

PREDICTORS OF POSTTRAUMATIC STRESS DISORDER AND DEPRESSION AMONG
LOW-INCOME WOMEN EXPOSED TO PERINATAL INTIMATE PARTNER VIOLENCE

by

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
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DEDICATION

I would like to dedicate this work to my family. I could not have successfully completed this journey without your unconditional love, support and encouragement. Especially to my parents, who taught me that I could achieve whatever I dreamed. To my dear sister, whose wit and wisdom continues to keep me grounded. You and your family have been a source of many happy memories for us. This dissertation is also dedicated to my son, Ari. From the moment of your birth, you have been an immeasurable source of love, light and joy in my life.

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LIST OF ABBREVIATIONS

Abuse Assessment Screen.....	AAS
American Psychiatric Association	APA
Behavioral Risk Factor Surveillance Survey	BRFSS
Centers for Disease Control and Prevention	CDC
Conflict Tactics Scale-Revised	CTS-2
Davidson Trauma Scale	DTS
Diagnostic and Statistical Manual of Mental Disorders-V	DSM-V
Domestic Violence Home Visitation	DOVE
Edinburgh Postnatal Depression Scale.....	EPDS
Intimate Partner Violence	IPV
Intrauterine Growth Restriction	IUGR
Life Course Health Development.....	LCHD
Major Depressive Disorder	MDD
Most Disturbing Traumatic Event.....	MDTE
National Intimate Partner and Sexual Violence Survey.....	NISVS
National Violence Against Women Survey	NAVWS
Posttraumatic Stress Disorder	PTSD
Self-Rated Mental Health.....	SRMH
Socio-Economic Status	SES

ABSTRACT

PREDICTORS OF POSTTRAUMATIC STRESS DISORDER AND DEPRESSION AMONG LOW-INCOME WOMEN EXPOSED TO PERINATAL INTIMATE PARTNER VIOLENCE

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Women exposed to intimate partner violence (IPV) during pregnancy are at increased risk for compromised mental health. There is evidence that trauma, both violent and non-violent events, are associated with the development of posttraumatic stress disorder (PTSD) and depression. Routine assessment for conditions such as depression and IPV is recommended for women of reproductive age, but the current health care environment impedes the ability of clinicians to complete recommended screenings for every patient. The purpose of this cross-sectional study was to examine trauma, IPV type and IPV severity as predictors of posttraumatic stress disorder and depression among low-income women who experienced intimate partner violence during pregnancy. A secondary purpose was to examine the validity of a brief screening measure of self-rated mental health (SRMH) to identify PTSD and depression in comparison to previously established mental health assessment measures. The baseline data of 239 low-income pregnant women who experienced recent IPV was analyzed to address the study objectives. Univariate and bivariate analyses were used to describe the sample and identify relationships among the major study variables. Regression models were developed to further explore these

relationships to identify predictors of PTSD and depression. Calculation of validity coefficients and receiver operating characteristic (ROC) analyses were conducted to determine the ability of SRMH to identify depression and PTSD among these women. PTSD was identified in 40% of the women, while 41% had high risk for depression. Age was the only predictor of PTSD development, with women more likely to develop PTSD as they aged. Women who experienced severe psychological IPV were more likely to have high risk for depression than those exposed to severe sexual or physical IPV. The SRMH item demonstrated moderate validity and accuracy in its ability to detect high risk for depression, suggesting it may be a useful way to increase screening and identification of women at risk for depression and who may benefit from a more comprehensive mental health assessment. These results suggest that current mental health screening measures should be expanded to routinely assess trauma, as well as IPV, to increase early identification and treatment of women most at risk for depression and PTSD. The current clinical climate may not be conducive to completing the recommended routine screenings for each patient. The present study findings indicate that single item measures may be useful, but further research is needed to establish a valid measure of mental health that is quick and efficient in a busy clinical setting.

CHAPTER ONE: INTRODUCTION TO STUDY

The Centers for Disease Control and Prevention (CDC) estimates that intimate partner violence (IPV) causes 1,200 deaths and 2 million injuries among women in the United States each year (CDC, 2008). IPV is defined by the CDC as physical, sexual or psychological harm by a current or former intimate, common-law spouse, non-marital dating partner or boyfriend/girlfriend of the same or opposite sex (Saltzman, Fanslow, McMahon & Shelley, 1999). The United States Department of Justice estimates that 85% of IPV victims are female and most often of reproductive age (Catalano, 2012). Research consistently demonstrates IPV risks are highest among women of minority populations, low socio-economic status (SES), single marital status, and lower education levels when compared with the general population (Black et al., 2011). Women exposed to IPV are at increased risk for multiple adverse physical and mental health outcomes such as injury, chronic pain, insomnia, chronic fatigue, unintended pregnancy, substance abuse, high risk behaviors, depression, posttraumatic stress disorder (PTSD), anxiety, suicidality, and fatal injury (American College of Obstetricians and Gynecologists, 2012; Black et al., 2011; Campbell, 2002; Dienemann et al., 2000; Golding, 1999; Hanson, 2010; National Center for Injury Prevention and Control, 2003).

Pregnant women are not immune to intimate partner violence. IPV occurring around the time of pregnancy is identified as *perinatal IPV* and includes IPV in the year before or during pregnancy, and up to one year postpartum (Sharps, 2007; Bhandari, Sharps & Bullock, 2013). Prevalence of perinatal IPV in the United States is estimated between 0.9% to 36% (Taillieu & Brownridge, 2010) with some reported rates as high as 81% in extremely rural locations (Bailey

& Daugherty, 2007). Perinatal IPV results in significant health consequences which extend beyond the individual to the pregnancy itself, increasing risks to both maternal and child health. Maternal health consequences include reproductive health risks such as delayed prenatal care, insufficient weight gain, miscarriage, placental rupture, and antepartum hemorrhage (Campbell, 2002). Fetal outcomes associated with perinatal IPV have long-term health implications which include intrauterine growth restriction (IUGR), pre-term birth, low birth-weight, and fetal death (Alhusen, Lucea, Bullock, & Sharps, 2013; Bailey, 2010; Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006; Janssen et al., 2003).

IPV and Mental Health

The physical consequences of IPV have long been a focus of research, but less is understood about the effect of IPV on the mental health of women who are victimized. Both pregnant and non-pregnant women who have experienced IPV suffer from significantly higher rates of depression, PTSD, suicidality, and substance abuse when compared to the general population (Brownridge et al., 2011; Cerulli, Talbot, Tang, & Chaudron, 2011; Huth-Bocks, Krause, Ahlfs-Dunn, Gallagher, & Scott, 2013; Maria A Pico-Alfonso et al., 2006; Sharps, Laughon, & Giangrande, 2007). Depression and PTSD are the two most commonly occurring mental disorders among women exposed to IPV, and co-occur in almost half of the women who have experienced IPV (Campbell, 2002; Nixon, Resick, & Nishith, 2004; Stein & Kennedy, 2001).

Prevalence rates of depression among pregnant women exposed to perinatal IPV vary and are estimated as low as 16% (Rodriguez et al., 2008) and as high as 49% when compared with pregnant women not exposed to IPV (Trabold, Waldrop, Nochajski, & Cerulli, 2013). Depression during pregnancy is associated with multiple negative maternal and fetal health outcomes that may be immediate or long term. Maternal outcomes include postpartum depression (Certain,

Mueller, Jagodzinski, & Fleming, 2008), gestational diabetes mellitus, preeclampsia, hypertension (Grote et al., 2010), increased risk for tobacco and substance abuse (Alhusen et al., 2013; Bullock, Mears, Woodcock, & Record, 2001), decreased breastfeeding, poor maternal-child bonding (Kendall-Tackett, 2007), and decreased ability to parent (Cerulli et al., 2011). Fetal risks linked with maternal depression are similar to those associated with perinatal IPV and include preterm birth, low-birth weight, and IUGR (Alder, Fink, Bitzer, Hösli & Holzgreve, 2007; Grote et al., 2010; Jasinski, 2004; Rosen, Seng, Tolman & Mallinger, 2007).

Prevalence of PTSD is also high among non-pregnant women exposed to IPV, ranging from 31% to 84%, and it is estimated that women are three to six times more likely to develop PTSD if exposed to IPV (Dutton et al., 2006; Golding, 1999). Women with PTSD are often at increased risk for mental health co-morbidities such as depression, panic disorder, anxiety, alcohol and/or illicit drug use and suicidality (Morland, Leskin, Block, Campbell, & Friedman, 2008; Smith, Poschman, Cavaleri, Howell & Yonkers, 2006), further compromising their mental stability.

Prevalence of PTSD among women exposed to perinatal IPV is estimated to be between 7% to 53% (Cerulli et al., 2011; Loveland Cook et al., 2004; Mahenge, Likindikoki, Stöckl & Mbwambo, 2013; Morland et al., 2008; Rodriguez et al., 2008; Rose et al., 2010). In addition to increased risk for mental health co-morbidities, PTSD has been associated with higher risks for obstetrical complications such as preterm labor, preterm birth, hyperemesis, ectopic pregnancy, and spontaneous abortion (Morland et al., 2008; Seng et al., 2001; Seng, Low, Sperlich, Ronis & Liberzon, 2009). Further, the effects of PTSD have been shown to extend beyond the pregnant individual's mental health, causing significant impairment and distress in daily life activities, such as school, work, and family functioning (Seng et al., 2009).

