies justified the need for research to further examine whether links exist related to health consequences among pregnant women before and during pregnancy who have experienced IPV.

Diabetes and IPV

Abuse victimization has been associated with type 2 diabetes (Rich-Edwards, 2010). Limited information exists regarding the correlation between IPV and common stressors that may influence the development of type 2 diabetes. Mason et al., (2013) showed a 15-20% increase in type 2 diabetes incidence in women who have experienced 5 or more years of any physical, sexual, or emotional IPV. This study was directly related in that it examined type 2 diabetes and IPV however, a gap remained in the inclusion of pregnant adult women. However, other studies have found chronic stress linked with elevation of blood levels of triglycerides, free fatty acids, cholesterol, glucose, and insulin, there could be a link between diabetes and IPV (Lovallo, 1997; Meaney, 1997; Sapolsky, 1994).

Additionally, abuse in childhood or adolescence is associated with an increased risk of diabetes (Huang et al., 2015; Rich-Edwards et al., 2010). This suggests type 2 diabetes risk is elevated based on past adverse childhood experiences. Past research focused on adult women and childhood or adolescents' associations regarding diabetes. There remains a gap in terms of research of IPV, pregnancy, and diabetes. However, this current research provided an additional focus by examining any link between IPV and outcomes of diabetes.

High Blood Pressure and IPV

High blood pressure is a common disease and can lead to deadly consequences. Approximately 75 million U.S. adults having a diagnosis of high blood pressure (Merai et

al., 2016). High blood pressure increases the risk for heart disease, one of the leading causes of death for Americans (Yoon et al., 2015).

Breiding et al. (2008) found that women who have experienced IPV have a higher prevalence of high blood pressure, along with an increased risk of engaging in risky behaviors that can result in chronic health issues. Cardiovascular health issues are a part of chronic health and there is a consistent relationship regarding partner violence exposure and cardiovascular endpoints (Suglia, Sapra & Koenen, 2015). Although physical and sexual abuse were not significantly associated with hypertension, women who reported severe emotional abuse were 24% more likely to have hypertension (Mason et al., 2012). This study further examined the association between IPV and hypertension inclusive of women before and during pregnancy.

IPV and hypertension affects different groups of women. Dichter et al., (2011) found that IPV victimization among women veterans exists and has been associated with heart health risks. In addition, IPV experiences were associated with depression, smoking, and heavy drinking. Although Dichter et al., (2011) focused on IPV and veterans, a different audience of women, the study contributes to the research population.

A number of researchers examined IPV and high blood pressure, linking a positive association with self-diagnosed cardiovascular disease (Breiding et al., 2008; Gass et al., 2010). Clark et al. (2016) found that exposure to IPV was related to a higher risk of cardiovascular disease later in adulthood as compared to individuals who were not exposed to IPV. Because this research only examined adolescent health and the

subsequent cardiovascular risk in adulthood, there remains a need to examine pregnant adult women.

Depression and IPV

Psychological consequences of IPV such as postpartum depression and stress have been associated with IPV while pregnant (Bhandari et al., 2012). Depression and stress has been studied in varied populations, resulting in rates from less than one percent to fifty percent (Bailey, 2010; Ludermir et al., 2010; Taillieu and Brownrider, 2010). Both prenatal and postpartum depression have significant health consequences during pregnancy, with prenatal depression increasing the risk of complications during pregnancy (Chung, Lau, Yip, Chiu, & Lee, 2001). Health consequences impact suicidality (Lindahl, Pearson, & Colpe, 2005), and postpartum depression, and even jeopardize a woman's future health (Lee et al., 2007; Sundaram et al., 2014; Yonkers et al., 2001. Women who experience IPV may be at risk for negative psychological health consequences (Birkley et al., 2016; Kastello et al., 2016). Women who experienced IPV were found to have elevated rates of depression between pregnancy and 13 months after birth (Rodriguez et al., 2010). Such findings confirm the critical need to further example IPV while pregnant from a national perspective.

One of the more prevalent psychological disorders in the general population is depression (Choudhary et al., 2012). Adverse mental health outcomes have been found to be more prevalent among women, with abuse being a risk factor for increased health problems (Campbell, 2002). IPV has long term negative health effects even after the abuse has ended (Campbell & Lewandowski, 1997). Sexual violence has been linked to

mental health outcomes and associations between mental and relational health while pregnant (Choudhary et al., 2008; Flanagan et al., 2015). Escriba-Aguir et al. (2012) found incidences of IPV among Spanish women to be higher during the postpartum period. Additionally, in review of one year of medical history with women experiencing IPV, Bonomi et al. (2009) found medical and psychosocial conditions were connected. This suggested that there may be an association of violence and depression. Because depression has been associated with pregnancy, research focused in this area will assist in further examination of this relationship.

From the Behavioral Risk Factor Surveillance System (BRFSS), a nationally representative health-related telephone surveys that collect data on health-related risk behaviors, chronic health conditions, and use of preventive services. BRFSS modules, out of 5% of victims who experienced sexual violence, 18.82% were diagnosed with depression (Choudhary et al., 2012). Those with low social support experiencing IPV had more depressive symptoms (Douge, 2014). Postpartum depression is a serious issue that is highly associated with IPV (Faisal-Cury, 2013; LaCoursiere et al., 2012).

Depression and chronic pain are related and found to be prevalent co-occurring problems for those experiencing IPV; can obstruct use and outcomes in traditional healthcare (Poleshuck et al., 2016). There is an increase in research regarding IPV and depression. This study focused on adult pregnant women experience IPV and depression.

Depression is one of the most prevalent mental health outcomes among women (United Nations General Assembly, 2006). An increased risk of depression has been found among women who experience IPV, and lack of positive support can increase

stress, anxiety, and negative mental health impacts (Bhandari et al., 2012; Bonomi, 2009). Internationally, IPV and depression affects one-third of women at some point in their lives with each impacting the other (Tsai et al., 2016). Additionally, IPV and depression have been found to have a bi-directional association and an increased risk of future depression associated with increased risk of future victimization (Tsai et al., 2016). The odds of developing postpartum depression resulted in higher outcomes for those who experienced physical violence (Budhathoki et al, 2012). IPV is not only a problem nationally, but internationally as well, crossing over boundaries. Additionally, because the effect of IPV and the severity of any associated depression has not been fully explored this study has furthered the discussion (Douge, 2014).

Almost half of U.S. women have experienced psychological aggression as part of IPV (McCall-Hosenfeld et al., 2015). IPV significantly relates to postpartum depression for those who reported IPV in the last two years of the study (Beydoun et al., and Tamim, 2010). Edwards et al. (2015) found serious psychological distress (SPD) increased when college students experience multiple forms of IPV. Women who reported physical, sexual or psychological violence during pregnancy had a strong association with postnatal depression (Ludermir et al., 2010). This suggests those who experience IPV maybe at a greater risk of depression.

Mental health consequences of IPV are prevalent across the nation and research has found a positive relationship between the severity of mental health problems and IPV among women in South Africa and South Asia, though at times are under-reported (Groves et al., 2012; Niaz, 2013; Peltzer et al., 2013). Abused women experience

adverse mental health conditions, for instance depression, anxiety, and low self-esteem (Mercy et al., 2003). However, it is important to note that over 40% of women in a national sample impacted by IPV may not have gotten professional medical assistance (Amstadter et al., 2008). Social support can greatly reduce almost half of adverse mental health outcomes, helping provide a positive impact and the earlier identification of abuse, possibly before those adverse mental health outcomes progress (Coker et al., 2004). Mental health consequences of IPV spans nationally and internationally, examining the impact across such a specific group of pregnant adult women is needed.

Therefore, I stressed the importance of determining the association of women before and during pregnancy in the relationship with depression. Mason et al. (2013) studied the estimates of IPV and diabetes, examining depression, but a lack of data related to timing limited focus on the research. The proposed study was directly related to type 2 diabetes, depression and IPV; examined the remaining research gap and included pregnant adult women.

Associated increased risk for depressive symptoms as a result of IPV exposure and other factors in rural areas using local data was found among those experiencing IPV (Chuang et al., 2012; Holden et al., 2012). Delara (2016) added significantly to the literature on the impact of IPV and mental health consequences finding mental health outcomes was an understudied issue. This also meant that a larger scale population could have risk for depression if exposed to IPV.

Literature Review Summary

IPV is a serious public health problem linked with numerous adverse health outcomes (Edwards, 2009). Several studies reported similar findings that linked IPV with poor general health, high blood cholesterol and heart disease, and chronic diseases, but adverse health outcomes could not directly be inferred to IPV (Campbell et al 2016; Smith and Breiding, 2011; Sugg 2015). Besides the evidence of biologic responses to long term or ongoing stress, this has been linked to chronic disease, such as cardiovascular health and diabetes possibly leading to increased IPV (Breiding et al., 2014). Sugg (2015) found that depression can negatively impact the quality of life and interfere with a person's ability to protect themselves. The risk for developing diabetes and cardiovascular disease was related to the high prevalence of experiencing violence (Glodich, 1998; Koop & Lundberg, 1992; Lancaster, 2010). Additionally, women who experienced psychological IPV were found to report significant factors of poor physical and mental health as well as an association with a number of adverse health outcomes (Coker et al., 2000).

Based on my literature review, there were gaps in the research available on the occurrence of IPV, the relationship and its impacts on those who have experienced it. Additionally, the available research on IPV was from a small circle of researchers and databases. For example, the NISVS collected data in 1999 and then not again until 2010 with an additional seven years before releasing the report and allowing public access to the data (Smith et al., 2017) It is important to note that although the associations with

IPV and health consequences existed, not all persons who experienced IPV had adverse health effects or behaviors (CDC, 2005).

While this study focused on pre and post pregnancy health consequences after experiencing IPV, it is important to note that, PRAMS was one of the only remaining, current data sources that collects standardized data that included IPV since the discontinuation of the NISVS and National Violence against Women Surveys data collection. This was important because as there were not any other current data sources that collected needed data on IPV from a national perspective, however IPV remains a public health issue. In order to continue the work needed to address IPV national data collection still needed to track the issue.

Research question gaps. In the PRAMS, Phase 7, 2012-2015, the CDC focused on all participating states addressing the impact on the health conditions of diabetes, high blood pressure and the mental health variable of depression before and during pregnancy among adult women surveyed (CDC, 2017). This information will be essential in the study to further analyze whether or not a relationship exists among IPV, diabetes, high blood pressure and depression before and during pregnancy.

Definitions

Age: Identifies the maternal age as less than 20; 20-29, 30 or above, or unknown (CDC, 2005).

Diabetes: A condition characterized by hyperglycemia (high blood glucose) that occurs because the body is unable to use blood glucose for energy (CDC, 2018). Type 1, Type 2, and gestational diabetes will be examined in this study.

Depression: One of the mental illnesses for all diagnosable mental disorders is depression, which can cause abnormal alterations in thinking, mood, or behavior (USDHHS, 1999).

High blood pressure: The pressure of the blood against the artery walls, in the blood vessels is higher than it should be; a normal blood pressure reading is less than 120/80 mmHg (CDC, 2017).

Intimate partner violence (IPV): Inclusive of sexual violence and/or physical violence, by a current or former intimate partner (Breiding et al., 2015). An intimate partner, boyfriend/girlfriend, spouse or partner, is defined as a person with whom the personal relationship exists by emotional connectedness, ongoing contact and sexual behavior with knowledge and familiarity with each other's lives (Breiding et al., 2015).

Sexual violence: A sexual act that is committed or attempted by another person without consent of the victim by someone the victim knows, to include the use of force or alcohol to penetrate a victim, perpetrator, or someone else; it can also occur when a victim is forced to engage in sexual acts with a third party (Breiding et al., 2015).

Terms associated with the circumstances and consequences of violence as identified by the CDC included illness and psychological functioning. Illness included social, physical and emotion conditions that maybe impaired from a person's previous condition (Hathaway et al., 2005). Psychological functioning includes changes in the development or increase of depression and stress (Breiding et al, 2015).

Assumptions

In this quantitative study of pregnant adult females ages 18 and older, a telephone survey and follow up interview method was used. The data set was a secondary ongoing state and population based data from the CDC and PRAMS. Because the data were collected from the PRAMS, it was possible to use the presumed weights found in the data; however, the weighted samples were assumed based on the CDC variables (CDC, 2017). Additionally, because the data was self-reported, this challenged the reliability and validity of the data set (CDC, 2017). This data included state and population based, self-reported data of maternal behaviors and experiences, before, during and after pregnancy, examined separately, who deliver a live-born infant (Beck et al., 2002). A mixed methods data collection methodology was used: self-administered surveys, followed by a telephone interview (for non-responders). Because the research relied on forty-seven states, New York City, Puerto Rico, the District of Columbia and the Great Plains Tribal Chairmen's Health Board (GPTCHB) for PRAMS, it represented approximately 83% of all U.S. live births. Because the data had been validated by the CDC, I assumed the responses to the questions were correct and accurately reported.

