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INTIMATE PARTNER VIOLENCE, EMPLOYMENT AND SOCIAL SUPPORT
AMONG WOMEN SEEKING ELECTIVE ABORTION SERVICES IN IOWA

by

Hind Ahmad Baydoun

An Abstract

Of a thesis submitted in partial fulfillment of the requirements for the Doctor of
Philosophy degree in Epidemiology in the Graduate College of
The University of Iowa

December 2009

Thesis Supervisor: Professor Elaine Smith

ABSTRACT

Intimate partner violence (IPV) against women is a major public health issue worldwide. The purpose of this dissertation is to characterize violence perpetrated by an intimate partner against a “high-risk” group of pregnant women who sought elective abortion services at a family planning clinic. Analyses were based on the Iowa Women’s Health Experience Survey (IWHES), a cross-sectional study of 519 abortion patients who completed an anonymous, self-administered questionnaire over a period of seven months. IWHES eligibility criteria were ‘Seeking pregnancy termination’; ‘Age \geq 18 years’; ‘Iowa resident’ and ‘Fluent in English or Spanish’. The survey instrument covered physical, sexual and psychological types of violence, health correlates of violence as well as demographic, socioeconomic and lifestyle characteristics of participating women and their current intimate partners. Aim I examined the prevalence of physical, sexual and/or psychological abuse by employment characteristics of elective abortion patients and their current intimate partners. Aim II examined associations of substance use, depression and social support with physical, sexual and/or psychological abuse perpetrated by current intimate partners against women seeking pregnancy termination. To achieve the analytic goals of Aims I and II, the study sample was restricted to women who had a current partner and valid IPV data. The overall prevalence of physical, sexual and/or psychological abuse perpetrated by a current partner was 12.3%, with some overlap between the different IPV subtypes. In general, the prevalence of IPV did not differ significantly by employment status or by broadly defined occupational groups of women and their partners. However, a trend was noted whereby a woman’s employment and a partner’s unemployment were associated with greater likelihood of IPV. Specifically, the prevalence of IPV was highest among couples where the woman was employed and the partner was unemployed. Consistently positive associations were

noted between the partner's (but not the woman's) substance use indicators (alcohol intake, binge drinking, recreational drug use) and IPV. Higher levels of depressive symptoms and less perceived availability of social support were noted among women who had experienced IPV versus those who had not experienced IPV. The association between depressive symptoms and IPV was stronger for women who reported having children in their homes compared to those did not report having children in their homes. Implications for policy and future research are discussed.

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Thesis Supervisor: Professor Elaine Smith

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Graduate College
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CERTIFICATE OF APPROVAL

PH.D. THESIS

This is to certify that the Ph. D. thesis of

Hind Ahmad Baydoun

has been approved by the Examining Committee for the thesis requirement for the Doctor of Philosophy degree in Epidemiology at the December 2009 graduation.

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To my family

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ABSTRACT

Intimate partner violence (IPV) against women is a major public health issue worldwide. The purpose of this dissertation is to characterize violence perpetrated by an intimate partner against a “high-risk” group of pregnant women who sought elective abortion services at a family planning clinic. Analyses were based on the Iowa Women’s Health Experience Survey (IWHES), a cross-sectional study of 519 abortion patients who completed an anonymous, self-administered questionnaire over a period of seven months. IWHES eligibility criteria were ‘Seeking pregnancy termination’; ‘Age \geq 18 years’; ‘Iowa resident’ and ‘Fluent in English or Spanish’. The survey instrument covered physical, sexual and psychological types of violence, health correlates of violence as well as demographic, socioeconomic and lifestyle characteristics of participating women and their current intimate partners. Aim I examined the prevalence of physical, sexual and/or psychological abuse by employment characteristics of elective abortion patients and their current intimate partners. Aim II examined associations of substance use, depression and social support with physical, sexual and/or psychological abuse perpetrated by current intimate partners against women seeking pregnancy termination. To achieve the analytic goals of Aims I and II, the study sample was restricted to women who had a current partner and valid IPV data. The overall prevalence of physical, sexual and/or psychological abuse perpetrated by a current partner was 12.3%, with some overlap between the different IPV subtypes. In general, the prevalence of IPV did not differ significantly by employment status or by broadly defined occupational groups of women and their partners. However, a trend was noted whereby a woman’s employment and a partner’s unemployment were associated with greater likelihood of IPV. Specifically, the prevalence of IPV was highest among couples where the woman was employed and the partner was unemployed. Consistently positive associations were

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LIST OF ABBREVIATIONS

AAS = Abuse Assessment Screen
ACOG = American College of Obstetricians and Gynecologists
ARI = Abuse Risk Inventory
BRFSS = Behavioral Risk Factor Surveillance System
CDC = Centers for Disease Control and Prevention
CESD = Center for Epidemiologic Studies Depression Scale
CI = Confidence Interval
CTS = Conflict Tactics Scale
DV = Domestic Violence
FMPV = Female-to-Male Partner Violence
HITS = “physically Hurt you, Insult you or talk down to you, Threaten you with harm, and Scream or curse you?”
IPV = Intimate Partner Violence
ISA-P = Index of Spouse Abuse – Physical
LBW = Low Birth Weight
MFPV = Male-to-Female Partner Violence
MDD=Major Depressive Disorder
NCVS = National Crime Victimization Survey
NFVS = National Family Violence Survey
NFVR = National Family Violence Resurvey
NLCS = National Longitudinal Couples Survey
NVAWS = National Violence Against Women Survey
OR=Odds Ratio
PPGI = Planned Parenthood of Greater Iowa
PMWI = Psychological Maltreatment of Women Inventory
PRAMS = Pregnancy Risk Assessment Monitoring System
PTSD = Post-Traumatic Stress Disorder
PVS = Partner Violence Screen
QFI=Quantity-Frequency Index
RR = Relative Risk
SAS = Statistical Analysis System
SD = Standard Deviation
SSQ-SF = Social Support Questionnaire – Short Form
STD = Sexually Transmitted Diseases
WAST = Woman Abuse Screening Tool
WEB = Women’s Experience with Battering

CHAPTER I

INTRODUCTION

Intimate Partner Violence (IPV) is a major public health issue in North America and worldwide. According to the Department of Justice, each year, IPV affects nearly 1,000,000 women and 150,000 men in the United States ¹. IPV is often described as a specific type of family or domestic violence, whereby the perpetrator is a current or former intimate partner of the victim. The Centers for Disease Control and Prevention (CDC) defines IPV as “physical violence, sexual violence, threats of physical/sexual violence, and psychological/emotional abuse perpetrated by a current or former spouse, common-law spouse, non-marital dating partners, or boyfriends/girlfriends of the same or opposite sex” ².

IPV is a burden on individuals, families, healthcare systems and society as a whole. IPV can co-exist with other manifestations of violence within families and communities such as child abuse, youth violence and maltreatment of elders ³⁻⁵. A growing body of literature indicates that the health effects of IPV are not limited to IPV victims. In fact, children who witness IPV in the home may exhibit physical, emotional and behavioral health problems at later stages in their lives ³⁻⁶. In addition, IPV is likely an inter-generational problem whereby past exposure to IPV can predispose an individual to future IPV victimization or perpetration ⁷⁻¹⁰.

Over the past 20 years, the body of the literature that focuses on IPV epidemiology has grown considerably. Although physical, sexual and psychological subtypes of violence are clearly distinct IPV components that often cluster in the same individual ¹¹, the conceptualization and operationalization of IPV vary among

epidemiologic studies, with most studies focusing on episodic incidents of physical or sexual assaults^{4, 12-19} as opposed to chronic forms of psychological abuse^{11, 20-22}.

A gender gap exists whereby the health burden of IPV is considerably higher among women compared to men²³. In addition, IPV is highly prevalent among women in the general population as well as those identified in clinical settings^{20, 21, 24-33}. According to national surveys, 25-30% of women in the United States have experienced physical and/or sexual abuse by an intimate partner during their lifetime, whereas 2-12% reported physical and/or sexual IPV over the past year³⁴⁻³⁶. In clinical studies, the prevalence of IPV against women is estimated to be 21-55% over a lifetime and 4-44% in the past year².

Although IPV risk is difficult to predict through the application of statistical modeling, population-based and clinic-based studies have consistently identified disparities in IPV prevalence by demographic, socioeconomic, and lifestyle characteristics of women and their intimate partners. Demographic and socioeconomic factors that have been consistently correlated with IPV victimization include young age^{26, 37-40}, minority racial or ethnic group^{19, 40-45}, low education^{26, 38, 39}, unemployment^{38, 46-51} and lack of health insurance coverage^{37, 46}. Similarly, an elevated risk of IPV perpetration and victimization is repeatedly found among individuals who abuse alcohol^{43, 44, 52-63} and other substances^{5, 53, 56}.

From an epidemiologic standpoint, employment characteristics, including employment status and type of occupation, have been alternatively examined as indicators of socioeconomic status or as environmental exposures in relation to a wide range of health problems, including birth defects, cardiovascular disease, cancer and

psychiatric illness⁶⁴. The role of employment characteristics in IPV, a newly recognized health problem, remains elusive⁶⁵. Work may constitute a double-edged sword in terms of its relationship to health, in general, and IPV, in particular. Past research has established that unemployed individuals may be at higher risk of experiencing IPV and those who experience IPV may be at higher risk for unemployment⁶⁶⁻⁷⁹. At the same time, for employed individuals, certain aspects of their occupation, including stress and social support, can affect their health as well as their propensity for IPV perpetration or victimization. Thus far, very few studies have assessed the relationship between employment characteristics and IPV experience^{30, 49}. A small but growing body of the literature has suggested that IPV may have short-term and long-term effects on the IPV victim's employment patterns. For instance, IPV victims are likely to report reduced job performance, increased absenteeism and tardiness, and higher rates of turnover as a result of resignation or termination. Similarly, IPV has been correlated with chronic unemployment, unstable employment and downward mobility. Existing studies of employment characteristics and IPV have generally been limited in scope, and none have attempted to examine whether the burden of IPV varies across occupational groups. Because occupation has been previously used as a tool for examining health disparities within populations⁶⁵, it is plausible that certain occupational groups may be more prone to IPV than others^{49, 80, 81}.

Male perpetrators of IPV often try to exert "power and control" over their female victims^{59, 82-102}. A woman's personal resources including her employment characteristics can influence her propensity to experience IPV as well as her ability to cope with and escape an abusive situation in the context of an intimate relationship^{30, 46, 49, 67, 103, 104}.

Therefore, a woman's employment characteristics and her experiences with IPV are likely to be correlated. Whereas women may be unemployed by choice, a male partner's unemployment may be perceived as a stressful situation that can lead to conflict among intimate partners. In couples whereby the female partner is employed while the male partner is unemployed, gender role strain may also be conducive to IPV perpetration or victimization^{105, 106}. Thus, in addition to assessing the employment characteristics of each partner in an intimate relationship, an examination of employment discrepancies between partners is warranted.

IPV is a stressful situation that has been linked with physical injuries, homicide, suicide and a wide spectrum of physical and mental health problems. These include headaches, gastrointestinal symptoms, sexually transmitted diseases, chronic pain syndrome, alcohol and recreational drug use, post-traumatic stress disorder and depression^{3-6, 26, 35, 37, 66, 107-109}. In particular, increased risks of alcohol use^{15, 29, 39, 43, 44, 53, 54, 58-62, 78, 97, 110-112}, recreational drug use^{15, 35, 39, 53, 54, 63, 111, 113-115} and depression^{59, 67, 111, 116-121} have been repeatedly observed among individuals experiencing IPV.

Theoretical¹²²⁻¹²⁵ and empirical^{46, 121, 122, 125-135} work suggest a role of social isolation and support in relation to the prevalence of IPV and its associated health problems. In particular, women experiencing IPV are prone to social isolation as a result of their low self-esteem, stigma associated with IPV and partner's controlling behaviors among other factors^{121-123, 126, 133}. Conversely, social support can be viewed as a protective or resilience factor, and is expected to be negatively associated with IPV and its associated health problems^{122, 123, 127, 128, 133-139}.

The impact of IPV on the health of pregnant women and their offspring has been extensively studied in the past. Research evaluating the health effects of IPV in the context of pregnancy¹⁴⁰ has reported increased risks of antenatal hospitalization³⁵, ante-partum hemorrhage¹⁰⁸, low birth weight^{66, 107, 140}, preterm delivery¹⁰⁷, fetal growth restriction¹⁰⁸, as well as maternal¹⁴⁰, perinatal^{66, 108} and infant¹⁴⁰ mortality. However, there is little evidence to suggest an increased risk of IPV around the period of pregnancy^{4, 18, 115, 117, 141-160}. Based on the CDC Pregnancy Risk Assessment Monitoring Surveillance, 2.4%-6.6% of women report physical or sexual abuse by an intimate partner during pregnancy¹⁶¹. Similarly, the annual prevalence of IPV in obstetric populations is estimated to be 11%-24%¹⁶². Yet, the healthcare system provides a key opportunity for women to disclose IPV to their providers, who would subsequently intervene by referring them to the appropriate resources, supports and services¹⁶³. Since a woman's contact with the healthcare system can dramatically increase as a result of pregnancy, IPV screening interventions have predominantly targeted pregnant women in prenatal care settings.

According to the 1995 National Survey of Family Growth, 49% of all pregnancies to women between the ages of 15 and 44 years are unintended, of which 54% result in an elective abortion. Moreover, women experiencing an unintended pregnancy often delay their entry into prenatal care^{164, 165}. Thus, for a sizeable proportion of pregnant women, the opportunity to disclose IPV in a prenatal care setting is minimal or completely absent. Most (if not all) pregnant women seeking elective abortion services have had an unintended pregnancy^{165, 166}. On the other hand, unintended pregnancies have been linked with IPV, substance use and depression^{16, 167-173}. Therefore, the sub-population of

pregnant women attending an abortion clinic can be viewed as a “high-risk” group likely to benefit from screening interventions that target early detection and treatment of IPV and its associated health problems.

So far, little preliminary research has been done to characterize IPV among women seeking elective abortion services^{36, 162, 174-185}. This type of research is needed to inform the future design, conduct and evaluation of IPV interventions in similar healthcare settings. Extensive PUBMED (1980-2007) searches have yielded only seven studies conducted in the United States and other developed countries. However, most of these studies have been descriptive in nature, restricted to physical or sexual types of IPV, or limited in sample size. Furthermore, associations of IPV with employment characteristics, substance use, depression and social support have not been adequately explored in this “high-risk” population.

The current dissertation is based on a cross-sectional study of women seeking pregnancy termination at a major family planning clinic in Iowa. The long-term goals of this dissertation are to characterize violence perpetrated by an intimate partner against pregnant women seeking elective abortion services and to inform the design, conduct and evaluation of IPV interventions in similar clinical settings. Deficiencies in this area of research are addressed through two specific aims:

Aim I: To examine the prevalence of physical, sexual and/or psychological abuse by employment characteristics of elective abortion patients and their current intimate partners.

Aim II: To examine the associations of substance use, depression and social support with physical, sexual and/or psychological abuse perpetrated by current intimate partners against women seeking pregnancy termination.

CHAPTER II

BACKGROUND

Overview

In the present chapter, published literature relevant to the dissertation topic was summarized and critically evaluated. First, historical milestones and existing theories associated with intimate partner violence (IPV) were explored. Second, various definitions and measurement tools that pertain to IPV were examined. Third, an overview of IPV burden in terms of prevalence, frequency, severity, risk factors and health correlates was presented. Fourth, an appraisal of existing legal, social and medical interventions that target the issue of IPV was provided. Fifth, studies that assessed the intersection of IPV with employment were described. Sixth, important theories and key empirical findings that have linked IPV and social support were identified. Finally, key information was presented that can help in establishing a rationale for targeting an IPV screening intervention to women seeking pregnancy termination at a family planning clinic.

Historical and theoretical perspective

General knowledge, attitudes and beliefs concerning IPV as a phenomenon has evolved over time. The “feminist movement” of the 1970s was instrumental in raising awareness regarding the pervasive nature of violence against women, gradually shifting the issue of IPV from the private to the public domain¹⁸⁶. Subsequently, a wide spectrum of legal, social and medical services was created in an attempt to help IPV victims and reduce the burden of IPV on society as a whole^{131, 187}.

Published research in the area of IPV dramatically increased over the past 20 years^{186, 188}. Observational studies were mainly concerned with determining the extent of the problem as well as identifying typologies, risk factors and health correlates of IPV. Most of these studies were conducted in developed countries, particularly in the urban regions of North America^{2-6, 34, 35, 37, 66, 97, 107-109, 187, 189-192}. In addition to national surveys, special studies evaluated IPV among women in prenatal care^{4-6, 35, 66, 107, 108} and those seeking help for injuries, with data obtained from medical records, shelters and crime reports^{3, 36, 97, 161, 193-196}. Recently, experimental studies were designed to assess the effectiveness of new and existing IPV interventions in various settings¹⁹⁷.

IPV is a complex interpersonal problem frequently depicted to laypersons through a conceptual framework known as the “Cycle of Violence.” Accordingly, IPV is typically viewed as cyclical, manifesting itself in three distinct phases. The *Tension Building Phase* is characterized by poor communication between intimate partners and fear of causing violent outbursts. This is followed by an *Acting-out Phase* whereby outbursts of violence and abusive incidents may occur. In the *Honeymoon Phase*, displays of affection and apology are accompanied by an apparent end of violence¹⁹⁸⁻²⁰⁸. Therefore, IPV comprises acute incidents of physical and/or sexual violence as well as chronic forms of psychological or emotional abuse.

“Perpetrators” often rely on IPV as a strategy to gain or maintain power and control over their “victims.” In the past, it has been suggested that IPV “perpetrators” are typically male whereas IPV “victims” are mostly female^{9, 186, 188}. However, current evidence suggests that even though women are more prone to be injured or murdered by an intimate partner, men and women tend to be equally aggressive in an intimate

relationship, supporting the idea of “gender symmetry^{9,42}.” Although violence in an intimate relationship is often bi-directional with the same individual alternatively acting as “victim” or “perpetrator”, researchers interested in exploring IPV in the context of reproductive health have traditionally adopted the “feminist” framework by focusing on women as “victims” and men as “perpetrators” of IPV^{209, 210}.

IPV was initially viewed as an issue to be dealt with by law enforcement. Nowadays, healthcare providers are encouraged to recognize IPV as a medical problem because of its many associated health sequelae. Yet, IPV screening and treatment often requires a thorough understanding of its underlying causes, risk factors and correlates. Current evidence suggests that the etiology of IPV is multi-factorial. According to Dutton’s “nested ecologic theory²¹¹,” determinants of IPV can be identified at the *macrosystem*, *exosystem*, *microsystem* and *ontogenic* levels of organization^{92, 212}. For instance, general cultural values and beliefs can influence IPV risk at the *macrosystem* level. Characteristics of an individual’s community, friendships, workplaces and healthcare institutions are examples of factors at the *exosystem* level that can affect IPV risk. For instance, young age, lower education and unemployment are *exosystem* risk factors for IPV. The *microsystem* includes characteristics of family units, relationship dynamics as well as antecedents and consequences of abuse. Excessive jealousy, marital dissatisfaction and past history of abuse are predictors of IPV at the *microsystem* level. At the *ontogenic* level, learned behaviors as well as cognitive and emotional responses to stressors may be correlated with IPV perpetration and victimization¹⁹⁷. Examples of *ontogenic* determinants of IPV include traditional gender-role ideology, having attitudes

that condone violence in intimate relationships, high levels of anger and hostility, substance abuse and depression¹⁹⁷.

IPV prevention efforts can be described as being either *universal* (population-based approach) or *targeted* (high-risk approach) interventions, depending on their scope and coverage²¹³. Alternatively, primary, secondary and tertiary prevention programs have been designed to reduce the burden of IPV and its health sequelae on society by targeting the appropriate risk factors for IPV. In medical terms, “prevention” consists of “actions aimed at eradicating, eliminating, or minimizing the impact of disease and disability, or if none of these is feasible, retarding the progress of disease or disability²¹⁴.”

The task of public health is mainly primary prevention²¹⁴. In the context of IPV, primary prevention is a universal effort targeting entire communities and aimed at warding off maladaptive behaviors that could lead to IPV. Examples of primary prevention strategies include educational and media programs that target entire communities with the goal of preventing IPV before it is initiated¹⁹⁷. By contrast, secondary prevention is usually the task of preventive medicine²¹⁴. When IPV is considered as the “disease” of interest, secondary prevention involves identification of “high-risk” populations to which future IPV interventions can be targeted. Examples include screening programs for the early detection and treatment of IPV within healthcare settings¹⁹⁷. Finally, tertiary prevention is mostly the task of rehabilitation²¹⁴. In the realm of IPV, tertiary prevention involves various strategies that target individuals who have already experienced IPV in the past in order to reduce recurrence risk. Examples of tertiary prevention include “batterer treatment” and “shelter-stay” programs¹⁹⁷.

Definitions and measurement of intimate partner violence

The availability of a clear “case definition” as well as valid and reliable measurement tools is essential before IPV prevention programs can be designed, implemented and evaluated in a given population. Although defining slightly different phenomena, the terms “violence” and “abuse” are often used interchangeably. *Violence* is defined as “the use of physical force against a person that potentially causes fear, injury or death²¹⁵.” By contrast, *abuse* refers to “the use or treatment of a person that is seen as harmful²¹⁶.” Violence or abuse may occur in any setting including the workplace, schools and the home. In particular, domestic violence (DV) and intimate partner violence (IPV) are often limited to the family environment^{7, 31, 53, 54, 69, 192, 217-219}.

Domestic violence (DV) has been defined by the United States Office of Violence Against Women as a “pattern of abusive behavior in any relationship that is used by one partner to gain or maintain power and control over another intimate partner²²⁰.” IPV is a specific type of DV whereby the “perpetrator” is either a current or former intimate partner of the “victim.” The American College of Obstetricians and Gynecologists (ACOG) defines IPV as “violence by an intimate partner that may involve hitting, slapping or kicking, emotional or physical threats, or forced sexual relations^{40, 42, 221}.” The Centers for Disease Control and Prevention (CDC) defines IPV as “physical violence, sexual violence, threats of physical/sexual violence, and psychological/emotional abuse perpetrated by a current or former spouse, common-law spouse, non-marital dating partners, or boyfriends/girlfriends of the same or opposite sex.” IPV has also been referred to as “domestic violence”, “domestic abuse”, “spouse abuse”, “courtship violence”, “battering”, “marital rape”, and “date rape.”²

Clearly, violence and abuse by an intimate partner can be manifested in various forms the most commonly reported being physical, sexual and emotional/psychological IPV. Although conceptually distinct, these IPV sub-types are rarely mutually exclusive. In fact, the term “battering” has been used in the past to designate not only emotional or psychological types of abuse, but also repeated physical and/or sexual assaults^{21, 22, 33, 123, 162, 163, 222-231}. Whereas physical and/or sexual assaults are incidental, emotional or psychological abuse is normally chronic in nature^{11, 232-241}. Physical violence or abuse involves contact that is intended to cause pain, injury or other physical suffering. This includes but is not limited to violent activities such as striking, punching, pushing, pulling, slapping, kicking, strangling, drowning and exposure to noxious substances^{12, 16, 18, 144, 146, 165, 232, 242, 243}. Sexual violence or abuse refers to forced sexual acts, including non-consensual sexual behaviors, rape or sexual assault, both in the context of dating and marital relationships^{4, 160, 234, 237, 241}. By contrast, emotional or psychological types of abuse frequently describe a situation where power imbalance exists between the “perpetrator” and the “victim” of abuse, leading to acts of humiliation, intimidation and other controlling behaviors^{11, 232-241, 244}.