Current research indicates high prevalence of mental health disorders among women exposed to IPV and demonstrates there is a strong link between mental health and IPV. Few studies, however, have examined specific characteristics related to IPV that may differentiate the mental health outcomes of women who are exposed to perinatal IPV. Factors such as trauma (Huth-Bocks et al., 2013; National Center on Domestic Violence, Trauma and Mental Health, 2011; Loveland Cook et al., 2004; Mezey, Bacchus, Bewley & White, 2005; Julia S Seng et al., 2009; Smith et al., 2006), IPV type (Brownridge et al., 2011; Burch & Gallup, 2004; Chandra, Satyanarayana & Carey, 2009; Garcia-Moreno et al., 2006), and IPV severity (Brownridge et al., 2011; Cerulli et al., 2011; Chandra et al., 2009; Huth-Bocks et al., 2013; Mahenge et al., 2013; Maria A Pico-Alfonso et al., 2006) have been shown to be associated with both PTSD and depression, but we have little knowledge about how these factors influence mental health outcomes in the context of perinatal IPV.

Trauma

The American Psychiatric Association (APA) defines trauma as personal experience with actual or threatened death, serious injury, or other threat to one's physical integrity; witnessing an event of this nature; or learning about unexpected or violent death, serious harm, injury or threat of death experienced by a family member or other close associate (2013). Trauma may include events such as combat, sexual and physical assault, robbery, being kidnapped, being taken hostage, terrorist attacks, torture, disasters, severe automobile accidents, childhood sexual abuse, and life-threatening illnesses, as well as witnessing death or serious injury by violent assault, accidents, war, or disaster (APA, 2000). Trauma is considered a natural response to a significant event, but research indicates it may have lasting negative effects on both mental and physical health.

Trauma has been identified as the primary catalyst in the development of mental health disorders such as PTSD, but less is known about the relationship between specific types of trauma, violent or non-violent, and mental health. Women and men experience comparable rates of traumatic events, but women experience significantly higher rates of trauma related to IPV and sexual assault (Breslau et al., 1998; Breslau, 2002). Women exposed to IPV-related trauma are often victims of chronic physical, psychological and sexual violence, but until recently, research surrounding repeated trauma has focused on men who have experienced combat or those who have survived natural disasters.

Other types of traumatic experiences not related to IPV, such as childhood sexual abuse, have been shown to increase a woman's predisposition to abuse in adulthood (Coid et al., 2001; Mezey et al., 2005). Trauma, such as history of childhood abuse or exposure to current or past IPV, is significant in the development of psychiatric disorders, recurrence for re-victimization, and recovery from mental illness among women who have experienced such events (National Center on Domestic Violence, Trauma and Mental Health, 2011). Additionally, adult and childhood physical and sexual abuse histories have been strongly linked to the increased severity of depressive and PTSD symptoms among childbearing women when compared with other forms of trauma (Mezey et al., 2005), suggesting that the type of trauma or history of trauma may play a significant role in the prediction of mental health outcomes.

Intimate Partner Violence: Type and Severity

Experiences with IPV differ for each woman. Factors such as IPV type and severity may have varying effects on an individual's health outcomes. Much research has focused on the reportable physical outcomes related to types of IPV, such as physical and sexual IPV, or severe violence, such as injury and death, while scant data exists about the effect of IPV type and severity on mental health.

Pregnancy may be a risk factor for increased IPV severity. Research demonstrates that IPV severity and homicide rates increase when women are exposed to IPV during pregnancy (Brownridge et al., 2011; Burch & Gallup, 2004; Chang, Berg, Saltzman, & Herndon, 2005; Clements, Holt, Hasson, & Fay-Hillier, 2011; McFarlane, Campbell, Sharps, & Watson, 2002). The World Health Organization (WHO) (2006) found that violence severity among non-pregnant populations exposed to IPV increased during pregnancy, and that almost half of the pregnant women reported that severe acts of violence, such as being kicked or punched in the abdomen, were perpetrated by the father of the baby 90% of the time (Garcia-Moreno et al., 2006). Limited research suggests that as perinatal IPV severity increases, symptoms of PTSD and depression symptoms also increase in severity (Brownridge et al., 2011; Chandra et al., 2009; Hegarty et al., 2013; Maria Angeles Pico-Alfonso, 2005), leading to greater maternal and child health risks.

The type of IPV is another factor that may contribute to the mental health outcomes among affected women. The CDC identifies three primary categories of violence in its definition of IPV: physical, sexual, and psychological (Saltzman, Fanslow, McMahon & Shelley, 1999). Different types of IPV experienced during pregnancy have been associated with increased risk for physical injury, emotional distress, depression, PTSD, attempted and completed suicide, high-risk behaviors, and substance use.

Women rarely experience just one type of IPV (Thompson et al., 2006) and those exposed to severe, combined physical, emotional and sexual abuse are most likely to report poorer mental health and quality of life compared with those experiencing one or two types (Hegarty et al., 2013). Further, women are more likely to experience all types of IPV and in severe forms during pregnancy (Brownridge et al., 2011). However, data is inconclusive regarding the relationship between exposure to multiple types of violence and mental health outcomes among women exposed to perinatal IPV.

Cost of IPV

In addition to the multiple health consequences affecting the individual, compromised mental health and exposure to IPV impose a significant economic burden on both the individual and society. In 2003, the National Center for Injury Prevention and Control (NCIPC) estimated that 5.8 million IPV victimizations occurred among adult women annually and resulted in approximately 2 million injuries. This translates to a loss of 8 million paid workdays (equivalent to 32,000 full time jobs) and 5.6 million productive household days each year (National Center for Injury Prevention and Control, 2003). The cost for medical care, mental health services, and loss of productivity resulting from IPV in 2003 was estimated to be 8.3 billion dollars annually (CDC, 2012). The occurrence of IPV and its related costs in the United States have created a serious public health crisis. Exploration of methods of risk reduction, identification, intervention, and prevention of IPV is needed to abate the substantial financial, physical, and mental burden on the individual and society at large.

Screening

Leading health organizations have begun to recognize the significance of environmental and psychosocial factors as determinants in women's physical and mental health. Clinical and health policy recommendations have been established in an effort to increase early identification of risk factors in the clinical setting. Citing the prevalence and associated risks surrounding IPV and mental health, leading health organizations, such as WHO (2013), the United States Preventative Services Task Force (USPSTF) (2013; 2009), and the American College of Obstetrics and Gynecology (ACOG) (2012; 2010), strongly emphasize the need for routine IPV and depression screening, particularly among women of reproductive age.

Statistically, victims of IPV seek healthcare more often than those who have not been exposed (Black et al., 2011), providing opportunities for clinical screening and early identification. However, despite 1 in 4 women reporting IPV in her lifetime, IPV screening has

not yet become the standard of care. Approximately 10% of obstetricians and gynecologists and 1.5% - 12% of primary care clinics report routine screening for IPV (Colarossi, Breitbart, & Betancourt, 2010; Rodriguez, Bauer, McLoughlin & Grumbach, 1999; Waalen, Goodwin, Spitz, Petersen & Saltzman, 2000). Factors contributing to the existing gap between recommendations and implementation of routine screening include fear of offending the patient, lack of education, scant referral resources, and limited time in the clinical setting (Waalen et al., 2000).

In an effort to remove financial obstacles to routine screening, the Department of Health and Human Services (DHHS) guidelines state that screening for IPV is considered a preventative health service and that all women should be screened without the related burden of cost (U.S. Department of Health and Human Services, 2013). Guidelines such as this may alleviate the cost of such screening, but it may not address clinical concerns regarding the time required to administer screenings during appointments. There are numerous reliable and valid assessment tools available for both depression and IPV, but they can be time consuming and may not be used consistently. Given the changing environment of healthcare, clinicians must optimize their time to address the most pertinent issues; hence, risk assessment may not be completed. Screenings that are short and place minimal burden on both the patient and clinician may provide a solution to increase screening.

Purpose

The primary purpose of this study was to examine trauma, IPV type, and IPV severity as predictors of PTSD and depression among low-income pregnant women exposed to IPV. The secondary purpose of this study was to test the validity of a single, self-rated mental health screening measure in its identification of risk for PTSD and depression when compared to previously validated mental health measures. The purposes of this study were addressed by the following research objectives:

1. Examine trauma, IPV type and IPV severity as predictors of PTSD among low-income pregnant women exposed to intimate partner violence.
2. Examine trauma, IPV type and IPV severity as predictors of depression among low-income pregnant women exposed to intimate partner violence.
3. Determine sensitivity, specificity and predictive value of a self-rated mental health indicator in the risk identification of depression and PTSD among low-income pregnant women exposed to intimate partner violence.

Theoretical Framework

The Life Course Health Development (LCHD) model served as the theoretical framework for the present study, providing a solid foundation from which to examine mental health in women exposed to perinatal IPV in the context of life-long health. It has become a widely accepted model in health research and has recently been used as a guide for health care policy and practice by the Institute of Medicine (IOM), *Healthy People 2020*, and in the formation of the *Maternal and Child Health Research Agenda* (Halfon, DuPlessis & Barrett, 2008; Russ, Larson, Tullis, & Halfon, 2014).

Originally evolving from multidisciplinary life course theories rooted in sociology and developmental psychology (Russ et al., 2014), the LCHD model emphasizes the influence of psychosocial, environmental, and socioeconomic factors on an individual's health over a life span. Multidisciplinary research using the LCHD framework has furthered our understanding of the influence of health environment on health outcomes. The LCHD model identifies health as a developmental trajectory that is influenced by the cumulative effect of events, exposures and experiences (risk factors) which increase an individual's vulnerability to disease especially during critical points in time (Halfon & Hochstein, 2002). Women exposed to perinatal IPV often experience repeated violent and non-violent events during a time of increased vulnerability. The

cumulative effects of these events potentially impact their physical and mental health trajectory and that of their unborn children. Risk factors, such as trauma and violence, influence both maternal and fetal health and potentially impede the ability to achieve optimum health over the life course trajectory. The LCHD model proposes protective factors (health promotion strategies) within the process that counterbalance the identifiable risk factors and fortify health along its trajectory (Halfon & Hochstein, 2002). Further, the LCHD model emphasizes that optimal health is achieved only when the risk factors are minimized and mitigated by promoting factors (2000).