A limitation in using self-administered surveys and telephone interviews, was that the surveys did not include follow up for potential respondents without telephones. Another limitation is that IPV is a sensitive topic, which can lead to self-reported occurrences being underreported. However, response bias was attempted to be minimized by the guarantee that participant's responses remained confidential.

The PRAMS questionnaire had two parts. There were core questions that were asked by all states and a pretested list of standard questions developed by CDC or states (CDC, 2017). This framework was a unique one that allowed states to gather both specific information and national perspectives. This large-scale population survey allowed for comparison between respondents who reported IPV and those who participated in the survey but did not report IPV.

It is assumed that during the national data collection participants' gender did not significantly affect their perceptions. It is assumed that all respondents answered all survey questions honestly and to the best of their abilities. Lastly, self-reported data were used with the assumption that the responses provided would be truthful and the questions understood.

Scope and Delimitations

The scope of this study was descriptive. The conclusions are only generalizable to pregnant women who deliver a live born infant. This study focused on the subpopulation of adult pregnant women across the nation who were surveyed in PRAMS, Phase 7 between 2012 to 2015.

Study Boundaries

PRAMS contained questions on a variety of topics. I did not use geospatial mapping approaches in the analysis. I suggested in my analysis that IPV screening be offered as a part of healthcare screenings and other prevention programs.

Generalizability and Scope

The generalizability of this investigation was a large national one. The scope of this study was on state and population based. The study included self-reported data of maternal behaviors and experiences, before and after pregnancy, examined separately, who delivered a live-born infant.

Significance of the Study

Specifically, for IPV, in this study I examined whether the mental health variables of depression and stress, and the health conditions of diabetes and high blood pressure impacted by victimization before and during pregnancy. There remained a literature gap that examined the relationship between the association of intimate partner violence, its occurrences, the physical, and psychological health outcomes of depression, stress, gestational diabetes, diabetes and high blood pressure (Delara, 2016; Du Mont and Forte, 2012; WHO, 2012). Researchers within the Nurses' Health Study found that physical intimate partner violence and depression has been found to be linked to type 2 diabetes (Mason et al., 2013). Additionally, the CDC (2008) found a link between IPV and adverse health conditions such as high blood pressure and diabetes.

This study contributed to filling the gap of association between IPV, diabetes, high blood pressure and depression, by examining the linkage. A recent cross-sectional study examining the relationship between sexual violence and chronic disease emphasized the importance of further research in the area of potential chronic disease consequences and the impact of sexual violence on the public health system as well (Santanularia et al., 2014). Breiding et al. (2008) identified the issue of experiencing IPV

and its association with adverse health outcomes, but there is need for additional research to address this gap.

This research supports practical applications by providing recommendations to public health professionals on how to address and reduce negative health behaviors and chronic disease before having lifetime impacts. The potential findings can lead to positive social change as a result of possible increased knowledge for healthcare providers to begin addressing and looking for physical and psychological health impacts after IPV occurs. It is essential for healthcare providers to be trained in the management of sexual violence and the associated health risk behaviors to encourage preventive measures (Santaularia et al., 2014). This study recommendations can potentially add to existing literature focused on the importance of healthcare providers to listen and provide scientific coping measures for dealing with physical and psychological health outcomes as a result of intimate partner violence (WHO, 2013). Potential policy changes and public health interventions that are accepted and implemented by the community focused on sexual violence can be further developed with recommendations specific for women that experience IPV before and during pregnancy. There remains a gap regarding screening tools and practices for those experiencing sexual violence to aid in the delivery of care to those adverse health outcomes as a result of IPV and this study may be able to provide additional recommendations to address this (Cloutier et al., 2002; Smith and Breiding, 2011).

Significance to Theory

IPV is significant to the identified SEM. Elder et al. (2007) stressed the importance of tailoring ecological models for each behavior or health condition, this case in the application of IPV. The SEM has been used in IPV research as it focused in and incorporates those complex factors that influenced partner violence (WHO, 2010). SEM has been widely used in that it also examined the relationship, personal and community factors aid in shaping health outcomes that impacted IPV, such as diabetes, hypertension and depression (WHO, 2010). Hatcher et al., (2013) examined the social context and drivers of intimate partner violence finding that global IPV research revealed a linkage beyond an individual, but multiple factors, such as family gender roles and community norms significantly impacted violence and its rates. The use of this theory also addressed chronic disease linkages with IPV from a public health perspective.

Significance to Practice

IPV significantly impacts women with a higher lifetime prevalence than males, with 24.3% experienced physical violence and 48.4% experiencing psychologically aggressive behavior, greatly impacting public health (Breiding et al., 2014). The impact of IPV is a serious one and becoming more recognized as a public health issue (Breiding 2014; CDC, 2018; Smith et al., 2017). By investigating the physical and psychological outcomes of IPV, research will be added to this area and allow for those impacted to gain resources and practical solutions to improve their quality of life. For public health leaders, additional attention and discussion for IPV and how to address the issue may yield outcomes that will be impactful for practice. Results from this research should

make a difference society through the demonstration of how IPV can impact the lives of women physically and psychologically. In addition, this research can also assist the societal cost and decrease the public health burden of IPV to address this public health problem.

Significance to Social Change

This project adds to the body of literature associated with IPV and an increased level of societal understanding of IPV and may assist those are risk in addressing this issue. It also supports positive social change in how follow up can be provided to those experiencing sexual violence and IPV. The project is intended to measure the association of IPV severity and its impact on diabetes, high blood pressure and depression severity, providing the public with vital statics. This project may also improve understanding of IPV, the impacts of the outcomes; with the aim to raise awareness and to determine how to further address the risk factors associated with the outcomes. Results from this project may help make a difference in society through the demonstration of how IPV impacts the lives of pregnant adult women.

Socially, I will aim to assist in filling in the gap within IPV prevention and treatment by providing updated research. Societal understanding of IPV among adult pregnant women, who are at risk for IPV is vital to the prevention and intervention of social change. The outcome of the project may be able to provide information on the characteristics of persons who identified themselves as having experienced IPV. Results from this project may assist in helping to make a difference in society, increasing the knowledge of what IPV and its physical and psychological impacts are.

Summary

This section included a review of the literature associated with the physical and psychological health outcomes of intimate partner violence from a national perspective. I identified the risk group of pregnant adult women and their impact of experiencing IPV as related to depression and stress and the health conditions of diabetes and high blood pressure. Furthermore, I justified the application of the SEM as the theoretical framework, highlighting the variety of different approaches that can be applied into public health research. Additionally, I discussed IPV epidemiology, pertinent at-risk populations and justification for using secondary data sources, such as PRAMS. The next section presents the methodology and design used in the study.

Section 2: Research Design and Data Collection

In Section 1, I provided a review of the current literature on physical and psychological health outcomes of IPV. My review of the literature addressed health outcomes after experiencing IPV and long-term health consequences. I investigated sexual violence, particularly IPV's impact on the mental health variables of depression/anxiety and the health conditions of Type 1, Type 2, and gestational diabetes and the consequences of IPV before and during pregnancy and high blood pressure (before pregnancy only) among pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015. This section presents the specifics of the study design, sample, and analytical techniques used to address the literature gap.

Research Design and Rationale

The purpose of my quantitative cross-sectional study was to examine the physical and psychological health outcomes of IPV on the health condition of diabetes, high blood pressure (before pregnancy only), and depression in this sample population. The population surveyed was a sample of women who have had a recent live birth based on information from the state's birth certificate file. This covered approximately 83% of those live births in selected U.S. states and New York City, New York using information from the state's birth certificate file. The data set included information on maternal attitudes and experiences before, during, and shortly after pregnancy. I examined how diabetes, high blood pressure, and depression are related to age, income, and race. Because the data were collected for the CDC and state-specific purposes, there was no time restriction regarding the design and data collection.

A quantitative cross-sectional research design is appropriate when measuring the strength of relationships between numerically measurable concepts (Howell, 2013). A qualitative design would have been appropriate if examining the underlying perceptions of participants. A general assumption within a qualitative methodology is that phenomena are more than the sum of the individual parts (Lincoln & Cuba, 2011). Instead of separating the phenomenon into several variables that can be independently examined, qualitative researchers assume that the phenomena are studied in a holistic manner (Lincoln & Cuba, 2011). The richness of data within a qualitative design is substituted for a level of statistical evidence that a relationship exists between the variables of interest (Pagano, 2009).

A cross-sectional research design is appropriate when examining data at one point in time (Bethlehem, 1999). Due to the research not involving data collected at multiple time points, a longitudinal design was not selected. In addition, experimental and quasi-experimental designs were not selected because participants were not randomly assigned to treatment and control groups (Bordens & Abbott, 2008). A cross-sectional design was identified as the most appropriate design to test for associations and predictive relationships between the variables of interest.

Secondary Data Analysis Methodology

Population

The population included adult women who experienced IPV before getting pregnant and adult pregnant women surveyed who experienced IPV during their pregnancy. Data were collected by the CDC (2017) with a sample of women who have

had a recent live birth, with the information pulled from the state's birth certificate records. The sample size of each state that participates averages between 1,300 and 3,400 women per year. PRAMS oversampling is conducted for some groups to help ensure adequate data are available in smaller but higher risk populations. Based on the codebook provided by PRAMS, there were approximately 137,000 surveys in PRAMS in Phase 7 between 2012 and 2015.

Sampling and Sampling Procedures

In the PRAMS Phase 7 between 2012 to 2015 national codebook for the data set, was a sample of approximately 137,000 surveyed nationally (CDC, 2017). The selected PRAMS subset consisted of adult women before and during pregnancy.

Sampling Frame

.... The sampling frame included adult women surveyed in PRAMS who were ages 18 and older, surveyed between the years 2012 and2015, and included all reported races or ethnicities. The samples excluded those who were younger than 18 years because the BRFSS survey did not ask this question nor include this age group, as noted in the questionnaire. PRAMS uses a standardized data collection methodology and was outlined in the CDC Model Surveillance Protocol. It was used to allow for comparisons among states as well as use of the data for both single-state or multistate analysis (CDC, 2017). Recruitment procedures used a two-prong approach: a survey conducted through a mailed questionnaire using several follow-up attempts, and a phone survey. The process of data collection included a pre-letter that introduced PRAMS to the mother and notification that a questionnaire was mailed; an initial mail questionnaire packet was sent 3 to 7 days after the pre-letter, which included a tickler 7 to 10 days later; a second mail questionnaire packet, who did not respond. A third mail questionnaire packet was then sent to the remaining sample of women who did not respond. Last, a telephone follow-up call was made as a last attempt to gain feedback from those women who did not respond to the last questionnaire.

The sample included people who were thinking of becoming pregnant and those who were pregnant. My study was cross-sectional. My study examined only those who answered questions regarding diabetes, high blood pressure, and depression before and during pregnancy.

The data set contained a total of 137,625 surveyed responses from women. To meet the criteria for inclusion in this study, subjects needed to be at least 18 years old. There was a total of 2,820 individuals who were under the age of 18 and were subsequently removed. Therefore, the final analyses will be conducted on a sample of 134,805 subjects.

Data accessibility and permissions. The PRAMS contains questions that were included in the national database and others that are state-specific. All questions can be downloaded from the CDC website. Accessing the questions and use of the data set required a data use agreement with the CDC PRAMS program, per a 2012-2015 report as provided in the ethics section. Because this study used all the population who met the inclusion criteria in the secondary dataset, there was not a need for a prior power analysis. The sample size was 134,805 and a post hoc power analysis was conducted to determine if there were statistically valid results. The results of this post hoc power analysis is provided in Section 3.

Data Collection and Management

The CDC provided a database considered the preeminent source of maternal behaviors and experiences before, during, and after pregnancy from a national perspective. Data were collected for the purpose of public health surveillance and program implementation. Ahluwalia, Helms & Morrow (2013) found validity and reliability of PRAMS data using three self-reported indicators assessed to be high, thus support the use of PRAMS data for epidemiological surveillance, research, and planning. This multilevel study included PRAMS data collected by the CDC and other state-

specific questions. Participants were selected randomly from those who had recently given birth from participating states using the state birth certificate registry. If selected, participants were then mailed a survey for completion to participate; however, if there was no response to multiple mailings, those selected were then contacted and interviewed by telephone.

Instrumentation

I conducted a quantitative analysis of secondary data collected by the CDC for the PRAMS 7 between 2012 to 2015 survey to determine the impact on the mental health variables of depression and stress, and the health conditions of diabetes and high blood pressure before and during pregnancy among pregnant adult woman. The PRAMS samples women who have had a recent live birth. Selected women were first contacted by mail. If there was no response to repeat mailings, women were contacted and interviewed via telephone. Data collection procedures and instruments were standardized to allow comparisons between states.

Operationalization of Constructs

The variables used in each research question were provided. The variables and codebook of the dataset were reviewed to examine the possible option for each variable. Included below are individual definitions of each selected variable used in the analysis, a general definition and possible options for the variable measured.