In the absence of a “gold standard” for IPV assessment, self-reported IPV has been the only available screening tool^{6, 245}. A wide range of instruments are available for use in clinical practice as well as in research studies for evaluating physical, sexual and/or psychological types of violence or abuse. Some of these are self-administered rating scales while others are meant for personal (face-to-face or telephone) interviews. Still others could be applied to either situation. Frequently utilized IPV instruments include the Psychological Maltreatment of Women Inventory (PMWI) [14 items],

Women’s Experiences with Battering (WEB) [10 items], Index of Spouse Abuse – Physical Scale (ISA-P) [15 items], Woman Abuse Screening Tool (WAST) [8 items], Abuse Risk Inventory (ARI) [25 items], “physically Hurt you, Insult you or talk down to you, Threaten you with harm, and Scream or curse you?” (HITS) [4 items], Conflict Tactics Scale (CTS) [19 items], Partner Violence Screen (PVS) [3 items], and the Abuse Assessment Screen (AAS) [5 items]^{29, 107, 122, 187, 225, 246-253}. The CTS is the most frequently utilized tool in population-based surveys of couples. By contrast, the AAS is a short questionnaire that has been validated among pregnant women in prenatal care settings^{107, 177}. Whereas the AAS is primarily focused on assessing physical and/or sexual types of violence, the WEB is commonly used in studies that evaluate psychological forms of abuse or battering^{22, 163, 225}.

Burden of intimate partner violence

Prevalence, frequency and severity

The prevalence, frequency and severity of IPV experience in the general and clinical populations of the United States have been estimated in numerous studies that used distinct methodologies for defining and measuring IPV^{19, 45, 254-258}. The lifetime prevalence of IPV often refers to the number of people who report ever experiencing IPV over the total number of people under study. Similarly, the annual prevalence of IPV refers to the number of people who report experiencing IPV in the past twelve months over the total number of people under study. Proxy measures of IPV frequency and severity include injuries and injury-related healthcare utilization.

Cross-sectional and longitudinal studies have been conducted in an effort to estimate the burden of IPV in the general population of the United States. Previous population-based studies include the 1975 National Family Violence Survey (NFVS), the 1985 National Family Violence Resurvey (NFVR), the 1995 National Longitudinal Couples Survey (NLCS), the National Crime Victimization Survey (NCVS) and the National Violence against Women Survey (NVAWS)^{43, 259}. In the following discussion, data from the most recent surveys, namely the NCVS and the NVAWS, will be examined.

Estimates from the 1993-1998 NCVS conducted by the Bureau of Justice on 293,400 households and 574,000 individuals aged 12+ years suggest that, each year, 1 million violent crimes are committed against individuals by a current or former spouse, boyfriend or girlfriend. These violent acts include murder, rape, sexual assault, robbery, aggravated assault, and simple assault. Based on NCVS data, almost half of IPV victims report the violence to law enforcement authorities and many IPV incidents result in minor injuries that do not require medical attention. Intimate partner homicides comprise almost 33% of murders in women and almost 4% of murders in men. Similarly, nearly 85% of IPV incidents over the course of one year are committed against women. Overall, the annual prevalence of IPV against women is estimated to be 7.7 per 1,000 compared to 1.5 per 1,000 against men¹.

The NVAWS was conducted through telephone interviews of 8,000 women and 8,000 men by the National Institute of Justice and the CDC. Nearly 25% of surveyed women and 7.6% of surveyed men disclosed rape and/or physical assault by a current or former spouse, cohabiting partner, or date at least once during their lifetime. In addition,

1.5% of women (representing 1.5 million women) and 0.9% of men (representing 834,732 men) said they were raped and/or physically assaulted by a partner in the previous 12 months. Nearly 5% of women and 0.6% of men reported being stalked by an intimate partner during their lifetime. In addition, 0.5% of women (representing 503,485 women) and 0.2% of men (representing 185,496 men) were stalked by an intimate partner in the past year^{23, 260}.

Clearly, a gender gap exists in susceptibility to violence in general and IPV in particular. Most national surveys have suggested higher IPV rates in women versus men²³. Nearly 25-30% of women in the general population of the United States experience physical and/or sexual abuse by an intimate partner during their lifetime, whereas 2-12% report physical and/or sexual IPV over the past year³⁴⁻³⁶. IPV prevalence rates identified in clinical samples are usually higher than those in the general population, ranging from 21-55% over a lifetime and from 4-44% within the past year². Prior studies conducted in obstetric populations have identified a prevalence of IPV in the past year ranging between 11% and 24%¹⁶². In addition, the annual prevalence of acute physical and/or sexual IPV among women in an emergency care setting ranges from 2% to 7%¹⁸⁷. Clinic-based surveys mainly using anonymous, confidential and self-administered questionnaires have indicated that female patients, including those seeking urgent care, primary care, family planning and sexually transmitted disease (STD) services, are at an even higher risk for IPV than was initially suspected^{20, 21, 24-33}.

An anonymous survey was conducted on a convenience sample of 1,268 women admitted to 1 of 24 emergency departments and primary care clinics. Results indicated that 50-57% of these women experienced physical or emotional abuse and 26%

experienced sexual abuse in their lifetime. In addition, the reported prevalence of abuse over the past year was as follows: emotional abuse (28%); physical abuse (12%); severe physical abuse (6%) and sexual abuse (4%)²⁶.

Another study was conducted among a convenience sample of 1,152 women, aged 18-65 years, who attended family practice clinics in South Carolina between 1997 and 1998. IPV was assessed through a 5-10 minutes in-clinic survey. Overall, 54% reported having experienced some type of violence and 24% were currently in a violent relationship²⁵.

A study of 399 women attending a family medicine clinic identified IPV using a modified version of the CTS scale. The study found that self-reported prevalence rates of any violence, psychological violence and physical violence perpetrated by an intimate partner against these women (over the past 90 days) to be 44.3%, 43.5% and 10.3%, respectively²⁹.

In another study, women seen at STD clinics in Florida and New Jersey were interviewed regarding their IPV experiences. These women were at least 18 years old, not known to be HIV positive, not tested for HIV in the previous 3 months, and offered HIV testing during the clinic visit. Of 490 survey participants, 16% reported partner violence in the past year²⁷.

Another study used a self-administered questionnaire in a convenience sample of 2,115 patients attending a public STD clinic in San Francisco. In a sub-sample of 409 female patients who reported recent male sexual partners, the authors reported a lifetime IPV prevalence of 24% and an 11% IPV prevalence over the past year²⁴.

Finally, a study using an anonymous questionnaire was conducted among a convenience sample of 727 women, 14 to 26 years of age, who were seen at family planning clinics in Southeast Texas. Results indicated that 43% of these women reported at least one episode of physical abuse and 73% reported one or more episodes of verbal abuse during their lifetime³⁰.

Healthcare settings may provide a key opportunity for confidential disclosure of IPV by patients to their providers who would subsequently intervene by connecting them to the appropriate resources¹⁶³. However, multiple barriers may impede the screening and identification of IPV victims in a busy clinical setting and their referral to on-site or off-site services^{163, 245, 261, 262}. Random reviews of 746 medical charts were conducted at one primary care center and the following results were obtained: 36.6% of patients were tagged for IPV screening, and of those tagged 86.1% had documentation of screening. In addition, 5% screened positive for IPV, and about half of those had documented clinician follow-up and referral to on-site services²⁶¹.

In a recent review article by Hamberger and Phelan²⁶³, potential barriers to IPV screening and identification in healthcare settings were summarized. Provider barriers include: lack of knowledge; fear of offending patients; perceived time pressures; perceived irrelevance of IPV to healthcare practice; fear of loss of control of the provider-patient relationship; personal attitudes and accountability; past experience with abuse; and perceived danger. Patient barriers to IPV disclosure revolved around the following themes: lack of trust; fear of retribution; fear of loss of control; sense of futility; nature of the intimate relationship; lack of knowledge of helping resources; embarrassment; and humiliation²⁶³.

Overall, studies have suggested higher lifetime and annual prevalence of IPV among women seeking healthcare in a clinical setting when compared to women in the general population. Although IPV screening activities have already been integrated into many healthcare settings, provider and patient barriers may preclude IPV disclosure. Thus, when providers elicit IPV information from patients, IPV prevalence is often underestimated. The use of anonymous, confidential and self-administered questionnaires may reduce barriers to IPV disclosure in urgent care, primary care, family planning and STD clinics.

Risk factors

A major aspect of IPV intervention is identifying causes, risk factors and correlates of IPV. Multiple risk factors for IPV have been identified at the individual, interpersonal, household, organizational and community levels of analysis^{30, 264}. However, existing studies have mainly focused on IPV risk factors at the individual level, and especially on those characteristics that are associated with poverty or low socioeconomic status (SES). In general, IPV victimization and perpetration occurs more frequently in certain groups of people who are educationally, economically, and socially disadvantaged^{43, 97}.

Age

Numerous studies have identified a higher IPV prevalence among young individuals and couples^{26, 37-40}. National surveys have indicated that IPV victims, and especially victims of sexual assault, are typically younger than non-victims, with

teenagers and young adults exhibiting the highest risks. Based on the NCVS, young age was associated with higher IPV prevalence¹. According to the NVAWS, only 16.6% of women with a lifetime history of rape were sexually assaulted for the first time at an age ≥ 25 years²⁶⁰. Finally, the 2003 Youth Risk Behavior Survey indicates that nearly 8.8% of teenage girls are physically abused and 11.9% are sexually abused by their dating partners²⁶⁵.

Race and ethnicity

Minority racial or ethnic group appears to be an important risk factor for IPV^{19, 40-45}. Surveys of the general population have consistently supported disparities in IPV prevalence by racial and ethnic group^{19, 40, 43, 44, 212, 259}. For instance, the NLCS indicated that 23% of Blacks, 17% of Hispanics and 11.5% of Whites reported an incident of male-to-female partner violence (MFPV), and that 30% of Blacks, 21% of Hispanics and 15% of Whites reported an incident of female-to-male partner violence (FMPV) in the past year. Racial and ethnic differences may in part be explained by socioeconomic characteristics as well as multiple indicators of alcohol use^{43, 44}. Two important theories that help explain such racial and ethnic disparities are the “subculture of violence” and the “social structural” theories. Based on the subculture of violence theory, “some groups in society accept violence as a means of conflict resolution more than others¹⁹.” In contrast, the social structural theory suggests that “intimate partner violence is associated not with the cultural characteristics of the group but with the societal structural conditions” such as “poverty, undernutrition, and high unemployment that characterize the life of members of a particular minority group¹⁹.” Moreover, family structure, immigration status,

acculturation, community response and histories of oppression may influence the experiences with and response to IPV by any particular racial or ethnic group in the United States ^{266, 267}.

Socioeconomic characteristics

Although IPV can occur in any couple or family irrespective of SES, disparities by socioeconomic indicators have been previously identified. Individuals and couples born outside their country of residence ³⁸ or those acculturated to their country of residence ²⁶⁸ were found to be at increased risk of IPV. Those who reported low educational attainment ^{26, 38, 39}, lack of health insurance coverage ³⁷, unemployment ³⁸ and a previous live birth ¹¹⁰ were also at higher risk for IPV. Based on the NVAWS, individuals were more likely to report being raped, physically assaulted or stalked by a current spouse or cohabiting partner if they had a high school diploma or less and if their educational level was higher than that of their partner ²³. The NCVS data indicated that women earning lower incomes or living in rental housing had higher rates of IPV ¹.

Other risk factors

Other risk factors were also identified at the individual, interpersonal, and household levels of analysis. At the individual level, past history of abuse was repeatedly found to predict current or recent exposure to IPV ^{30, 44, 112}. At the interpersonal level, couples who were married or cohabiting ^{37, 38, 56, 110, 116, 269}, those who reported relationship dissatisfaction ^{9, 13} or conflicts ^{97, 116, 269, 270} were at increased risk for experiencing IPV in their lives. At the household level, low income ^{26, 37, 40}, high

crowding index⁹⁷, and having young children in the home³⁷ were also correlated with IPV.

Health correlates

IPV was linked with physical injuries³, homicide and suicide^{26, 189-191}. In addition, IPV was associated with short-term and long-term physical and mental health sequelae. Studies conducted in a variety of settings had suggested a wide range of physical and mental health conditions associated with physical, sexual or psychological abuse of victims by their intimate partners^{20, 109, 116, 209, 222, 271-273}.

Physical health

Victims of IPV were shown to be at an increased risk for detrimental physical health outcomes such as injury^{109, 113}, disability^{20, 25}, chronic pain^{20, 26, 109, 113, 119}, arthritis²⁰, headaches or migraine^{20, 26}, gastrointestinal signs^{20, 109, 113}, vaginal bleeding and sexually transmitted infections^{26, 109, 113, 209}.

Mental health

Victims of IPV were more likely to have intimate partners diagnosed with a psychiatric illness^{39, 55, 189, 274}. In addition, the prevalence of mental health problems was exceptionally high in victims of IPV. These include substance use and abuse^{53, 109}, social dysfunction^{109, 113}, insomnia^{109, 113}, Post-Traumatic Stress Disorder (PTSD)^{119, 275-278}, anxiety^{109, 113}, depression^{59, 67, 111, 116-120} and suicidal thoughts^{26, 127, 279}. Poor physical or mental health perceptions were also cited as correlates of IPV^{20, 26, 39, 59, 103, 123}. IPV,

substance use and depression could co-exist in the same individuals^{2, 111}. Thus, IPV can be conceptualized as a risk factor, correlate or outcome of substance use and depression.

Substance use

IPV perpetrators were shown to be more likely than non-perpetrators to be users of alcohol^{43, 44, 52-63} or other substances^{5, 53, 56}. Furthermore, individuals who reported drinking alcohol^{15, 29, 39, 43, 44, 53, 54, 58-62, 97, 110, 111} and other substance use^{15, 35, 39, 53, 54, 63, 111, 113-115} were at increased risk for experiencing IPV victimization. Substance use and abuse often referred to the consumption of alcohol and/or recreational drugs that could cause addiction. Alcohol use has been defined as “the drinking or swallowing of any beverage, liquid mixture or preparation containing alcohol²⁸⁰.” By contrast, alcohol abuse is “a pattern of problem drinking that results in health consequences, social problems, or both²⁸¹.” Drug abuse is a term used to describe “illegal drug use,” “use of medicines in a non-prescribed manner” or “use of certain drugs that are not accepted by wider society²⁸¹.”

According to Caetano *et al.*⁶⁰, the role of alcohol in IPV “may be explained by people's expectations that alcohol will have a disinhibitory effect on behavior or by alcohol's direct physiological disinhibitory effect. It is also possible that people consciously use alcohol as an excuse for their violent behavior or that alcohol appears to be associated with violence because both heavier drinking and violence have common predictors, such as an impulsive personality.”

Using the 1995 National Study of Couples, Cunradi *et al.*⁷⁸ assessed the contribution of past year male and female alcohol-related problems and drug abuse to the

risk of moderate and severe male-to-female IPV. In a multi-ethnic sample of 1,615 married and cohabiting couples, past year female and male alcohol-related problems and female drug use were associated with increased risk of moderate and severe male-to-female IPV, after adjustment for important socio-demographic and psychosocial factors. Using the same data, Leadly *et al.*⁶² found that despite considerable concordance between couple members' drinking behaviors, discrepant drinking patterns were strongly predictive of the incidence of physical violence. In another study by Caetano *et al.*⁶⁰, 30-40% of the men and 27-34% of the women who perpetrated violence against their partners reported drinking at the time of the event.

Using data from two national surveys, O'Leary and Schumacher⁵⁷ examined whether the association between alcohol and IPV was most meaningfully described as a linear relationship, a threshold effect, or both. Analyses indicated that although linear associations between IPV and alcohol drinking classification were significant, the associated effect sizes were very small. In addition, only heavy drinkers and binge drinkers were major contributors to the significant associations.

Another cross-sectional study by Lipsky *et al.*⁵⁴ identified alcohol drinking patterns during an IPV event among abused women presenting to an urban emergency department. Bivariate associations were presented in a sample of 182 women. The authors found that an increased number of drinks per week, consuming five or more drinks per occasion, alcohol abuse and dependence, and recreational drug use were significantly associated with the abused woman's drinking while victimized or perpetrating IPV. Partner's drinking five or more drinks per occasion was associated only with the woman's drinking while victimized. Partners were more likely to drink while

perpetrating IPV in the relationship irrespective of the woman's drinking while victimized. Among couples in which the abused woman also perpetrated violence, the partner's drinking more closely paralleled the woman's drinking in events perpetrated by the woman.

A survey of 501 men and 1,756 women who had experienced an IPV physical assault examined the roles of perpetrator and victim incident-specific alcohol use in IPV outcomes. Logistic regression analyses showed that after controlling for relevant covariates, women whose partners had been drinking alcohol were significantly more likely to be injured than women whose partners had not been drinking. A woman's own alcohol use was unrelated to victimization outcomes. Men were significantly more likely to report the incident if their partners had been drinking but were marginally less likely to report if they had been drinking⁵².

In another cross-sectional study, Lipsky *et al.*¹¹¹ assessed the role of alcohol use and depression in IPV victimization and perpetration among Blacks and Hispanics in an underserved urban emergency department population. The outcome measures were physical or sexual IPV victimization and perpetration in the previous 12 months. The independent predictors included demographic variables, alcohol and drug use, and depressive symptoms. The prevalence of IPV victimization among Blacks and Hispanics were similar (14% and 10%, respectively) but Blacks were nearly twice as likely to report IPV perpetration (17% and 9%, respectively). Predictors of IPV perpetration were Black race, married or living with a partner, heavy drinking, recreational drug use and current depression. Depression, but not substance use, also predicted IPV victimization, in addition to Black race, being married or living with a partner, and younger age.

Depression

Depression is defined as “a mental state or chronic mental disorder characterized by feelings of sadness, loneliness, despair, low self-esteem, and self-reproach.” Co-existing signs and symptoms of depression include “motor retardation,” “withdrawal from social contact,” “loss of appetite” and “insomnia.” Major depression is the most common psychiatric disorder. According to the World Health Organization, it is the leading cause of disability worldwide among people aged 5 years and older. The lifetime prevalence of major depression is 10% for men and 25% for women. In the United States, around 20 million people suffer a depressive illness each year. Risk factors for depression include substance abuse, chronic physical illness, stressful life events, social isolation, a history of physical or sexual abuse, and a family history of depression²⁸².

IPV victims are at risk of experiencing depressive symptoms which could potentially lead to suicide or homicide¹²⁰. Using a probability sample of 616 Whites, 377 Blacks, and 592 Hispanics aged 18+ years, Caetano and Cunradi⁶⁷ examined the predictors of depression, including IPV, using multivariate logistic regression analyses. Among men, predictors of depression were Black (adjusted OR=0.29; 95% CI, 0.13-0.65) and Hispanic (adjusted OR=0.4; 95% CI, 0.2-0.8) ethnicity, victimization by a female partner (adjusted OR=4.04; 95% CI, 1.15-14.11), unemployment (adjusted OR=7.65; 95% CI, 1.59-16.39) and living in a high-unemployment neighborhood (adjusted OR=4.60; 95% CI, 1.86-11.37). Among women, the predictors of depression were perpetration of moderate (adjusted OR=4.08; 95% CI, 1.33-12.47) or severe (adjusted OR=6.57; 95% CI, 1.76-24.52) partner violence and impulsivity (OR=1.82; 95% CI, 3.87-20.71).

In another study by Martin *et al.*¹¹⁷, depressive symptoms of 95 prenatal care patients were examined relative to the women's experiences of IPV. Women who were victims of psychological aggression during the year before pregnancy were not at elevated risk for depression except when the psychological aggression was very frequent. However, during pregnancy, psychological aggression was more closely tied to women's depression levels, regardless of its frequency. In addition, women who experienced any level of physical assault or sexual coercion by their intimate partners (before or during pregnancy) had higher levels of depressive symptoms compared to non-victims.

Utilization of healthcare services

Because IPV is associated with multiple health conditions, it is also likely to have an impact on healthcare utilization. In a recent cohort study by Rivara *et al.*²²⁹, healthcare utilization and costs for women with and without a history of IPV were compared. Among 3,333 women 18-64 years of age, IPV since age 18 years was determined from responses to telephone interview using questions from the Behavioral Risk Factor Surveillance System (BRFSS) and the WEB scale. A total of 1,546 women reported IPV in their lifetime and IPV had ceased in 87% of these women. Healthcare utilization was higher for all categories of service during IPV compared to women without IPV, and decreased over time after cessation of IPV. However, healthcare utilization was still 20% higher five years after women's abuse stopped compared to women without IPV. Adjusted annual total healthcare costs were 19% higher in women with a history of IPV compared to women without IPV. Based on an IPV prevalence of

44%, the excess costs due to IPV were approximately \$19.3 million per year for every 100,000 women²²⁹.

Coker *et al.*¹⁴ estimated direct medical expenditure for physician, drug, and hospital utilization among Medicaid-eligible women who screened as currently experiencing IPV compared with those who were not currently experiencing IPV. In a family practice-based cross-sectional study, women were screened for current IPV using a 15-item ISA-P between 1997 and 1998. Mean physician, hospital, and total expenditures were higher for those women with higher IPV scores compared with those who scored as not currently experiencing IPV, after adjusting for confounders. The mean total expenditure difference between the high IPV and non-IPV groups was \$1,064 (95% CI: \$623-\$1506)¹⁴.