The LCHD model is based on the recognition that the basic processes of human development are genetically programmed, and environmental factors, such as social, economic, physical, behavioral, and cultural factors, play a significant role in health development (Halfon & Hochstein, 2002). Building on the link between prenatal exposure and negative health outcomes in adulthood, Halfon et al. (2008) recognized pregnancy as a critical time in which women are particularly vulnerable to cumulative risk factors. They highlight the relationship between maternal and child health trajectories, emphasizing the vulnerability of preconception and prenatal health to multiple factors such as preexisting health disparities, poor health, socioeconomic status, poverty, education, environment, maternal stress, social structure, and access to healthcare. Halfon et al. (2008) suggest that by incorporating LCHD concepts with the current prenatal care model, the scope of health care can potentially span the reproductive years to create opportunities for prevention and health promotion, chronic disease management, psychosocial interventions, as well as risk assessment leading to improvement of health environment during both pre-conception and pregnancy. The LCHD model supports the importance of optimal health in the pre-conception period and builds the case for early identification and risk assessment of women as a standard practice prior to pregnancy. These

protective strategies decrease the impact of negative risk factors and enhance life long health for both mother and baby.

Russ (2014) et al. present a compelling argument for the incorporation of the LCHD model into the maternal and child health research (MCH) agenda. They emphasize the need for MCH research to move from a single-cause to a multi-cause perspective and address MCH as a multi-dimensional issue. The LCHD model provides a framework that can help explain the links between early-life events (occurring in pregnancy and childhood) and future health outcomes to address the knowledge gaps identified in current MCH research.

Conceptual Model

This study examined risk factors associated with the mental health trajectory of women exposed to perinatal IPV. The cumulative effect of trauma and IPV-related factors, such as IPV type and IPV severity, contribute to the deterioration of maternal mental health while increasing susceptibility to negative outcomes for both the pregnant individual and developing baby. For a woman, this might translate to diminished self-care behaviors such as poor nutrition, smoking, substance abuse, and inconsistent prenatal care leading to pregnancy complications or maternal death. For a baby in utero, these maternal behaviors may directly relate to physical injury, poor growth, or life-long complications arising from preterm labor or birth or fetal death (March of Dimes, 2009). Prenatal care visits and routine screening have the potential to serve as significant, health promoting strategies to mitigate the cumulative effect of risk factors, such as trauma and IPV, on maternal mental health. Health promotion, early identification and prevention strategies introduced at prenatal visits could reduce vulnerability and victimization, while ensuring a positive health trajectory for both mother and baby.

Adapted from the LCHD model (Halfon, Inkelas & Hochstein, 2000), the conceptual model for this study illustrates the relationship between risk factors (trauma, IPV type and IPV severity) and the compromised mental health of women exposed to perinatal IPV. Additionally,

sociodemographic characteristics known to be associated risks such as age, race/ethnicity, marital status, and level of education are included in the model. Health promotion strategies, such as screening, identification and intervention for IPV and mental health status can decrease the overall impact of these experiences on mother and baby (Figure 1).

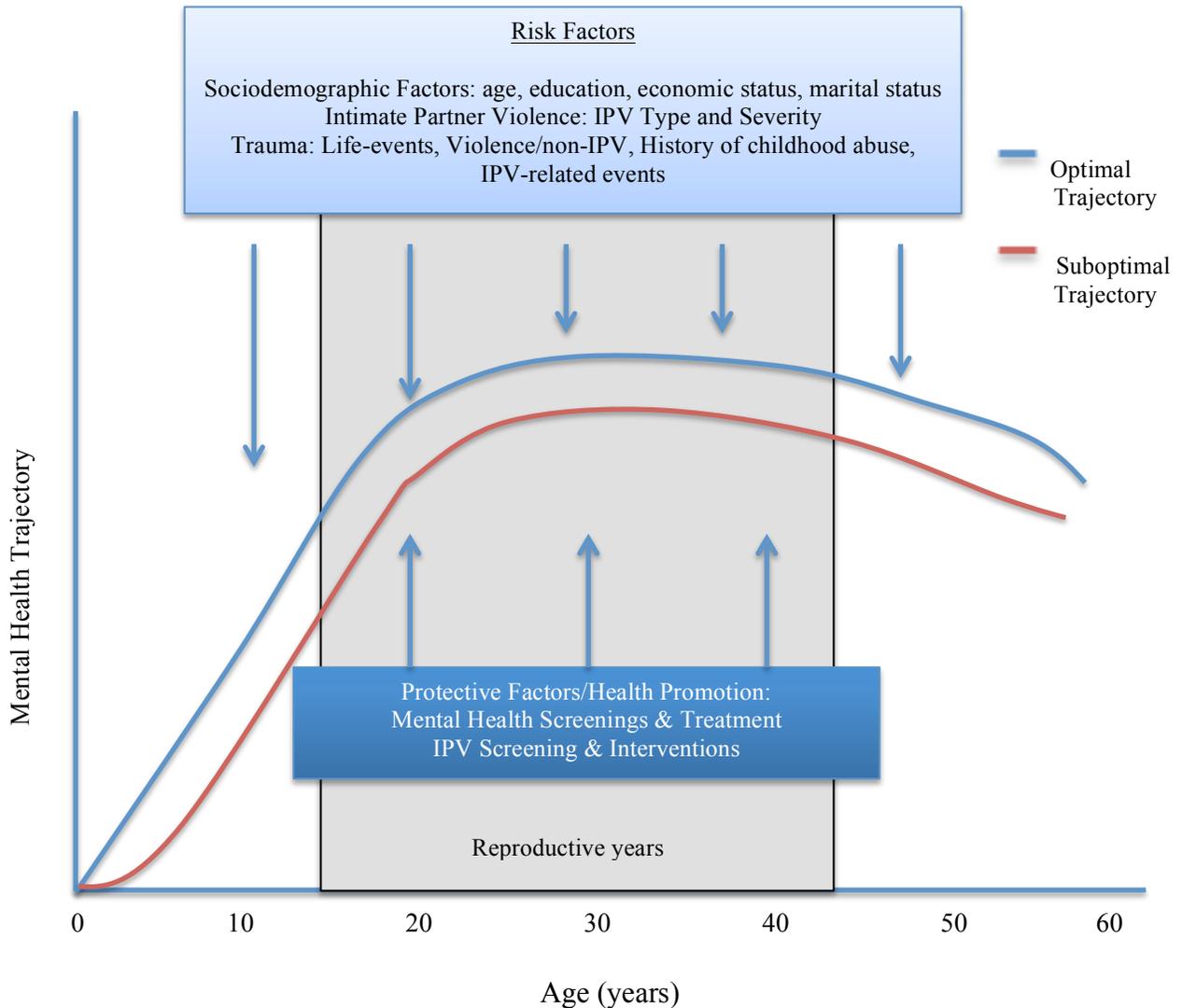


Figure 1. Trajectory of mental health over the life course. Adapted from the Life Course Health Development Model by N. Halfon, M. Inkelas and M. Hochstein, 2000, *The Millbank Quarterly*, 78 (3), p. 447.

Definition of Terms

Perinatal IPV. Perinatal IPV is defined as IPV that occurs in the 12 months prior to pregnancy, during pregnancy and up to one year postpartum (Bhandari, Bullock, & Sharps, 2013; Sharps et al., 2007). For the purpose of this study, perinatal IPV included any form of partner violence reported by the participant during the baseline interview that occurred within the 12 months prior to the study, during the index pregnancy or within the first six weeks of the postpartum period.

Posttraumatic Stress Disorder (PTSD). The American Psychiatric Association (APA) defines PTSD as a pathological response to a traumatic event, which may cause an individual clinically significant impairment or distress in social interactions, ability to work and other important daily functioning (2013).

Depression. Depression is defined as prolonged overwhelming feelings of sadness and/or hopelessness, which may lead to lack of interest and pleasure in daily activities, significant weight loss or gain, insomnia or excessive sleeping, lack of energy, inability to concentrate, feelings of worthlessness or excessive guilt, and recurrent thoughts of death or suicide (APA, 2013).

Self-Rated Mental Health (SRMH). Self-rated mental health is defined as an assessment of one's contextual perception of his/her mental health status. SRMH has been shown to be associated with an individual's well-being, physical and mental health status, and use of mental health services (Fleishman & Zuvekas, 2007). SRMH is a potential valid measure of mental health because it allows an individual to consider his/her ideals and values in the context of health and determine the value of each as it pertains to his/her situation (Youngblut & Casper, 1993).

Trauma. Trauma is clinically defined as a personal experience with actual or threatened death, serious injury, or other threat to one's physical integrity; witnessing an event of this nature; or learning about unexpected or violent death, serious harm, injury or threat of death experienced

by a family member or other close associate (APA, 2013). Specific types of trauma may include events such as combat, sexual and physical assault, robbery, being kidnapped, being taken hostage, terrorist attacks, torture, disasters, severe automobile accidents, childhood sexual abuse and life-threatening illnesses, as well as witnessing death or serious injury by violent assault, accidents, war or disaster (APA, 2000).

IPV type. The CDC delineates IPV as physical, sexual or psychological acts perpetrated by current or former intimates of the same or opposite sex (Saltzman et al., 1999). Each type of violence involves various acts that may range in frequency and severity. A complete definition of each violence type and its related actions as defined by the CDC can be seen in Table 1.