Intimate partner violence (IPV). For RQs 1 and 2 the variable PAB6HUS which was about "IPV by husband/partner for at least 12 months before pregnancy" was pulled

from the questionnaire variable. The response options include B, DK/blank, M, not printed on QX, N, Not recorded, S, skip, T, teen mom – not asked, 1, no and 2, yes. For RQs 3 and 4, the variable PAD6HUS which is about "IPV by husband/partner during pregnancy" was used. The response options include B, DK/blank, M, not printed on QX, N, Not recorded, S, skip, T, teen mom – not asked, 1, no and 2, yes. There was no variable/code for IPV for both times, but we generated this by combining the two variables above.

Age. The variable, MAT_AGE_NAPHSIS, with a SAS Label, Maternal age grouped.

Income. The variable, INCOME7, with a SAS Label, income--12 mnths bef, total income to be used with Research Questions 1, 2, and 3 & INC_NDEP, SAS Label, Income--dependents (+self).

Race. The variable, MAT_RACE, with a SAS Label, maternal race; the only variable pulled from the birth certificate data.

Diabetes. RQs 1 and 3 included diabetes, which is a chronic disease that impacts the way in which the body breaks down insulin and allows for too much blood sugar to remain in the body (CDC, 2017). The variable of diabetes for pre-pregnancy (RQ1) was 11a BPG_DIAB, with a SAS Label of Health prob –Diabetes for diabetes, pulled from both the birth certificate and questionnaire. For the purpose of this study diabetes included both Type 1 and Type 2 diabetes mellitus, asking participants if they had diabetes. The options for this question included A, not applicable, B don’t know/blank, N, not recorded, U, unknown, 1, no and 2 yes.

RQ3 focused on adult women experiencing health problems of gestational diabetes, variable for gestational diabetes, PG_GDB, with a SAS Label, “gestational diabetes – this pregnancy, diabetes”, The response options included A, not applicable, B don’t know/blank, N, not recorded, U, unknown, 1, no and 2 yes.

High blood pressure. RQ1 includes, high blood pressure, which was where the pressure of the blood in the blood vessels was higher than it should be (CDC, 2017). The variable for high blood pressure was 11b BPG_HBP, with a SAS Label of Health prob -- HBP for high blood pressure, pulled from both the birth certificate and questionnaire. The response options included A, not applicable, B don’t know/blank, N, not recorded, U, unknown, 1, no and 2 yes.

Depression/anxiety. Research questions included, depression/anxiety, a mood disorder that can impact one’s life greatly if left untreated (CDC, 2017). For RQ2 the variable for depression/anxiety was BPG_DEPRS, with a SAS Label of Health prob-- Depression for depression/anxiety. The response options included A, not applicable, B don’t know/blank, N, not recorded, U, unknown, 1, no and 2 yes.

For RQ4, the variable for depression/anxiety, is STRS_T_G, with a SAS Label of VAR: TOTAL #STRESSES, GROUPED. The response options included 1= 1-2; 2= 3-5; 3= 6 or more.

Table 1 presents the nominal, ordinal, and binary variables used for each research question. The type of variable and level of measurement were also provided.

Table 1

Research Questions, Variables and Level of Measurement

RQ	Sample	Variables	IV/DV/CV	Level of measurement
1,2	Adult women prior to getting pregnant	Intimate partner violence (IPV)	IV	Nominal
		Age	CV	Interval
		Income	CV	Ordinal
		Race	CV	Nominal
		Diabetes, high blood pressure and depression/anxiety	DV	Nominal
3,4	Pregnant adult women	Intimate partner violence during pregnancy (IPV)	IV	Nominal
		Age	CV	Interval
		Income	CV	Ordinal
		Race	CV	Nominal
		Gestational diabetes, depression/anxiety	DV	Nominal

Data Analysis Plan

The data were extracted into SPSS version 25.0 for Windows. Descriptive statistics was ran for the nominal, ordinal interval level variables. Frequencies and percentage distributions was developed for the nominal and ordinal level variables.

Data Cleaning Procedures

Prior to running the inferential analyses, the data was screened for missing data and outliers. SPSS automatically used list-wise deletion in the removal of partial responses.

Research Questions and Hypotheses

RQ1- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between (IPV) experienced before getting pregnant and the occurrences of the health conditions of diabetes and high blood pressure after controlling for age, income, and race of adult women before pregnancy?

$H_0$1: There is no association between IPV occurrences and the health condition of diabetes and high blood pressure amongst adult women, before getting pregnant, surveyed in the PRAMS Phase 7 from 2012 to 2015.

H_a1: There is an association between IPV occurrences and the health condition of diabetes and high blood pressure amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ2- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV experienced before getting pregnant and the occurrences of the health condition of depression/anxiety after controlling for age, income, and race of adult women before pregnancy?

$H_0$2: There is no association between IPV occurrences and the health condition of depression/anxiety amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 before getting pregnant, surveyed in the PRAMS, Phase 7 between 2012 and 2015.

H_a2: There is an association between IPV occurrences and the health condition depression/anxiety amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ3-Quantititve: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcome of gestational diabetes, controlling for age, income, and race of adult women while pregnant?

$H_0$3: There is no association between IPV occurrences during pregnancy and the physical health outcome of diabetes amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

H_a3: There is an association between IPV occurrences during pregnancy and the physical health outcome of diabetes amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ4-Quantititve*:* Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcomes of depression/anxiety after controlling for age, income, and race of adult women while pregnant?

$H_0$4: There is no association between IPV occurrences during pregnancy and the physical health outcomes of depression/anxiety amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

H_a4: There is an association between IPV occurrences during pregnancy and the physical health outcomes of depression/anxiety amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

Data Analysis Techniques

To address the research questions, a series of binary logistic regressions using the stepwise method of entry was conducted. A binary logistic regression was an appropriate statistical procedure when examining the predictive relationship between a group of independent variables on a dichotomous (two-level; yes/no) outcome/dependent variable (Pagano, 2009). Using the stepwise method of predictor entry, the control variables of age, income, and race was included first in the model. Then, the predictor variable of intimate partner violence (IPV) was entered into the second step of the model. Using this method, the additional variance accounted for by the inclusion of IPV in the model was be calculated. There are not strict, parametric assumptions to check for a binary logistic regression (Stevens, 2009). The overall models was evaluated for collective significance using the χ^2 coefficient (Tabachnick & Fidell, 2013). The Nagelkerke R^2 value will explain the proportion of variance in the outcome that can be explained the predictor variables (Tabachnick & Fidell, 2013). The Wald statistic was ran for each independent variable to evaluate the predictive effect of each factor (Pagano, 2009).

Threats to Validity

Threats to internal validity correspond to the limitations within the proposed methodology for the study. The selection of a quantitative methodology limits the full exploration of the underlying perceptions of participants (Jonker & Pennink, 2010). In addition, through the use of archival data, I assumed that the data were accurately read, interpreted, and transcribed. Threats to external validity correspond to limitations of the research that can affect the generalization of the findings (Rovai, Baker, & Ponton,

2014). There is potential for confounding variables to affect the relationships established between the variables of interest. Therefore, a level of caution was applied to interpretations of findings.

Ethical Considerations

I adhered to the ethical and moral guidelines as defined by Walden Institutional Review Board (IRB) and the federal government. I sought and received Walden IRB approval (#09-06-18-0121421). A letter of approval to use CDC PRAMS data was provided, no additional IRB was required from CDC as the Walden IRB provided oversight for the capstone data analysis and results reporting. Through the analysis of archival data, I was not in direct contact with human subjects during the study. To maintain confidentiality of the subjects, identifying characteristics such as names, phone numbers, and email addresses was presented. The data will be kept secure on a password-protected hard drive within my residence. Following the five-year retention period of the data set, I will permanently remove the data from all hard drives and flash drives.

Summary

The purpose of this study was to examine the physical and psychological health outcomes, the health condition of diabetes, high blood pressure, as well as depression resulting from intimate partner violence in this sample population. In this chapter, I justified the selection of a quantitative, cross-sectional design. I discussed the population, sampling frame, and data collection procedures. The archival data and variables of interest were operationally defined. The chapter concluded with a data

analysis plan, threats to validity, and ethical considerations. The next chapter will present the findings of the data analysis. Descriptive statistics was ran to explore trends of the sample. Inferential analyses was used to statistically address the research questions.

Section 3: Presentation of the Results and Findings

Introduction

The purpose of my quantitative, cross-sectional study is to examine the physical and psychological health outcomes of IPV on the health condition of diabetes, high blood pressure, and depression in this sample population of pregnant adult women. The research questions and hypothesis are:

RQ1- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between (IPV) experienced before getting pregnant and the occurrences of the health conditions of diabetes and high blood pressure after controlling for age, income, and race of adult women before pregnancy?

$H_0 1$: There is no association between IPV occurrences and the health condition of diabetes and high blood pressure amongst adult women, before getting pregnant, surveyed in the PRAMS Phase 7 from 2012 to 2015.

$H_a 1$: There is an association between IPV occurrences and the health condition of diabetes and high blood pressure amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ2- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV experienced before getting pregnant and the occurrences of the health condition of depression/anxiety after controlling for age, income, and race of adult women before pregnancy?

$H_0 2$: There is no association between IPV occurrences and the health condition of depression/anxiety amongst adult women surveyed in the PRAMS Phase 7 between

2012 and 2015 before getting pregnant, surveyed in the PRAMS, Phase 7 between 2012 and 2015.

H_a2: There is an association between IPV occurrences and the health condition depression/anxiety amongst adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ3-Quantititve: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcome of gestational diabetes, controlling for age, income, and race of adult women while pregnant?

H_03: There is no association between IPV occurrences during pregnancy and the physical health outcome of diabetes amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

H_a3: There is an association between IPV occurrences during pregnancy and the physical health outcome of diabetes amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

RQ4-Quantititve*:* Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcomes of depression/anxiety after controlling for age, income, and race of adult women while pregnant?

H_04: There is no association between IPV occurrences during pregnancy and the physical health outcomes of depression/anxiety amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

H_a4: There is an association between IPV occurrences during pregnancy and the physical health outcomes of depression/anxiety amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015.

Descriptive statistics were first examined to explore the trends of the sample. A series of binary logistic regressions was used to address the research questions. Statistical significance was evaluated at the generally accepted level, $\alpha = .05$.

Data Collection of Secondary Data Set

The raw data set from archival data included 134,805 cases from the PRAMS 7 2012-2015 survey. The sample data set included such a large sample it can be considered as illustrative of the whole population since it ensures the participation of a representatively satisfactory size of women. Every month, from a frame of eligible birth certificates, each participating state draws a stratified systematic sample of 100 to 250 new mothers, with a large majority of participating states oversampling low weight births (PRAMS, 2017). On an annual basis, the sample sizes range from 1000 to 3400, divided among three to six strata. Usually, within 3.5% at 95% confidence, the annual sample is large enough for estimating statewide risk factor proportions (PRAMS, 2017). Several participants did not have complete survey responses for the variables to be used in the regression analyses and response rates were not reported by PRAMS. However, these cases were deleted in a list wise format during the inferential analysis. Therefore, no removals were made, and the final sample consisted of all 134,805 cases. A series of point-biserial correlations were then used to examine the relationship between the hypothesized covariates and the outcome variables. Every point-biserial correlation was

statistically significant with the outcome variables (all $p < .001$), suggesting that the covariates were justified to be included in the regression models. Due to the large size of the table, the statistics were presented in the narrative.

Results

Descriptive Statistics

A majority of the sample consisted of White participants (n = 79,680, 59.1%). Age was more heavily distributed towards 20-24 year olds (n = 29,698, 22.0%), 25-29 year olds (n = 39,465, 29.3%), and 30-34 year olds (n = 37,284, 27.7%). Income was disproportionately distributed among participants, with the greatest numbers in the lower income bracket ($0 to $15,000: n = 28,348, 21.0%) and the higher income bracket ($79,000 or more: n = 34,826, 25.8%). Nominal level frequencies and percentages of the demographic variables are presented in Table 2. Income was more heavily distributed towards the middle age categories.

Table 2

Frequency Table for Demographic Variables

Variable	*N*	*%*
Race		
White	79680	59.1
Black	22142	16.4
Other	28869	21.4
No response	4114	3.1

Age		
18-19	6718	5.0
20-24	29698	22.0
25-29	39465	29.3
30-34	37284	27.7
35-39	17374	12.9
40	4262	3.2
No response	4	0.0
Income		
$0 to $15,000	28348	21.0
$15,001 to $19,000	8655	6.4
$19,001 to $22,000	6790	5.0
$22,001 to $26,000	5938	4.4
$26,001 to $29,000	4004	3.0
$29,001 to $37,000	7813	5.8
$37,001 to $44,000	6224	4.6
$44,001 to $52,000	5622	4.2
$52,001 to $56,000	3415	2.5
$56,001 to $67,000	5903	4.4
$67,001 to $79,000	6279	4.7

(table continues)

$79,001 or More	34826	25.8
No response	10988	8.2

Note. Due to rounding errors, percentages may not equal 100.