In another study by Wisner *et al.*²⁸³, computerized cost data were analyzed for 126 identified IPV victims in a large health plan and were compared to data from a random sample of 1,007 female enrollees (18-64 years of age) who used healthcare services in the same year. The authors found that an annual difference of \$1,775 or more was spent for victims of IPV versus the comparison group. Regression analyses found that victims of IPV were significantly younger and had more hospitalizations, general clinic use, mental health services use, and out-of-plan referrals. Use of emergency room services was the same across groups²⁸³.

In summary, IPV is a highly prevalent public health problem that can have short-term and long-term health effects resulting in increased healthcare utilization and costs. Therefore, IPV is likely to be more common among patients identified in healthcare settings as compared to the general population. Also, primary and secondary prevention

programs within healthcare settings that are aimed at reducing physical, sexual and psychological forms of IPV can ultimately reduce the burden of IPV on the healthcare system and society as a whole.

Response to intimate partner violence in healthcare settings

Numerous primary and secondary IPV prevention interventions have been previously designed and implemented without formal evaluation. Despite the recent growth in IPV research, many of the existing legal, social and medical services that target IPV have never been assessed, especially with regard to their safety and cost-effectiveness. Currently available IPV prevention interventions can be broadly classified as follows: 1) “Interventions for women”; 2) “Interventions for batterers or couples”; 3) “Emergency department interventions, social interventions and legal or policy interventions^{3, 193, 284}.” A recent study by Chang *et al.*² described potentially acceptable forms of “interventions for women” after conducting face-to-face interviews with 21 female DV survivors. These interventions were classified into three categories: 1) Informational; 2) Counseling; and, 3) Other. Examples of IPV informational interventions included placing posters, flyers and hotline numbers in clinics or providing information about legal steps related to child custody rights, restraining orders or other issues. Examples of IPV counseling interventions include support group participation, talking with a counselor about how to keep safe, talking with a counselor about relationship problems and talking with a counselor about depression or anxiety. Examples of “Other” IPV interventions include getting help with alcohol or drug use, getting help with reporting to the police and staying at the shelter.

Based on the existing evidence for IPV as a major public health problem and a burden on healthcare institutions, professional organizations have recommended that physicians routinely screen for IPV in patients who raise their “suspicion”³. In addition, most organizational guidelines advocate screening, identification, and referral within and beyond healthcare services^{6, 285}. However, no standard methods for implementing these recommendations have been advised^{286, 287}. In addition to screening instruments, healthcare providers have relied on health-related characteristics such as injuries, substance abuse and depression to facilitate the identification of women experiencing IPV in their lives. One underlying assumption is that screening will be a safe and cost-effective means for identifying women experiencing IPV, leading to appropriate interventions, thereby decreasing long-term exposure to IPV and its adverse health consequences. However, the safety and cost-effectiveness of IPV screening and subsequent interventions remains equivocal^{3, 31, 131, 187, 193, 288-290}.

In their 2003 and 2005 scientific reviews, Wathen and MacMillan^{193, 291} revealed the dearth of scientific information regarding evidence-based approaches in healthcare settings for preventing IPV. In their review of 22 IPV intervention trials, those that targeted “male batterers alone or with their partners” were shown to be unsuccessful in reducing IPV. The few “shelter stay” studies that targeted women were largely inconclusive and high-quality studies conducted in clinical settings were “of limited availability”³⁶. These reviews concluded that “the evaluation of interventions to improve the health and well-being of abused women remains a key research priority”^{36, 291}.

Role of employment characteristics in intimate partner violence

Employment characteristics, health disparities and gender roles

‘Occupation’, ‘employment’ and ‘work’ are all employment characteristics that have been used interchangeably in health research. From an epidemiologic standpoint, ‘occupation’ has been alternatively conceptualized as an indicator of socioeconomic status or as an environmental exposure⁶⁴. Because of its complex nature, ‘occupation’ should be distinguished from the broader concepts of ‘socioeconomic status’ and ‘social class’. In general, ‘socioeconomic status’ has been defined as “a descriptive term for a person’s position in society, which may be expressed on an ordinal scale using such criteria as income, educational level attained, occupation, value of dwelling place, etc.”²¹⁴ On the other hand, ‘social class’ refers to the occupational classification developed in 1911 by the Registrar-General of England and Wales. The five “social classes” were the following: Professional occupations (I); Intermediate occupations (II); Non-manual skilled occupations (IIIN); Manual skilled occupations (IIIM); Partly skilled occupations (IV); Unskilled occupations (V)²¹⁴. The current literature defines occupation-based socioeconomic status indicators, mostly relying on various classifications of occupational groups, occupational prestige ratings and employment status^{64, 292}. A recently developed occupational classification is the 2008 International Standard Classification of Occupations (ISCO-08)²⁹³. Researchers have frequently used these occupational classifications to create dichotomous definitions of ‘occupation’ such as ‘manual vs. non-manual’, ‘blue-collar vs. white-collar’ and ‘non-professional vs. professional’^{64, 292}.

Health disparities by employment characteristics have been previously examined in epidemiologic studies, especially in the context of cardiovascular diseases. Few studies have attempted to unravel social, behavioral, physiologic and environmental mechanisms that may underlie such disparities. In addition, there appears to be little agreement among studies with regard to measuring employment characteristics⁶⁴. For instance, ‘descriptive’ occupational data commonly included ‘current occupation/job title’, ‘employment status’, ‘employment history’, ‘work schedule’, ‘industry’, ‘ability to work’, ‘job loss/layoff’, ‘employer name/address’, ‘second job’, ‘work effort and ability’, ‘self-employment’, ‘unpaid work’, ‘years at present or usual job’ and ‘job search’, whereas ‘exposure’ occupational data frequently included ‘physical job demands’, ‘psychosocial job stressors’ and ‘chemical agents’⁶⁴. Nevertheless, the most frequently collected and reported occupational data in the context of cardiovascular disease epidemiology were current ‘occupation/job title’ and ‘employment status’⁶⁴.

A conceptual model entitled ‘*work and health disparities*’ has been previously described by Lipscomb *et al*²⁹². In this model, positive and negative aspects of ‘occupation’ are described. In the United States, “work determines income and provision of benefits” while simultaneously conditioning “broad inequities in opportunities for advancement, employment security and stability, and patterns of exposure to physical, psychosocial, and chemical hazards^{64,292}.” In sum, whether perceived as a socioeconomic indicator or as an environmental exposure, ‘occupation’ can impact general health. Past research has linked employment characteristics with a wide range of medical conditions including birth defects, cardiovascular disease, cancer and psychiatric illness⁶⁴. Yet, the role of these employment characteristics in IPV, a newly recognized

health problem, remains elusive⁶⁵. In particular, violent behaviors have not been adequately explored in relation to employment status and type of occupation of partners in an intimate relationship. The relationship between IPV and these employment characteristics is likely to be complex and gender-specific, given the link between ‘occupation’ and gender roles. The *Parsons model* is commonly used to contrast and illustrate extreme positions on gender roles²⁹⁴. Model A describes total separation of male and female roles, while Model B describes the complete dissolution of barriers between gender roles²⁹⁴. With regard to ‘occupation’, Model A posits that “the workplace is not the primary area for the woman” and therefore “career and professional advancement is deemed unimportant for women”²⁹⁴. By contrast, Model B posits that “for women, career is just as important as for men” and therefore “equal professional opportunities for men and women are necessary”²⁹⁴. Whereas women may assume the role of the homemaker and be unemployed by choice, a male partner’s unemployment may be perceived as a stressful situation that can lead to conflict among intimate partners. In couples whereby the female partner is the main provider, gender role strain may also be conducive to IPV perpetration or victimization^{105, 106}. Thus, in addition to assessing the employment characteristics of each partner in an intimate relationship, an examination of employment discrepancies between partners is warranted.

Intimate partner violence and the workplace

Numerous studies have suggested that IPV is experienced by individuals, especially women, in a wide range of settings, including the workplace^{49, 51, 218, 226, 295-307}. The work site is often accessible to the public irrespective of type of occupation,

employer or location, a factor that may facilitate victimization by IPV perpetrators in that setting²⁹⁶. Although IPV occurs more frequently in the home, studies have reported adverse consequences of IPV on the workplace environment^{51, 296, 300, 302-304}. IPV perpetrated against an employee can influence job attendance and increase healthcare costs assessed to the employer³⁵. In addition, IPV victims are more likely to have diminished productivity and are at increased risk of underemployment or unemployment as a result of absenteeism, tardiness, resignation or termination^{49, 296}. Thus, IPV not only affects the individual victim, but also her employer, co-workers and society as a whole.

Homicide is the leading cause of injury death among women in the workplace, accounting for 40% of workplace deaths among female workers in the United States. Workplace homicides against women are primarily robbery-related, and often occur in grocery or convenience stores, eating and drinking establishments, and gasoline service stations. In addition, over 25% of female victims of workplace homicide are assaulted by people they know (co-workers, customers, spouses, or friends). Along the same line, IPV incidents that spill into the workplace account for 16% of female victims of work-related homicides³⁰⁸. According to data from the NCVS, each year, nearly 18,000 people are assaulted at work by an intimate partner, with women being five times more likely than men to be attacked by their partners^{47, 49}. In addition, female employees are as likely to be victimized by a co-worker as they are by an intimate partner, and are more likely to be murdered by an intimate partner than by a co-worker⁴⁹.

IPV can incur considerable costs on the victim as well as her employer. According to the 2003 National Center for Injury Prevention and Control (NCIPC) estimates, almost 8 million days of paid work are lost each year by IPV victims due to

missing work, losing jobs and inability to remain employed, resulting in a total cost of \$728 million. IPV victims lose approximately \$18 million in annual earnings and almost \$1 billion in lifetime earnings. In addition, nearly \$893 million are lost as a consequence of premature death when IPV victims are murdered by their intimate partners at work^{48, 309}.

Intimate partner violence and employment characteristics

Despite existing evidence for a high burden of IPV on the female workforce, their employers and co-workers, epidemiological studies that examined IPV in relation to employment characteristics are scarce^{47-51, 81, 301, 302, 304-307, 309}. Employment characteristics have been previously associated with a wide range of physical and mental health problems that have also been correlated with IPV⁶⁵. The relationship between IPV and employment characteristics could be causal, the result of self-selection or both⁶⁵. In particular, certain occupations may put individuals at increased risk for violence in general and IPV in particular^{49, 80, 81}. Furthermore, unemployed men and women may be at higher risk of experiencing IPV and those who experience IPV may be at higher risk for unemployment⁶⁶⁻⁷⁹. Male perpetrators of IPV often try to exert “power and control” over their female victims^{59, 82-102}. Thus, a woman’s personal resources including her employment characteristics can influence her propensity to experience IPV as well as her ability to cope with and escape an abusive situation^{30, 46, 49, 67, 103, 104}.

So far, very few studies have addressed employment characteristics of women in relation to their experiences with IPV^{30, 46, 49, 103}. A small but growing body of the literature has evaluated the influence of IPV on a victim’s employment patterns^{47-51, 81,}

300-302, 307, 309. Existing evidence suggests that IPV may have short-term and long-term effects on the victim's work. For instance, IPV victims are likely to report reduced job performance, increased absenteeism and tardiness, and higher rates of turnover as a result of resignation or termination. Similarly, IPV has been associated with chronic unemployment, unstable employment and downward mobility⁴⁷⁻⁵¹.

MacFarlane *et al.*³⁰⁰ examined consequences of IPV on employment in a sample of 90 women seeking protective orders. Results showed that most of the IPV victims had been employed at one time and had experienced harassment from an intimate partner in regard to their work, and many reported reduced performance and lost productivity.

Zinc and Sill³⁰⁷ examined the impact of IPV on job instability among 32 mothers in Midwestern shelters. Half of participants had lost their jobs because of IPV. Reasons for unemployment included the following: "the abuser told the victim to quit," "in order to be safe", "excessive absences because of covering up the abuse" and "health issues exacerbated by IPV³⁰⁷."

A qualitative study by Swanberg and Logan⁵¹ explored the impact of IPV on women's employment and identified job interference tactics used by abusers and their consequences on the victim's job performance. IPV perpetrators exhibited a wide range of job interference tactics before, during and after work hours. In addition, abuser tactics increased women's risk of absenteeism, tardiness, resignations, and terminations⁵¹. Job interference tactics were classified by the same researchers into three distinct categories, namely, "work disruption," "on-the-job harassment" and "performance problems⁴⁸."

Swanberg *et al.*⁵⁰ conducted another survey of 518 recently employed women who had DV orders. Study findings confirmed the use of a wide range of job interference

tactics by intimate partners. On the other hand, most victimized women had disclosed the abuse to someone at work, including co-workers and supervisors who provided them with both formal and informal types of social support ⁵⁰.

Using a sample of 485 women who were victimized by their intimate partners and who were employed in the past, Swanberg *et al.* ⁴⁸ assessed differences between currently employed and unemployed women with respect to IPV disclosure at work and workplace supports. Their results suggested that both IPV disclosure and the presence of workplace supports were positively related to current employment.

Tolman and Wang ³⁰⁴ used fixed effects models to examine the relationship between IPV and women's employment characteristics in the Women's Employment Study Data which included 598 women in an urban county in Michigan. Regression analyses suggested that IPV exposure was associated with a significant reduction in the number of annual work hours of respondents ³⁰⁴.

A study by Staggs and Riger ^{103,302} examined the relationship of IPV, health, and employment stability using data from a 3-year study of over 1,000 female welfare recipients in Illinois. Chronic exposure to IPV was associated with poor health, whereas recent IPV was associated with unstable employment. However, health did not 'mediate' the effects of IPV on employment stability over the study period ^{103,302}.

In summary, both qualitative and quantitative studies suggest that IPV can negatively influence women's employment characteristics. In addition, IPV disclosure and the availability of social support at work may affect the relationship between IPV and employment characteristics. However, most studies that related IPV to employment patterns had focused on a limited group of women, namely those seeking protective

orders, those residing in shelters or those receiving welfare benefits. These women are at increased risk for both unemployment and abuse by their intimate partner. Furthermore, few of these studies were adequately powered to quantitatively assess the relationship between IPV and employment characteristics in these populations. Therefore, study results are limited in their precision as well as their internal and external validity. Although it is plausible that employment characteristics of male intimates may also be associated with IPV^{43, 66-79, 104, 310}, none of the previously published studies had simultaneously examined employment characteristics of male and female intimate partners in relation to IPV perpetration and victimization.

Intimate partner violence and social support

“Stress Process”

Stressful events and situations, including IPV, are “environmental exposures” that can decrease “host resistance” and increase “host susceptibility” to a wide range of physical and mental health problems. “Stress” can be conceptualized as an imbalance between “environmental demands” (acute and chronic stressors) and “individual resources” (socioeconomic status, personality type)^{124, 311-314}. Such an imbalance can lead to greater “stress perception” and a “maladaptive emotional response” (anxiety, depression) leading either directly or indirectly to adverse health outcomes³¹⁴.

Empirical evidence and theoretical work have consistently linked poor health outcomes with exposure to acute or chronic stressors^{313, 315-363}. According to Karasek’s “job strain model,” chronic stress at work can influence the risks of cardiovascular

disease³⁶⁴⁻³⁶⁷, cancer³⁶⁸, mental health disorders³⁶⁹⁻³⁷¹ and psychosomatic complaints³⁷². Similarly, based on the theoretical framework of the “Stress Process:” 1) health is negatively influenced by acute and chronic stressors; 2) the impact of these stressors on health is ‘mediated’ by perceived stress, coping efforts, social support, and help-seeking behaviors; 3) personal characteristics (socioeconomic status, personality type) can affect stressors as well as factors that can “buffer” the impact of stressors on health^{122, 123, 125, 136}.

The ‘mediating’ role of perceived stress, coping efforts, social support and help-seeking behaviors on the stress-health relationship implies a causal link between stress and health, whereby stressful exposures influence health outcomes, at least in part, through these various surrogates or intermediate variables. Evaluating factors that can ‘mediate’ the effect of stress on health problems is important for the design of preventive strategies. These ‘mediators’ are potentially amenable to intervention and their manipulation can reduce the burden of stress-related health problems. Although previous studies have used ‘mediator’ in the context of cross-sectional and case-control study designs, current epidemiologic research caution against the use of such terminology in the absence of longitudinal data. Based on the theoretical framework of the “Stress Process”, it is only possible to hypothesize that social support is an intermediate variable between IPV and depressive symptoms. Because social support may also be a predictor of IPV or an outcome of depressive symptoms, an evaluation of the ‘IPV-social support-depressive symptoms’ causal pathway cannot be accomplished with cross-sectional data. Instead, we could hypothesize that IPV is inversely related to social support and directly associated with mental health problems such as depressive symptoms.

Social support

Lack of social support has been identified as a major correlate of IPV, a barrier to seeking legal, social and medical services^{161, 247, 373} and a risk factor for IPV-associated health problems¹²⁷. Applying the theoretical framework of the “Stress Process,” IPV can act as a chronic stressor affecting health either directly or indirectly, through various ‘mediators’ including social support. Accordingly, social support can be viewed as a resilience factor and is, therefore, expected to be inversely related to IPV and its associated mental health problems, including depressive symptoms^{122, 123, 127, 128, 133-139}. In his book, House³⁷⁴ distinguished four types of social support. The most frequently referenced type is *emotional support* which refers to “affective participation, empathy, liking or respect.” *Appraisal support* is defined as “sharing opinions,” “evaluation” and “provision of information relevant to self-evaluation.” *Informational support* includes “offering information needed for completing a task.” Finally, *instrumental support* involves “practical help such as food, money and child care³⁷⁵.”

Many social support scales have been developed that measure the number of support persons, interrelatedness of the support group, source of support (e.g. family members, friends), whether a close or confidant relationship is associated with the support, the functions the support fulfills and how they are matched with the person’s needs, the adequacy of support, the person’s satisfaction with the support, whether the support is actually provided or perceived to be available if needed. Studies by Sarason³⁷³ have indicated that “perceived availability of social support” rather than “received social support” is the best predictor of favorable IPV-associated health outcomes¹⁶¹. In a cross-sectional survey of 1,152 IPV victims by Coker *et al.*¹²², perceived availability of social

support was associated with a reduced risk of poor perceived physical or mental health, less symptoms of anxiety, depression and PTSD and fewer suicide attempts^{122, 123, 253}.

Another study by Coker *et al.*¹²³ tested a structural equations model for IPV, using a sample of 191 women currently experiencing either physical or psychological abuse or battering. Emotional support provided to women experiencing IPV was hypothesized to ‘mediate’ the impact of IPV on current physical and mental health outcomes. Results indicated that higher scores on emotional support were associated with better physical and mental health. Physical IPV was directly associated with poorer mental health and indirectly associated with poorer physical health and mental health primarily through psychological IPV. Higher psychological abuse was directly associated with less emotional support and indirectly associated with poorer physical and mental health, primarily through emotional support.

Bradley *et al.*²⁷⁵ examined self-esteem, social support, and religious coping as mediators between experiences of child maltreatment (CM) or IPV and symptoms of PTSD in a sample (N = 134) of low-income African American women. Both CM and IPV related positively to PTSD symptoms. Risk and resilience factors accounted for 18% of the variance in PTSD symptoms over and above IPV and CM, with self-esteem and negative religious coping making unique contributions. Both variables were thought to ‘mediate’ the abuse-PTSD symptom link.

Meadows *et al.*¹²⁷ examined protective factors (hope, spirituality, self-efficacy, coping, social support-family, social support-friends, and effectiveness of obtaining resources) against suicide attempts in economically, educationally, and socially disadvantaged African American women (100 suicide attempters, 100 non-attempters)

who had experienced recent IPV. Bivariate logistic regressions revealed that higher scores on each of the seven protective factors predicted non-attempter status. In addition, multivariate logistic regressions indicated that higher scores on measures of hope or social support-family showed unique predictive value for non-attempter status.

In another study of 143 economically disadvantaged African American women (21-64 years old) who were receiving services at an urban public health system, 65 had experienced IPV within the past year and 78 had never experienced IPV. Social support was found to play an important role as a potential ‘mediator’ of the relationship between IPV on various health outcomes. For instance, a) the IPV status-depressive symptoms link was ‘mediated’ by multiple ways of coping, spiritual well-being, and social support; b) the IPV status-anxiety symptoms link was ‘mediated’ by multiple ways of coping, social support, and ability to access resources; and c) the IPV status-parenting stress link was ‘mediated’ by multiple ways of coping, spiritual well-being, and social support ¹²⁸.

Finally, a study by Carlson *et al.*¹³³ examined social support and other protective factors (education, employment, self-esteem, health and absence of economic hardship) in relation to depression, anxiety and three types of lifetime abuse (recent IPV, past IPV and child abuse). A survey of 557 women was conducted as part of a DV screening intervention in primary care. Compared with non-abused women, recently abused women received less social support from partners but reported comparable levels of support from others. Total protective factors potentially provided a buffer for abused women from developing anxiety and depression, but appeared less effective at severe levels of lifetime abuse.

The available literature on IPV, social support and IPV-related health problems remains inconclusive as to the specific role played by social support. Several studies have implied a protective effect of social support against IPV. Others have suggested a ‘mediating’ role of social support for the effect of IPV on selected mental health problems, including depression.

Intimate partner violence in the context of pregnancy

Intimate partner violence before, during and after pregnancy

Women are at highest risk of experiencing IPV during their childbearing years¹⁴³,¹⁶⁵. In addition, women of childbearing age are more likely to seek obstetric care than any other healthcare service¹⁴³. Therefore, pregnancy presents an ideal opportunity for providers of obstetric care to screen and intervene on women at risk of IPV victimization¹⁴³. Based on the CDC Pregnancy Risk Assessment Monitoring Surveillance (PRAMS), 2.4%-6.6% of women report physical or sexual abuse by an intimate partner during pregnancy¹⁶¹. However, patterns of IPV risk around the period of pregnancy are unclear^{4, 18, 115, 117, 141-160}. Specifically, it remains uncertain whether, in fact, the risk of IPV initiation or escalation increases, decreases or remains the same as a result of pregnancy¹⁵⁵.

The vast majority of epidemiological studies that examined the risk of IPV during pregnancy did not examine patterns of IPV around the period of pregnancy through comparisons of IPV prevalence rates in the pre-pregnancy, pregnancy and post-partum periods^{4, 18, 115, 117, 141-160}. The few studies that examined IPV across time periods in the

context of pregnancy varied widely in design and methods, yielding inconsistent results¹⁶⁰. For instance, some of these studies suggest an increased risk after delivery^{141, 146, 376}, while others suggest a decreased risk²⁴³. Summarized below are some of the more recent studies that examined patterns of IPV in the context of pregnancy.