Table 1. Types of Intimate Partner Violence as Recognized by the Centers for Disease and Prevention

IPV Type	Definition	Actions
Physical Violence	Intentional use of physical force with the potential for causing death, disability, injury, or harm (Saltzman et al., 1999).	Physical violence includes but is not limited to scratching, pushing, shoving, throwing, grabbing, biting, choking, shaking, slapping, punching, burning, use of a weapon and use of restraints or one's body size or strength against another person.
Sexual Violence	Use of force or coercion to compel a person to complete a sexual act against his/her will; an abuse sexual act (Saltzman et al., 1999).	
Psychological Violence	Involves trauma to the victim caused by acts, threats of acts, or coercive tactics (Saltzman et al., 1999).	Includes, but is not limited to humiliating the victim, controlling what the victim can and cannot do, withholding information from the victim, deliberately doing something to make the victim feel diminished or embarrassed, isolating the victim from friends and family, and denying the victim access to

IPV Severity. IPV severity refers to the level of risk of injury associated with a specific violent or non-violent act (Certain et al., 2008; Coker, Sanderson & Dong, 2004; Howard, Oram, Galley, Trevillion & Feder, 2013; Huth-Bocks, Levendosky & Bogat, 2002; Janssen et al., 2003; Straus, Hamby, Boney-McCoy & Sugarman, 1996). Acts of physical violence, such as slapping, pulling or grabbing a partner are considered less severe than behaviors like punching, beating or use of a weapon on a partner, while non-violent acts, such as destroying something belonging to a partner, are considered to be more severe than insulting or yelling at a partner (Straus, Hamby, Boney-McCoy & Sugarman, 1996).

Table 2 provides an overview of the conceptual definitions of the mental health and predictor variables to be examined in this study. Operational definitions of these variables are detailed in Table 4 in Chapter 3.

Table 2. Conceptual Definitions of Major Study Variables

Variable	Conceptual Definition
Posttraumatic Stress Disorder (PTSD)	Recurrent and repeated reaction to a traumatic event in which an individual may experience recurrent thoughts, re-experience the event, avoid situations that are reminders of the event and have increased anxiety that may disrupt their lives (American Psychiatric Association, 2013).
Depression	Prolonged overwhelming feelings of sadness and/or hopelessness, which may lead to lack of interest and pleasure in daily activities, significant weight loss or gain, insomnia or excessive sleeping, lack of energy, inability to concentrate, feelings of worthlessness or excessive guilt and recurrent thoughts of death or suicide (American

	Psychiatric Association, 2013).
Self-Rated Mental Health (SRMH)	Self-report assessment of maternal state of mental health during pregnancy.
Trauma	Any personal experience with actual or threatened death, serious injury, or other threat to one's physical integrity; witnessing an event of this nature; or learning about unexpected or violent death, serious harm, injury or threat of death experienced by a family member or other close associate (American Psychiatric Association, 2013).
IPV Type	Three primary types of violence are associated with IPV and are identified by the CDC as follows: physical, sexual, psychological violence (Saltzman et al., 1999). Complete definitions are listed in Table 1, pages 14-15.
IPV Severity	The level of risk of injury associated with a specific violent or non-violent act (Straus, 1996).

Innovation of Study

This study will advance nursing science in several ways. First, it is congruent with the current trend in healthcare that emphasizes the importance of mental health in our overall physical health and wellness. This study sought to increase our understanding of two mental disorders that frequently plague victims of intimate partner violence, and provided valuable insight to factors that may predict mental health outcomes.

Second, this study examined low-income women from a community setting with known exposure to perinatal IPV, providing a unique opportunity to expand our knowledge surrounding mental health in this specific population. Current research demonstrates an alarmingly high prevalence of both depression and PTSD among women exposed to perinatal IPV, however much of this research has focused on prevalence among women from acute settings such as hospitals,

clinical settings or shelters. Women in these settings represent those who are seeking medical care or services for acute situations and may not accurately reflect the prevalence or nature of mental health disorders among women residing in a community setting.

Third, impaired mental health during pregnancy is known to result in poor physical health, increased risk for reproductive health consequences, pregnancy complications, postpartum depression, poor maternal-child bonding, and poor quality of life. Less is known about the specific factors that predict mental health outcomes among this population. Studies focused on factors such as trauma, IPV type and IPV severity have demonstrated associations with mental health, but there are no studies that examine these factors collectively among low-income women exposed to perinatal IPV. Additionally, little is known about the role of trauma in mental health beyond its association with PTSD. Women by nature experience greater levels of trauma in their lives and there is a dearth of knowledge surrounding how different forms of trauma affect mental health and pregnancy outcomes, especially among women who routinely experience repeated trauma during pregnancy.

Fourth, few studies have examined the effect of experiencing multiple forms of IPV on mental health or whether the severity of a particular type of violence affects the mental health outcomes among pregnant women. This study lends insight to the relationships between mental health and trauma, IPV type (number of types experienced) and IPV severity, and provides valuable knowledge for the formation of early detection, prevention and intervention strategies among this particularly vulnerable population.

Finally, in order to identify and treat mental disorders among women exposed to perinatal IPV, screening must become routine in both primary and specialty care settings. Valid and reliable mental health measures exist, but in the current healthcare environment, where time is often limited, patient and clinician burden must be kept to a minimum. This study explored the

validity of a single item that assesses self-rated mental health (SRMH) and its ability to detect mental health outcomes in comparison to existing reliable and valid measures. This information provides valuable information to improve current mental health screening practices and lead to increased routine screening and identification of women at risk for compromised mental health.

Summary

Intimate partner violence is a significant global health problem that affects individuals across gender, social, economic and geographic boundaries. Women are most often the victims of IPV, and those who are socially and economically disadvantaged are disproportionately affected. The consequences of exposure to IPV are innumerable and they extend beyond the immediate impact on the individuals to affect families, communities and society. Women are susceptible to increased health risks during pregnancy and perinatal IPV is of particular concern when the potential risk for injury to both mother and child is considered. Research demonstrates that perinatal IPV is associated with mental and physical health consequences, as well as poor obstetrical, maternal and fetal outcomes.

The primary purpose of this study was to examine trauma, IPV type and IPV severity as predictors of PTSD and depression in the context of lifetime health. Emphasizing that multiple cumulative factors potentially affect an individual's health trajectory, the LCHD framework provides a solid basis to explore how trauma and violence factors impact a pregnant woman's mental health trajectory. The secondary purpose of this study was to explore the validity of a single mental health question and its ability to accurately identify PTSD and depression when compared with previously validated measures. The LCHD model demonstrates that health-promoting actions, such as screening, are essential to the mitigation of risk on an individual's health trajectory. The use of the LCHD model in this study provided a foundation from which to explore the second objective of this study.

CHAPTER TWO: REVIEW OF LITERATURE

The review of literature focuses on the major variables of the present study. This chapter begins with a presentation of the literature that explores the concept of mental health in terms of three variables: posttraumatic stress disorder (PTSD), depression, and self-rated mental health (SRMH). The review will then focus on the literature surrounding the predictors (trauma, IPV type and IPV severity) as individual concepts and their relationships to mental health through current research. Next, research related to the concept and use of self-rated mental health (SRMH) as a screening mechanism will be explored. The review will then discuss literature surrounding the Life Course Health Development (LCHD) model to present a more comprehensive understanding of the theoretical framework supporting this study. Current literature derived from the data examined in this study will be then be presented. Finally, the chapter will conclude with a summation of the key points of this review.

Multiple literature searches were conducted using three primary electronic databases: MedLine, CINAHL and Psychology and the Behavioral Sciences Collection. Searches were conducted for individual variables as well as in combination with each other. The search criteria included publications from academic journals, years 2000-2014, and published in English. Extensive searches were completed to ensure the state of the science and existing data were current to address the following research objectives:

1. Examine trauma, IPV type and IPV severity as predictors of PTSD among low-income women exposed to perinatal intimate partner violence.

2. Examine trauma, IPV type and IPV severity as predictors of depression among low-income women exposed to perinatal intimate partner violence.
3. Determine sensitivity, specificity and predictive value of a self-rated mental health indicator in the risk identification of depression and PTSD among low-income pregnant women exposed to intimate partner violence.

The primary keywords used to guide this search included: *intimate partner violence, mental health, PTSD, depression, pregnancy, trauma, violence type and violence severity.*

An initial search was conducted using the search terms *intimate partner violence, pregnancy* and *mental health* and yielded 124 results. The search was further refined replacing the term *mental health* with more specific terms of *depression* and *posttraumatic stress disorder* in combination with *intimate partner violence* and *pregnancy*. These searches yielded 216 results and 15 results respectively. A separate literature search for *self-rated mental health* yielded 416 results, but this narrowed considerably when combined with *pregnancy* (6 results), *PTSD* (1 result) or *depression* (99 results). An additional search using *self-rated mental health* in combination with *intimate partner violence* and *pregnancy* and yielded 0 results. To examine *self-rated mental health* in the context of its use as a valid measure for mental health, additional searches were conducted using the terms *self-rated mental health, global indicators, single-item indicators, validity* and *mental health*.

Subsequent searches were conducted to identify literature specifically related to the predictors (trauma, violence type and violence severity). Databases were searched using each of the predictors initially in combination with the terms *intimate partner violence, and mental health* yielding the highest results. When the search was narrowed by the inclusion of the terms *pregnancy* and/or *PTSD* and *depression* results decreased significantly. The combination of *intimate partner violence, violence severity* and *mental health* yielded 40 results, while the same

combination including *pregnancy* yielded just 4 results. Replacing the term *mental health* with *depression* or *PTSD* resulted in 4 results and 1 result respectively. Searches for the predictor *violence type* in combination with *intimate partner violence* and *mental health* produced 31 results compared to 1 result when the search was narrowed to include the term *pregnancy*. The search term *trauma* in combination with *depression* produced 5, 329 results, but produced 195 results when the search term *pregnancy* was included. To further refine the search, the term *trauma* was replaced with *trauma history*. Searching *trauma history*, *depression* and *pregnancy* yielded 36 results, while *trauma history*, *pregnancy* and *PTSD* produced 20 results. In each of the described searches the literature was reviewed to determine relevance to this study and hand searches of the identified literature were completed to ensure the review was extant.