Descriptive statistics were used to compare the variables of interest at pre-pregnancy check and during pregnancy check. Approximately 3% of the sample had experienced intimate partner violence before and during pregnancy. A larger percentage of participants were diagnosed with diabetes during pregnancy as opposed to before pregnancy (2.9% vs 10.3%). Approximately 27.2% of participants were diagnosed with high blood pressure before pregnancy. A larger percentage of participants were diagnosed with depression/anxiety during pregnancy as opposed to before pregnancy (70.8% vs 19.5%). Table 3 presents the frequencies and percentages of the variables at the two time periods.

Table 3

Frequency Table for Variables of Interest (Pre-Pregnancy and During Pregnancy)

Variable	Pre-Pregnancy		During Pregnancy	
	n	*%*	*N*	*%*
Intimate partner violence				
No	128933	95.6	129452	96.0
Yes	3938	2.9	3393	2.5
No response	1934	1.4	1960	1.5
Diabetes				
No	128118	95.0	119053	88.3
Yes	3944	2.9	13645	10.3
No response	2743	2.0	2107	1.6
High blood pressure				
No	124679	72.0	-	-
Yes	7589	27.2	-	-
No response	2537	1.9	-	-
Depression/anxiety				
No	117520	79.7	33743	28.0
Yes	14674	19.5	95434	70.8
No response	2611	1.9	1628	1.2

Notes. Due to rounding errors, percentages may not equal 100%. Blood pressure data during pregnancy were not included in the PRAMS 7 2012-2015 survey.

Results

Coding of Variables

Age was treated as an ordinal level variable and utilized the following coding scheme: 1 = less than 17 years, 2 = 18-19 years, 3 = 20-24 years, 4 = 25-29 years, 5 = 30-34 years, 6 = 35-39 years, and 7 = 40 or older. Income was treated as an ordinal level variable and utilized the following coding scheme: 1 = $0 to $15,000, 2 = $15,001 to

$19,000, 3 = $19,001 to $22,000, 4 = $22,001 to $26,000, 5 = $26,001 to $29,000, 6 = $29,001 to $37,000, 7 = $37,001 to $44,000, 8 = $44,001 to $52,000, 9 = $52,001 to $56,000, 10 = $56,001 to $67,000, 11 = 56,001 to $67,000, and 12 = $56,001 to $67,000. Race was treated as a nominal level variable and white was treated as the reference group.

IPV, the predictor variable, was coded dichotomously with the possible responses: yes and no. Diabetes, an outcome variable, was coded dichotomously with the possible responses: yes and no. High blood pressure, an outcome variable, was coded dichotomously with the possible responses: yes and no. Depression, an outcome variable, was coded dichotomously with the possible responses: yes and no.

RQ1- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between (IPV) experienced before getting pregnant and the occurrences of the health conditions of diabetes and high blood pressure after controlling for age, income, and race of adult women before pregnancy?

To address RQ1, two binary logistic regression models were conducted. The first regression model assessed the relationship between IPV and a diagnosis of diabetes before pregnancy. The second regression model assessed the relationship between IPV and a diagnosis of high blood pressure before pregnancy.

Diabetes (pre-pregnancy). The results of the first model were statistically significant, $\chi^2(5) = 572.09$, $p < .001$, suggesting there is a significant predictive relationship between intimate partner violence and diabetes before pregnancy, while controlling for age, income, and race. The Nagelkerke R^2 value (2.1%) only increased by

0.1% after the inclusion of the covariates. The Nagelkerke R^2 value suggests that 2.1% of the variance in a diagnosis of diabetes before pregnancy can be explained by the predictor variables.

The regression coefficient for age was significant, Wald = 288.32, $p < .001$, $OR = 1.29$, suggesting that with every one unit increase in age, participants were 29% more likely to have a diabetes diagnosis before pregnancy. The regression coefficient for income was significant, Wald = 270.56, $p < .001$, $OR = 0.93$, suggesting that with every one unit increase in income, participants were 7% less likely to have a diabetes diagnosis before pregnancy. The regression coefficient for race (Black vs White) was significant, Wald = 25.21, $p < .001$, $OR = 1.26$, suggesting that Black participants were approximately 26% more likely to have a diagnosis of diabetes before pregnancy in comparison to White participants. The regression coefficient for race (Other vs White) was significant, Wald = 89.50, $p < .001$, $OR = 1.47$, suggesting that Other races were approximately 47% more likely to have a diagnosis of diabetes before pregnancy in comparison to White participants.

The regression coefficient for intimate partner violence was significant, Wald = 4.18, $p = .041$, $OR = 1.20$, suggesting that participants who experienced intimate partner violence were approximately 20% more likely to have a diagnosis of diabetes before pregnancy in comparison to participants who did not experience intimate partner violence. Table 4 summarizes the results of the binary logistic regression model.

Table 4

Binary Logistic Regression Results for IPV Predicting Diabetes (Pre-Pregnancy)

Predictor	*B*	*SE*	Wald	*P*	*OR*	95% CI for OR
Age	0.26	0.02	288.32	< .001	1.29	[1.26 to 1.33]
Income	-0.07	0.00	270.56	< .001	0.93	[0.92 to 0.94]
Race (reference: White)						
Black	0.23	0.05	25.21	< .001	1.26	[1.15 to 1.39]
Other	0.38	0.04	89.50	< .001	1.47	[1.36 to 1.59]
Intimate partner violence	0.18	0.09	4.18	.041	1.20	[1.01 to 1.43]

Note. Overall Model: $\chi^2(5) = 572.09$, $p < .001$.

High blood pressure (pre-pregnancy). The second of the first model were statistically significant, $\chi^2(5) = 1750.38$, $p < .001$, suggesting there is a significant predictive relationship between intimate partner violence and high blood pressure before pregnancy, while controlling for age, income, and race. The Nagelkerke R^2 value (4.1%) did not increase after the inclusion of the covariates. The Nagelkerke R^2 value suggests that 4.1% of the variance in a diagnosis of high blood pressure before pregnancy can be explained by the predictor variables.

The regression coefficient for age was significant, Wald = 684.60, $p < .001$, OR = 1.34, suggesting that with every one unit increase in age, participants were 34% more likely to have a high blood pressure diagnosis before pregnancy. The regression coefficient for income was significant, Wald = 390.19, $p < .001$, OR = 0.94, suggesting

that with every one unit increase in income, participants were 6% less likely to have a high blood pressure diagnosis before pregnancy. The regression coefficient for race (Black vs White) was significant, Wald = 604.67, $p < .001$, $OR = 2.13$, suggesting that Black participants were approximately 113% more likely to have a diagnosis of high blood pressure before pregnancy in comparison to White participants. The regression coefficient for race (Other vs White) was significant, Wald = 12.27, $p < .001$, $OR = 1.12$, suggesting that Other races were approximately 12% more likely to have a diagnosis of high blood pressure before pregnancy in comparison to White participants.

The regression coefficient for intimate partner violence was significant, Wald = 72.25, $p < .001$, $OR = 1.65$, suggesting that participants who experienced intimate partner violence were approximately 65% more likely to have a diagnosis of high blood pressure before pregnancy in comparison to participants who did not experience intimate partner violence. Due to intimate partner violence being significant in both regression models, the null hypothesis ($H_0 1$) was rejected for research question one. Table 5 summarizes the results of the binary logistic regression model.

Table 5

Binary Logistic Regression Results for IPV Predicting High Blood Pressure (Pre-Pregnancy)

Predictor	*B*	*SE*	Wald	*p*	*OR*	95% CI for OR
Age	0.29	0.01	684.60	< .001	1.34	[1.31 to 1.37]
Income	-0.06	0.00	390.19	< .001	0.94	[0.93 to 0.95]
Race (reference: White)						
Black	0.76	0.03	604.67	< .001	2.13	[2.01 to2.27]
Other	0.12	0.03	12.27	< .001	1.12	[1.05 to 1.20]
Intimate partner violence	0.50	0.06	72.25	< .001	1.65	[1.47 to 1.85]

Note. Overall Model: $\chi^2(5) = 1750.38$, $p < .001$

RQ2- Quantitative: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV experienced before getting pregnant and the occurrences of the health condition of depression/anxiety after controlling for age, income, and race of adult women before pregnancy?

Depression/anxiety (pre-pregnancy). To address RQ2, a binary logistic regression model was conducted to assess the relationship between IPV and a diagnosis of depression before pregnancy. The results of the model were statistically significant, $\chi^2(5) = 3112.02$, $p < .001$, suggesting there is a significant predictive relationship between intimate partner violence and depression before pregnancy, while controlling for age,

income, and race. The Nagelkerke R^2 value (5.2%) only increased by 1.2% after the inclusion of the covariates. The Nagelkerke R^2 value suggests that 5.2% of the variance in a diagnosis of depression before pregnancy can be explained by the predictor variables.

The regression coefficient for age was significant, Wald = 10.71, $p = .001$, $OR = 1.03$, suggesting that with every one unit increase in age, participants were 3% more likely to have a depression diagnosis before pregnancy. The regression coefficient for income was significant, Wald = 1504.42, $p < .001$, $OR = 0.91$, suggesting that with every one unit increase in income, participants were 9% less likely to have a depression diagnosis before pregnancy. The regression coefficient for race (Black vs White) was significant, Wald = 375.58, $p < .001$, $OR = 0.59$, suggesting that Black participants were approximately 41% less likely to have a diagnosis of depression before pregnancy in comparison to White participants. The regression coefficient for race (Other vs White) was significant, Wald = 420.05, $p < .001$, $OR = 0.59$, suggesting that Other races were approximately 41% less likely to have a diagnosis of depression before pregnancy in comparison to White participants.

The regression coefficient for intimate partner violence was significant, Wald = 854.89, $p < .001$, $OR = 3.14$, suggesting that participants who experienced intimate partner violence were approximately 214% more likely to have a diagnosis of depression/anxiety before pregnancy in comparison to participants who did not experience intimate partner violence. Due to intimate partner violence being significant in the regression model, the null hypothesis ($H_0 2$) was rejected for research question two. Table 6 summarizes the results of the binary logistic regression model.

Table 6

Binary Logistic Regression Results for IPV Predicting Depression/Anxiety (Pre-Pregnancy)

Predictor	*B*	*SE*	Wald	*p*	*OR*	95% CI for OR
Age	0.03	0.01	10.71	.001	1.03	[1.01 to 1.05]
Income	-0.10	0.00	1504.42	< .001	0.91	[0.90 to 0.91]
Race (reference: White)						
Black	-0.54	0.03	375.58	< .001	0.59	[0.55 to 0.62]
Other	-0.53	0.04	420.05	< .001	0.59	[0.56 to 0.62]
Intimate partner violence	1.14	0.06	854.89	< .001	3.14	[2.91 to 3.39]

Note. Overall Model: $\chi^2(5) = 3112.02$, $p < .001$.

RQ3-Quantititve: Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcome of gestational diabetes, controlling for age, income, and race of adult women while pregnant?

Diabetes (during pregnancy). To address RQ3, a binary logistic regression model was conducted. The results of the first model were statistically significant, with $\chi^2(5) = 2600.27$, $p < .001$, suggesting there is a significant predictive relationship between intimate partner violence and diabetes during pregnancy, while controlling for age,

income, and race. The Nagelkerke R^2 value (4.5%) only increased by 0.1% after the inclusion of the covariates. The Nagelkerke R^2 value suggests that 4.5% of the variance in a diagnosis of diabetes during pregnancy can be explained by the predictor variables.

The regression coefficient for age was significant, Wald = 1705.78, $p < .001$, $OR = 1.44$, suggesting that with every one unit increase in age, participants were 44% more likely to have a diabetes diagnosis during pregnancy. The regression coefficient for income was significant, Wald = 521.40, $p < .001$, $OR = 0.95$, suggesting that with every one unit increase in income, participants were 5% less likely to have a diabetes diagnosis during pregnancy. The regression coefficient for race (Black vs White) was significant, Wald = 5.00, $p = .025$, $OR = 1.07$, suggesting that Black participants were approximately 7% more likely to have a diagnosis of diabetes during pregnancy in comparison to White participants. The regression coefficient for race (Other vs White) was significant, Wald = 724.54, $p < .001$, $OR = 1.82$, suggesting that Other races were approximately 82% more likely to have a diagnosis of diabetes during pregnancy in comparison to White participants.

The regression coefficient for intimate partner violence was not significant, Wald = 1.26, $p = .263$, $OR = 0.93$; therefore, the null hypothesis for RQ3 is accepted. Table 7 summarizes the results of the binary logistic regression model.

Table 7

Binary Logistic Regression Results for IPV Predicting Diabetes (During Pregnancy)

Predictor	*B*	*SE*	Wald	*P*	*OR*	95% CI for OR
Age	0.36	0.01	1705.78	< .001	1.44	[1.41 to 1.46]
Income	-0.06	0.00	521.40	< .001	0.95	[0.94 to 0.95]
Race (reference: White)						
Black	0.06	0.03	5.00	.025	1.07	[1.01 to 1.13]
Other	0.60	0.02	724.54	< .001	1.82	[1.74 to 1.90]
Intimate partner violence	-0.07	0.06	1.26	.263	0.93	[0.82 to 1.06]

Note. Overall Model: $\chi^2(5) = 2600.27$, $p < .001$.