Using data from the 1996-1998 CDC PRAMS, Saltzman *et al.*¹⁸ calculated the levels and patterns of physical abuse before and during pregnancy. The prevalence of IPV across the 16 states was found to be 7.2% (95% CI, 6.9-7.6) during the 12 months before pregnancy, 5.3% (95% CI, 5.0-5.6) during pregnancy, and 8.7% (95% CI, 8.3-9.1) around the time of pregnancy (before or during pregnancy). IPV was ongoing before pregnancy for three quarters of the women experiencing abuse by a husband or partner during pregnancy.

Martin *et al.*²⁴³ examined patterns of physical abuse before, during, and after pregnancy in a representative statewide sample of North Carolina women. IPV prevalence rate before pregnancy was 6.9% (95% CI: 5.6%-8.2%) compared with 6.1% (95% CI: 4.8%-7.4%) during pregnancy and 3.2% (95% CI: 2.3%-4.1%) during a mean post-partum period of 3.6 months. Abuse during a previous period was strongly predictive of later abuse²⁴³.

In a prospective study of 634 pregnant women in four US states, Koenig *et al.*¹⁶⁰ reported that the overall prevalence of IPV around the period of pregnancy was 10.6%. In addition, 8.9% experienced IPV during pregnancy and 4.9% after delivery. Of those women, 61.7% were abused only during their pregnancy, 21.7% were repeatedly abused, and 16.7% were abused only after their delivery. The authors concluded that women experienced IPV more frequently during pregnancy than in the post-partum period¹⁶⁰.

In a British Longitudinal Study of 7,591 pregnant women, prevalence rates of IPV were examined during pregnancy and after delivery. Compared to the post-partum period, the risk of IPV was consistently lower during pregnancy. At 18 weeks of gestation, 1% experienced physical cruelty, 4.8% experienced emotional cruelty and 5.1% experienced any victimization. At 33 months post-partum, 2.9% experienced physical cruelty, 10.8% experienced emotional cruelty and 11% any victimization ¹⁴³.

The prevalence of physical and sexual violence postpartum was estimated in a random sample of Swedish born women attending antenatal clinics. Of 132 women answering the questionnaire, 32 reported threats, physical or sexual abuse postpartum. Of those 32 women, 22 (69%) stated that they had not been subject to abuse previously ¹⁴⁵.

A community-based survey of Chinese population was conducted by Guo *et al.* ^{4, 148} to examine patterns of IPV against women before, during and after pregnancy. The overall prevalence rate of physical, sexual or emotional violence that occurred around the period of pregnancy was 12.6%. The prevalence of IPV against women during the 9 months of pregnancy (4.3%) was relatively lower than that during the 12 months before the pregnancy (9.1%) and during the 11 months post-partum period (8.3%). In addition, IPV against women before pregnancy was a strong risk factor for abuse during pregnancy and after delivery ^{4, 148}.

In summary, whether or not pregnancy constitutes a “high-risk” period for IPV remains controversial. The only consistent finding across epidemiologic studies that examined IPV around pregnancy is that the majority of women who report being victimized during a certain time period also report being victimized at an earlier time period ^{18, 143, 145, 243}. Therefore, women who experienced IPV during pregnancy are likely

to have experienced it in the pre-pregnancy period. Similarly, women who experienced IPV in the post-partum period are likely to have experienced it during pregnancy or in the pre-pregnancy period.

Impact of intimate partner violence on pregnancy outcomes

Although the evidence for an increased risk of IPV around the period of pregnancy remains inconclusive, the health burden of IPV appears to be considerable in the context of pregnancy. IPV has been associated with unintended pregnancy, delayed entry into prenatal care, diagnosis with sexually transmitted diseases and adverse pregnancy outcomes^{12, 16, 160, 175, 222, 242, 377, 378}. Studies that evaluated the effect of IPV on pregnancy outcomes¹⁴⁰ have reported increased risks of ante-partum hemorrhage¹⁰⁸, antenatal hospitalization³⁵, maternal mortality¹⁴⁰, perinatal or fetal death^{66, 108}, infant mortality¹⁴⁰, low birthweight (LBW)^{66, 107, 140}, preterm delivery (PTD)¹⁰⁷ and fetal growth restriction (FGR)¹⁰⁸. Therefore, targeting IPV prevention interventions to pregnant women in prenatal care settings may reduce healthcare costs associated with adverse outcomes of pregnancy.

Intimate partner violence and pregnancy intention

Women with unintended pregnancies especially those seeking pregnancy termination at a family planning clinic, are frequently missed by targeted IPV prevention programs in prenatal care settings. Unintended pregnancy is a worldwide problem affecting women, their families and society^{16-18, 44, 63, 111, 164-173, 379-381}. Recent studies have emphasized the importance of considering the various dimensions of pregnancy

intention such as distinguishing between *mistimed* and *unwanted* pregnancies^{167, 379}. The CDC PRAMS defines pregnancy intention based on responses to a single question: “Thinking back to just before you were pregnant, how did you feel about becoming pregnant”. Accordingly, a pregnancy was classified as being intended (the woman wanted to become pregnant at that time or sooner), mistimed (the woman wanted to be pregnant later), or unwanted (the woman did not want to be pregnant then or at any time in the future)^{16, 18, 165, 167, 168}.

It is worth noting that pregnancy intention is an attitude or feeling about pregnancy which is not necessarily translated into behaviors, such as contraceptive use or abortion¹⁶⁹. Some of the known causes of unintended pregnancy include contraceptive failure, non-use of contraceptive services and rape¹⁶⁴. Important consequences of unintended pregnancy are elective abortion and delayed entry into prenatal care^{164, 165}. Thus, for a sizeable percentage of pregnant women, the opportunity for IPV screening, identification and intervention in a prenatal care setting is minimal or completely absent. In addition, infants born as a result of an unintended pregnancy are at increased risk of LBW, PTD and FGR¹⁷⁰.

Based on the 1996-1997 CDC PRAMS, nearly 42% of pregnancies were unintended (31% mistimed and 11% unwanted)¹⁶⁵. Similarly, according to the 1995 National Survey of Family Growth (NSFG), a total of 2.65 million *pregnancies* (excluding miscarriages) or 49% of all pregnancies to United States women between the ages of 15 and 44 years were unintended, of which 54% resulted in an elective abortion. Furthermore, nearly 1.22 million births or 31% of all 1995 *births* to United States women between the ages of 15 and 44 years were unintended. Of those, 21% were mistimed and

10% were unwanted births^{165, 166}. More recently, the 2002 NSFG indicated that three of ten women 15–44 years of age ever had an unintended birth – 12% reported an unwanted birth and 23% reported a mistimed birth³⁸⁰.

In addition to cultural and religious influences, unintended pregnancies have been linked with poor socioeconomic conditions, adverse maternal behaviors (including substance use), physical or sexual abuse, morbidity (including depression), and mortality^{16, 167-173}. For instance, a survey of 7,044 postpartum women conducted between 1999 and 2000 in California suggested that racial and ethnic disparities in unintended pregnancies were partially explained by three socioeconomic factors (poverty status, maternal education and paternal education), four demographic factors (age, marital status, insurance, language), in addition to “physical or sexual abuse” and “sense of control”¹⁷⁰.

A study based on the 1998 CDC PRAMS which was conducted in 15 states found distinct risk factors for mistimed and unwanted pregnancies. Whereas women 35 years and older were more likely to report unwanted than mistimed pregnancies, women younger than 25 years reported more mistimed than unwanted pregnancies. Similarly, multiparous women were more at risk for unwanted rather than mistimed pregnancies. Other correlates of unintended pregnancies included smoking in the third trimester, receiving delayed or no prenatal care, no breastfeeding, unwanted pregnancy by their partner, physical abuse during pregnancy and LBW¹⁶⁷.

A limited body of literature has linked unintended pregnancy to IPV^{16, 165, 169-171}. However, the temporal relationship between IPV and pregnancy intention remains uncertain. Violence could precede the unintended pregnancy and be directly related to it. On the other hand, an unintended pregnancy could affect interpersonal relationships with

the partner, later leading to violence. Previous studies also have found a positive association between substance abuse, on one hand, and IPV^{17, 44, 63, 111} or unintended pregnancies, on the other^{168, 172}. Thus, another plausible explanation is that unintended pregnancy and IPV are not causally related, but co-exist in an environment that favors both conditions¹⁶. In summary, women with unwanted or mistimed pregnancies appear to be at a greater risk for IPV than those with intended pregnancies. However, the exact causal mechanism relating IPV to unintended pregnancies remains unknown.

Whereas some women with unintended pregnancies undergo elective abortions, most (if not all) women seeking pregnancy termination have had an unintended pregnancy. Women who choose to terminate a pregnancy through an elective abortion may do so for a variety of reasons, including interpersonal problems with their intimate partner¹⁸². Given that IPV has been positively correlated with unintended pregnancy, it is expected that the prevalence of IPV would be higher among women seeking elective abortion services as compared to other groups of pregnant and non-pregnant women.

Intimate partner violence and pregnancy termination

Overview

Pregnancy termination through elective (medical or surgical) abortion is a sensitive issue worldwide. Subsequent to the 1973 United States Supreme Court decision in *Roe v Wade*, elective abortion became legal but restrictions on access to pregnancy termination remain state-specific. Many state laws rule against late term abortions, require parental notification if the patient was a minor, in addition to disclosure of

abortion risk information to patients before a medical or surgical procedure is performed³⁸². According to the CDC abortion surveillance data, the number of legal abortions has increased since 1973, reaching a peak level in 1990 and declining thereafter^{382, 383}. In 2004, the abortion rate was estimated to be 16 per 1,000 women aged 15-44 years, with the highest rates being reported among women who were unmarried (80%), White (53%) or less than 25 years of age (50%)³⁸³.

A small but growing body of research has examined IPV prevalence and correlates among pregnant women who choose to terminate their pregnancy by seeking elective abortion services^{36, 162, 174-185, 384-388}. However, most of the studies that examined IPV in women seeking pregnancy termination were limited in sample size and descriptive in nature. Besides relationship issues, correlates of IPV were rarely explored in this population. In addition, the few studies that examined IPV risk and protective factors used only bivariate associations to identify these correlates. Many of these studies did not examine the independent association of each correlate with IPV, while taking into account other known risk and protective factors.

Empirical evidence

Extensive PUBMED searches were conducted to identify all recently published (1980-2007) studies that examined IPV among women seeking elective abortion^{162, 174-177, 183, 384}. Of those, only seven were original articles describing studies conducted in a developed country.

In one study, interviews were conducted on 51 women presenting at an abortion clinic in North Carolina. The lifetime prevalence of physical or sexual IPV was 31.4%. In

addition, the prevalence of physical or sexual IPV over the past year was 21.6% and that of physical or sexual IPV during the current pregnancy was 7.8% ¹⁷⁵.

A cross-sectional study that used a self-administered questionnaire was conducted among 486 women seeking outpatient abortion services in North Carolina. The lifetime prevalence of IPV was 39.5%. White women were significantly more likely to report any history of abuse as compared to non-White women. Relationship issues were the only reason for pregnancy termination, given more often by women who report lifetime IPV exposure. Finally, women who reported lifetime IPV were less likely to disclose their pregnancy or decision to undergo pregnancy termination to their intimate partners ¹⁷⁷.

Another cross-sectional study was conducted in an urban, racially and socio-economically diverse population of women attending an abortion clinic in Texas. Of 818 women who completed the self-administered questionnaire, 13.8% reported physical or sexual violence within the past year and 2.8% reported physical or sexual violence during their current pregnancy by an intimate partner. Furthermore, the prevalence of physical or sexual IPV within the past year was twice as high among women who failed to disclose their decision to seek abortion to their intimate partners (23.7% compared with 12.0%, $P=0.001$). Among non-disclosers, 45.3% said the relationship with the partner had no future, 37.4% did not feel obliged to notify their partners, 20.9% said the partner would oppose the abortion, and 7.9% said disclosure would result in physical harm ¹⁷⁶.

A descriptive survey examined the prevalence of current IPV (physical, sexual or emotional) among 100 pregnant women attending an abortion clinic in Canada. About 41.5% suffered from physical and emotional abuse, 36.6% were abused emotionally and

12.2% were abused emotionally, physically and sexually. In addition, sexual abuse alone was reported by 4.9% of women and 2.4% reported both physical and sexual abuse ¹⁷⁴.

Another Canadian survey evaluated the policy of universal screening for IPV in an abortion clinic. Compliance with screening was low, whereby only 254 (50.9%) of 499 women seen at the clinic were asked the screening questions. In addition, 58% of Caucasian, 40% of East Asian, and 37% of South Asian women were screened for IPV. Among the 254 women who were screened for IPV, 38 reported being abused in the past 12 months, resulting in an estimated 14.9% prevalence of IPV ¹⁸³.

A cross-sectional study was conducted at an abortion clinic in New Zealand to measure the lifetime and yearly prevalence of abuse reported by women seeking pregnancy termination. The reported lifetime prevalence of physical or sexual abuse was 50.8%. In addition, the lifetime prevalence of physical abuse was 43.3% and that of sexual abuse was 32.2%. Within the last year, the prevalence of physical abuse was 13.3% and of sexual abuse was 8.5%. Of women reporting a lifetime history of physical abuse, 69% reported that the partner was the perpetrator or one of the perpetrators of the abuse.

More recently, Bourrasa and Berube ³⁸⁴ conducted face-to-face interviews to assess IPV prevalence in women seeking abortion services at family planning clinics versus those continuing their pregnancy in prenatal care clinics. Overall, 1,003 women were interviewed, including 350 in the elective abortion [EA] group and 653 in the continuing pregnancy [CP] group. For women in the EA group, the probability of being a victim of IPV in the past year (including psychological, physical, and/or sexual abuse) was almost three times higher than for women in the CP group (25.7% vs. 9.3%, $P <$

0.0001), and the risk of being a victim of physical and/or sexual IPV in the past year was almost four times higher (7.1% vs. 1.8%, $P < 0.0001$).

Summary

The literature suggests that IPV is a significant health burden on individuals, families, and society as a whole. A gender gap exists whereby women are at greater risk of experiencing IPV and its health sequelae. Other risk factors for IPV include young age, minority race and ethnic group and low socioeconomic status. Employment, substance use, depression and social support are modifiable inter-related characteristics that have been previously linked with IPV. A limited number of studies have examined the relationship between IPV and employment characteristics. On the other hand, IPV has been associated with diverse physical and mental health problems, the most prominent of which are substance use and depression. Theoretical work and empirical evidence have suggested an inverse relationship between IPV and social support. Despite the recent growth in IPV research, many of the existing primary and secondary IPV prevention programs have not been adequately assessed in terms of safety and cost-effectiveness. One of the pre-requisites to the design, implementation and evaluation of an IPV intervention is the identification and characterization of a “high-risk” population. The prevalence of IPV appears to be elevated in healthcare settings as well as among women with unintended pregnancies. Therefore, women seeking pregnancy termination at a family planning clinic may have an increased chance of IPV. However, few studies have so far examined IPV prevalence, risk factors and health correlates in this presumably “high-risk” population. None of these studies have analyzed associations between IPV

and employment characteristics of women and their intimate partners. Substance use and depression appear to be important correlates of IPV, especially in the context of unintended pregnancies. Yet, previous studies of women seeking elective abortions have not evaluated the inter-relationships between IPV, substance use and depression. Also, none of these studies have examined the role of social support in relation to IPV or its health outcomes.

CHAPTER III

MATERIALS AND METHODS

Overview

The current study was based on the Iowa Women's Health Experience Survey (IWHES), a cross-sectional study of women seeking pregnancy termination at a major family planning clinic in Iowa. The long-term goal of this study was to characterize violence perpetrated by an intimate partner against pregnant women seeking elective abortion services. Deficiencies in this research area were addressed through two specific aims:

Aim I

To examine the prevalence of physical, sexual and/or psychological abuse by employment characteristics of elective abortion patients and their current intimate partners.

It was hypothesized that the prevalence of physical, sexual and/or psychological types of abuse will be increased if: 1) Women were unemployed, 2) Their partners were unemployed, or 3) Discrepancies in employment status existed between women and their partners. It was also hypothesized that the prevalence of physical, sexual and/or psychological types of abuse will differ according to occupational groups of women and their partners.

Aim II

To examine the associations of substance use, depressive symptoms and social support with physical, sexual and/or psychological abuse perpetrated by current intimate partners against women seeking pregnancy termination.

It was hypothesized that: 1) Women experiencing physical, sexual and/or psychological abuse were more likely to report above median level of alcohol intake, binge drinking or recreational drug use as compared to their non-abused counterparts; 2) Women experiencing physical, sexual and/or psychological abuse were more likely to report above median level of alcohol intake, binge drinking or recreational drug use by their partners as compared to their non-abused counterparts; 3) Women experiencing physical, sexual and/or psychological abuse were more likely to report high depressive symptoms when compared to their non-abused counterparts; 4) Women experiencing physical, sexual and/or psychological abuse were likely to report lower perceived availability of social support when compared to their non-abused counterparts.

Abortions: Iowa vs. Rosenfield Clinic

The Planned Parenthood of Greater Iowa (PPGI) serves women and men of all ages in 85 of 99 Iowa counties and three counties in Illinois through 16 medical centers and an education and resource center. PPGI offers accessible and affordable reproductive health care and education as well as advocacy for health care, education and privacy issues. PPGI services to women include annual check-ups, testing and treatment of sexually transmitted infections, birth control supplies and information, emergency contraception, abortion, Pap tests, breast exams and menopause services. Five PPGI

centers (Des Moines Rosenfield clinic, Iowa City Center, Quad Cities Center, Sioux City Center, Cedar Falls Center) are currently providing legal and confidential abortion services³⁸⁹⁻³⁹¹.

The Des Moines Rosenfield clinic was selected because it conducts approximately one-third of all yearly elective abortions in Iowa. In the planning phase of the study, existing data were extracted from administrative records on a sample of 1,755 patients (Iowa residents aged 18 years and older) who sought pregnancy termination at the Rosenfield clinic between May 20, 2004 and December 31, 2004. Nearly 73-74% of these women were between the ages of 18 and 29 years, 80% were White and 91% were non-Hispanic. Furthermore, nearly 39% had completed at least twelve years of formal education. Distribution by age and race among elective abortion patients who sought care at the Rosenfield clinic were comparable to those reported, in 2001, by the Centers for Disease Control and Prevention (CDC) for all Iowa residents who had an elective abortion procedure³⁸⁹⁻³⁹¹ (Table III.1).

Study design

The University of Iowa Institutional Review Board granted the IWHES “exempt status” with a waiver of authorization and a waiver of informed consent. A consecutive sample of women seeking pregnancy termination at the Rosenfield clinic was recruited, on a voluntary basis, between November 30th, 2006 and June 29th, 2007. Participating women completed a self-administered, anonymous and computer-assisted questionnaire at the clinic. The main advantage of using an anonymous questionnaire is its potential to safeguard confidentiality, leading to improved disclosure of sensitive topics such as IPV and its related health problems. The most frequently utilized format for an anonymous

self-administered questionnaire is paper-and-pencil. However, recent studies have suggested that IPV screening tools administered in an audiotape or a computer-assisted format were superior to other methods of data collection³⁹²⁻³⁹⁷. In general, the computer-assisted format is preferred because of its built-in capability for validating answers and allowing the use of skip logic. Hence, a computer-assisted method of self-administration was chosen for the IWHES.

Table III.1. Demographic characteristics of Iowa residents ≥ 18 years treated at Rosenfield clinic in 2004 (PPGI data) and all Iowa residents who had an elective abortion procedure in 2001 (CDC data)

Patient Demographic Characteristics	Rosenfield Clinic, 2004 (n=1,755) (%) ^a	All Iowa Clinics, 2001 (n=5,298) (%) ^b
<i>Age (years)</i>		
18-19	14.2	14.3
20-24	36.4	38.4
25-29	22.2	21.6
30-34	16.1	14.3
35-39	7.6	8.6
40+	3.5	3.1
<i>Race</i>		
White	80.2	80.4
Black	8.9	7.8
Asian	3.0	Not provided (NP)
American Indian	1.0	NP
Pacific Islander	0.2	NP
Other	6.7	NP
<i>Hispanic Ethnicity</i>		
Hispanic	7.4	NP
Non-Hispanic	91.4	NP
Unknown	1.2	NP
<i>Education (years)</i>		
Less than 12	12.1	NP
12	49.1	NP
Greater than 12	38.8	NP

^a Percentages and annual number of abortions derived from data on Rosenfield clinic patients seeking abortion services and treated from May 20, 2004 through December 31, 2004, who were Iowa residents and ≥ 18 years.

^b Data published by the Centers for Disease Control and Prevention (CDC).

Source: Iowa Department of Public Health State Center for Health Statistics. *2002 Iowa Termination of Pregnancy Report*.

Inclusion and Exclusion criteria

The following categories of women seeking elective abortion services were excluded from the study: non-residents of Iowa; less than 18 years old; not proficient in English or Spanish. We excluded non-residents of Iowa because the information collected through the IWHES will be used to develop an IPV intervention within the state of Iowa. Minors (less than 18 years of age) were excluded because disclosure of abuse in this age category would require mandatory reporting to authorities. This would constitute a breach of confidentiality, which is not in accordance with the medical care these women are seeking. The survey was available to women in either English or Spanish, which we anticipated would be the primary languages of over 98% of the sample.

Instrument

The questionnaire was initially developed in English by the investigators. Spanish translation and back-translation were conducted by two different native speakers. The original and back-translated versions of the questionnaire were further reconciled to identify any translation accuracy problems. Both the English and Spanish language-questionnaires were pre-tested using a convenience sample of students, friends and co-workers who were fluent in either or both languages. The questionnaire consisted of approximately 85 questions and the primary method of questionnaire administration was computerized. However, a paper-and-pencil version of the questionnaire was developed for use in special circumstances, such as when: 1) women were more comfortable completing the paper-and-pencil versus the computerized version of the questionnaire, 2)

the computer network was not functional or 3) more women were recruited at one point in time than the total number of computer workstations available.

The WebSurveyor Online Survey Tool Data ³⁹⁸ was used for questionnaire design, data collection and storage. Initially, Websurveyor was used to develop the computerized version of the survey instrument. Subsequently, Websurveyor was used to: 1) verify survey eligibility among women who agreed to participate; 2) administer the English or Spanish version of the survey instrument to eligible women who agreed to participate; and 3) store survey data in an electronic format. The Websurveyor is well-suited for the IWHES questionnaire, which includes a wide variety of (open and closed) questions with complicated skip logic.