Mental Health and IPV

Research has consistently focused on the potential physical and reproductive health consequences of IPV, while risks to maternal mental health are just beginning to be recognized. The significance of understanding mental health during pregnancy in the context of IPV is clear when the possible adverse maternal and fetal outcomes related to compromised mental health during pregnancy are considered. These include pre-term labor, postpartum depression and psychoses, poor maternal-infant bonding, low-birth weight, pre-term delivery, perinatal and infant death, intrauterine growth restriction (Certain et al., 2008; Coker et al., 2004; Howard et al., 2013; Huth-Bocks et al., 2002; Janssen et al., 2003). While causality has not been established between IPV and mental health disorders, strong associations have certainly been demonstrated in the literature.

Depression and PTSD are the two most common occurring mental health disorders among women exposed to IPV (Stein & Kennedy, 2001) and are often examined simultaneously in IPV research for this reason. In 2013, Howard et al. completed a comprehensive systematic

review and meta-analysis of 67 papers examining associations between perinatal mental disorders and IPV among women exposed to lifetime IPV, recent IPV (within the last 12 months) or during the current pregnancy (Howard et al., 2013). The majority of studies included in this review examined depression, while only 4 of the 67 studies met the inclusion criteria for reported PTSD. Prevalence, pooled odds ratios (ORs) and 95% confidence intervals of having experienced IPV were calculated by mental health disorder. Howard et al. estimated that women with probable PTSD during pregnancy had significantly increased odds of experiencing lifetime IPV (OR 6.4; 95% CI: 1.7 – 26.4); recent IPV (OR 4.6; 95% CI: 2.5 – 8.5), and IPV in pregnancy (OR 6.0; 95% CI: 1.4 – 29.2); while women with probable depression during pregnancy had increased odds of experiencing lifetime IPV (OR 3.0; 95% CI: 2.3 – 4.0), current IPV (OR 2.8, 95% CI [1.5 – 5.3]), or during pregnancy (OR 5.0; 95% CI: 4.0 – 6.2). The associations between IPV, depression, and PTSD among women exposed to IPV are supported by this study, and demonstrate that women with these mental disorders are more likely to have been exposed to IPV at some point in time, particularly during pregnancy. However, the majority of research cited by Howard et al. focused on lifetime IPV, while studies that examine mental health in the context of recent or perinatal IPV were limited. Further, the majority of these studies sought to establish an association between IPV and mental health but do not examine more specific factors that may play a role in the prediction of mental health outcomes, such as trauma, IPV type and severity. More knowledge is needed to better understand how specific facets of IPV contribute to mental health outcomes in this vulnerable population. The following section will discuss current literature related to PTSD and depression as individual outcomes among women exposed to IPV, and then describe predictors (trauma, IPV type and IPV severity) and their relationship to PTSD and depression.

PTSD and IPV

Diverse populations of women exposed to IPV report a higher likelihood of having PTSD during pregnancy when compared with women who have not been exposed. Mahenge et al. (2013) conducted a cross-sectional study of 1,180 women receiving prenatal care in Tanzania and reported that women exposed to violence during pregnancy were three times more likely to experience PTSD symptoms compared to those with no exposure (AOR 2.94, 95% CI [1.71 – 5.06]). These findings are supported by the researchers use of a comparison group of pregnant women who did not report exposure to IPV during pregnancy. However, generalizability of the results is limited in that it measures just physical and sexual violence and does not account for IPV that may have occurred previous to the current pregnancy. In addition, these results may be influenced by differences in cultural perceptions and acceptance of violence that could result in underreporting of violence. Comparatively, Rodriguez et al. (2008) also found a high association between exposure to IPV and PTSD among a small sample of 210 pregnant Latina women receiving private prenatal care in an urban setting in the United States. The women were four times more likely to report PTSD if they experienced IPV at any point in their lives (OR 3.91; 95% CI: 0.91 – 16.88). Use of a small select sample of minority women who have access to insured healthcare reduces the generalizability of these results to women with differing sociodemographic characteristics. Stampfel, Chapman & Alvarez (2010) used a predominantly uninsured, minority sample (N=655) from four urban U.S. hospitals and estimated that the women exposed to IPV in the last year were six times more likely to have PTSD, but saw a 34% decrease in odds during pregnancy. Data collection in this study was conducted with modified instruments to assess both IPV and PTSD suggesting validity and reliability may be questionable. In another study examining a sample of newly arrived migrant women in Canada (N = 774), Stewart, Gagnon, Merry, & Dennis (2012) also found that women reporting violence associated with pregnancy (n = 59) were more likely to have PTSD than those not reporting violence (n =

715). This study sample was drawn from a hospital based dataset and uniquely differs in that the results reflect violence experienced during pregnancy, but was not limited to just intimate partner violence.

The reported findings described above vary, but there are some noted differences in methodologies between the studies. The samples used in each of the studies vary significantly in size, race, ethnicity, socio-economic standing and insurance status. Additionally, each study measured violence using three different reference time points: during pregnancy (Mahenge et al., 2013), lifetime violence (Rodriguez, 2010), and IPV within the last 12 months (Stampfel, 2010). However, even with these differences, the results suggest that IPV is strongly associated with PTSD in pregnancy across race/ethnicity, socio-economic status and geographical location.

PTSD and Health

Women with PTSD are at increased risk for altered physical and mental health, but there is a dearth of knowledge regarding PTSD among women exposed to perinatal IPV. Specifically, PTSD during pregnancy has been associated with higher risks for obstetrical complications such as preterm labor, preterm birth, hyperemesis, ectopic pregnancy, and spontaneous abortion (Morland et al., 2008; Seng et al., 2001). The following studies provide insight to the impact of PTSD on mental health and functioning during pregnancy, but not all studies include IPV as a variable. PTSD alone can significantly impair mental health, but it is also often associated with increased risks for mental health co-morbidities such as depression, anxiety, panic disorder, substance abuse, and suicidality (Campbell, 2002; Loveland Cook et al., 2004; Smith et al., 2006), further compromising an individual's health. In a study examining PTSD among a community sample of low-income women seeking prenatal care (N = 948), Smith et al. (2006) found that 66% of women with PTSD had co-morbid depression, 36.4% met criteria for panic disorder, 27% reported current alcohol or illicit drug use, and 33% had thoughts of harming

themselves. Similarly, Cook et al. (2004) conducted a study with 744 economically disadvantaged pregnant women and indicated women with PTSD during pregnancy were five times more likely to have co-morbid major depressive disorder (MDD) (OR 5.17; 95% CI: 2.61 – 10.26) and three times more likely to have generalized anxiety disorder (OR 3.12; 95% CI: 1.22 – 8.62).

PTSD symptoms can impair an individual's day-to-day functioning, but this has been shown to differ between populations. Among non-pregnant women, Coker, Weston, Creson, Justice & Blakeney (2005) conducted a cross-sectional analysis of the National Violence Against Women Survey (NVAWS) to compare symptoms of PTSD among male (n = 185) and female (n = 369) survivors of IPV. Results indicated that women more often reported mild to moderate PTSD symptoms (39%) than severe symptoms (5.7%), but notes that women were 1.5 times more likely to report severe symptoms compared to men. This study demonstrates gender as an increased risk factor for experiencing and developing PTSD in response to IPV, but suggests factors related to socio-economic status, previous history of IPV and pre-existing depression might have a confounding effect on the results. Conversely, Woods (2001) used two different instruments to examine prevalence and patterns of PTSD among samples of abused, non-abused and post-abused women. She reported 74% of abused women experienced mild, moderate or severe PTSD symptoms on the SCL-PTSD (Symptom Checklist PTSD Scale), but when measured by the IES (Impact of Event Scale), the number increased to 92%. Comparatively, 44% of post-abused women experienced mild, moderate or severe PTSD symptoms on the SCL-PTSD, but when measured by the IES, that number increased to 66%. The discrepancy of results stemming from the use of two instruments highlights the complexity involved in measuring PTSD, as well as the potential effect that PTSD can have on long-term health. Woods points out that post-abused women reported being out of the abusive relationship an average of nine years

and 44 – 66% continued to report symptoms of PTSD. The diversity of the sample in both race/ethnicity and source (shelter, hospital or community dwelling) in Woods' study suggests generalizability of the results, but the use of a small sample size and measurement of only physical and psychological IPV produced limitations. Goldberg et al. (1996) had similar findings among veterans of combat who were found to experience PTSD symptoms from 15 - 30 years following the event and were directly associated with the severity of combat. Conversely, using a sample of pregnant women exposed to IPV, Mahenge et al. (2013) found that 18% of the women experienced mild to moderate symptoms of PTSD.

These studies highlight the potential impact that PTSD and its longevity have on overall mental health and daily functioning. Data suggest that PTSD is detrimental on its own, and its high association with co-morbid mental health conditions, such as depression, anxiety, substance abuse and suicidality, further place an individual at risk.

Depression and IPV

Multiple studies using diverse samples have demonstrated a strong link between depression and IPV during pregnancy and postpartum. In a recent, small longitudinal study, Ogonnaya et al. (2013) examined depressive symptoms before pregnancy, during pregnancy, and during postpartum among women who had been exposed to physical IPV and those who had not. Few longitudinal studies with multiple data collection points have been conducted in this population, making this study unique. The sample consisted of 76 low-income women recruited from prenatal care clinics in the southeastern U.S. Of the 76 women, 48% were African American, and 43% reported exposure to physical IPV, and the groups were similar in socio-demographic characteristics. Results indicated that while the pattern of depressive symptoms were similar over time for both groups, the group exposed to IPV had consistently higher rates of depression at all time points. Several limitations make generalizability of these results

questionable including a small sample size and assessment of only one type of violence.