RQ4-Quantititve*:* Amongst pregnant adult women surveyed in the PRAMS Phase 7 between 2012 and 2015 is there an association between IPV occurrences during pregnancy and health outcomes of depression/anxiety after controlling for age, income, and race of adult women while pregnant?

Depression/anxiety (during pregnancy). To address research question four, a binary logistic regression model was conducted to assess the relationship between intimate partner violence (IPV) and a diagnosis of depression/anxiety during pregnancy. The results of the model were statistically significant, $\chi^2(5) = 6378.74$, $p < .001$, suggesting there is a significant predictive relationship between intimate partner violence and depression during pregnancy, while controlling for age, income, and race. The

Nagelkerke R^2 value (7.5%) only increased by 1.0% after the inclusion of the covariates. The Nagelkerke R^2 value suggests that 7.5% of the variance in a diagnosis of depression/ anxiety during pregnancy can be explained by the predictor variables.

The regression coefficient for age was significant, Wald = 642.02, $p < .001$, OR = 0.86, suggesting that with every one unit increase in age, participants were 14% less likely to have a depression/anxiety diagnosis during pregnancy. The regression coefficient for income was significant, Wald = 2100.68, $p < .001$, OR = 0.93, suggesting that with every one unit increase in income, participants were 7% less likely to have a depression diagnosis during pregnancy. The regression coefficient for race (Black vs White) was significant, Wald = 96.04, $p < .001$, OR = 1.23, suggesting that Black participants were approximately 23% more likely to have a diagnosis of depression/anxiety during pregnancy in comparison to White participants. The regression coefficient for race (Other vs White) was significant, Wald = 110.85, $p < .001$, OR = 0.84, suggesting that Other races were approximately 16% less likely to have a diagnosis of depression during pregnancy in comparison to White participants.

The regression coefficient for intimate partner violence was significant, Wald = 453.21, $p < .001$, OR = 9.03, suggesting that participants who experienced intimate partner violence were approximately 803% more likely to have a diagnosis of depression during pregnancy in comparison to participants who did not experience intimate partner violence. Due to intimate partner violence being significant in the regression model, the null hypothesis ($H_0$4) was rejected for research question four. Table 8 summarizes the results of the binary logistic regression model.

Table 8

Binary Logistic Regression Results for IPV Predicting Depression/Anxiety (During Pregnancy)

Predictor	*B*	*SE*	Wald	*P*	*OR*	95% CI for OR
Age	-0.16	0.01	642.02	< .001	0.86	[0.84 to 0.87]
Income	-0.08	0.00	2100.68	< .001	0.93	[0.92 to 0.93]
Race (reference: White)						
Black	0.20	0.02	96.04	< .001	1.23	[1.18 to 1.28]
Other	-0.17	0.02	110.85	< .001	0.84	[0.82 to 0.87]
Intimate partner violence	2.20	0.10	453.21	< .001	9.03	[7.37 to 11.05]

Note. Overall Model: $\chi^2(5) = 6378.74$, $p < .001$.

Summary

The purpose of my quantitative cross-sectional study was to examine the physical and psychological health outcomes of IPV on the health condition of diabetes, high blood pressure, as well as depression in this sample population. In this section, the findings of the data analyses were presented. Descriptive statistics were first used to explore the trends of the demographic variables and variables of interest. Binary logistic regressions were used to address the research questions. Due to IPV being significant in diabetes and high blood pressure before pregnancy regression models for RQ1 and RQ3, $H_0$1 and $H_0$3 were rejected. Due to IPV being significant in the depression/anxiety before pregnancy regression model for RQ2 and RQ4, $H_0$2 and $H_0$4 were rejected. Due to intimate partner

violence was not significant in the regression model (IPV and a diagnosis of diabetes during pregnancy) for research question three, the null hypothesis ($H_0$3) was accepted. Due to intimate partner violence being significant in the regression model (depression/anxiety during pregnancy) for research question four, the null hypothesis ($H_0$4) was rejected.

In the next section, the findings will continue to be explained. The findings will be connected to the existing literature. In addition, implications of the findings and recommendations for future research will be provided.

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

The purpose of my quantitative cross-sectional study was to examine the physical and psychological health outcomes of IPV on the health condition of diabetes, high blood pressure, and depression in adult women surveyed in the PRAMS Phase 7 between 2012 to 2015 before and during pregnancy. Findings for the binary logistic regressions indicated significant associations between IPV in both regression models for diabetes and high blood pressure before pregnancy, depression before pregnancy, and depression/anxiety during pregnancy. Section 4 includes an interpretation of the findings, limitations of the study, recommendations for further study, and implications for professional practice and positive social change.

Interpretation of the Findings

My analyses of the PRAMS data indicated significant associations between experiences of IPV on the health condition of diabetes, high blood pressure, and depression, as well as most of the variables investigated (age, income, and race). In the following subsection, I compare findings to the literature and the SEM framework.

Findings in Literature

Breiding et al., (2008) identified issues related to experiencing IPV and its association with adverse health outcomes. Researchers specified the importance of identifying collaborations and the need for essential healthcare providers to be trained in the management of sexual violence and associated health risk behaviors to encourage preventive measures (Santaularia et al, 2014). The following subsections present

findings broken down by variables including presence of diabetes, high blood pressure, and depression in relation to age, income, and race.

Diabetes. Abuse victimization is associated with type 2 diabetes (Rich-Edwards, 2010). The longitudinal Nurses' Health Study II (NHSII) examined this association revealing a 15-20% increase in type 2 diabetes incidences in women who have experienced 5 or more years of any physical, sexual, or emotional IPV (Mason et al., 2013). Respondents who experienced IPV before pregnancy were 20% more likely to have type 2 diabetes (Rich-Edwards, 2010; Mason et al., 2010). I found similar results in the rate of diabetes and a significant predictive relationship with IPV; 2.9% of the participants are more likely to have diabetes before pregnancy and 10.3% are more likely to have diabetes during pregnancy.

Age, income, race, and diabetes. Findings from this study showed that for every one-unit increase in age, before pregnancy participants were 29% more likely to have diabetes and pregnant participants were 44% more likely to have diabetes diagnosis during pregnancy. I found that those pregnant adult women who participated in PRAMS were more likely to have diabetes while pregnant. While as related to every unit increase of income, pregnant adult women were 7% less likely before pregnancy and 5% less likely while pregnant to have diabetes. Black participants were 26% more likely to have a diagnosis of diabetes before pregnancy and 7% more likely during pregnancy. Black adult women are two to four times more likely to be diagnosed with diabetes than non-Hispanic White adult women (CDC, 2016).

High blood pressure. Breiding et al. (2008) found that women who have experienced IPV had a higher risk of high blood pressure. Mason et al. (2012) found that although physical and sexual abuse were not significantly associated with hypertension, women who reported severe emotional abuse still had a 24% increase in the rate of hypertension. I found similar results in the rate of high blood pressure and a significant predictive relationship with IPV; 34% of the participants were more likely to have high blood pressure before pregnancy. There is a positive association to IPV and high blood pressure (Breiding et al., 2008; Gass et al., 2010).

Age, income, race, and high blood pressure. Clark et al. (2016) found that exposure to IPV was related to a higher risk of cardiovascular disease later in adulthood compared to individuals who were not exposed to IPV. For each year increase in age, participants were 34% more likely before pregnancy, to have high blood pressure diagnosis. As income increases, participants were 6% less likely before pregnancy to have a high blood pressure diagnosis. Black participants were 113% more likely to have a diagnosis of high blood pressure before pregnancy in comparison to White participants and other races were approximately 12% more likely to have the same diagnosis in comparison to White participants.

Depression. Participants who experienced IPV were 20% more likely to have a depression diagnosis before pregnancy and 70.8% more likely after pregnancy. Pre and post-partum psychological consequences of IPV identified depression associations with varying rates less than one to fifty percent (Bhandari et al., (2012); Bailey, (2010); Ludermir et al., (2010); Taillieu & Brownrider, (2010). These study findings indicated

similar varied results. Similar studies found linkages in women who experienced IPV with and risks for negative psychological health consequences (Birkley et al., 2016; Kastello et al., 2016). Associations between mental and relational health while pregnant exist among women (Choudhary et al., 2008; Flanagan et al., 2015).

Age, income, race, and depression. Using results from the BRFSS, Choudhary et al. (2012) found that among the 5% of victims who experienced sexual violence, 18.82% were diagnosed with depression. My findings from PRAMS suggest similar results with the need for additional screening investigations and follow up to align consistency across national surveys. Findings from this study showed that for each year increase in age, participants were 3% more likely before pregnancy to have a diagnosis of depression, whereas during pregnancy, they were 14% less likely to have the same diagnosis. As income increases participants were 9% less likely before pregnancy to have a diagnosis of depression, whereas during pregnancy, they were 9% less likely to the same diagnosis. Black participants were 41% less likely to have a diagnosis of depression as indicated for other races before pregnancy and 23% more likely to have the same diagnosis during pregnancy.

Findings of SEM Theoretical Framework

I applied the SEM framework as used by the CDC (2018), IOM (2003) and Glanz et al., (2008). The framework was used by addressing the five levels of influence: intrapersonal, interpersonal, organizational, community, and public policy levels. To account for multilevel determinants of physical and psychological health outcomes of pregnancy-related IPV, I addressed each of these levels individually.

Intrapersonal. The intrapersonal level pertains to the individual characteristics of the pregnant adult female, IPV, and individual health effects, which tends to impact both the lower and higher income levels. Gazmararian et al. (2005); Green et al. (1996) assisted in identifying needed behaviors for change in the reduction of IPV and pregnancy related health outcomes. Future research can continue to explore similar studies, further explaining results.

Interpersonal. The social network corresponds to the interpersonal level of the pregnant adult female, those issues are impacted by the relationships of diabetes, high blood pressure and depression. The interpersonal component showed that adult pregnant women experiencing IPV need multifaceted interventions, in particular, violence prevention behaviors for change to reduce the occurrences related to chronic disease (Gazmararian et al., 2005; CDC, 2018; Green et al., 1996). The need for those experiencing IPV require ongoing screening and multilevel interventions. The inclusion of social networks with the interrelatedness of targeted chronic diseases are also needed to address IPV. Addressing violence will require an integrated response that needs the influence of the larger community and societal factors (Petrosky et al., 2017).

Social networks were found to be smaller than those of the general population, who are connected to each other that can include current and former partners, friends, coworkers, family of origin, children, in-laws, and others (Wasserman & Faust, 1994). Viola (2014) found that established relationships with social network leads to the influence of specific mechanisms that is responsible for social networks' effects on one another. Additional findings indicated the presence of social networks and social support

in homes experiencing IPV may have psychological impacts (Miller, 2013). Such comprehensive interventions for layered target audiences and health issues would assist in address all components of IPV as well as those directly and indirectly impacted.

Organizational. There is a complex relationship between adult pregnant women who experience IPV within relationships, organizations and societal factors that impact diabetes, high blood pressure and depression through multidirectional flow of influence (IOM, 2002). Many women experiencing violence are unlikely to enroll in programs to assist in getting treatment, or if enrolling may enroll in a program that addresses only one issue they are facing (Black, 2011). This is a great missed opportunity for the use of comprehensive screenings to address violence and chronic issues. However, uses of comprehensive programs as used by coalitions with an inclusive focus on the totality of sexual violence or IPV is highly recommended. Fisher et al. 2010 found comprehensive approaches with the inclusion of organized partnerships and developing organizational policies with those impacted in the community are most effective in impacting IPV.

The use of a behavior change model is preferred; a framework that uses different influences with relationship that can assist in addressing the sensitive issue of IPV (Washington Coalition of Sexual Assault Programs, 2018). Findings from my study indicated the need for further developing and implementation of comprehensive programs that focus on the complexity of sexual violence and account for life influences. CDC (2018) found by addressing individual, relationship, community, and societal elements, healthy relations may change at all levels of social ecology.

Community. The community level is related to the built environment of the pregnant adult women and community norms (IOM, 2003). The CDC (2018) uses the SEM as a framework for prevention, taking into account the interactions between individual, relationship, community, and societal factors. For the aims of my study, I used PRAMS data collected by the CDC, which provides funding and guidance for prevention projects nationally and internationally. I encourage future community projects to further use the SEM approach and available resources.

Public Policy. CDC promotes the use of a holistic approach as exampled by Dooris et al. (2007), for building effective evidence and development of supportive and protective measures for health promotion, including IPV. Niolon et al. (2017) shared a technical package of programs, policies and practices, endorsed by federal agencies, to assist in the prevention of IPV. The use of public policy resources will aid in addressing IPV.