The paper-and-pencil questionnaire consisted of eight distinct sections. Section A covered the woman's demographic and socioeconomic characteristics. Section B examined the woman's relationship with her current intimate partner. Section C asked about the current partner's demographic and socioeconomic characteristics. Section D included the woman's experience with battering by her current partner. Section E focused on the woman's recent experience with physical and sexual abuse. It also included questions of readiness for and acceptability of various intervention strategies to prevent recurrence of physical or sexual abuse. Section F enquired about alcohol drinking and recreational drug use habits of the woman and her current partner. Section G included validated scales for perceived availability of social support and depressive symptoms. Finally, Section H included survey evaluation questions (Appendix A). Women who were not involved in a current relationship were asked to skip Sections C through D and to complete only Sections A, E, F, G and H. In the computerized mode of questionnaire

administration, the same questions and scales were displayed consecutively, taking skip logic into consideration.

Measurement scales

Intimate partner violence

In the IWHEs, occurrence of episodic physical or sexual assaults was assessed with the Abuse Assessment Screen (AAS). In addition, chronic psychological abuse by a current partner was measured using the Women's Experiences with Battering (WEB) scale.

Abuse Assessment Screen

The AAS was selected to measure past experiences with physical and/or sexual abuse. The AAS is among the most widely used screening tools in the general population and also in the context of pregnancy^{29, 107, 187, 251, 252}. It was previously validated in a population of pregnant women attending prenatal care²⁵¹. A modified version of the AAS was used that focuses on recent experiences with physical or sexual violence and excludes lifetime history of abuse. Furthermore, some of the questions from the original AAS were rephrased and categorized in order to facilitate self-reporting of frequency and severity of abusive experiences.

Women's Experience with Battering Scale

The WEB scale was used extensively to measure women's experience with psychological abuse and battering by a current partner^{22, 122, 223}. The WEB measures a

variety of abusive tactics including threats, intimidation, humiliation, isolation and controlling behaviors^{22, 122, 223}. The original version of the WEB scale consisted of 16 items, whereby subjects were asked to endorse their level of agreement or disagreement with 16 statements, using a 6-point Likert-type scale. Of the 16 WEB items, only the following 10 items were usually scored: 'My partner makes me feel unsafe even in my own home,' 'I feel ashamed of the things my partner does to me,' 'I try not to rock the boat because I am afraid of what my partner might do,' 'I feel like I am programmed to react a certain way to my partner,' 'I feel like my partner keeps me prisoner,' 'My partner makes me feel like I have no control over my life, no power, no protection,' 'I hide the truth from others because I am afraid not to,' 'I feel owned and controlled by my partner,' 'My partner can scare me without laying a hand on me' and 'My partner has a look that goes straight through me and terrifies me.' Accordingly, the WEB score could range between 10 and 60¹²³. In addition, a WEB score of 20 or higher were previously designated as the cut-off point for battering²²⁵.

Social Support Questionnaire – Short Form

The Social Support Questionnaire – Short Form (SSQ-SF) is a validated measure of perceived availability of social support³⁷³. A 5-item sub-scale of the original 27-item SSQ was used in IWHES to measure a woman's perception of whether there is someone available who would 'help her feel better when she is under stress,' 'accept her totally, including both her worst and best points,' 'care about her, regardless of what is happening to her,' 'help her feel better when she is feeling down in the dumps,' and 'console her when she is upset.' Each item was measured on a Likert scale from 1 (low

social support) to 5 (high social support), resulting in a total score that ranged between 5 and 25³⁷³. Although Sarason *et al.*³⁷³ had developed a 3-item and a 6-item SSQ-SF, we used a 5-item SSQ-SF that was previously administered in a comparable study of social support, IPV and adverse health consequences to women recruited from a family practice setting¹²².

10-item Center for Epidemiologic Studies Depression Scale

Depressive symptoms were evaluated using the 10-item Center for Epidemiologic Studies Depression Scale (CESD-10), a short screening tool frequently used in research studies^{120, 399}. The original 20-item CESD scale was developed by Radloff³⁹⁹. In the CESD-10 version, “negative affect” items (‘I was bothered by things that usually don't bother me,’ ‘I had trouble keeping my mind on what I was doing,’ ‘I felt depressed,’ ‘I felt that everything I did was an effort,’ ‘I felt fearful,’ ‘My sleep was restless,’ ‘I felt lonely,’ ‘I could not get "going"’) were coded as follows: 0= ‘Rarely or none of the time,’ 1= ‘Some or little of the time,’ 2= ‘Occasionally or a moderate amount of the time’ and 3= ‘Most or all of the time,’ while ‘positive affect’ items (‘I felt hopeful about the future’ and ‘I was happy’) were reverse scored. A total CESD-10 score could range between 0 and 30. High depressive symptoms were identified among individuals who scored at least 10 on the CESD-10 scale^{120, 399}.

Variable definitions

Intimate partner violence

IPV perpetrated by a current partner was operationalized using three distinct definitions: *Physical IPV*, *Sexual IPV* and *Psychological IPV*^{177, 400}. The study sample was restricted to women who responded ‘yes’ to ‘During the past year, have you been involved in an ongoing intimate relationship?’ and ‘Are you currently involved in an intimate relationship with your partner?’ Furthermore, recent *physical IPV* by a current partner was identified among women who answered ‘yes’ to ‘Within the last year, have you been hit, slapped, kicked, or otherwise physically hurt by someone?’ and ‘current partner’ to ‘Who did this to you.’ Recent *sexual IPV* by a current partner was determined in women who answered ‘yes’ and ‘current partner’ to the questions ‘Within the last year, were you forced to be involved in sexual activities?’ and ‘Who did this to you?’, respectively. To reduce survey length, only the 10 scored WEB items were included in the IWHEs. *Psychological IPV* by a current partner was identified in women who scored at least 20 on the WEB scale²²⁵. In addition, *IPV* was defined as any type of physical, sexual and/or psychological abuse by a current partner. A more detailed definition of *IPV* was also used in which it was assumed that ‘physical or sexual assault’ and ‘psychological abuse’ were qualitatively distinct sub-types of *IPV*. In this definition, the following groups were identified: No psychological, physical or sexual *IPV*; Psychological *IPV* only; Physical or sexual *IPV* only; and ‘Physical or sexual’ and psychological *IPV*.

Employment characteristics

In *Aim I*, the main IPV-associated variables of interest were employment characteristics of women and their partners. These included: woman's employment status; partner's employment status; woman's type of occupation; partner's type of occupation; discrepancies in employment status between women and their partners. In *Aim II*, employment status was considered as a potential confounder for the associations of IPV with substance use indicators and depressive symptoms.

Woman's and partner's employment status

Women were asked to report their employment status at the time of the survey using a set of closed questions. Women who reported having an intimate partner at the time of the survey were also asked to report their partner's employment status. Accordingly, current employment status of women and their partners were analyzed as: 'employed' or 'unemployed.' For women (or partners) who were currently employed, a question was used to characterize their work as either 'full-time' or 'part-time.' Women (or partners) who were not currently employed were asked: 'How would you describe your employment status?' with the following possible responses: 'Never worked, not looking for a job,' 'Never worked, looking for a job,' 'Worked before, not looking for a job,' 'Worked before, looking for a job,' 'Homemaker' and 'Student.' Therefore, women (or partners) classified as currently *employed* included those who worked full-time or part-time. Similarly, women (or partners) classified as currently *unemployed* included those who had never worked, had worked previously, were homemakers or were full-time students.

Woman's and partner's type of occupation

Women who reported being currently *employed* were asked to describe their job title and type of industry using two open-ended questions. For women who reported having a current intimate partner, the same questions were asked about that partner. Occupations were coded using the International Standard Classification of Occupations 2008 (ISCO-08), developed by the International Labor Office⁴⁰¹. Self-reported job titles and industries were coded into nine broadly defined occupational categories, namely: 'Chief executives, senior officials and legislators,' 'Professionals,' 'Technicians and associate professionals,' 'Clerks,' 'Service and sales workers,' 'Skilled agricultural, fishery and forestry workers,' 'Craft and related trades workers,' 'Plant and machine operators and assemblers' and 'Elementary occupations.' Other occupational categories were: 'Full-time student', 'Homemaker', 'Unemployed – never worked/worked previously', 'Armed forces', 'Unclassifiable' and 'Unknown'. These occupational categories were further collapsed into five main occupational groups that were qualitatively distinct, with *occupational group I* being arbitrarily selected as the reference group. No ordering was assumed for these five occupational groups. Whereas *occupational group I* consisted of 'professional and managerial occupations', *occupational group II* consisted of 'semi-professional, technical and services occupations' and *occupational group III* consisted of 'manual occupations'. *Occupational group IV* included 'Full-time student' and 'Homemaker, while the 'Unemployed – Never worked/Worked previously' category was considered as *occupational group V*⁴⁰² (Table III.2). *Occupational groups IV* and *V* were created in an effort to distinguish those who were unemployed for a specific reason ('Full-time

student’, ‘Homemaker’) from those who were unemployed but did not indicate a specific reason for their unemployment. Due to the limited number of individuals classified as ‘Armed forces’ in the study sample, this occupational category was excluded from further analyses. Similarly, individuals whose occupation was ‘Unclassifiable’ or ‘Unknown’ were also excluded from further analyses.

Table III.2. International Standard Classification of Occupations 2008 (ISCO-08)

Occupational code	Occupation category
<i>I</i>	<i>Professional/Managerial (1-2)</i>
1	Chief executives, senior officials and legislators
2	Professionals
<i>II</i>	<i>Semi-professional/Technical/Services (3-5)</i>
3	Technicians and associate professionals
4	Clerks
5	Service and sales workers
<i>III</i>	<i>Manual (6-9)</i>
6	Skilled agricultural, fishery and forestry workers
7	Craft and related trades workers
8	Plant and machine operators and assemblers
9	Elementary occupations
<i>IV</i>	<i>0.0-0.2</i>
0.1	<i>Full-time student</i>
0.2	<i>Homemaker</i>
<i>V</i>	<i>0.3</i>
0.3	<i>Unemployed – Never worked/Worked previously</i>
99	Armed Forces/Unclassifiable/Unknown
0.0	<i>Armed Forces</i>
0.4	Unclassifiable
0.5	Unknown

Discrepancies in employment status

A cross-classified variable was created to compare couples based on discrepancies in employment status between the woman and her partner. Specifically, this variable was defined as follows: ‘both employed,’ ‘woman employed only,’ ‘partner employed only’ and ‘both unemployed,’ with the first group being considered as the reference.

Health correlates

Woman's substance use

In the IWHES, women were asked questions concerning their use of alcohol and recreational drugs. Responses to substance use questions were adapted from a report entitled *NIAAA Task Force on Recommended Alcohol Questions*⁴⁰³. A drink or standard ethanol unit (SEU) was defined as 12 ounces of beer, 5 ounces of wine or 1.5 ounces of 80-proof distilled spirits⁴⁰³. Women were asked to self-report their alcohol and recreational drug use habits. Because women might alter their consumption of substances around the period of pregnancy, questions that focused on women's use of alcohol and recreational drugs were framed for the 3 months before they found out about their pregnancy. Women who acknowledged having consumed alcohol in the 3 months prior to pregnancy awareness were asked follow-up questions that assessed *frequency* (number of times per week, month or year) and *quantity* (number of drinks per occasion) of alcohol use as well as *binge* drinking frequency (number of times per week, month or year). Women who acknowledged consuming recreational drugs in the 3 months prior to pregnancy awareness were asked a follow-up question that assessed recreational drug use frequency (number of times per week, month or year). Alcohol intake, binge drinking and recreational drug use were selected as key measures of substance use among women in the study sample.

Alcohol intake

Woman's alcohol intake or the number of drinks in standard ethanol units (SEU) consumed per week was calculated by multiplying the midpoint of *frequency* (Table III.3) by the midpoint of *quantity* (Table III.4) of alcohol use. Of 395 women, 370 (93.6%) had valid data on alcohol intake, which ranged between 0 and 137.5 drinks per week. Nearly 23% of the women did not use alcohol in the 3 months that preceded pregnancy awareness. Overall, woman's alcohol intake was not normally distributed, with mean and median alcohol intakes estimated to be 6.8 drinks/week and 2.0 drinks/week, respectively (Shapiro-Wilk's normality test; $P < 0.0001$). After thorough examination of its overall distribution in the study sample, woman's alcohol intake was categorized as following: '0-<2 drinks/week' and ' ≥ 2 drinks/week'. Further details are presented in the section entitled 'Categorization of alcohol intake'.

Binge drinking and recreational drug use

Among women who reported consuming alcoholic beverages, *binge drinking* frequency was defined as the number of times, in the 3 months that preceded pregnancy awareness, during which they had consumed 4 or more drinks of alcohol in one sitting over a time span of 2 hours. Women were also asked to report whether or not they used marijuana, hashish, cocaine, crack, amphetamines, methamphetamines, "ecstasy" or other recreational drugs. Those who replied positively were asked to report their frequency of recreational drug use as number of times per day, week, month or year. In the current analyses, binge drinking and recreational drug use in the 3 months prior to pregnancy awareness were defined as dichotomous 'yes' or 'no' variables.

Partner's substance use

In the IWHES, women who reported having a current partner were asked questions concerning that partner's use of alcohol and recreational drugs. Responses to substance use questions were adapted from a report entitled *NIAAA Task Force on Recommended Alcohol Questions*⁴⁰³. An alcoholic drink or standard ethanol unit (SEU) was defined as 12 ounces of beer, 5 ounces of wine or 1.5 ounces of 80-proof distilled spirits⁴⁰³. Women were asked to report on their partner's alcohol and recreational drug use habits in the 12 months that preceded the survey. Women who acknowledged that their partners had consumed alcohol in the past 12 months were asked follow-up questions that assessed *frequency* (number of times per week, month or year) and *quantity* (number of drinks per occasion) of alcohol use as well as *binge* drinking frequency (number of times per week, month or year) by their partners. Women who acknowledged that their partners had consumed recreational drugs in the past 12 months were asked a follow-up question that assessed frequency (number of times per week, month or year) of recreational drug use. Alcohol intake, binge drinking and recreational drug use were selected as key measures of substance use among partners in the study sample.

Alcohol intake

Partner's alcohol intake or the number of drinks in standard ethanol units (SEU) consumed per week was calculated by multiplying the midpoint of *frequency* (Table III.3) by the midpoint of *quantity* (Table III.4). Of 395 women with a current partner, 357 (90.3%) had valid data on alcohol intake of their partners, which ranged between 0 and

175 drinks per week. Nearly 16.5% of the partners did not use alcohol in the past 12 months. Overall, partner's alcohol intake was not normally distributed, with mean and median alcohol intakes estimated to be 10 drinks/week and 3.5 drinks/week, respectively (Shapiro-Wilk's normality test; $P < 0.0001$). After thorough examination of its overall distribution in the study sample, partner's alcohol intake was defined as: '0-<3.5 drinks/week' and ' ≥ 3.5 drinks/week'. Further details are presented in the section entitled 'Categorization of alcohol intake'.

Binge drinking and recreational drug use

Among women who reported that their partners consumed alcohol over the past 12 months, frequency of *binge* drinking was defined as the number of times, in the past 12 months, during which the partner consumed 5 or more drinks of alcohol in one sitting over a time span of 2 hours. Women were also asked to report whether or not their partners used marijuana, hashish, cocaine, crack, amphetamines, methamphetamines, "ecstasy" or other recreational drugs. Those who replied positively were asked to report frequency of recreational drug use in number of times per day, week, month or year. Binge drinking and recreational drug use in the 12 months that preceded the survey were defined as dichotomous 'yes' or 'no' variables.

Categorization of alcohol intake

Clearly, alcohol intake for women (self-reported) and their partners (proxy-reported) is not normally distributed, with over 10% reporting non-use of alcohol and several outlier values in the specified recall period. Therefore, transformation or

categorization of the continuous form of alcohol intake is warranted, taking the published literature, sample size constraints and the full distribution of alcohol intake into consideration. Whereas transformation assumes a specific shape for the distribution of alcohol intake, categorization of alcohol intake according to pre-specified cut-off points does not. Moreover, alcohol intake in its categorical form is more easily interpretable and more relevant to policy-making than in its continuous form.

Guidelines for defining categories of alcohol intake have been proposed in the past by different organizations. For instance, the United States Department of Agriculture defines *moderate* alcohol consumption as ‘more than zero but not more than one drink per day’ for women and as ‘more than zero but not more than two drinks per day’ for men⁴⁰⁴. The *NIAAA* National Longitudinal Alcohol Epidemiologic Study (NLAES) defines alcohol consumption (in both men and women) in terms of average daily ounces of ethanol consumed⁴⁰⁵. Based on the NLAES, alcohol intake can be categorized as follows: 1) Fewer than 12 drinks in the past year (< 0.01 ounces of ethanol per day); 2) 1-13 drinks per month (0.01-0.21 ounces of ethanol per day); 3) 4-14 drinks per week (0.22-1.00 ounces of ethanol per day); 4) More than 14 drinks per week (> 1 ounce of ethanol per day)^{405, 406}. A recent meta-analysis⁴⁰⁷ identified 21 key research studies of alcohol intake and IPV^{56, 408-422}. Most of these studies had used multiple indicators that measure alcohol intake, abuse or dependence. A review of methods used to define cut-off points for alcohol intake discussed in this meta-analysis⁴⁰⁷ suggested a high degree of heterogeneity among studies. Specifically, there was no consensus on what level of alcohol intake could be considered a threshold level beyond which the risk of IPV is increased^{56, 408-422}. The lack of agreement among studies appears to be a direct result of

using different instruments to determine frequency and quantity of alcohol consumption. However, there were conceptual similarities among some studies. For instance, many studies examined ever use of alcoholic beverages over a certain recall period as a dichotomous ‘yes’ or ‘no’ variable. Other studies created categories of alcohol intake without multiplying frequency and quantity measures. For instance, in several studies, *heavier* drinking (an established correlate of unintentional and intentional injuries) was defined as having had at least 5 drinks per occasion at least once a month in the past 12 months^{54, 168}. Still others created a quantity-frequency index (QFI) which was either defined as a continuous variable or transformed based on the shape of the distribution^{423, 424}. By using the continuous form of QFI, whether transformed or not, it is assumed that the relationship of alcohol intake with IPV is linear throughout the distribution, which may not be the situation with a relatively wide range for alcohol consumption. Therefore, a categorical definition of alcohol intake or QFI is warranted, by defining alcohol intake as a ‘yes’ or ‘no’ variable or in terms of quantiles. Due to sample size constraints (See Section III.9), we determined that up to two categories of alcohol intake may be defined for our study sample. In an exploratory analysis, three alternative categorizations of alcohol intake were created. Specifically, alcohol intake was defined as: (1) ‘yes’; ‘no’; (2) ‘0-<1st quartile’; ‘1st quartile-<2nd quartile’; ‘2nd quartile-<3rd quartile’; ‘≥ 3rd quartile’; (3) ‘Less than median level for consumers and non-consumers’; ‘At or above median level for consumers and non-consumers’. The first definition was not considered as a good option because of sample size constraints. In fact, less than 25% of women (or their partners) were non-users of alcohol over the recall period. The second definition was used to examine the linear dose-response relationship between alcohol intake and

IPV. In the absence of a linear dose-response relationship, the median level of alcohol intake was selected as the cut-off point. If a linear dose-response relationship was observed, the cut-off point was selected as either the 1st, 2nd or 3rd quartile, depending on observed threshold effects and sample size constraints. After careful examination of the alcohol intake distributions in IWHES, cut-off points were selected using the median level of alcohol intake among women (and their partners) as key information.

Table III.3. Computing alcohol intake (SEU/week) – Frequency

<i>Response</i>	Frequency (Times / week)		
	<i>Lower limit</i>	<i>Upper limit</i>	<i>Midpoint</i>
'Everyday'	7	7	7
'5 to 6 times a week'	5	6	5.5
'3 to 4 times a week'	3	4	3.5
'Twice a week'	2	2	2
'Once a week'	1	1	1
'2 to 3 times a month'	0.50	0.75	0.625
'Once a month'	0.25	0.25	0.25
'3 to 11 times in the past year'	0.060	0.23	0.145
'1 or 2 times in the past year'	0.020	0.040	0.030

SEU=standard ethanol units.

Table III.4. Computing alcohol intake (SEU/week) – Quantity

<i>Response</i>	Quantity (Drinks/occasion)		
	<i>Lower limit</i>	<i>Upper limit</i>	<i>Midpoint</i>
'25 or more drinks'	25	25	25
'19 to 24 drinks'	19	24	21.5
'16 to 18 drinks'	16	18	17
'12 to 15 drinks'	12	15	13.5
'9 to 11 drinks'	9	11	10
'7 to 8 drinks'	7	8	7.5
'5 to 6 drinks'	5	6	5.5
'3 to 4 drinks'	3	4	3.5
'2 drinks'	2	2	2
'1 drink'	1	1	1

SEU=standard ethanol units.

Woman's depressive symptoms

The 10-item CESD-10 scale was used to measure women's depressive symptoms

^{120, 399}. A dichotomous ('High depressive symptoms' versus 'Low depressive symptoms')

variable was defined using a standard cut-off point. Specifically, women who scored at least 10 on the CESD-10 were screened as having high depressive symptoms^{120, 399}.

Woman's social support

The 5-item SSQ-SF scale was used to measure a woman's perceived availability of social support^{122, 373}. In the absence of a standard cut-off point, the total SSQ-SF score was analyzed as a continuous variable.

Covariates

Woman's and partner's age

Woman's and partner's age at the time of the survey was reported, in years, as a continuous variable, which was later categorized (depending on the analysis) as: ('18-19,' '20-24,' '25-29,' '30-34' and '35+' years) or ('18-24' and '25+') years. The first categorized definition of age was used in most analyses, while the second categorized definition of age was applied only to analyses involving comparison of survey data with administrative records data.

Woman's and partner's race and ethnicity

A cross-classified variable for woman's race and ethnic group was included in IWHES. Women who reported having a current partner were also asked to report their partner's race and ethnic group. The original variable responses were categorized as follows: 'White, non-Hispanic,' 'White, Hispanic,' 'Black, non-Hispanic,' 'Black,

Hispanic,' 'Asian' and 'Other'. These responses were later re-grouped (depending on the analysis) as: ('White,' 'Black,' 'Asian' and 'Other') or as ('White, non-Hispanic' and 'Other'). The first categorized definition of race/ethnicity was applied only to analyses involving comparison of survey data with administrative records data, while the second categorized definition was used in most analyses.

Woman's and partner's education

Woman's education was operationalized as the highest level of education attained at the time of the survey. Women who reported having a current partner were also asked to report their partner's education. These variables were originally categorized as follows: 'Less than high school,' 'high school,' 'Some college,' 'College degree,' 'Graduate degree' and 'Other.' Woman's and partner's education were re-classified in all analyses as follows: 'Less than high school or high school' or 'More than high school.'