However, the strength of this study lies in its longitudinal design and exploration of mental health among a low-income minority population. Comparatively, Rodriguez et al. (2010) also conducted a small, longitudinal study to examine the patterns of depression between pregnant women exposed to IPV, and those who were not. Unlike Ogbonnaya et al., the sample consisted of 210 insured, pregnant Latinas, recruited from obstetrical clinics in a large, urban city. Despite the differences in sample characteristics, Rodriguez et al. also found that persistent depression was five times more likely to occur in the group exposed to IPV, but violence type was not specified.

Depression is not only associated with IPV, but there is an increased risk for co-occurrence of substance use among pregnant women exposed to IPV. A recent study conducted by Connelly et al. (2013) examined the co-occurrence of depression, IPV, and substance use among 1,868 low-income, minority women receiving prenatal care from community obstetrical clinics. The majority of the sample was Latina (82%) while the remaining sample consisted of women who were Black, Asian, Pacific Islander, or other race/ethnicity. Prevalence of depression was calculated using the Edinburgh Postnatal Depression Scale (EPDS) and estimated to be 20.4%, while 3.5% screened positive for current or recent IPV on the Abuse Assessment Scale (AAS). Using binary logistic regression to determine odds ratios, Connelly et al. found that women who were not Hispanic, and those reporting substance abuse or IPV were more likely to experience depressive symptoms (Hispanic: OR = 1.81, $p = 0.005$; substance abuse: OR = 2.37, $p = 0.0001$; IPV: OR = 3.98, $p < 0.0001$). Further analysis explored the prevalence of depression, IPV, and substance use alone or in combination, and indicated 1% of the women reported all three, compared to 0.8% reporting depression and IPV. Of the 20% of women reporting depression, 6.6% reported both substance abuse and IPV, highlighting the risk of co-occurrence of these morbidities. Similarly in an earlier study, Holden, McKenzie, Pruitt, Aaron & Hall

(2012) examined depression, substance abuse, and IPV in a predominantly minority sample of pregnant women (N = 602) recruited from hospitals, clinics, and community programs. This study also used the EPDS to assess depression, but used a lesser-known tool to determine exposure to IPV. Using descriptive statistics, the researchers described the sample as primarily African American, single, high school graduates, and unemployed. Unlike Connelly et al., a small number of women reported substance use (7.3%), but a larger percentage indicated IPV (6%), and depressive symptoms (30.4%) during pregnancy. However, data was collected at two time points and the number of women reporting depressive symptoms at 1-3 months postpartum decreased significantly (24.4%). These findings suggest that pregnancy itself may be a confounder in mental health among this population. Analysis using Pearson's correlations demonstrated a strong positive relationship between IPV and depression ($r = .26; p < .0001$), IPV and substance use, and depression and substance use.

Research also suggests that IPV occurring during pregnancy is associated with greater risk of postpartum depression, further demonstrating the potential long-term effects of IPV on maternal mental health. Certain et al. (2008) found that women who experienced IPV during pregnancy were four times more likely to screen positive for postpartum depression (OR 4.21; 95% CI: 2.19 – 8.07). Using a large sample of pregnant women (N = 1,519), who were primarily Caucasian, well-educated, employed and married, Certain et al. found that women who were either Hispanic, unemployed, older than 35 years old, or in a relationship with a partner who binge drinks were most likely to experience postpartum depression. While this study used well-known instruments to assess for depression (EPDS) and IPV (AAS), it is limited by its lack of data surrounding sexual abuse, and its use of a predominantly Caucasian sample with high socio-economic standing.

In a large population-based study, Tiwari et al. (2008) also examined the impact of violence on the mental health of 3,245 pregnant women receiving prenatal care at 7 urban hospitals in Hong Kong. Similar to Certain et al. (2008), participants were screened for recent IPV (within the last year) using the Abuse Assessment Screen (AAS) between 32-36 weeks gestation, and then screened for IPV, depression, and quality of life at 1 week postpartum. Depression was measured using the Edinburgh Postnatal Depression Scale while quality of life was measured by the SF-12 Health Survey. Nine percent of the sample reported IPV, and of those, 73% reported psychological abuse only, 27% reported physical or sexual violence, and 57.5% of those in the physical/sexual violence group also reported psychological abuse. Tiwari et al. found that women who just experienced psychological abuse had increased risk for postnatal depression (OR 1.84; 95% CI: 1.12 – 3.02), increased suicidal ideation (OR 3.5; 95% CI: 1.49 – 8.20) and poorer mental health-related quality of life ($p < 0.0001$) when compared to the women who experienced physical/sexual violence. The women in the physical/sexual violence group did not have increased risk of suicidal ideation or postnatal depression. This study used a large sample size, standardized measurement and a longitudinal design that supports generalizability of its results. Limitations include participants of one race/ethnicity, and no evaluation of depression or quality of life upon initial interview to account for pre-existing depression, or reduced quality of life.

Similarly, Beydoun, et al. (2010) examined the effect of IPV before (up to 2 years before study interview), during, or after pregnancy on postpartum depression among a national representative sample of Canadian women. Using a cross-sectional design and a national dataset, the researchers had a total sample of 6,421 for analysis. Like Tiwari et al. (2008) and Certain et al. (2007), this study measured postpartum depression using the EDPS. The authors did not specify which instrument was used to assess IPV, but do indicate that 10-items were used to

measure only physical and sexual violence. Results indicated that prevalence of postpartum depression was 7.5% and approximately 11% of the sample reported actual or threatened violence in the last 2 years. Prevalence of postpartum depression among the women who experienced violence within the last two years was 18% compared with 7% among those who did not experience violence. Use of a large sample size implies validity of these results. However, this study is limited by its exclusion of psychological violence as a risk factor for depression.

Woolhouse, Gartland, Hegarty, Donath & Brown (2012) found a higher prevalence of postpartum depression among 1,305 Australian women in the 12 months following delivery. They estimated that 16% of the participants were symptomatic according to EPDS results, and that 40% of the women reporting depressive symptoms also reported IPV. This study used a longitudinal design with data collection occurring at recruitment, 3, 6, and 12 months postpartum. Additionally, the researchers examined other predictors of depression and found that emotional abuse alone, physical abuse, depression during pregnancy, and unemployment in early pregnancy was strong predictors of PPD.

These studies highlight the relationship between depression and IPV, as well as the potential risk of co-morbidities and postpartum depression in this vulnerable population. Similarities between the studies' sample characteristics provide compelling evidence that prevalence and association of depression with IPV is high among minority pregnant women experiencing IPV. However, sample size and discrepancies between data collection methods, such as the timing of IPV, type of violence assessed and depression screening tools, suggest further research is needed.

Predictors

Mental health is complex and potentially affected by multiple physical, environmental, social and psychosocial factors. For women exposed to IPV, there are additional factors

associated with trauma and violence that may directly impact their mental health response. This study examined trauma, IPV type and IPV severity and their relationships to PTSD and depression among women exposed to perinatal IPV. This portion of the review will present the literature surrounding these concepts as well as explore the relationships of these variables to mental health as identified by the literature.

Trauma

All individuals are at risk for experiencing trauma, but research indicates that specific groups have increased risk. Women are more likely to experience trauma related to sexual and violent assault (Breslau, 1996), but it has also been found that individuals from socially and economically disadvantaged groups are also at increased risk for experiencing trauma (Gill, 2008; Breslau, 1996; 2002).

Women experience higher rates of specific traumas than men such as childhood physical and sexual abuse, adult IPV, and violence at the hands of known individuals, family members and intimate partners (National Center of Domestic Violence, Trauma and Mental Health, 2011). Research examining trauma among pregnant populations is limited, but it is suggested that trauma types and the number of traumas experienced may impact mental health outcomes. Mezey et al. (2005) examined the role of trauma in the mental health of 200 childbearing women receiving antenatal and postnatal care and estimated that 61% of the women reported experiencing one traumatic event compared with two-thirds reporting multiple traumatic events. The most frequently reported trauma was witnessing or experiencing physical assault by a family member (34%), followed by IPV (23.5%). Further, participants who reported a history of IPV were significantly more likely to have experienced more than one traumatic event. In a larger study examining PTSD symptoms among 948 low-income pregnant women, Smith et al. (2006) found a lower prevalence of trauma, but identified types of trauma experienced similar to those found by

Mezey et al. (2005). Twenty-nine percent of participants reported lifetime trauma exposure and 28.4% reported trauma experienced in the year prior to the study. The most commonly reported traumas among the participants were sexual molestation (48.5%), an extremely upsetting/stressful event (42.4%), domestic violence (36.4%), rape (27.3%), or serious physical attack or assault. In 2004, Harris-Britt et al. examined a small sample of 85 pregnant women and found that 69% of the participants had experienced a violence-related trauma prior to pregnancy and most often at the hands of an intimate partner.

IPV Type

Types of IPV, such as physical, sexual, and psychological violence, may have differing and unique effects on mental and physical health outcomes of pregnant woman exposed to IPV. Specific types IPV will be discussed in this section, while their relationships to mental health will be addressed later in this chapter.