Limitations of the Study

Limitations with the CDC PRAMS national data set impacted generalizability trustworthiness, validity, and reliability of findings. The CDC (2005) recognized self-reported data in the PRAMS data set requiring review and data cleaning for statistical adjustment. Also, the amount of non-responses on the questionnaire served as a limitation. Statisticians note that accurate statistics are essential and add to the quality of reported data. Osborne (2013) shares the importance of properly examining and cleaning data to decrease error rates and in doing so increase both the power and replicability of results. Implementation of this practice assists in adding in best practices and accurate representations of those who have experienced IPV.

There are a limited number of current available data collected primarily on sexual violence and/or IPV. Although the database used for this study was that of PRAMS, its primary purpose is to collect data for researchers to investigate emerging issues in the field of reproductive health but does ask participants a small number of specific questions regarding IPV before and during pregnancy. For instance, although PRAMS collect data on the effects of blood pressure before getting pregnant, PRAMS does not collect data on blood pressure during pregnancy. Therefore, for the purpose of this study only data analysis was conducted on blood pressure before getting pregnant.

The nature of the topic, IPV, was a very private and sensitive one; often still thought of as taboo for open discussion. Although the study focuses exclusively on IPV, such issues were taken into account to ensure accurate data were shared and analyzed. Although PRAMS primary surveillance currently covers approximately 83% of all US births, further expansion to include those areas that are currently not participating and the inclusion of questions regarding violence against women will assist in providing more nationally representative data (Shulman, 2018).

CDC (2014) uses National Youth Risk Behavior Survey that found adolescent groups are rapidly involved with incidences of IPV with nearly 12% of high school females having reported physical violence. Kann, McManus, Harris, et al. (2016) found that nearly 16% of adolescent groups reported sexual violence from a dating partner in the 12 months before they were surveyed; while more than 7% of high school males, reported physical violence and about 5% reported sexual violence from a dating partner. Furthermore, reports have found among victims of sexual violence, physical violence, or

stalking by an intimate partner, nearly 23% of females and 14% of males have been impacted with some of the first experiences occurring by that partner before age 18 (Breiding, 2014). However, for this study, this age group was not used due to ethical concerns. This age group was removed from the data source and all analyses.

Recommendations Investigating Emerging Issues in the Field of Violence Against Women and Health

There are a number of recommendations that may assist in advancing research in IPV and adult pregnant women. First, this study can be replicated after the updated PRAMS data is released to capture the updated target audience of IPV and pregnant women. Consistent data collection of health variables before, during and after pregnancy would allow for comparison of health studies for future recommendations and health improvements for pregnant adult women. Second, this study can be replicated after the updated National Intimate Partner and Sexual Violence Survey is released to capture updated and detailed data on IPV and demographic information.

Lastly, I recommend future research in the area of IPV, particularly with new movements and focuses on women who may now be more willing to share sexual and IPV experiences. Continuous research is needed to determine the effects of IPV on those who have experienced it. Additionally, research should also focus on how both men and women's beliefs, attitudes and behaviors regarding IPV may contribute to their coping mechanisms, and the physical and psychological impacts. The patriarchal perspective of beliefs about wife-beating as it is perpetuated through certain beliefs and attitudes about the role and status of women found psychological impacts (Haj-Yahia, 1998b; Zakar et

al., 2013). However, there is a gap in the research regarding the coping methods and the physical and psychological impacts after experiencing such violence.

I would also suggest further research regarding IPV among different populations, such as adolescents, immigrants, international, military and disabled populations to include others not researched in my study. Evidence has shown the increased rates of violence regardless of age, economic or social statuses (Kann, 2016; Breiding, 2014; Gass, et al., 2010).

Implications for Professional Practice and Social Change

This section provides recommendations to professional practice and positive social change implications relevant to the physical and psychological health outcomes of IPV. After sharing experiences of IPV, there is an opportunity to provide health education information related to possible outcomes after experiencing IPV with referrals of how and where to get assistance. Moreover, because PRAMS is focused on the promotion of ethical data collection, analysis, and dissemination of high scientific quality supporting data to be used to develop policies and programs that are beneficial to both the nation and those that participate supplementary educational information and resources included to participants would be highly encouraged.

Professional Practice

I am guiding this investigation to further the examination and discussion of IPV and its outcomes, specifically, physical and psychological health outcomes of pregnancy related IPV. I am suggesting the theoretical, and empirical applications to professional practice, in this subsection.

Theoretical. I suggest that additional comprehensive theoretical models are developed and accessible to assist in accurately and fully addressing the issues faced within public health. My attempt was to model a cross-sectional study with a comprehensive focus on the environment, SES framework, and human interactions for physical and psychological health outcomes of pregnancy related IPV. Berkes and Folke, (1998) highlighted the issue of using one framework to serve as a stand-alone theory to address multifaceted issues such as IPV. Researchers have indicated an issue being able to apply one theoretical framework for comprehensive results and study integration, but a model of health that will recognize the importance of social and physical environmental determinants (Fiedling, Teutsch, & Breslow, 2010). Schluter et al. 2017 acknowledged challenges, pointing out that many theories are distributed across the social sciences, most only cover a certain facets of decision-making, and vary in their stage of validation. Further work with the advancement and integration of human interaction, research, and existing theories will assist in the professional development to maximize practice within public health.

Empirical. I suggest that an empirical review as related to physical and psychological health outcomes of pregnancy related IPV may be used to help reinforce the message of violence prevention, speaking out if abused and gaining needed assistance to help prevent chronic diseases that have been linked to IPV occurrence. Breiding, (2014) & Smith et al., (2017) confirmed the importance of recognizing IPV as a public health issue to gain momentum and use evidence based theories to improve efforts and capacity in communities.

Positive Social Change

A universal understanding of IPV, who is impacted, and possible outcomes are vital to the prevention of and interventions to address it. The goal of this research was to examine such an intimate issue, determine results and create inventions for implementation and raise awareness regarding IPV. Additionally, this research was intended to further the discussion regarding women who experience IPV and have adverse effects associated with diabetes, high blood pressure and depression related to pregnancy. At the individual level there is a need for developing interventions for those adult pregnant women experiencing IPV with some chronic disease conditions. At a family level, part of the social network of the pregnant adult female, it is important to have a strong supportive network that can use intervention and resources to help provide assistance if needed. The organizational level for women experiencing IPV includes institutions and organizations that will aim to raise awareness, improve understanding and determine how to further address the risk factors associated with the outcomes. The community needs effective educational and access to resources to educate populations regarding IPV. The societal or policies having guidelines that provide clear direction that align with current research findings will assist in the promotion of healthy behaviors and choices that can increase the health of those impacted, the families and communities they serve. The hope for such a personal topic as IPV and the analysis will help in making a difference in society, increase the knowledge of IPV as well as its physical and psychological impacts.

Conclusion

As society enter into a more innovative culture, issues, such as IPV, within society continue to exist. I identified the relationships between the odds of pregnant adult women who experienced IPV and the physical and psychological health outcomes of chronic diseases of diabetes, high blood pressure and depression before and during pregnancy, as allowed, based on data from the PRAMS 2013 data set. In this study, depression/anxiety was the only health outcome found significantly correlated both before and during pregnancy and should be further examined to gain more in-depth relationships. This investigation was not a pre/post study and only explored adult pregnant women who identified as having experienced IPV. Future investigators are needed to further explore other related health outcomes after experiencing IPV. This remains to be a sensitive and at times taboo public health issues that needs to be further addressed. The CDC continues to provide funding to further the discussion as violence transcends across varied audiences of youth, children, and the elder; viewed as such a multifaceted topic, which includes both sexual and intimate partner violence. Additionally, the CDC remains committed to stopping violence before it begins as one of the nation's leads on prevention issues. Santaularia et al. 2014 & Breiding (2015) shared the need for further research and discussion regarding the association of IPV with its physical and psychological impacts. A holistic approach comprising continued research with the integration of comprehensive theoretical framework along with varied collaborations to integrate the identification and addressing of IPV into routine practices can assist in continued better public health practice nationally and internationally.

References

Akers, L., & Sellers, S. (2009). *Criminological theories: Introduction, evaluation, and application* (5th ed.). New York, NY: Oxford University Press.

Amstadter, A., McCauley, J., Ruggiero, K., Resnick, H., & Kilpatrick, D., (2008). Service utilization and help seeking in a national sample of female rape victims. *Psychiatric Services, 59*(12), 1450-1457.

Basile, K., Smith, S., Breiding, M., Black, M., & Mahendra, R. (2014). Sexual violence surveillance: Uniform definitions and recommended data elements, version 2.0. Atlanta, (GA): National Center for Injury Prevention and Control, Centers for Disease Prevention and Control.

Bandura, A. (1973). *Aggression: A social learning analysis*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1977). *Social learning theory*. New York, NY: General Learning Press.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.

Barker, R.G. (1968). *Ecological psychology.* Stanford, CA: Stanford University Press.

Beck, L., Morrow, B., Lipscomb, L., Johnson, C., Gaffield, M., Rogers, M., & Gilbert, B. (2002). Prevalence of selected maternal behaviors and experiences, Pregnancy Risk Assessment Monitoring System (PRAMS), 1999. *Morbidity and Mortality Weekly Report Surveillance Summary, 51*(2), 1-27.

Berkes, F., & Folke, C. (eds.) (1998). *Linking social and ecological systems:*

management practices and social mechanisms for building resilience. Conservation Ecology 4(2): 5. [online] URL: http://www.consecol.org/vol4/iss2/art5/ NY. Cambridge University Press.

Bethlehem, J. (1999). Cross-sectional Research. In H. J. Adèr & G. J. Mellenbergh (Eds.) *Research methodology in the life, behavioural and social sciences* (pp. 110-142). London: SAGE Publications, Ltd doi: 10.4135/9780857029027

Beydoun, H., Al-Shaba, B, Beydoun, M., & Tamim, H. (2010). Intimate partner violence as a risk factor for postpartum depression among Canadian women in the Maternity Experience Survey. *Annals of Epidemiology, 20*(8), 575-583.

Bhandari, S., Bullock, L. F. C., Bair-Merritt, M., Rose, L., Marcantonio, K., Campbell, J. C., & Sharps, P. (2012). Pregnant women experiencing IPV: Impact of supportive and non-supportive relationships with their mothers and other supportive adults on perinatal depression: A mixed methods analysis. *Issues in Mental Health Nursing*, *33*(12), 827-837. doi:10.3109/01612840.2012.712628

Birkley, E.L., Eckhardt, C.I., & Dykstra, R.E. (2016). Posttraumatic stress disorder symptoms, intimate partner violence, and relationship functioning: A Meta-Analytic Review. *Journal of Traumatic Stress, 29*, 397-405. |https://doi.org/10.1002/jts.22129

Black, M.C. (2011). Intimate partner violence and adverse health consequences: implications for clinicians. *American Journal of Lifestyle Medicine, 5(*5), 428-439. doi: 10.1177/1559827611410265

Black, M., Basile, K., Breiding, M., Smith, S., Walters, M., Merrick, M., Chen, J. &

Stevens, M. (2011). *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report.* Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Bordens, K. S., & Abbott, B. B. (2008). Research design and methods: A process approach (7th ed.). Boston, MA: McGraw-Hill.

Bonomi, A, Anderson, M., Reid, R., Rivara, F., Carrell, D., & Thompson, R., (2009). Medical and psychosocial diagnoses in women with a history of Intimate Partner Violence. *Archives of Internal Medicine, 169(*18), 1692–1697. doi:10.1001/archinternmed.2009.292

Breiding, M.J., Black, M.C., Ryan, G.W. (2008). Chronic disease and health risk behaviors associated with intimate partner violence-18 U.S. states/territories, 2005 *Annals of Epidemiology, 18(*7), 538-544. doi 10.1016/j.annepidem.2008.02.005

Breiding, M. J. (2014). Prevalence and Characteristics of Sexual Violence, Stalking, and Intimate Partner Violence Victimization—National Intimate Partner and Sexual Violence Survey, United States, 2011. *Morbidity and Mortality Weekly Report*. Surveillance Summaries (Washington, D.C. : 2002), 63(8), 1–18.

Breiding, M.J., Chen J., & Black, M.C. (2014). Intimate Partner Violence in the United States — 2010. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Breiding, M., Smith, S., Basile, K., Walters, M., Chen, J., & Merrick, M. (2014).

Prevalence and characteristics of sexual violence, stalking, and intimate partner violence victimization — National Intimate Partner and Sexual Violence Survey, United States, 2011. *Morbidity and Mortality Weekly Report.* Surveillance Summaries, *63*, SS08, 1-18.

Breiding, M. & Armour, B. (2015). The association between disability and intimate partner violence in the United States. *Annals of Epidemiology*, *25(*6), 455-457.

Breiding, M., Basile, K., Smith, S., Black, M., & Mahendra, R. (2015). *Intimate Partner Violence Surveillance: Uniform Definitions and Recommended Data Elements*, Version 2.0. Atlanta (GA): National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Breiding, M., Black, M., & Ryan, G., (2008). Prevalence and risk factors of intimate partner violence in eighteen U.S. states/territories, 2005. *American Journal of Rural Health, 25(*3), 240-246.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32(7), 513–531.