Woman's and partner's health insurance status

Woman's current health insurance status was assessed using a single question that has the following responses: 'Not insured,' 'Medicaid,' 'Private insurance,' 'Military insurance' and 'Other.' For women who reported having a current intimate partner, the same question was asked concerning that partner. These variables were recoded into dichotomous variables as follows: 'Not insured/Medicaid' and 'Private/Military/Other'.

Marital status and living arrangements

Women were asked to describe their relationships with their intimate partners in terms of marital status and living arrangements as follows: ‘Married, living together,’ ‘Married, not living together,’ ‘Not married, living together,’ ‘Not married, not living together’ and ‘Other.’ This variable was analyzed as a dichotomous variable comparing women who were married to or living with their partners to other women.

Child status

In the survey, women were asked to report the number and ages of children less than 18 years of age who were currently living in their homes, either full-time or part-time. For the present analyses, child status was defined as a dichotomous ‘yes’ or ‘no’ variable.

Field procedures

All field procedures took place at the Des Moines Rosenfield clinic and the University of Iowa-College of Public Health. A select group of Rosenfield clinic educators (RCE) was responsible for the implementation of data collection activities. In addition to receiving a study-specific training manual, these RCE underwent Level I IPV training through the Iowa Department of Public Health. The primary tasks of RCE were to identify eligible patients, enlist their cooperation, answer any questions that these patients may ask in regard to the survey and provide compensation to all survey participants. One RCE was assigned the task of communicating information between

stakeholders at the Rosenfield clinic and investigators at the University of Iowa-College of Public Health.

Data collection activities were conducted at one of four private rooms in the Rosenfield clinic. Women seeking pregnancy termination were recruited on elective abortion days (Thursdays and Fridays and occasionally Saturdays) by the RCE after these women had made their final decision to undergo an abortion. The RCE ensured that the survey instrument was administered in the absence of the partner, family members, friends or other clinic patients. However, the RCE was available to address any questions or concerns raised by the survey participant. To further ensure confidentiality of patient information, no identifiers such as name, address, or date of birth were used within the survey instrument. Participating women were also instructed not to write any personal identifiers while completing the computerized or paper-and-pencil questionnaire.

Initially, the RCE assessed survey eligibility criteria (age, area of residence, language fluency) for all women who sought elective abortion services at the Rosenfield clinic during the designated study period. For women who were screened eligible, the RCE read Script #1 which introduced the IWHES to them and invited them to participate, on a voluntary basis. For eligible women who refused to participate, the RCE read Script #2, which informed women of potentially available IPV resources. For eligible women who agreed to participate, the RCE determined their language (*English* or *Spanish*) preference by reading Script #3. The RCE, then, directed women who agreed to participate to a computer workstation. These women selected one of two web-links based on their language preference (*English* or *Spanish*) and were instructed to read the *face sheet* before beginning to answer questions. The *face sheet* included information about

ethical issues of voluntary participation and confidentiality, in addition to information about survey content, compensation, contact information and instructions on how to complete and submit the self-administered questionnaire. Women were assured that if they refused to participate, this would not impact their ability to receive healthcare services at the clinic. Also, women were informed of their ability to skip any question that they did not want to answer. Similar procedures were used for women who opted for the paper-and-pencil method of administration (Appendix A&B).

The first few questions ('Are you 18 years or older?', 'Do you currently live in Iowa?') were included to further verify eligibility. Women who replied positively to both questions were allowed to proceed through the IWHES. In contrast, women who replied negatively to any of the two screening questions received Script #4, which informed them that, based on the data provided, they were found to be ineligible to take part in the IWHES (Appendix B).

The RCE ensured that participating women were allowed to complete the questionnaire uninterrupted. Women seeking pregnancy termination may be accompanied by their partner, a family member or a friend. These companions may ask questions about the additional time spent with the RCE in the private room, whereby data collection was taking place. Thus, Script #5 was used to answer these questions by stating that additional time was needed to complete the paperwork (Appendix B).

The total duration of questionnaire administration ranged between 10 and 15 minutes, depending on IPV status. Women who completed the questionnaire received a \$5-10 gift card to compensate them for their time. Initially, women were offered \$5 and after receiving IRB approval on April 22nd, 2007, the incentive was increased to \$10. In

addition, these women were offered a list of IPV resources (names, addresses and telephone numbers) in their specific area of residence, upon request.

Survey data (*English* and *Spanish*) were exported from WebSurveyor to Microsoft Excel, on a weekly basis. Excel files were then transferred to the Statistical Analysis System (SAS) for data analysis. Each IWHES observation was identified by a unique number randomly generated in SAS. For quality control, a de-identified dataset was requested from PPGI which includes information on age, race, ethnicity, education, marital status and abortion type of all patients who were admitted to the Rosenfield clinic for an elective abortion between November 30th, 2006 and June 29th, 2007. This dataset was used to evaluate the degree of representation of the selected study sample to the target population of Iowa residents (≥ 18 years) who sought an elective abortion at the Rosenfield clinic during the study period. In addition, the RCE submitted a weekly updated spreadsheet allowing for the evaluation of IWHES participation. The following numbers were obtained using spreadsheet data: 1) Total number of women seeking elective abortion services, 2) Total number of women who were found eligible to take the IWHES, 3) Total number of women approached with the IWHES and 4) Total number of women who agreed to participate in the IWHES. Furthermore, specific exclusion criteria and reasons for not offering IWHES to eligible patients were recorded. Survey *response rate* was computed by comparing the number of women who completed the questionnaire to the number of women eligible to complete the questionnaire. Survey *participation rate* was computed by comparing the number of women who completed the questionnaire to the number of women approached with the questionnaire.

Sample size calculations

In the planning phase of the IWHES, preliminary findings were used to compute the minimum detectable odds ratio for a fixed sample size. Based on preliminary data, a total of 1,755 Iowa residents aged 18 years and older had a termination procedure at the Rosenfield clinic between May 20th, 2004 and December 31st, 2004. In addition, it was expected that approximately 2% of patients would not be proficient in English or Spanish and 18% would refuse to participate. Of the remaining 1,168 subjects, it was expected that 90% (1,051 subjects) would be involved in a current intimate relationship, and therefore would complete the questionnaire, while 10% (117 subjects) would be required to fill out only three of eight IWHES sections because they were not involved in an ongoing intimate relationship. Accordingly, the investigators planned to collect data on elective abortion admissions over a period of 7-10 months until the goal of 1,000 questionnaires completed by women in current intimate relationships has been reached. With a sample of 1,000 women, it was conservatively expected, based on previous studies¹⁷⁷ that at least 10% would report physical, sexual and/or psychological abuse in their current relationship. At an alpha level of 5% and a power of 80%, assuming 10%, 20% and 30% exposure prevalence rates for hypothesized IPV correlates, the investigators would be able to detect true relative risks of 2.24, 1.93 and 1.83, respectively. The final analysis indicated that nearly 85% of subjects were eligible to participate in IWHES. Yet, only 50% of eligible subjects agreed to complete the questionnaire. In sum, a total of 519 women participated in the study between November 30, 2006 and June 29, 2007. The total sample used for *Aim I* and *Aim II* analyses consists of a sub-set of IWHES participants who reported having an intimate partner and had valid

data on IPV and other relevant characteristics. For 373 women (46 IPV and 327 non-IPV) who had a current partner and valid IPV data, assuming an alpha level of 5% and a power of 80%, the investigators would be able to detect true relative risks of 3.09, 2.58 and 2.43, for an exposure prevalence rate of 10%, 20% and 30%, respectively.

Subject selection

Through the IWHES, data was collected on 519 women seeking elective abortions at the clinic between November 30th, 2006 and June 29, 2007. A total of 511 women took the computerized *English version* of IWHES. In addition, 8 women took the *Spanish version* of IWHES. Of those, 6 were computerized and 2 were paper-and-pencil. All women who completed IWHES were 18 years or older, Iowa residents and fluent in English or Spanish. Of 519 women who completed the self-administered questionnaire, 395 (76.1%) reported having an intimate partner at the time of the survey. Of those, 373 (94.4%) had valid data on IPV.

As shown in Table III.5, item non-response for the 373 women who had valid IPV data ranged between 0% (woman's age) and 27.6% (partner's type of occupation). For most of these variables, data were missing in less than 5% of survey participants and the proportion of missing data differed only slightly between those who reported IPV versus those who reported no IPV in a current intimate relationship. Accordingly, complete-subject analyses were applied for the descriptive, bivariate and multivariate analyses.

Table III.5. Percentage missing data among women in the study sample (N=373) by intimate partner violence status

	% All women	% IPV	% Non-IPV
Woman's age	0	0	0
Woman's race and ethnicity	1.07	2.17	0.92
Woman's education	1.07	2.17	0.92
Woman's health insurance	7.77	8.70	7.65
Woman's employment status	2.14	4.35	1.83
Woman's type of occupation	12.06	19.57	11.01
Woman's alcohol intake	5.90	6.52	5.81
Woman's binge drinking	2.68	0.0	3.06
Woman's recreational drug use	0.80	0.0	0.80
Partner's age	0.27	0.0	0.31
Partner's race and ethnicity	0.80	0.0	0.92
Partner's education	1.88	4.35	1.53
Partner's health insurance	12.33	4.35	13.46
Marital status/living arrangement	4.35	1.22	1.61
Child status	0.0	0.31	0.27
Partner's employment status	3.75	2.17	3.98
Partner's type of occupation	27.61	23.91	28.13
Woman's social support	2.95	0.0	3.36
Woman's depressive symptoms	9.38	13.04	8.87

IPV=intimate partner violence

Plan of analysis

Descriptive, bivariate, stratified and regression analyses were performed using *SAS version 9.1*. Descriptive analyses consisted of frequencies for categorical variables and summary measures (mean, standard deviation, median) for numerical variables. The Shapiro-Wilk's test was also used to assess normality. On the other hand, Cronbach's alpha was used to measure internal consistency for the various scales. Cronbach's alpha measures whether several items that propose to measure the same general construct produce similar scores and is based on the correlations between different items on the same test⁴²⁵.

For most bivariate and stratified analyses, two-sided statistical significance was tested at an alpha level of 0.05. However, in the process of screening for potentially confounding variables, bivariate associations were examined at an alpha level of 0.25. Also, for logistic regression modeling, two-sided statistical significance was tested at an alpha level of 0.05, with the exception of interaction terms which were considered as significant at an alpha level of 0.1.

Bivariate associations were evaluated using Pearson's chi-square, Fisher's exact, independent samples t-tests and Wilcoxon's rank sum test, where appropriate⁴²⁶. Dose-response relationships were examined for alcohol intake defined in quartiles in relation to IPV. Specifically, the continuous form of alcohol intake was categorized as '0-<1st quartile', '1st quartile-<2nd quartile', '2nd quartile-<3rd quartile', and '≥3rd quartile'. These categories were coded as 1, 2, 3 and 4. Then, the categorized and coded alcohol intake variable was entered as a continuous exposure variable in a logistic model where the outcome was IPV. The observed statistical significance (P_{trend}) was used to determine the presence or absence of a linear dose-response relationship between alcohol intake and IPV.

In the context of stratified analyses, Mantel-Haenszel adjustment was used as a method for confounder identification and the Breslow-Day test⁴²⁷ was used to evaluate statistical heterogeneity. For *Aims I* and *II*, potential confounders were defined as covariates that were causally related to the outcome variable, causally or non-causally related to the exposure variable and not on the causal pathway between the exposure and the outcome variables^{428, 429}. In order to establish confounding, we evaluated whether a covariate was related to both the exposure and the outcome under study, at a conservative alpha level of 0.25. In addition, we evaluated whether the exposure-outcome association seen in the crude analysis was different from that seen after Mantel-Haenszel adjustment. A 10% change between the crude and the Mantel-Haenszel adjusted measures of association was selected as a rule-of-thumb for confounder identification⁴²⁸. Statistical heterogeneity generally indicates that the relationship between an exposure and an outcome is not homogeneous in strata formed by a third variable⁴²⁸. The Breslow-Day

method assesses heterogeneity of odds ratios by examining variation in cell counts, assuming a fixed and common association across strata⁴²⁷. Heterogeneities identified with the Breslow-Day test were further tested using interaction terms within logistic regression models.

Logistic regression modeling was performed for estimating crude and adjusted odds ratios (AOR) and their 95% CI. A logistic (or logit) model is a linear model expressed as the log odds of an outcome as a function of one or several exposures and covariates²¹⁴. In each logit model, indicator variables were created for categorical variables and the Hosmer-Lemeshow test was used to assess goodness-of-fit^{426, 430}. Model-building strategies included comparing full to reduced models in order to establish confounding or effect modification. A potential confounder was kept in the final logistic model if, after its removal from the full model, the estimated odds ratio for the exposure variable varied by $\pm 5\%$. A potential effect modifier was kept in the model along with its corresponding interaction terms if, in the full model, the interaction term was statistically significant at an alpha level of 0.1⁴²⁸. Final logit models were of the form $\text{Logit}(D|X=x) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$ ²¹⁴.

Characterization of survey participants

First, an IWGES flowchart was presented and basic characteristics (age, race, ethnicity, education, marital status, abortion type) of the eligible population (N=1,085) were compared with survey participants (N=519) and the selected study samples (N=395 and N=373). Second, survey participants were described in terms of recent and current availability of an intimate partner as well as experiences with physical, sexual and

psychological types of IPV, based on the AAS and the WEB. Third, characteristics and co-existence of physical, sexual and psychological sub-types of violence among women who reported having a current intimate partner were presented. Finally, socio-demographic characteristics of women and their current partners by physical, sexual and/or psychological IPV status were examined.

Aim I

In *Aim I*, the associations of IPV (outcome) with current employment characteristics (exposures) of women and their partners were evaluated, before and after adjusting for confounders and/or effect modifiers. Specifically, IPV prevalence was compared by categories of employment status and type of occupation of women and their partners. In addition, discrepancies in employment status between women and their partners were assessed in relation to IPV prevalence.

The following variables were tested as potential confounders and/or effect modifiers: woman's age, race and ethnicity, education and health insurance; partner's age, race and ethnicity, education and health insurance; marital status/living arrangements; child status. While examining differences in women's employment characteristics by IPV status, potential confounding and/or effect modification by marital status / living arrangement, child status as well as women's age, education, race or ethnic group and health insurance coverage was assessed. While examining differences in partner's employment characteristics by IPV perpetration, potential confounding and/or effect modification by marital status/living arrangement, child status as well as partner's age, race or ethnic group, education and health insurance coverage was assessed. While

examining employment status discrepancies by IPV status, all of the selected covariates were tested as potential confounders and/or effect modifiers. Final logit models were of the form $\text{Logit}(D|X=x) = \beta_0 + \beta_1E + \beta_2X_2 + \dots + \beta_nX_n$ ²¹⁴.

Aim II

To fulfill the analytic goals of *Aim II*, the following steps were taken: First, IPV was examined in relation to patterns of substance use among women and their partners. Second, the associations of substance use indicators with selected covariates were evaluated. Third, unadjusted and adjusted logistic models for the associations of IPV (outcome) and the various substance use indicators (exposures) were constructed. Fourth, associations of IPV (outcome) with depressive symptoms (exposure 1) and social support (exposure 2) were evaluated. Fifth, the association of socio-demographic characteristics with depressive symptoms and social support were assessed. Finally, models were created to examine the relationships between IPV, depressive symptoms and social support.

The associations of IPV with various health correlates (woman's alcohol intake, binge drinking, recreational drug use, depressive symptoms, social support; partner's alcohol intake, binge drinking, recreational drug use) were examined. Women's socio-demographic characteristics (age, race and ethnicity, education, employment status, health insurance) as well as marital status/living arrangements and child status were considered as potential confounders and/or effect modifiers for relationships involving women's substance use indicators, depressive symptoms or social support. Partner's socio-demographic characteristics (age, race and ethnicity, education, employment status,

health insurance) as well as marital status/living arrangements and child status were considered as potential confounders and/or effect modifiers for relationships involving partner's substance use indicators. Final logit models were of the form $\text{Logit}(D|X=x) = \beta_0 + \beta_1 E + \beta_2 X_2 + \dots + \beta_n X_n$ ²¹⁴.

CHAPTER IV

CHARACTERIZATION OF SURVEY PARTICIPANTS

Overview

The purpose of this section is to describe the Iowa Women's Health Experience Survey (IWHES) sample and how it relates to the target population of Iowa women (≥ 18 years) who sought elective abortion services at the Rosenfield clinic. Key characteristics of the IWHES sample, including socio-demographic variables, availability of an intimate partner and recent experiences with physical, sexual and psychological violence are described. These descriptive analyses are critical for a better understanding of findings that pertain to *Aims I* and *II*.

Flowchart of subject selection

A total of 1,196 women sought elective abortion services between November 30, 2006 and June 29, 2007. Of those, 1,037 (86.7%) were found eligible to complete the questionnaire and 159 (13.3%) were excluded for not meeting one or more of the eligibility criteria. Of 159 excluded patients: 93 (58.5%) were less than 18 years of age; 12 (7.5%) were non-Iowa residents; 50 (31.4%) were not fluent in English or Spanish; and 4 (2.5%) were excluded for other reasons. Of 1,037 eligible women, 921 (88.8%) were invited to complete the self-administered questionnaire and 519 completed that questionnaire (participation rate=50.0%; response rate=56.4%) (data not shown).

Of 116 eligible women not recruited into the study, 111 (95.6%) had known reasons for non-recruitment, which were mostly health-related or logistical in nature. In

many instances, patients were described by the clinic educator as being “deaf” (n=1; 0.9%), “sick” (n=2; 1.8%), “upset” (n=4; 3.6%), “angry” (n=3; 2.7%) or “emotional” (n=1; 0.9%). At other times, patients were “in a hurry” (n=2; 1.8%), “wanting to leave” (n=5; 4.5%), “went home” (n=2; 1.8%) or “declined to participate” (n=1; 0.9%). An important barrier was the presence of a spouse (n=19; 17.1%), a child (n=2; 1.8%), other family members (n=2; 1.8%), friends (n=3; 2.7%) or other people (n=13; 11.7%) with the patient at all times, precluding questionnaire administration. Computer problems (n=2; 1.8%), room availability (n=3; 2.7%), lack of time (n=3; 2.7%), lack of trained staff (n=36; 32.4%) and forgetfulness (n=7; 6.3%) were also listed as reasons for not administering the questionnaire (data not shown).

Of 519 participants, 395 (76.1%) reported having an intimate partner at the time of the survey, and, of those, 373 (94.4%) provided valid data on intimate partner violence (IPV), as determined by completion of the Abuse Assessment Screen (AAS) and the Woman’s Experience with Battering (WEB) scales (Figure IV.1).

Of 22 women with missing IPV data, 7 (31.8%) had missing data on physical assault status, 6 (27.2%) had missing data on sexual assault status and 15 (68.2%) had missing data on psychological abuse status. These 22 women were excluded from *Aims I* and *II* analyses (data not shown).

Basic characteristics

Of 1,196 women who sought elective abortion services at the Rosenfield clinic between November 30, 2006 and June 29, 2007, 1,085 were Iowa residents who were 18 years of age and older. Table IV.1 compares the basic characteristics of this eligible population (Group 1; N=1,085) to those of survey participants (Group 2; N=519), survey participants with a current partner (Group 3; N=395) and the selected sample of survey participants who had a current partner and known IPV status (Group 4; N=373). The proportion of women at least 35 years of age was considerably reduced in Groups 2, 3 and 4 versus Group 1, suggesting that older women were less likely to participate in the study. In addition, the percentages of white women, those seeking medical abortions and those with at least a high school education were significantly higher among survey participants (Groups 2, 3 and 4) versus the eligible population (Group 1). By contrast, Hispanic ethnicity and marital status did not affect survey participation (Table IV.1). Overall, the study sample was systematically different from the eligible population in terms of age, race/ethnicity, education and type of abortion. In particular, younger, white, more educated and medical abortion-seeking women were more likely to part-take in the study.

Intimate partner status among survey participants

Of 519 survey respondents, 33 (6.4%) reported no intimate partner over the past 12 months, 395 (76.1%) had at least one intimate partner at the time they participated in the survey, 74 (14.3%) had at least one intimate partner over the past 12 months but no partner when they enrolled in the study, and 17 (3.3%) did not report intimate partner

status (Table IV.2). As previously mentioned, all survey participants (N=519) – irrespective of partner status – were offered the AAS. However, only study participants who reported having a “current” partner (N=395) were offered the WEB scale and were asked questions concerning their partner’s socio-demographic characteristics.

Accordingly, IPV definition (physical, sexual and/or psychological abuse by a current partner) was focused on the 395 subjects who were asked to complete both the AAS and the WEB.

Women’s experience with physical violence by partner status

Table IV.3 displays physical violence characteristics by partner status for women who completed the self-administered questionnaire. Of 519 participants, 83 (15.9%) reported at least one instance of physical assault during the 12 months prior to completion of the questionnaire. Of those, 58 (69.9%) had a current partner, 13 (15.7%) had a former partner, 8 (9.6%) had no partner and 4 (4.8%) did not report partner status. In addition, 424 (81.7%) reported no physical assault and 12 (2.3%) had missing data on physical assault. Of 83 physically assaulted participants, 26 (31.3%) reported current partners and 45 (54.2%) reported former partners as the perpetrator. Fifty-five of 83 participants (66.2%) reported more than one instance of physical assault over the prior 12-month period. Most participants who experienced physical assault described their injuries as very mild to moderate. For women who reported having a current intimate partner and valid data on IPV screening tests, the prevalence of physical assaults by that partner was 6.2%.

Women's experience with sexual violence by partner status

Table IV.4 displays sexual violence characteristics by partner status for women who completed the self-administered questionnaire. Of 519 participants, 34 (6.6%) reported at least one sexual assault in the 12 months prior to the study. However, 11 (2.1%) confirmed that the current pregnancy was the outcome of sexual violence. Furthermore, 474 (91.3%) reported no instances of sexual assault and 11 (2.1%) had missing data on sexual assault. Of 34 sexually assaulted women, 20 (58.8%) had a current partner, 9 (26.4%) had a former partner, 4 (11.8%) had no partner and 1 (2.9%) had missing data on partner status. The perpetrator of sexual assault was equally likely to be a current partner, a former partner or a person known to the participant. For women who reported having a current intimate partner and valid data on IPV screening tests, the prevalence of sexual assaults by that partner was 2.4%.