Recent evidence suggests that women exposed to IPV rarely experience just one type of violence, but most often experience psychological violence. The CDC conducted an ongoing nationwide IPV surveillance in 2011 and estimated that during their lifetime 47.1% of the women had experienced psychological IPV, compared to 31.5% of women exposed to physical IPV, or 15.8% exposed to sexual violence (excluding rape) (Breiding, et al., 2014). Thompson et al. (2006) completed a retrospective cohort study using the Behavioral Risk Factor Surveillance Survey (BRFSS) (N=3,568), and estimated that 14% of the women experienced one type of violence compared to 45% exposed to more than one type during a five year period. When examined by type, 5% were exposed to physical IPV (defined as physical, forced sex and/or sexual contact), and twice as many women (10%) were exposed to non-physical violence (threats, anger and/or coercive behaviors). In a more recent study, Tiwari et al. (2008) used a similar sample size and found that psychological IPV was not only more prevalent than physical or

sexual violence, but also suggested exposure to psychological violence in the year prior to pregnancy was more detrimental to mental health than physical or sexual violence. Using a sample of 3,245 pregnant women receiving prenatal care at 7 public hospitals, Tiwari et al. (2008) assessed prevalence of IPV types and examined their effect on mental health outcomes among pregnant women exposed to IPV within the last year. The researchers found that significantly more participants (73%) reported experiencing just psychological abuse, compared with 27% reporting physical and/or sexual abuse within the last year. Further, 57.5% of the physical and/or sexual abuse group also reported experiencing psychological abuse, suggesting these types often occur together. The women in the psychological abuse only group had a significantly increased risk for postpartum depression (AOR 1.84; 95% CI: 1.12 – 3.02) compared women exposed to physical and/or sexual abuse. The sample size of this study increases the power and validity of these results, but Tiwari et al. conducted this population-based study in Hong Kong using a very specific population. Therefore, generalizability of results may be limited and suggest more research focused on violence types, specifically psychological IPV, is needed.

Specific IPV types have also been shown to increase risks for negative pregnancy outcomes such as miscarriage. Because types of IPV, such as physical and psychological violence, often co-occur, it is difficult to determine if one type has a greater effect on health outcomes than the other. Morland et al. (2008) examined the individual roles of physical IPV, psychological IPV, and PTSD in miscarriage among 118 minority women who had been pregnant within the last year. The participants were categorized into two groups, history of violence and no history, using the modified Conflict Tactics Scale (CTS-2) to determine if they had experienced either physical or psychological violence. Results indicated that risk for miscarriage was higher among those reporting physical violence, and was strongly correlated with increasing severity of violence.

IPV Severity

IPV severity refers to how life threatening the abusive act is to the victim and includes varying degrees of violence, both physical and non-physical. Severe physical IPV includes acts such as being hit with a fist or an object, kicked, slammed against something, beaten, burned intentionally, or injured with a knife or a gun. Recent results from the CDC's National Intimate Partner and Sexual Violence Survey (NISVS) indicate that approximately 22.3% of women reported exposure to severe IPV in their lifetime compared to 2.3% who were exposed within the last 12 months (Breiding, et al., 2014). The most severe IPV is fatal and IPV is a leading cause of homicides and injury-related deaths in pregnancy (Chang et al., 2005). There is limited data surrounding the prevalence of violence severity during pregnancy, but the World Health Organization (WHO) estimates that prevalence of violence severity increases significantly during pregnancy (WHO, 2011). Similarly, in an extensive systematic review of current IPV literature, Taillieu et al. (2013) reports 13% - 71% of women exposed to IPV, prior to or during pregnancy, reported an increase in both severity and frequency at pregnancy onset. Brownridge et al. (2011) found women exposed to IPV during pregnancy were twice as likely to be sexually assaulted; three times more likely to be beaten up; and almost four times more likely to be kicked, bitten or hit with a fist compared with non-exposed pregnant women.

Much of the research on IPV severity has been conducted using participants who have been victimized, but Burch & Gallup (2004) used a sample of convicted male perpetrators of IPV to examine violence severity. Results indicated that reported violence severity and frequency doubled with current pregnant partners and was even higher towards former partners who were pregnant. Other studies indicate that women who are exposed to IPV during pregnancy are not only likely to experience more severe violence, but may also be at increased risk for fatal violence (Brownridge et al., 2011; McFarlane et al., 2002).

Relationship between Predictors and Mental Health

Trauma and Mental Health

The link between trauma, specifically IPV-related trauma, and mental health has been explored in the literature. However, research that examines the relationship between specific types of trauma (violence-related and non-violence related), and mental health outcomes, such as PTSD and depression, is limited. It is estimated that approximately 90% of people experience trauma in their lifetime and 25% develop PTSD as a result (Breslau, 2002). Research suggests that development of PTSD and depression following a traumatic event may be dependent on trauma type and is highest following assaultive events (Kessler, 1995; Mezey, Bacchus, Bewley & White, 2005). Further, it is documented that most traumatized women experience more than one trauma and the risk for developing PTSD increases with each event (Breslau, 2002; Gill, Page, Sharps & Campbell, 2008). These factors suggest that women exposed to IPV, who are often victims of multiple events, are at great risk for negative mental health outcomes.

There are few studies that examine trauma and its association with mental health among pregnant women. Mezey, Bacchus, Bewley & White (2005) examined the association of specific types of trauma, including IPV, among women receiving prenatal care (N=200). Results indicated that the three most commonly identified trauma types were physical assault by a family member or someone known (34%), life-threatening illness (20%), and a serious accident (19%). Consistent with the literature, 24% of the sample reported a history of IPV, and this group was significantly more likely to report multiple traumatic events, compared to those without a history of IPV (70% versus 48%). While over ten trauma types were identified in this study, only a history of adult and/or childhood sexual or physical abuse was significantly associated with lifetime or current PTSD and severity of symptoms. An additional important finding from Mezey et al. was that IPV and lifetime history of trauma were both significant predictors in women seeking care for mental health symptoms. Similarly, Seng et al. (2009) examined the association

of types of trauma and PTSD among a diverse sample of pregnant women (N=1581) expecting their first child, and found those who reported abuse-related trauma of any type were 12 times more likely to develop PTSD (OR 11.9, 95% CI 3.6-39.9), compared with women reporting reproductive trauma (OR 6.1, 95% CI 1.5-24.4).

Harris-Britt et al. (2004) specifically examined violence-related trauma and its impact on PTSD symptoms and daily functioning in 85 low-income pregnant women who were exposed and those who were not. Sixty-nine percent of the participants reported a violence-related trauma occurring at some point in her lifetime. The majority of women who identified a violence-related trauma reported it occurred in adulthood before the current pregnancy, while 18% percent of women reported a violence-related trauma perpetrated by an intimate partner during pregnancy. Eighty-eight percent of the women reporting violence-related trauma during pregnancy met the criteria for PTSD. Further, the women reporting violence-related trauma in adulthood (including during pregnancy) reported increased impairment in their daily functioning. One of the more significant findings in this study was the suggestion that PTSD symptom response varied depending on when the trauma was experienced. Women who experienced violence related-trauma during pregnancy tended to experience higher levels of re-experiencing than those who experienced a traumatic event in adulthood, or childhood. Insight to specific symptom response is needed for development of targeted interventions among women experiencing PTSD.

IPV Type and Mental Health

Physical violence has most often been explored in the literature among pregnant and non-pregnant populations exposed to IPV, although research indicates an association between all IPV types (physical, sexual and psychological), and poor mental health outcomes among women exposed to IPV. Among 182 Spanish, non-pregnant women, Pico-Alfonso et al. (2005) found a strong correlation between all three IPV types and PTSD, but identified psychological abuse as

the biggest predictor for PTSD symptoms. In a subsequent study using the same sample, Pico-Alfonso (2006) also found women exposed to just psychological IPV were at comparable risk for PTSD, depression, and suicidality when compared with women exposed to both psychological and physical IPV. In addition, Houry et al. (2006) found that mental health symptoms significantly increased with the number of IPV types experienced. Women exposed to all three types of IPV were nine times more likely to have PTSD, six times more likely to have symptoms of depression, and seventeen times more likely to have thoughts of suicide (Houry, 2006). Similarly, Hegarty (2013) examined IPV type and severity among 272 non-pregnant women who reported fear of their partners in the last 12 months. Approximately 33% of the participants reported experiencing severe combined IPV (all three types), compared to 26% experiencing combined physical and emotional IPV. Those who experienced severe combined abuse reported significantly lower quality of life and poorer mental health when compared with the participants exposed to fewer types and less severe violence.

Similar relationships between IPV types and mental health outcomes have been identified among pregnant women exposed to IPV. Studies specifically examining depression indicate that women exposed to physical IPV, psychological IPV, or sexual IPV during pregnancy consistently have higher levels of depressive symptoms than women not exposed (Martin et al., 2006; Ogonnaya, Macy, Kupper, Martin, & Bledsoe-Mansori, 2013). Further, there are implications for the long-term effects of these types of violence on postpartum mental health. Tiwari et al. (2008) found pregnant women exposed to recent psychological IPV (within the last 12 months) were at greater risk for postnatal depression (OR 1.84; 95% CI: 1.12 – 3.02), suicidality, and significantly poorer quality of mental health in the postnatal period than women exposed to physical and/or sexual abuse. Physical IPV is also significantly associated with postnatal depression. Ogonnaya et al. (2013) found that women exposed to physical IPV during

pregnancy continued to experience higher rates of depression in the postpartum period when compared to women who were not exposed to IPV.

Studies exploring IPV types are limited but evidence suggests that psychological abuse is strongly associated with mental health outcomes. One study estimated psychological IPV prevalence to be 28% among 120 pregnant women (Huth-Bocks et al., 2013), while another study reported that 73% experienced psychological abuse (N=3,245), compared to 26% exposed to physical and/or sexual abuse (Tiwari et al., 2008). Psychological IPV appears to occur more frequently and seems to negatively impact mental health more than sexual and physical IPV alone. Women experiencing psychological IPV tend to have increased levels of PTSD, depression, and anxiety both during and after pregnancy (Huth-Bocks et al., 2013; Martin et al., 2006; Ogbonnaya et al., 2013). Further, evidence indicates psychological IPV is significantly associated with PTSD symptom severity even when controlling for physical and sexual IPV (Huth-Bocks et al., 2013). Conversely, Mahenge et al. (2013) found that physical and/or sexual violence also significantly increases women's risk for both PTSD (OR 2.94) and depressive symptoms (OR 3.31), but this study did not assess for psychological IPV.