Budhathoki, N., Dahal, M., Bhusal, S., Ojha, H., Pandey, S. & Basnet, S. (2012). Violence against women by their husband and postpartum depression. *Journal of Nepal Health Research Council, 10*, 176-80.

Centers for Disease Control and Prevention (2018). Diabetes Home. Glossary of Terms. Retrieved May 13, 2018 from https://www.cdc.gov/diabetes/library/glossary.html

Centers for Disease Control and Prevention (2017). Intimate partner violence. Retrieved

September 3, 2017. https://www.cdc.gov/violenceprevention/intimatepartnerviolence/index.html

Centers for Disease Control and Prevention (2017). Know the facts about high blood pressure. Retrieved December 21, 2017 from https://www.cdc.gov/bloodpressure/docs/consumered_hbp.pdf

Centers for Disease Control and Prevention (2017). PRAMS Methodology. Retrieved from https://www.cdc.gov/prams/methodology.htm

Centers for Disease Control and Prevention (2005). PRAMS model surveillance protocol, CATI version. Unpublished.

Centers for Disease Control and Prevention (2016). Summary Health Statistics: National Health Interview Survey: 2014. Retrieved October 10, 2018 from http://www.cdc.gov/nchs/nhis/shs/tables.htm.)

Centers for Disease Control and Prevention (2018). The Social-Ecological Model: A Framework for Prevention. Retrieved June 14, 2018 from https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html

Chuang, C. H., Cattoi, A. L., McCall-Hosenfeld, J. S., Camacho, F., Dyer, A.-M., & Weisman, C. S. (2012). Longitudinal association of intimate partner violence and depressive symptoms. *Mental Health in Family Medicine*, *9*(2), 107–114.

Choudhary, E., Smith, M., & Bossart, R. (2012). Depression, anxiety, and symptom profiles among female and male victims of sexual violence. *American Journal of Men's Health, 6(*1), 28-36.

Choudhary, Coben, and Bossarte, (2008). Gender and time differences in the

associations between sexual violence victimization, health outcomes, and risk behaviors. *American Journal of Men's Health, 2,* 254-259.

Chung, T., Lau, T., Yip, A., Chiu, H., & Lee, D. (2001). Antepartum depressive symtomatology is associated with adverse obstetric and neonatal outcomes. *Psychosomatic Medicine, 63,* 830-834.

Clark C.J., Alonso, A., Everson-Rose, S.A., Spencer, R.A., Brady, S.S., Resnick, M.D., Borowsky, I.W., Connett, J.E., Krueger, R.F., & Nguyen-Feng, V.N. (2016). Intimate partner violence in late adolescence and young adulthood and subsequent cardiovascular risk in adulthood. *Preventive Medicine, 87,* 132-137.

Clark, C. J., Everson-Rose, S. A., Alonso, A., Spencer, R. A., Brady, S. S., Resnick, M., & D.Suglia, S. F. (2014). Effect of partner violence in adolescence and young adulthood on blood pressure and incident hypertension. *PLoS ONE*, *9*(3), e92204. doi: 10.1371/journal.pone.0092204

Cooper, A., & Smith, E. L. (2011). Homicide trends in the United States, 1980–2008. Washington, D.C.: Bureau of Justice Statistics. NCJ 236018.

Cornelius, D., Close, F. T., Thompson-Robinson, M. (2003). The sexual violence experience of college students in Leon County, Florida. *Florida Journal of Public Health*, *13*(1), 18-22.

Dahlberg, L.L. & Krug, E.G. (2002). Violence-a global public health problem. In: Krug E, Dahlberg, LL, Mercy, JA, Zwi, AB, Lozano, R eds. World Report on Violence and Health. Geneva, Switzerland: World Health Organization, 1-56.

Dichter, M. E. & S. C. Marcus (2013). Intimate partner violence victimization

among women veterans: health, health care service use, and opportunities for intervention. *Military Behavioral Health, 1*(2), 107-113.

Delara, M. (2016). Mental health consequences and risk factors of physical intimate partner violence. *Mental Health in Family Medicine*, *12*, 119-125.

Dillman, D. (2000). *Mail and Internet surveys: the tailored design method*. New York: John Wiley and Sons.

Dooris, M., Poland, B., Kolbe, L., de Leeuw, E., McCall, D., & Wharf, Higgins, J. (2007). Healthy settings: Building evidence for the effectiveness of whole system health promotion–challenges and future directions. In D. McQueen & C. Jones (Eds.), Global perspectives on health promotion effectiveness (pp. 327–352). NY: Springer.

Dougé, N., Lehman, E.B., &. McCall-Hosenfeld, J.S. (2014). Social support and employment status modify the effect of intimate partner violence on depression symptom severity in women: Results from the 2006 Behavioral Risk Factor Surveillance System Survey. *Womens Health Issues, 24*(4),: e425–e434 doi: 10.1016/j.whi.2014.03.006

Du Mont J, & Forte T. (2012). An exploratory study on the consequences and contextual factors of intimate partner violence among immigrant and Canadian-born women. *British Medical Journal Open*, *2*(6):e001728. doi:10.1136/bmjopen-2012- 001728

Edwards, K., Dards, C., Sylaska, K., & Gidycz, C., (2015). Informal social reactions to college women's disclosure of intimate partner violence: associations with

psychological and relational variables. *Journal of Interpersonal Violence, 30*(1), 25-44. doi: 10.1177/0886260514532524

Elder, J. P., Lytle, L., Sallis, J. F., Rohm Young, D., Steckler, A., Simons-Morton, D., et al. (2007). A description of the social–ecological framework used in the trial of activity for adolescent girls (TAAG). *Health Education Research,* 22(2), 155–165.

Escribà-Agüir, V., Royo-Marqués, M., Artazcoz, L., Romito, P., Ruiz-Pérez, I., & Martín-Baena, D. (2012). Personal and psychosocial predictors of psychological abuse by partners during and after pregnancy: a longitudinal cohort study in a community sample. *An International Journal of Obstetrics and Gynaecology, 120*(5), 576-582. doi: 10.1111/1471-0528.12051

Faisal-Cury A., Menezes, P., d'Oliveira, A., Schraiber, L., & Lopes, C. (2013). Temporal relationship between intimate partner violence and postpartum depression in a sample of low income women. *Child Health Journal, 17*(7), 1297-1303.

Fielding, J.E., Teutsch, S, & Breslow, L. (2010). A framework for public health in the United States. *Public Health Reviews,* 32, 174-189.

Flanagan, J. C., Gordon, K. C., Moore, T. M., Stuart, G. L. (2015). Women's stress, depression, and relationship adjustment profiles as they relate to intimate partner violence and mental health during pregnancy and postpartum. *Psychology of Violence, 5*(1), 66-73. doi:10.1037/a0036895

Frieden, T. R. (2010). A Framework for Public Health Action: The Health Impact

Pyramid. *American Journal of Public Health*, 100(4), 590-595.

Gashaw, B. T., Schei, B., & Magnus, J. H. (2018). Social ecological factors and intimate partner violence in pregnancy. PLoS ONE, 13(3), e0194681. doi: 10.1371/journal.pone.0194681

Glanz K, Rimer BK, & Viswanath K (2008). *Health Behavior and Health Education: Theory, Research, and Practice* (4th ed). San Francisco: Jossey-Bass

Gass, J., Stein, D., Williams, D. & Seedat, S. (2010). Gender differences in risk for intimate partner violence among South African adults. *Journal of Interpersonal Violence* 26(14):2764-2789. doi: 10.1177/0886260510390960

Gass, J., Strein, D., Williams, D. & Seedat, S. (2010). Intimate partner violence, health behaviours, and chronic physical illness among South African women. *South African Medical Journal, 100,* 582-585.

Gazmararian, J., Curran, J., Parker, R., Bernhardt, J., & DeBuono, B. (2005). Public health literacy in America, an ethical imperative. *American Journal of Preventive Medicine*, *28*(3), 317–322.

Green, L. W., Richard, L., & Potvin, L. (1996). Ecological Foundations of Health Promotion. *American Journal of Health Promotion, 10*(4), 270–281. doi: 10.4278/0890-1171-10.4.270

Groves, A.K., Kagee, A., Maman, S., Moodley, D., & Rouse, P. (2012). Associations between intimate partner violence and emotional distress among pregnant women in Durban, South Africa. *Journal of Interpersonal Violence, 27*(7), 1341 – 1356. doi.org/10.1177/0886260511425247

Gómez, A. M. (2011). Testing the cycle of violence hypothesis: Child abuse and adolescent dating violence as predictors of intimate partner violence in young adulthood. *Youth & Society, 43*, 171-192.

Go, A., Mozaffarian, D., Roger, V., Benjamin, E., Berry, J. (2013). Heart disease and stroke statistics – 2013 update: a report from the American Heart Association. *Circulation, 127*(1): e6-e245.

Gragnoli, G. (2014). Hypothesis of the neuroendocrine cortisol pathway gene role in the comorbidity of depression, type 2 diabetes, and metabolic syndrome. *The Application of Clinical Genetics, 7*, 43-53. doi 10.2147/TACG.S39993

Green, L. W., Richard, L., & Potvin, L. (1996). Ecological foundations of health promotion. *American Journal of Health Promotion, 10*(4), 270–281.

Hatcher, A., Romito, P., Odero, M., Bukusi, E., Onono, M. & Turan, J. (2013). Social context and drivers of intimate partner violence in rural Kenya: Implications for the health of pregnant women. *Culture, Health & Sexuality, 15*(4), 404-419, doi: 10.1080/13691058.2012.760205

Haj-Yahia M. (1998b). A patriarchal perspective of beliefs about wife-beating among Palestinian men from West Bank and the Gaza Strip. *Journal of Family Issues, 19*, 595–621.

Hamby, S., Finkelhor, D., & Turner, H. (2012). Teen dating violence: Co-occurrence with other victimizations in the National Survey of Children's Exposure to Violence. *Psychology of Violence, 2*, 111-124.

Hatcher, A.M., Romito, P., Odero, M., Bukusi, E.A., Onono, M. & Turan, J.M. (2013)

Social context and drivers of intimate partner violence in rural Kenya: implications for the health of pregnant women. *Culture, Health & Sexuality, 15* (4), 404-419. doi: 10.1080/13691058.2012.760205

Heiss, V. J. & R. L. Petosa (2016). Social cognitive theory correlates of moderate-intensity exercise among adults with type 2 diabetes. *Psychology, Health & Medicine, 21*(1), 92-101.

Holden, K.B., McKenzie, R., Pruitt, V., Aaron, K., & Hall, S. (2012). Depressive symptoms, substance abuse, and intimate partner violence among pregnant women of diverse ethnicities. Journal of Health Care for the Poor and Underserved, *23*(1), 226-241. doi.org/10.1353/hpu.2012.0022

Howell, D. C. (2013). Statistical methods for psychology (8th ed.). Belmont CA: Wadsworth Cengage Learning.

Huang, H., Yan, P., Shan, Z., Chen, S., Li, M., Luo, C., …Gao, H., Hao, L., & Liu, L. (2015). Adverse Childhood Experiences and Risk of Type 2 Diabetes: A Systematic Review and Meta-analysis. Metabolism: clinical and experimental, *64*, 1408-1418. doi: 10.1016/j.metabol.2015.08.019.

Institute of Medicine (2003). *Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century.* Washington, DC: The National Academies Press.

Institute of Medicine (2002). *The Future of the Public's Health in the 21st Century.* Washington, DC: The National Academies Press.

Jang, Y. & H. Yoo (2012). Self-management programs based on the social cognitive

theory for Koreans with chronic disease: a systematic review. *Contemporary Nurse, 40*(2), 147-159.

Jonker, J., & Pennink, B. W. (2010). *The Essence of Research Methodology: A Concise Guide for Master and Ph.D Students in Management Science.* Heidelberg: Springer Verlag.

Kann, L., McManus, T., Harris. W. A., et al. (2016). Youth Risk Behavior Surveillance – United States, 2015. *Morbidity and Mortality Weekly Report*, *65*(6).

Kastello, J.C., Jacobsen, K.H., Gaffney, K.F., Kodadek, M.P., Bullock, L.C., Sharps, P.W. (2016). Posttraumatic stress disorder among low-income women exposed to perinatal intimate partner violence. *Archives of Women's Mental Health, 19,* 521-528.

Kendall-Tacket, K.A (2007). Inflammation, cardiovascular disease, and metabolic syndrome as sequelae of violence against women: the role of depression, hostility, and sleep disturbance. *Trauma Violence Abuse*, *8,* 117-126.

LaCoursiere, D.Y, Hirst, K.P., & Barrett-Connor, E. (2012). Depression and pregnancy stressors affect the association between abuse and postpartum depression. *Maternal and Child Health Journal, 16*(4), 929–935.