Women's experience with psychological abuse by a current partner

Of 519 completed questionnaires, 395 (76.1%) women reported an intimate partner at the time of the survey and were, therefore, asked to complete the WEB scale (Table IV.5). Of those, 15 (3.8%) had missing data on at least one WEB item, 34 (8.6%) were psychologically abused by their current partners (WEB score ≥ 20) and 344 (87.1%) were not psychologically abused by their current partners (WEB score < 20). Total WEB scores ranged between 10 and 60, with a mean of 12.9 (SD=7.5). Of the 380 completed WEB responses, internal consistency was robust (Cronbach $\alpha = 0.95$), supporting reliability of the WEB for this patient population. For women who reported having a

current intimate partner and valid data on IPV screening tests, the prevalence of psychological abuse by that partner was 9.1% (data not shown).

Co-existence of intimate partner violence sub-types

Since only women with a current partner were offered the AAS and the WEB in IWHES, IPV was defined as physical, sexual and/or psychological abuse perpetrated by a current partner of the victim. Of 395 women who were offered the AAS and the WEB, 373 (94.4%) completed both screeners and 22 (5.5%) had missing data on at least one key question from the AAS or the WEB scales. Furthermore, 327 (82.8%) women reported no physical, sexual or psychological abuse by their current partners. Of 46 women reporting physical, sexual and/or psychological abuse by a current partner, 20 (43.5%) were psychologically abused only, 12 (26.1%) were physically or sexually abused only, and 14 (30.4%) reported episodic 'physical or sexual' abuse as well as chronic psychological abuse (Table IV.6).

Among 34 women who were psychologically abused, 8 (23.5%) were also physically assaulted, 1 (2.9%) was also sexually assaulted, and 5 (14.7%) were both physically and sexually assaulted. Among 40 women who were physically assaulted by a current partner, 8 (20.0%) were also psychologically abused, 1 (2.5%) was also sexually assaulted and 5 (12.5%) were abused psychologically and sexually by that partner. A total of 9 women reported sexual assault by their current partners. Of those, one woman was also psychologically abused and another was also physically assaulted by that partner. Finally, 5 (55.6%) of 9 sexually assaulted women were also psychologically and physically abused by their current partners (data not shown).

These findings suggest a high prevalence of physical and/or psychological violence as well as some overlap among the qualitatively distinct IPV sub-types in the study sample. Therefore, in the following analyses, IPV will be defined as a dichotomous variable, comparing women who experienced physical, sexual and/or psychological abuse by their current partners to those who did not. Complete-subject analyses were conducted in *Aims I* and *II*. Thus, cases with missing data on AAS and/or WEB items were excluded from further analyses.

Intimate partner violence by basic characteristics

Table IV.7 presents socio-demographic characteristics of the study sample and the prevalence of IPV by these characteristics. Nearly 53% of couples were married or cohabiting and 57% had no children living in their homes. The mean age of women was 25.4 years and 53.5% were between the ages of 18 and 24 years. In addition, 81% were non-hispanic white, 71.3% had more than high school education and 51.5% reported having private health insurance. Partner's mean age was 27.8 years, with 60.8% being at least 25 years of age. Nearly three-quarters (72.2%) of partners were non-hispanic white, 56.8% had more than high school education and 58.4% had private health insurance. The prevalence of IPV was significantly lower among white non-hispanic women as compared to minority racial/ethnic groups (10.4% vs. 20.0%, $P=0.03$). Partners with more than a high school education (7.7% vs. 17.7%, $P=0.004$) were less likely to perpetrate IPV. Also, women who were married or cohabiting with their partners reported a higher prevalence of IPV by that partner (31.8% vs. 15.5%, $P=0.027$).

Sub-analyses were also conducted in order to evaluate whether physical, sexual and psychological IPV sub-types had distinct demographic or socioeconomic risk factors. The small number of women reporting sexual assault by their partners may have limited our ability to detect an association between sexual IPV and the selected characteristics. Both physical and psychological IPV sub-types were more prevalent in couples who were married or cohabiting compared to other groups. Taking white non-hispanic women as a reference, minority women were at elevated odds for psychological (but not physical) IPV. Finally, physical (but not psychological) IPV was inversely associated with partner's education. Thus, socio-demographic risk factors for physical, sexual and/or psychological abuse were found to be 'minority racial or ethnic group' in women, 'high school or lower level of education' in partners and 'married or cohabiting' couples (Table IV.7).

Key findings

The IWHES was a cross-sectional study based on a consecutive sample of women seeking pregnancy termination at a major family planning clinic in Iowa. The overall participation rate for the IWHES was 50% (519/1,037). When compared to the target population of Iowa women (≥ 18 years) seeking elective abortions at the Rosenfield clinic, IWHES participants and those selected for the present analyses were younger, more frequently white and more likely to have at least a high school education. They were also more likely to have sought medical rather than surgical abortion services. In the present analyses, we defined IPV using AAS and WEB data. The overall prevalence of physical, sexual and/or psychological abuse perpetrated by a current partner was 12.3%

(46/373). Of 46 women who reported any type of IPV, 40 (86.9%) were physically assaulted, 9 (19.6%) were sexually assaulted and 34 (73.9%) were psychologically abused by their current partners. However, some overlap was observed between the different IPV sub-types. Therefore, IPV was defined as a dichotomous variable, comparing women who had experienced physical, sexual and/or psychological abuse by their current partners to those who had not. Minority racial/ethnic group among women was associated with a higher chance of IPV. Similarly, the likelihood of IPV was significantly higher among partners who had less than high school education. Finally, couples experiencing IPV were more frequently married or cohabiting.

Figure IV.1. Flowchart for Iowa Women's Health Experience Survey

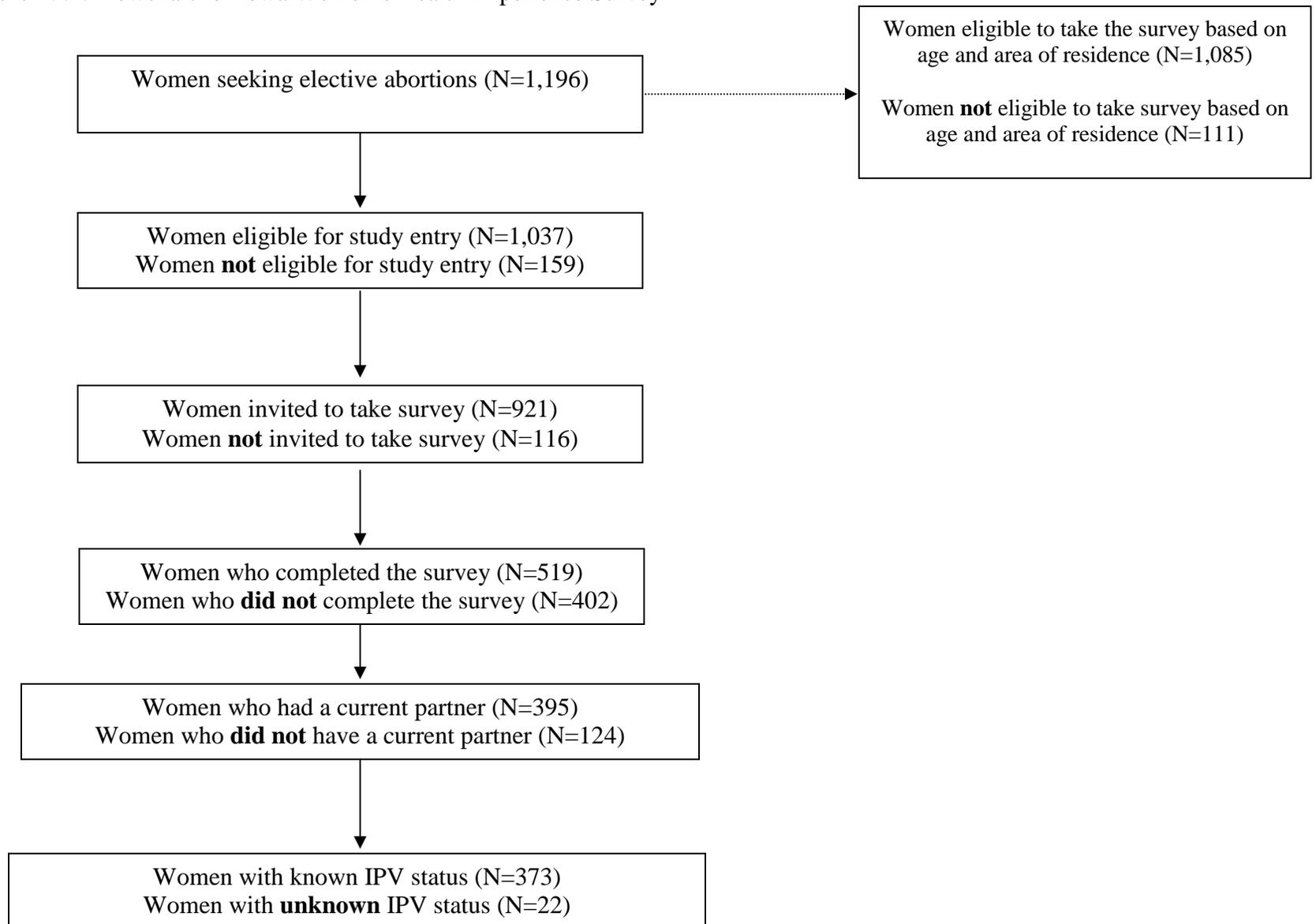


Table IV.1. Basic characteristics of eligible population, survey participants and study sample

	Eligible population ^a (N=1,085)		Survey participants (N=519)		Survey participants with current partner (N=395)		Survey participants with current partner and known IPV status (N=373)	
	% ^b	P ^c	% ^b	P ^c	% ^b	P ^c	% ^b	P ^c
<i>Age (years)</i>		n=1085		n=511		n=305		n=373
< 25	46.9	Reference	54.4	Reference	67.5	Reference	53.4	Reference
25-29	26.9	Reference	24.1	0.06	32.7	0.25	24.4	0.12
30-34	14.0	Reference	12.9	0.18	18.0	0.55	13.7	0.40
35+	12.2	Reference	8.8	0.013	10.8	0.02	8.6	0.02
<i>Race</i>		n=945		n=509		n=390		n=369
white	83.9	Reference	83.6	Reference	84.8	Reference	85.0	Reference
black	11.2	Reference	9.0	0.26	6.6	0.02	6.2	0.02
asian	3.5	Reference	4.5	0.34	5.1	0.19	5.1	0.20
other	1.4	Reference	2.9	0.04	3.3	0.02	3.5	0.02
<i>Ethnicity</i>		n=1001		n=486		n=370		n=350
Hispanic	5.8	Reference	8.3	0.08	5.7	0.10	5.7	0.12
Non-Hispanic	94.2	Reference	91.7	Reference	94.3	Reference	93.3	Reference
<i>Education</i>		n=1084		n=512		n=393		n=371
High school or less	63.2	Reference	31.0	< 0.0001	28.8	< 0.0001	29.7	< 0.0001
More than high school	36.8	Reference	68.9	Ref.	71.3	Reference	70.4	Reference
<i>Marital status</i>		n=1024		n=495		n=388		n=367
Married	15.5	Reference	12.7	Reference	16.2	Reference	15.8	Reference
Not married	84.5	Reference	87.3	0.15	83.8	0.74	84.2	0.90
<i>Abortion type</i>		n=1085		n=505		n=389		n=368
Medical	54.3	Reference	43.3	Reference	55.5	Reference	55.4	Reference
Surgical	45.7	Reference	56.6	< 0.0001	44.5	< 0.0001	44.6	< 0.0001

^a Eligibility criteria are limited to age (≥ 18 years) and residence (Iowa) is the reference group. Data on English and Spanish language fluency is not available for the total population of women seeking pregnancy termination at the family planning clinic.

^b Column percentages are presented.

^c P represents Pearson's Chi-square test statistical significance.

Table IV.2. Partner status over the past 12 months and current partner status

	<i>Partner status</i>	
	N	% ^a
<i>Had a partner over past 12 months</i>		
Yes	473	91.1
No	33	6.4
Missing	13	2.5
<i>Has a current partner</i>		
Yes	395	76.1
No	74	14.3
Not applicable ^b	33	6.4
Missing	17	3.3
<i>Partner status</i>		
None	33	6.4
Current partner	395	76.1
Partner over past 12 months	74	14.3
Missing	17	3.3

^a Column percentages are presented.

^b Did not have a partner over the past 12 months

Table IV.3. Physical violence characteristics by partner status

	Overall ^a (N=519)		Current partner (N=395)		No Current partner, Partner in past 12 months (N=74)		No partner (N=33)	
	N	%	N	%	N	%	N	%
<i>Any physical violence^b</i>	N=519		N=395		N=74		N=33	
Yes	83	15.9	58	14.7	13	17.6	8	24.2
No	424	81.7	330	83.5	61	82.4	25	75.8
Missing	12	2.3	7	1.8	0	0.0	0	0.0
<i>If yes, how many times?^b</i>	N=83		N=58		N=13		N=8	
Once	13	15.7	12	20.7	2	15.4	2	25.0
Twice	13	15.7	10	17.2	2	15.4	1	12.5
Three times	18	21.7	15	25.9	2	15.4	0	0.0
4-5 Times	10	12.0	5	8.6	3	23.1	2	25.0
6 or more times	14	16.9	11	18.9	1	7.7	1	12.5
Not sure	15	18.1	5	8.6	3	23.1	2	25.0
<i>If yes, severity of injuries^b</i>	N=83		N=58		N=13		N=8	
Very mild	31	37.3	23	39.7	4	30.8	2	25.0
Mild	25	30.1	19	32.8	3	23.1	2	25.0
Moderate	16	19.3	7	12.1	5	38.5	3	37.5
Severe	8	9.6	6	10.3	1	7.7	1	12.5
Very severe	1	1.2	1	1.7	0	0.0	0	0.0
Missing	2	2.4	2	3.4	0	0.0	0	0.0
<i>If yes, by whom?^c</i>	N=83		N=58		N=13		N=8	
Current partner	26	31.3	24	41.4	0	0.0	0	0.0
Former partner	45	54.2	27	46.6	11	84.6	6	75.0
Family member	8	9.6	5	8.6	1	7.7	1	12.5
Person known to victim	11	0.0	11	18.9	0	0.0	0	0.0
Stranger	3	3.6	1	1.7	2	15.4	0	0.0
Other	1	1.2	1	1.7	0	0.0	0	0.0

^a 17 (3.3%) of the 519 patients had missing data on partner status.

^b Column percentages are presented.

^c “Current partner”, “Former partner”, “Family member”, “Partner known to victim”, “Stranger” are individual questions with the following response options: “yes”, “no” and “missing”.

Table IV.4. Sexual violence characteristics by partner status

	<i>Overall^a</i> (N=519)		<i>Current partner</i> (N=395)		<i>No Current partner, Partner in past 12 months</i> (N=74)		<i>No partner</i> (N=33)	
	N	%	N	%	N	%	N	%
<i>Any sexual violence^b</i>	N=519		N=395		N=74		N=33	
Yes	34	6.6	20	5.1	9	12.2	4	12.1
No	474	91.3	369	93.4	65	87.8	29	87.9
Missing	11	2.1	6	1.5	0	0.0	0	0.0
<i>Current pregnancy is outcome of sexual violence^b</i>	N=519		N=395		N=74		N=33	
Yes	11	2.1	3	0.8	7	9.5	1	3.0
No	488	94.0	383	96.9	66	89.2	30	90.9
Not sure	11	2.1	4	1.0	1	1.4	2	6.1
Missing	9	1.7	5	1.3	0	0.0	0	0.0
<i>If yes, by whom?^c</i>	N=34		N=20		N=9		N=4	
Current partner	11	32.3	10	50.0	0	0.0	0	0.0
Former partner	11	32.3	6	30.0	3	33.3	2	50.0
Family member	0	0.0	0	0.0	0	0.0	0	0.0
Person known to victim	11	32.3	5	25.0	4	44.4	2	50.0
Stranger	3	8.8	1	5.0	2	22.2	0	0.0
Other	4	11.8	2	10.0	1	11.1	1	25.0
Missing	0	0.0	0	0.0	0	0.0	0	0.0

^a 17 (3.3%) of the 519 patients had missing data on partner status.

^b Column percentages are presented.

^c “Current partner”, “Former partner”, “Family member”, “Partner known to victim”, “Stranger” are individual questions with the following response options: “yes”, “no” and “missing”.

Table IV.5. Women’s Experience with Battering items among women who had a current partner

WEB item	Disagree strongly N (% ^a)	Disagree somewhat N (% ^a)	Disagree a little N (% ^a)	Agree a little N (% ^a)	Agree somewhat N (% ^a)	Agree strongly N (% ^a)	Missing N (% ^a)
My partner makes me feel unsafe even in my own home.	349 (88.4)	19 (4.8)	4 (1.0)	10 (2.5)	4 (1.0)	8 (2.0)	1 (0.3)
I feel ashamed of the things my partner does to me.	346 (87.6)	20 (5.1)	3 (0.8)	14 (3.5)	4 (1.0)	5 (1.3)	3 (0.8)
I try not to rock the boat because I am afraid of what my partner might do.	328 (83.0)	31 (7.9)	8 (2.0)	17 (4.3)	4 (1.0)	4 (1.0)	3 (0.8)
I feel like I am programmed to react a certain way to my partner.	314 (79.5)	36 (9.1)	9 (2.3)	16 (4.0)	10 (2.5)	9 (2.3)	1 (0.3)
I feel like my partner keeps me prisoner.	353 (89.4)	14 (3.5)	10 (2.5)	9 (2.3)	3 (0.8)	1 (0.3)	5 (1.3)
My partner makes me feel like I have no control over my life, no power, no protection.	349 (88.4)	16 (4.0)	10 (2.5)	10 (2.5)	3 (0.8)	3 (0.8)	4 (1.0)
I hide the truth from others because I am afraid not to.	334 (84.6)	23 (5.8)	10 (2.5)	17 (4.3)	5 (1.3)	5 (1.3)	1 (0.3)
I feel owned and controlled by my partner.	352 (89.1)	14 (3.5)	6 (1.5)	14 (3.5)	5 (1.3)	2 (0.5)	2 (0.5)
My partner can scare me without laying a hand on me.	343 (86.8)	18 (4.6)	10 (2.5)	13 (3.3)	4 (1.0)	5 (1.3)	2 (0.5)
My partner has a look that goes straight through me and terrifies me.	346 (87.6)	14 (3.5)	10 (2.5)	10 (2.5)	7 (1.8)	4 (1.0)	4 (1.0)

^a Row percentages are presented.

Table IV.6. Co-existence of intimate partner violence sub-types among women who had a current partner

	N	% ^a
<i>Co-existence of IPV sub-types – Definition 1</i>		
None	327	82.8
Physical only	9	2.3
Sexual only	2	0.5
Psychological only	20	5.1
Physical and Psychological only	8	2.0
Sexual and Psychological only	1	0.3
Physical and Sexual only	1	0.3
Physical, Sexual and Psychological	5	1.3
Missing	22	5.6
Total	395	100
<i>Co-existence of IPV sub-types – Definition 2</i>		
No IPV	327	82.8
Any IPV	46	11.7
Psychological abuse only	20	5.1
Physical or Sexual abuse only	12	3.0
Physical or sexual violence and psychological abuse	14	3.5
Missing	22	5.6

^a Column percentages are presented.

Table IV.7. Basic characteristics of study sample by intimate partner violence status

	Total (n=373)	Any IPV		Physical IPV	Sexual IPV	Psychological IPV
		Yes (n=46) N (%) ^a	No (n=327) N (%) ^b	% Yes	% Yes	% Yes
<i>Woman's characteristics</i>						
<i>Age group (years)</i>						
18-24	199 (53.5)	26 (13.1)	173 (86.9)	6.5	3.0	9.6
≥ 25	174 (46.7)	20 (11.5)	154 (88.5)	5.8	1.7	8.6
			P=0.64 ^c	P=0.75 ^e	P=0.51 ^e	P=0.76 ^e
Mean (SD)	25.4 (5.9)	24.8 (5.9)	25.4 (6.0)			
			P=0.69 ^d			
<i>Race and ethnicity</i>						
white, non-hispanic	299 (81.0)	31 (10.4)	268 (89.6)	5.0	2.0	7.7
other	70 (18.9)	14 (20.0)	56 (80.0)	10.0	4.3	15.7
			P=0.03 ^c	P=0.16 ^e	P=0.38 ^e	P=0.04 ^e
<i>Education</i>						
Less than high school or high school	106 (28.7)	16 (15.1)	90 (84.9)	8.5	3.8	11.3
More than high school	263 (71.3)	29 (11.0)	234 (88.9)	5.3	1.9	7.9
			P=0.28 ^c	P=0.25 ^e	P=0.29 ^e	P=0.31 ^e
<i>Health insurance</i>						
Private/Military/Other	177 (51.5)	22 (13.2)	145 (86.8)	6.2	1.7	7.3
Not insured/Medicaid	167 (48.6)	20 (11.3)	157 (88.7)	5.9	2.9	10.8
			P=0.59 ^c	P=0.93 ^e	P=0.49 ^e	P=0.27 ^e
<i>Partner's characteristics</i>						
<i>Age group (years)</i>						
18-24	146 (39.3)	19 (13.1)	127 (86.9)	6.9	2.0	10.3
≥ 25	226 (60.8)	27 (11.9)	199 (88.1)	5.8	2.7	8.4
			P=0.76 ^c	P=0.67 ^e	P=1.00 ^e	P=0.54 ^e
Mean (SD)	27.8 (7.0)	27.9 (7.0)	27.7 (7.1)			
			P=0.89 ^d			
<i>Race and ethnicity</i>						
white, non-hispanic	267 (72.2)	30 (11.4)	237 (88.8)	5.2	2.3	8.6
other	103 (27.8)	16 (15.6)	87 (84.5)	8.7	2.9	10.7
			P=0.26 ^c	P=0.21 ^e	P=0.71 ^e	P=0.54 ^e
<i>Education</i>						
Less than high school or high school	158 (43.2)	28 (17.7)	130 (82.3)	9.5	2.5	11.4
More than high school	208 (56.8)	16 (7.7)	192 (92.3)	3.4	2.4	6.7
			P=0.004 ^c	P=0.015 ^e	P=1.00 ^e	P=0.12
<i>Health insurance</i>						
Private/Military/Other	191 (41.6)	22 (11.5)	169 (88.4)	5.2	2.9	11.8
Not insured/Medicaid	136 (41.6)	22 (16.2)	114 (83.8)	9.6	2.6	8.4
			P=0.22 ^c	P=0.13 ^e	P=1.00 ^e	P=0.31 ^e
<i>Marital status and living arrangements</i>						
Married or cohabiting	193 (52.6)	30 (15.5)	163 (84.5)	8.3	2.6	11.4
Not married and not cohabiting	174 (47.4)	14 (8.0)	160 (91.9)	3.5	1.7	5.8
			P=0.027 ^c	P=0.05 ^e	P=0.73 ^e	P=0.06 ^e
<i>Child status</i>						
None	159 (42.7)	19 (11.9)	140 (88.1)	7.6	3.1	8.8
Any	213 (57.3)	27 (12.7)	186 (87.3)	5.2	1.9	9.4
			P=0.83 ^c	P=0.34 ^e	P=0.50 ^e	P=0.85 ^e

^a Column percentages are presented.