Despite evidence supporting a strong link between all types of IPV, research identifying the role of IPV types in mental health outcomes is limited. Evidence also suggests that psychological IPV may prove to be a greater determinant of mental health than sexual or physical IPV (Tiwari et al., 2008). More research is warranted to better understand the impact of IPV types on the mental health outcomes of pregnant women exposed to IPV.

IPV Severity and Mental Health

IPV severity and its role in physical health outcomes have been established over the last decade, but its association with mental health is just beginning to be understood. IPV severity has been strongly linked to severity of PTSD symptoms among women exposed to IPV (Chandra et

al., 2009; Dutton et al., 2006; Huth-Bocks et al., 2013; Maria Angeles Pico-Alfonso, 2005; Woods, 2000). Further, when severity is associated with multiple forms of violence, the impact on mental health appears to be exacerbated. Women reporting severe, combined IPV have decreased quality of life and poorer mental health when compared with women exposed to less severe and fewer types of violence (Hegarty et al., 2013). Similarly, another study found the health status of women is more vulnerable when exposed to increased severity of physical and psychological IPV (Straus et al., 2009). Women reported both decreased mental and physical health, while only mental health status was affected by increased severity of psychological violence among men.

Sociodemographic Factors

IPV occurs globally across economic, gender, racial and ethnic strata, but the greatest risk for IPV continues to be gender. In addition to gender, there are specific sociodemographic factors that further increase a woman's risk for IPV victimization. Research consistently demonstrates risk is highest among women who are from health disparate populations, such as minority populations, low socio-economic status (SES), and lower education levels (Tjaden & Thoennes, 2000; Kamimura, Yoshihama & Bybee, 2013; Black et al., 2011; Breiding, Black & Ryan, 2008).

In a large, seminal study, Tjaden & Thoennes (2000) examined data from the National Violence Against Women Survey (NVAW) to identify factors that determined increased risk for IPV. The study included 8,000 women and those who were from minority groups, unmarried, lower income status, and less education had higher rates of exposure to IPV. Further, specific minority groups had significantly different rates of IPV when compared with other minority racial groups. In 2008, the CDC reviewed data collected from over 70,000 men and women during the Behavioral Risk Factor Surveillance Survey (BRFSS). Twenty-six percent of the women reported lifetime prevalence of IPV compared to 16% of the men. Concurrent with the findings

from Tjaden & Thoennes (2000), prevalence of lifetime IPV was also found to be highest among women from minority groups, disadvantaged socio-economic status and lower levels of education. Similarly, this study also found prevalence varied significantly between minority groups with multiracial women experiencing the highest rates (43.1%), when compared with American Indian/Alaskan Native (39.0%), and Black non-Hispanic (29.2%) (Breiding et al., 2008).

Screening

Assessment and diagnosis of mental health is guided by the use of established psychometric instruments that have been found to be both valid and reliable among the general population. In light of the current state of healthcare, time is often limited during health care appointments and use of these instruments can be both time-consuming and burdensome to patients and clinicians. Self-rated health has been shown to be a useful indicator of physical health outcomes and well-being in the clinical setting, but use of self-rated mental health (SRMH) as a mental health indicator has received little attention (Fleishman & Zuvekas, 2007; Jang et al., 2012). Much like self-rated health, SRMH is an individual's perception of his/her mental health at that point in time, and has the potential to be a useful assessment tool. Research is very limited regarding SRMH, but available data indicate poor SRMH has been associated with exposure to IPV, depression, decreased quality of life, increased use of mental health services, extended use of medications and activity limitations in daily life (Fleishman & Zuvekas, 2007; Black et al., 2011; Jang et al., 2012; Jang, Park, Kang, & Chiriboga, 2014; Shiovitz-Ezra, Leitsch, Graber, & Karraker, 2009). Prevalence of poor SRMH is estimated to be highest among poor females with less education and those with known mental disorders, such as PTSD, and those with co-morbid mental health conditions (Mawani & Gilmour, 2010).

Early research supports a moderate link between SRMH and mental health outcomes, but evidence is limited and inconsistent. Most studies indicate SRMH is a weak predictor of mental health and suggest a single item indicator cannot be relied upon to predict mental health status (Fleishman & Zuvekas, 2007; Jang et al., 2012, 2014; Mawani & Gilmour, 2010). In 2007, Fleishman & Zuvekas examined SRMH as a predictor of mental health disorders against validated mental health measures (SF-12, PHQ-2, K6) among 11,109 participants. They found strong correlations existed among the validated measures ($r > 0.69$), but correlations were weaker between the validated measures and SRMH ($r \approx 0.4$). In another large study comparing SRMH with validated measures of mental health (N=36,984), Mawani & Gilmour (2010) found those with a diagnosed mental disorder, or moderate/high distress had higher odds of reporting fair/poor SRMH. However, a large portion of respondents classified with a mental morbidity did not rate their mental health as fair/poor. In 2014, Jang et al. examined a diverse sample of older adults (N=2,923), and also found SRMH to be a weak predictor of depression among the minority groups. Previous to that, Jang et al. (2012) found a moderately strong association between depression and SRMH among a small sample of older Korean American adults (N=420) when comparing SRMH to three valid depression indicators. In both studies, Jang et al. used a single item indicator of SRMH, but used different measures of depressive symptoms among different samples, suggesting generalizability of results is questionable.

Research using SRMH as a measure of mental health among women exposed to IPV is very limited, but it has been explored. The CDC's National Intimate Partner and Sexual Violence Survey (NISVS) included a single item indicator for SRMH and found that women reporting rape, stalking, or physical violence by an intimate partner were three times more likely to report poor mental health than those without a history of IPV (Black et al., 2011). Studies focused on

use of SRMH among women exposed to perinatal IPV have not been found in the literature at this time, indicating that a research gap exists and should be explored.

We do not yet know if SRMH is a reliable and valid tool in the identification of mental health conditions when compared with validated instruments, but it may serve as prescreening mechanism to identify women needing further evaluation.

Life Course Health Development Model

Chapter 1 provides a brief description of the evolution of the theoretical components of the Life Course Health Development (LCHD) model and its application in this study. The following section presents research that uses the LCHD model as a basis to examine IPV and women's health. Supportive literature focused on the incorporation of the LCHD model in the development of maternal and child health research and policy will also be explored.

Three studies were identified that used the LCHD model to explore IPV as an environmental risk factor in the context of women's health. Lindhorst & Oxford (2008) conducted a longitudinal study to examine the effect of IPV during pregnancy on the development of depressive symptoms into adulthood among 229 adolescent mothers. The fourteen-year study collected data at seven time points and participants were assessed for depression, economic security, and IPV. Approximately 67% of the participants reported at least one incidence of violence and this number decreased to 15% at the last time point (14 years postpartum). Depression symptoms were highest during pregnancy and remained elevated in adulthood as compared with the mean score in the general public. These results remained significant after controlling for variables known to contribute to depression, such as economic security. The unique perspective presented in this study is the examination of cumulative versus concurrent variables and their effect on mental health outcomes (final depression score). This

study successfully used the LCHD model to illustrate the cumulative effect of IPV on women's mental health.

A second study used the life course perspective to examine the use of IPV-related health care services among Japanese women exposed to IPV. Kamimura et al. (2013) based their study on the need for research to extend beyond cross-sectional designs to comprehensively evaluate and understand the healthcare seeking patterns of women exposed to lifetime IPV. The study used a sample of 101 Japanese women, ages 24-80 years, reporting a lifetime history of IPV. Data was retrospectively collected using a life course calendar, in which participants were expected to recall IPV-events and healthcare seeking behaviors at various time points in their lives. Healthcare seeking behaviors were primarily associated physical IPV, while sexual and psychological violence did not significantly impact healthcare seeking behaviors. Additionally, factors such as public assistance, decreased self-rated health status, and smoking were positively correlated with healthcare seeking behaviors. Further, patterns of violence were noted to decrease over time as is consistent with the literature. The life course approach emphasizes the cumulative effect of risks/exposures on an individual's health over time, and the role protective factors may play in mitigating the effect of such risks. This study's use of the life course approach provides a robust approach to understand how multiple exposures over time affect an individual's ability to seek healthcare, but results may be skewed due to a retrospective design and participant recall bias.

Yoshihama, Hammock, & Horrocks (2006) used the life course model to examine the cumulative effect of IPV and mental status on women's use of public financial assistance. Based on the underpinnings of the life course model that emphasize the relationship between environmental factors and health, this study examined the cumulative risk over time. Using a random sample of low-income African American women (N=40), data regarding IPV status,

welfare receipt, and PTSD were collected using a life history calendar. Data indicated that the participants reported higher prevalence of IPV, poor self-rated health, and PTSD than the general population. Additionally, the researchers found previous history of IPV increased the likelihood of receiving public assistance, while cumulative IPV was associated with the reduced self-reported health status, PTSD, and interference of the women's ability to work over time.

Publications from the DOVE Study

This study used existing data derived from a multi-state, randomized control trial funded by the National Institute of Health (NIH) and the National Institute of Nursing Research (NINR). Known as the Domestic Violence Enhanced Home Visitation (DOVE) program, this study was a longitudinal randomized control trial that assessed an empowerment intervention to reduce maternal and child exposure to IPV among women participating in perinatal home-visitation programs. A number of publications and significant findings have resulted from the data collected in the DOVE study. These studies examine perinatal IPV in the context of multiple factors including geographical location, lived experiences, coping mechanisms and strategies, mental health, and the effectiveness of IPV interventions delivered by nurse home-visitors. The findings from these studies are a significant contribution to IPV research, as well as our understanding of the complexities surrounding perinatal IPV. Table 3 provides an overview of these publications.