Lancaster, J. (2010). Violence as a public health problem. *Family Community Health, 33*(2), 79.

Lovallo, W. (1997). *Stress and health: Biological and psychological interactions*. Newbury Park, CA: Sage.

Lemus, S. & Stroebe, K. (2015). Achieving Social Change: A Matter of All for One?

Journal of Social Issues, 71(3), 441-452.

Lewin, K. & Cartwright, D. (1951). *Field Theory in Social Science.* New York: Harper.

Ludermir, A., Lewis, G., Alves Valongueiro, S., Araújo, T., & Araya, R. (2010). Violence against women by their intimate partner during pregnancy and spostnatal depression: A prospective cohort study. *Lancet, 376*, 903-10. doi: 10.1016/S0140-6736(10)60887-2.

Malcolm, J. (2012). Through the looking glass: gestational diabetes as a predictor of maternal and offspring long-term health. *Diabetes/Metabolism Research and Reviews*, *28*(4), 307-311.

Martin, M., Person, S., Kratt, P., Prayor-Patterson, H., Kim, Y., Salas, M., … Pisu, M. (2008). Relationship of health behavior theories with self-efficacy among insufficiently active hypertensive African-American women. *Patient Education and Counseling*, *72*(1), 137-145.

Mason, S., Tobias, D., Clark, C., Zhang, C., Hu, F. & Rich-Edwards, J. (2016). Abuse in Childhood or Adolescence and Gestational Diabetes. A Retrospective Cohort Study. *American Journal of Preventive Medicine*, *50*(4), 436-444. doi: 10.1016/j.amepre.2015.08.033

Mason, S., Wright, R., Hibert, E., Spiegelman, D., Forman, J., & Rich-Edwards, J. (2012). Intimate partner violence and incidence of hypertension in women. *Annals of Epidemiology*, *22*(8), 562-567. doi: 10.1016/j.annepidem.2012.05.003

Mason, S., Wright, R., Hibert, E., Spiegelman, D., Jun, H., Hu, F., & Rich-Edwards, J.

(2013). Intimate Partner Violence and Incidence of Type 2 Diabetes in Women. *Diabetes Care, 36*(5), 1159-1165. doi 10.2337/dc12-1082.

Mathew, A., Smith, S., Marsh, B., & Houry, D., (2013). Relationship of Intimate Partner Violence to Health Status, Chronic Disease, and Screening Behaviors. *Journal of Interpersonal Violence, 28*(12), 2581–2592. doi 10.1177/0886260513497312.

McLeroy, K.R., Bibeau, D., Steckler, A. & Glanz, K. (1988). "An Ecological Perspective on Health Promotion Programs." *Health Education Quarterly, 15, 351-377.*

Merai, R., Siegel, C., Rakotz, M., Basch, P., Wright, J., Wong, B., … Thorpe, P. (2016). CDC Grand Rounds: A Public Health Approach to Detect and Control Hypertension. *Morbidity Mortality Weekly Report, 18*(65), 45, 1261-1264. http://dx.doi.org/10.15585/mmwr.mm6545a3

McCall-Hosenfeld, J., et al. (2015). Prevalence and correlates of actions taken by women in response to recent intimate partner violence (IPV). *Journal of General Internal Medicine, 30,* S234.

Miller, L.E., VanZomeren-Dohm, A., Howell, K.H., Hunter, E.C. & Graham-Bermann, S.A. (2013). In-Home Social Networks and Positive Adjustment in Children Witnessing Intimate Partner Violence. Journal of Family Issues 35(4):462-480 doi: 10.1177/0192513X13478597

Niaz, U. (2013). Violence against women in South Asia. *Violence against women and mental health. 178,* 38-53.

Niolon, P. H., Kearns, M., Dills, J., Rambo, K., Irving, S., Armstead, T., & Gilbert, L.

(2017). Preventing Intimate Partner Violence Across the Lifespan: A Technical Package of Programs, Policies, and Practices. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Oliveira, A.G.S., Reichenheim, M.E., Moraes, C.L., Howard, L.M., & Lobato, G. (2017). Childhood sexual abuse, intimate partner violence during pregnancy, and posttraumatic stress symptoms following childbirth: a path analysis. *Archives of Women's Mental Health, 20*(2), 297.

Osborne, J.S. ((2013). *Best Practices in data cleaning.* Washington, DC: Sage.

Pagano, R. R. (2009). Understanding statistics in the behavioral sciences (9th ed.). Belmont CA: Wadsworth Cengage Learning.

Peltzer, K., Pengpid, S., McFarlane, J.M., & Banyini M. (2013). Mental health consequences of intimate partner violence in Vhembe district, South Africa. *General Hospital Psychiatry, 35*(5), 545-550. doi: 10.1016/j.genhosppsych.2013.04.001

Pervanidou, P. & P., Chrousos, G. (2012). Metabolic consequences of stress during childhood and adolescence. *Metabolism, 61*(5), 611-619.

Petrosky, E., Blair, J.M., Betz, C.J., Fowler, K.A., Jack, S.P., Lyons, B.H. (2017). Racial and Ethnic Differences in Homicides of Adult Women and the Role of Intimate Partner Violence – United States, 2003-2014. *MMWR* 66(28):741-746.

Poleshuck, E., Mazzotta, C., Resch, K., Rogachefsky, A., Bellenger, K., Raimondi, C., …Thompson Stone, J., & Cerulli, C. (2016). Development of an innovative treatment paradigm for intimate partner violence victims with depression and pain

using community-based participatory research. *Journal of Interpersonal Violence* Publications INC Books via the Copyright Clearance Center.

Powers, R., Cochran, J., Maskaly, J., & Sellers, C. (2017). Social Learning Theory, Gender, and Intimate Partner Violent Victimization: A Structural Equations Approach. *Journal of Interpersonal Violence, 1-27.* doi: 10.1177/0886260517710*486*

Reeves, W.C., Strine, T.W., Pratt, L.A., Thompson, W., Ahluwalia, I., Dhingra, S.S., McKnight-Eily, L.R., Harrison, L., D'Angelo, D. V., Williams, L., Morrow, B., Deborah Gould, D., Safran, M.A., (2011). Mental Illness Surveillance Among Adults in the United States. Morbidity and Mortality Weekly Report Supplements *60*(3), 132.

Rich-Edwards JW, Spiegelman D, Lividoti Hibert EN, Jun HJ, Todd TJ, Kawachi I. (2010) Abuse in childhood and adolescence as a predictor of type 2 diabetes in adult women. *American Journal of Preventive Medicine, 39*(6), 529e536.

Riley, E.H., Wright, R.J., Jun, H.J., Hibert, E.N., & Rich-Edwards, J.W. (2010). Hypertension in adult survivors of child abuse: observations from the Nurses' Health Study II. *Journal of Epidemiology Community Health, 64*(5), 413e8.

Rodriguez, M. A., Valentine, J., Ahmed, S. R., Eisenman, D. P., Sumner, L. A., Heilemann, M. V., … Liu, H. (2010). Intimate partner violence and maternal depression during the perinatal period: a longitudinal investigation of Latinas. *Violence against Women, 16*(5), 543–559. doi.org/10.1177/1077801210366959

Rovai, A. P., Baker, J. D., & Ponton, M. K. (2014). Social Science Research Design and

Statistics. Chesapeake, VA: Watertree Press LLC.

Santaularia, J., Johnson, M., Hart, L., Haskett, L., Welsh, E., & Faseru, B. (2014). Relationships between sexual violence and chronic disease: A cross-sectional study. *BMC Public Health, 14* doi: 10.1186/1471-2458-14-1286

Sapolsky, R.M. (1994). *Why zebras don't get ulcers: A guide to stress, stress-related diseases, and coping*. New York: WH Freeman.

Schlüter, M., Baeza, A., Dressler, G., Frank, K., Groeneveld, J., Jager, W., Janssen, M., McAllister, R., Müller, B., Orach, K., Schwarz, N., Wijermans, N. (2017). Ecological economics (Amsterdam): A framework for mapping and comparing behavioural theories in models of social-ecological systems. *Ecological Economics* 131:21-35. doi: 10.1016/j.ecolecon.2016.08.008

Shulman, H.B., D'Angelo, D.V., Harrison, L., Smith, R.A., Warner, L. (2018). "The Pregnancy Risk Assessment Monitoring System (PRAMS): Overview of Design and Methodology", *American Journal of Public Health*:*108*(10): 1305-1313. DOI: 10.2105/AJPH.2018.304563

Shulman, H. B., Gilbert, B. C., & Lansky, A. (2006). The Pregnancy Risk Assessment Monitoring System (PRAMS): Current methods and evaluation of 2001 response rates. *Public Health Reports, 121*(1), 74–83.Smith, S. G., Chen, J., Basile, K. C., Gilbert, L. K., Merrick, M. T., Patel, N., Walling,

M., & Jain, A. (2017). The National Intimate Partner and Sexual Violence Survey (NISVS): 2010-2012 State Report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Smith, S.G. & Breiding, M.J. (2011). Chronic disease and health behaviours linked to experiences of non-consensual sex among women and men. *Public Health, 125*, 653-659.

Stevens, J. P. (2009). Applied multivariate statistics for the social sciences (5th ed.). Mahwah, NJ: Routledge Academic.

Sugg, N. (2015). Intimate partner violence: Prevalence, health consequences, and intervention. *Medical Clinics of North America, 99*(3), 629-649. doi: 10.1016/j.mcna.2015.01.012

Suglia, S., Sapra, K., & Koenen, K. (2015). Violence and cardiovascular health: A systematic review. *American Journal of Preventive Medicine, 48*, 205-212. doi: 10.1016/j.amepre.2014.09.013.

Sundaram, S., Harman, J.S. & Cook, R.L. (2014). Maternal Morbidities and Postpartum Depression: An Analysis Using the 2007 and 2008 Pregnancy Risk Assessment Monitoring System. *Women s Health Issues 24*(4),:e381-8. DOI: 10.1016/j.whi.2014.05.001 ·

Tabachnick, B. G., & Fidell, L. S. (2013). Using Multivariate Statistics, 6th ed. Boston: Allyn and Bacon.

Tsai, A., Tomlinson, M., Comulada, W., & Rotheram-Borus, M. (2016). Intimate partner violence and depression symptom severity among South African women during pregnancy and postpartum: Population-based prospective cohort study. *PLoS Medicine* / Public Library of Science, *13*(1), e1001943.

United Nations General Assembly. *In-depth study on all forms of violence against*

women. New York, NY, United Nations, 2006.

Warshaw, C., Brashler, P., & Gil, J. (2009). *Mental health consequences of intimate partner violence.* In C. Mitchell & D. Anglin (Eds.), Intimate partner violence: a health-based perspective (pp. 147–170). New York: Oxford University Press.

Washington Coalition of Sexual Assault Programs. The Social Ecological Model. Retrieved June 14, 2018 from www.wcsap.org/social-ecological-model

Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. New York: Cambridge University Press.

Wharf Higgins, J., Begoray, D., & MacDonald, M. (2009). A Social Ecological Conceptual Framework for Understanding Adolescent Health Literacy in the Health Education Classroom. *American Journal of Community Psychology, 44,* 350-362. doi: 10.1007/s10464-009-9270-8.

World Health Organization, (2013). *Responding to intimate partner violence and sexual violence against women: WHO clinical and policy guidelines.* World Health Organization document.

World Health Organization, (2012). *Understanding and addressing violence against women; health consequences.* Available at http://apps.who.int/iris/bitstream/10665/77431/1/WHO_RHR_12.43_eng.pdf

World Health Organization, (2010). *Preventing Intimate Partner and Sexual Violence Against Women: Taking Action and Generating Evidence.* Geneva: WHO and London School of Hygiene and Tropical Medicine.

US Department of Health and Human Services. *Mental health: a report of the Surgeon*

General. Rockville, MD: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health; 1999. Available at http://www.surgeongeneral.gov/library/mentalhealth/home.htmlExternal Web Site Icon. Accessed May 13, 2018.

Viola, W.E. (2014). "Social Networks of Intimate Partner Violence Perpetrators". Dissertations and Theses. Paper 1933.

Willis, M. & Jozkowski, K.N. (2018) Barriers to the Success of Affirmative Consent Initiatives: An Application of the Social Ecological Model. *American Journal of Sexuality Education,* 1-13. doi: 10.1080/15546128.2018.1443300

Xu, J.Q., Murphy, S.L., KochanJek,, K.D., & Bastian, B.A. (2016). *Deaths: Final data for 2013. National Vital Statistics Report, 64*(2).

Yoon, S., Fryar, C., & Carroll, M. (2015). *Hypertension Prevalence and Control Among Adults: United States, 2011-2014.* NCHS data brief, no 220. Hyattsville, MD: National Center for Health Statistics.

Zakar, R., Zakria Zakar, M., & Kraemer, A. (2013) Men's beliefs and attitudes toward intimate partner violence against women in Pakistan. *Violence Against Women, 19*(2):246-268. doi: 10.1177/1077801213478028