^b Row percentages are presented.

^c P represents Pearson's Chi-square test statistical significance.

^d P represents independent sample's t-test statistical significance.

^e P represents Fisher's Exact test statistical significance.

CHAPTER V
RELATIONSHIPS OF EMPLOYMENT CHARACTERISTICS WITH PHYSICAL,
SEXUAL OR PSYCHOLOGICAL INTIMATE PARTNER VIOLENCE AMONG
WOMEN SEEKING PREGNANCY TERMINATION IN IOWA

Overview

In *Aim I*, relationships between intimate partner violence (IPV) and employment characteristics of elective abortion patients and their current intimate partners were examined. The following exploratory research questions were evaluated:

- Does the prevalence of IPV differ according to employment status of women seeking abortion services?
- Does the prevalence of IPV differ according to employment status of partners of women seeking abortion services?
- Does the prevalence of IPV differ according to broadly defined occupational groups of women seeking abortion services?
- Does the prevalence of IPV differ according to broadly defined occupational groups of partners of women seeking abortion services?
- Is IPV prevalence affected by discrepancies in employment status between women seeking elective abortion services and their partners?

Woman's and partner's employment characteristics

Table IV.8 describes women's employment characteristics in the selected study sample. Irrespective of IPV status, the vast majority (77.8%) of women were employed at the time of the survey, with 54.6% employed full-time and 23.2% employed part-time. Self-reported occupations were coded and classified into five major groups. Accordingly, 21.4% were classified in *occupational group I* ('Chief executives, senior officials and legislators;' 'Professionals'), 50.1% were classified in *occupational group II* ('Technicians and associate professionals,' 'Clerks,' 'Service and sales workers'), 3.1% were classified in *occupational group III* ('Skilled agricultural, fishery and forestry workers,' 'Craft and related trades workers,' 'Plant and machine operators and assemblers,' 'Elementary occupations'), 15.3% were classified into *occupational group IV* ('Student', 'Homemaker') and 10.1% were classified in *occupational group V* ('Unemployed – Never worked/worked previously').

Table IV.9 describes partners' employment characteristics in the selected study sample. Irrespective of IPV status, the vast majority (84.7%) of partners were employed, with 76.6% employed full-time and 8.1% employed part-time. Self-reported occupations were coded and classified into five major groups. As such, 17.0% of the partners were classified in *occupational group I* ('Chief executives, senior officials and legislators;' 'Professionals'), 22.2% were classified in *occupational group II* ('Technicians and associate professionals,' 'Clerks,' 'Service and sales workers'), 38.5% were classified in *occupational group III* ('Skilled agricultural, fishery and forestry workers,' 'Craft and related trades workers,' 'Plant and machine operators and assemblers,' 'Elementary

occupations'), 7.4% were classified in *occupational group IV* ('Student') and 13.3% were classified as *occupational group V* ('Unemployed – Never worked/Worked previously').

Discrepancies in employment status between women seeking elective abortion services and their partners were also evaluated. Overall, discrepancies were reported in 96 (27.2%) of 352 couples. Specifically, 37 (10.5%) consisted of couples in which the woman was employed and the partner was not and 59 (16.8%) consisted of couples in which the partner was employed and the woman was not. For 238 (67.6%) couples, both the woman and her partner were employed, while in 18 (5.1%) couples, neither the woman nor her partner was employed (data not shown).

Employment characteristics by socio-demographic characteristics

Tables IV.10, IV.11 and IV.12 present bivariate associations of employment characteristics of couples with relevant socio-demographic characteristics. Unemployed women were less likely to be white non-hispanic and more likely to have no insurance or Medicaid insurance or to be married/cohabiting with their partners. The distribution of women by age, race/ethnicity, education, health insurance and child status differed according to their occupational group (Table IV.10). Furthermore, unemployed partners were less frequently 25 years and older, white non-hispanic, privately insured or without children. The distribution of partners by age, race/ethnicity, education, health insurance, marital status/living arrangements and child status differed according to their occupational group (Table IV.11). With the exception of woman's and partner's levels of education, most of the selected socio-demographic characteristics were significantly related to discrepancies in employment status among couples (Table IV.12). Socio-

demographic characteristics significantly associated with IPV and employment characteristics, at an alpha level of 0.25, were considered as potential confounders in multivariate analyses. Mantel-Haenszel adjustment was used to confirm these variables as confounders and identify other socio-demographic characteristics that may be confounding the relationship between IPV and employment characteristics. Tables IV.13-IV.15 present analyses pertaining to hypothesized relationships between IPV and employment characteristics of women and their partners.

Woman's employment status and intimate partner violence

The prevalence rate of IPV was non-significantly lower among women who reported themselves as *unemployed* (11.1%) compared to those who reported themselves as *employed* (12.3%) at the time of the survey (unadjusted OR=0.89; 95% CI: 0.41-1.94) (Table IV.13). Woman's race/ethnicity, health insurance and marital status/living arrangements were at least marginally associated ($P<0.25$) with woman's employment status (Table IV.10). These socio-demographic characteristics (woman's race/ethnicity, health insurance and marital status/living arrangements) were also at least marginally associated ($P<0.25$) with IPV and thereby considered as potential confounders. Stratified analyses and logistic modeling confirmed these variables as important confounders to be included in the final model. After controlling for these covariates, the negative relationship between women's unemployment and IPV became more pronounced but remained statistically non-significant (adjusted OR=0.57, 95% CI: 0.22-1.46) (Table IV.13).

Partner's employment status and intimate partner violence

The prevalence rate of IPV was non-significantly higher among partners who were reported as being *unemployed* (18.2%) compared to those who were reported as being *employed* (11.5%) at the time of the survey (unadjusted OR=1.71; 95% CI: 0.79-3.69) (Table IV.14). The relationship between partner's employment status and IPV was non-homogeneous (Breslow-Day Chi-square=2.74, P=0.098) according to partner's marital status/living arrangements. Specifically, the association between partner's unemployment and IPV was considerably higher among couples who were neither married nor cohabiting (stratum-specific OR=4.00, 95% CI: 1.27-12.5) as compared to couples who were either married or cohabiting (stratum-specific OR=1.04, 95% CI: 0.33-3.30) (data not shown). This heterogeneity was of borderline significance and appears to be a chance finding as it was not corroborated by further logistic modeling. Partner's race/ethnicity, health insurance and marital status/living arrangements were at least marginally associated (P<0.25) with their employment status (Table IV.10). These socio-demographic characteristics were also marginally associated (P<0.25) with IPV, and were thereby considered as potential confounders. Stratified analyses and logistic modeling confirmed partner's race/ethnicity, health insurance and marital status/living arrangements as important confounders to be included in the final model. After adjusting for these confounders, the positive relationship between partner's unemployment and IPV became more pronounced but remained statistically non-significant (adjusted OR=2.07, 95% CI: 0.86-4.98) (Table IV.13).

Woman's occupation and intimate partner violence

As shown in Table IV.13, the prevalence rates of IPV were comparable across occupational groups of women (group I: 10.0%; group II: 12.2%; group III: 10.0%; group IV: 8.0%; group V: 15.1%). Taking *occupational group I* as a reference, crude relationships suggested no significant differences in the likelihood of physical, sexual and/or psychological abuse by woman's occupation. In particular, the odds of being in occupational group II versus group I did not differ significantly by IPV status (unadjusted OR=1.25, 95% CI: 0.50-3.11). In addition, the odds of being in occupational group III versus group I did not differ significantly by IPV status (unadjusted OR=1.00, 95% CI: 0.11-9.10). Similarly, non-significant results were noted for occupational group IV versus group I (unadjusted OR=0.78; 95% CI: 0.22-2.83) and occupational group V versus group I (unadjusted OR=1.61; 95% CI: 0.47-5.50) (Table IV.13). The magnitude of the association between occupational group III versus group I and IPV differed according to marital status/living arrangements (Breslow-Day Chi-square=3.56, P=0.059), although this heterogeneity was of borderline significance. For married or cohabiting couples, IPV risk was lower if women were in occupational group III versus occupational group I (RR=0.85, 95% CI: 0.75-0.97). By contrast, for couples who were neither married nor cohabiting, IPV risk was non-significantly increased in occupational group III versus group I (RR=1.81, 95% CI: 0.45-7.28). This heterogeneity appears to be a chance finding and was not corroborated by further logistic modeling (data not shown). Woman's education, health insurance and marital status/living arrangements were at least marginally associated (P<0.25) with woman's occupation (Table IV.10). Whereas woman's education and marital/living arrangements were also at least marginally

associated ($P < 0.25$) with IPV, health insurance was identified through Mantel-Haenszel adjustment. Accordingly, these variables were considered as potential confounders. Stratified analyses and further logistic modeling confirmed woman's education, health insurance and marital status/living arrangements as important confounders to be included in the final model (data not shown). After adjusting for these confounders, the likelihood of IPV remained comparable across occupational groups of women (Table IV.13).

Partner's occupation and intimate partner violence

As shown in Table IV.14, the prevalence rates of IPV were comparable across occupational groups of partners (group I: 10.9%; group II: 5.0%; group III: 16.4%; group IV: 5.0%; group V: 25.0%). Taking *occupational group I* as a reference, crude relationships suggested no significant differences in the likelihood of physical, sexual and/or psychological abuse by partner's occupation. In particular, the odds of being in occupational group II versus group I did not differ significantly by IPV status (unadjusted OR=0.43, 95% CI: 0.098-1.91). In addition, the odds of being in occupational group III versus group I did not differ significantly by IPV status (unadjusted OR=1.60, 95% CI: 0.55-4.64). Similarly, non-significant results were noted for occupational group IV versus group I (unadjusted OR=0.43; 95% CI: 0.048-3.95) and occupational group V versus group I (unadjusted OR=2.73; 95% CI: 0.83-9.04) (Table IV.14). Partner's education was at least marginally associated ($P < 0.25$) with his occupation (Table IV.11). This socio-demographic characteristic was also at least marginally associated ($P < 0.25$) with IPV, and was thereby considered as a potential confounder. Stratified analyses and logistic modeling confirmed partner's education as an important confounder to be included in the

final model (data not shown). After adjusting for partner's education, the likelihood of IPV remained comparable across occupational groups of partners (Table IV.14).

Discrepancies in employment status and intimate partner violence

Crude analyses suggested that the prevalence rates of IPV were slightly different according to whether or not there were discrepancies in employment status among couples. Taking as a reference couples where both the woman and her partner were employed, the odds of IPV was higher for couples where only the woman was employed. However, the relationship was not statistically significant (unadjusted OR=1.82, 95% CI: 0.73-4.55). Taking the same reference group, the odds of IPV was not significantly different when the partner was employed and the woman was not (unadjusted OR=0.89, 95% CI: 0.35-2.25) or when both partners were unemployed (unadjusted OR=1.56, 95% CI: 0.43-5.75) (Table IV.15). Potential confounders of the association between employment discrepancies and IPV were identified as woman's race/ethnicity, woman's health insurance, partner's education and partner's health insurance (Table IV.12). These variables were confirmed through stratified analyses and logistic modeling as important confounders to be included in the final model. After adjustment for these confounders, the relationship between employment discrepancies and IPV remained statistically non-significant (Table IV.15).

Key findings

In conclusion, the vast majority of women and their partners in this “high-risk” population were employed, either full-time or part-time. Whereas women were predominantly employed in semi-professional, technical or clerical occupations, their partners were predominantly employed in manual occupations. The null hypotheses that employment characteristics of women and their partners are not associated with IPV could not be rejected in the present analyses. Unemployment in either women or their partners was not significantly related to IPV and none of the pre-defined occupational groups could be considered as “high-risk” for IPV. Furthermore, discrepancies in employment status between women and their partners had no significant influence on the chance of IPV. Nevertheless, a trend was observed whereby unemployed partners were more likely to perpetrate IPV, while unemployed women were less likely to be victimized by their partners. A trend was also observed whereby women were more likely to experience IPV if they were employed and their partners were not. Despite sample size limitations, the relationship between employment characteristics and IPV appears to be weak. By contrast, socio-cultural indicators such as woman’s race/ethnicity, partner’s education and marital status/living arrangements appear to play a more important role in IPV. The burden of IPV among women seeking pregnancy termination at a family planning clinic appears to be high, irrespective of their employment characteristics and those of their partners. Nevertheless, *Aim I* analyses have identified three potentially “high-risk” sub-groups within the overall population of patients seeking pregnancy termination, namely: (1) employed women; (2) unemployed partners and (3) couples where the woman is employed and the partner is unemployed.

Table IV.8. Woman's employment characteristics in relation to intimate partner violence

	<i>Any IPV</i> (<i>n=46</i>) N (% ^a)	<i>No IPV</i> (<i>n=327</i>) N (% ^a)	<i>Total</i> (<i>n=373</i>) N (% ^a)
<i>Employment status:</i>			
Yes	35 (79.5)	249 (77.6)	284 (77.8)
No	9 (20.5)	72 (22.4)	81 (22.2)
<i>Full-time/Part-time employment:</i>			
Full-time	26 (59.1)	173 (53.9)	199 (54.6)
Part-time	9 (20.5)	76 (23.7)	85 (23.2)
Unemployed	9 (20.5)	72 (22.4)	81 (22.2)
<i>Type of occupation:</i>			
I	7 (18.9)	63 (21.7)	70 (21.4)
Chief executives, senior officials and legislators	3 (8.1)	26 (8.9)	29 (8.9)
Professionals	4 (10.8)	37 (12.7)	41 (12.5)
II	20 (54.0)	144 (49.6)	164 (50.1)
Technicians and associate professionals	6 (16.2)	40 (13.8)	46 (14.1)
Clerks	4 (10.8)	33 (11.4)	37 (11.3)
Service and sales workers	10 (27.0)	71 (24.5)	81 (24.8)
III	1 (2.7)	9 (3.1)	10 (3.1)
Skilled agricultural, fishery and forestry workers	0 (0.0)	1(0.3)	1 (0.3)
Craft and related trades workers	0 (0.0)	0 (0.0)	0 (0.0)
Plant and machine operators and assemblers	0 (0.0)	4 (1.4)	4 (1.2)
Elementary occupations	1 (20.0)	4 (1.4)	5 (1.5)
IV	4 (10.8)	46 (15.9)	50 (15.3)
Full-time student	3 (8.1)	33 (11.3)	36 (11.0)
Homemaker	1 (2.7)	13 (4.5)	14 (4.3)
V	5 (13.5)	28 (9.7)	33 (10.1)
Unemployed – never worked/worked previously	5 (13.5)	28 (9.7)	33 (10.1)

^a Column percentages are presented.

Table IV.9. Partner's employment characteristics in relation to intimate partner violence

	<i>Any IPV</i> (<i>n=46</i>) N (% ^a)	<i>No IPV</i> (<i>n=327</i>) N (% ^a)	<i>Total</i> (<i>n=373</i>) N (% ^a)
<i>Employment status:</i>	<i>n=45</i>	<i>N=314</i>	<i>n=359</i>
Yes	35 (77.8)	269 (85.7)	304 (84.7)
No	10 (22.2)	45 (14.3)	55 (15.3)
<i>Full-time/Part-time employment:</i>	<i>n=45</i>	<i>N=314</i>	<i>n=359</i>
Full-time	31 (68.9)	244 (77.7)	275 (76.6)
Part-time	4 (8.9)	25 (7.9)	29 (8.1)
Unemployed	10 (22.2)	45 (14.3)	55 (15.3)
<i>Type of occupation:</i>	<i>n=35</i>	<i>n=235</i>	<i>n=270</i>
I	5 (14.3)	41 (17.4)	46 (17.0)
Chief executives, senior officials and legislators	1 (2.9)	22 (9.4)	23 (8.5)
Professionals	4 (11.4)	19 (8.1)	23 (8.5)
II	3 (8.6)	57 (24.3)	60 (22.2)
Technicians and associate professionals	0 (0.0)	18 (7.7)	18 (6.7)
Clerks	1 (2.9)	7 (2.9)	8 (2.9)
Service and sales workers	2 (5.7)	32 (13.6)	34 (12.6)
III	17 (48.6)	87 (37.0)	104 (38.5)
Skilled agricultural, fishery and forestry workers	0 (0.0)	9 (3.8)	9 (3.3)
Craft and related trades workers	5 (14.3)	29 (12.3)	34 (12.6)
Plant and machine operators and assemblers	1 (2.9)	19 (8.1)	20 (7.4)
Elementary occupations	11 (31.4)	30 (12.8)	41 (15.2)
IV	1 (2.9)	23 (9.8)	24 (7.4)
Full-time student	1 (2.9)	19 (8.1)	20 (7.4)
Homemaker	0 (0.0)	0 (0.0)	0 (0.0)
V	9 (25.7)	27 (11.5)	36 (13.3)
Unemployed – never worked/worked previously	9 (25.7)	27 (11.5)	36 (13.3)

^a Column percentages are presented.

Table IV.10. Woman’s employment characteristics in relation to her socio-demographic characteristics

	<i>Employment status</i>		<i>Occupational group^a</i>				
	<i>Unemployed</i> (n=75) N (% ^b)	<i>Employed</i> (n=266) N (% ^b)	<i>I</i> (n=70) N (% ^b)	<i>II</i> (n=164) N (% ^b)	<i>III</i> (n=10) N (% ^b)	<i>IV</i> (n=50) N (% ^b)	<i>V</i> (n=33) N (% ^b)
<i>Age group (years)</i>	n=81	n=284	n=70	n=164	n=10	n=50	N=33
18-24	47 (58.0)	145 (51.0)	20 (28.6)	95 (57.9)	6 (60.0)	31 (62.0)	18 (54.6)
≥ 25	34 (41.9)	139 (48.9)	50 (71.4)	69 (42.1)	4 (40.0)	19 (38.0)	15 (45.5)
	P=0.27 ^c		Reference	P < 0.0001 ^c	P=0.07 ^d	P=0.0003 ^c	P=0.011 ^c
<i>Race and ethnicity</i>	n=81	n=280	n=70	n=162	n=10	n=50	n=33
white, non-hispanic	60 (74.1)	234 (83.6)	63 (90.0)	132 (81.5)	9 (90.0)	39 (78.0)	22 (66.7)
other	21 (25.9)	46 (16.4)	7 (10.0)	30 (18.5)	1 (10.0)	11 (22.0)	11 (33.3)
	P=0.05 ^c		Reference	P=0.10 ^c	P=1.00 ^d	P=0.069 ^c	P=0.0036 ^c
<i>Education</i>	n=81	n=280	n=70	n=162	n=10	n=50	n=33
Less than high school or high school	26 (32.1)	78 (27.9)	13 (18.6)	52 (32.1)	0 (0.0)	10 (20.0)	17 (51.5)
More than high school	55 (67.9)	202 (72.1)	57 (81.4)	110 (67.9)	10 (100)	40 (80.0)	16 (48.5)
	P=0.46 ^c		Reference	P=0.04 ^c	P=0.20 ^d	P=0.84 ^c	P=0.0006 ^c
<i>Health insurance</i>	n=75	n=261	n=68	n=150	n=10	n=46	n=31
Private/Military/Other	24 (32.0)	140 (53.6)	50 (73.5)	67 (44.7)	6 (60.0)	21 (45.7)	27 (87.1)
Not insured/Medicaid	51 (68.0)	121 (46.4)	18 (26.5)	83 (55.3)	4 (40.0)	25 (54.4)	4 (12.9)
	P=0.001 ^c		Reference	P < 0.0001 ^c	P=0.45 ^d	P=0.0026 ^c	P < 0.0001 ^c
<i>Marital status and living arrangements</i>	n=78	n=281	n=69	n=163	n=10	n=48	n=32
Married or cohabiting	49 (62.8)	138 (49.1)	39 (56.5)	79 (48.5)	6 (60.0)	32 (66.7)	17 (53.1)
Not married and not cohabiting	29 (37.2)	143 (50.9)	30 (43.5)	84 (51.5)	4 (40.0)	16 (33.3)	15 (46.9)
	P=0.03 ^c		Reference	P=0.26 ^c	P=1.00 ^c	P=0.27 ^c	P=0.75 ^c
<i>Child status</i>	n=81	n=283	n=70	n=164	n=10	n=50	n=33
None	38 (46.9)	118 (41.7)	23 (32.9)	71 (43.3)	3 (30.0)	27 (54.0)	13 (39.4)
Any	43 (53.1)	165 (58.3)	47 (67.1)	93 (56.7)	7 (70.0)	23 (46.0)	20 (60.6)
	P=0.23 ^c		Reference	P=0.14 ^c	P=1.00 ^c	P=0.021 ^c	P=0.52 ^c

^a I = ‘Chief executives, senior officials and legislators’, ‘Professionals’; II= ‘Technicians and associate professionals’, ‘Clerks’, ‘Service and sales workers’; III= ‘Skilled agricultural, fishery and forestry workers’, ‘Craft and related trades workers’, ‘Plant and machine operators and assemblers’, ‘Elementary occupations’; IV = ‘Full-time student’, ‘Homemaker’, V=‘Unemployed – Never worked/Worked previously’.

^b Column percentages are presented.

^c P represents Pearson’s Chi-square test statistical significance.

^d P represents Fisher’s exact test statistical significance.

Table IV.11. Partner's employment characteristics in relation to his socio-demographic characteristics

	Employment status		Occupational group ^a				
	Unemployed (n=55) N (% ^b)	Employed (n=304) N (% ^b)	I (n=46) N (% ^b)	II (n=60) N (% ^b)	III (n=104) N (% ^b)	IV (n=20) N (% ^b)	V (n=36) N (% ^b)
<i>Partner's characteristics</i>							
<i>Age group (years)</i>	n=55	n=303	n=46	n=60	n=103	n=20	n=36
18-24	31 (56.4)	109 (35.9)	13 (28.3)	25 (41.7)	38 (36.9)	15 (75.0)	16 (44.4)
≥ 25	24 (43.6)	194 (64.0)	33 (71.7)	35 (58.3)	65 (63.1)	5 (25.0)	20 (55.6)
	P=0.004 ^c		Reference	P=0.16 ^c	P=0.30 ^c	P=0.0004 ^c	P=0.13 ^c
<i>Race and ethnicity</i>	n=55	n=301	n=46	n=59	n=104	n=20	n=36
white, non-hispanic	28 (50.9)	233 (77.4)	36 (78.3)	44 (74.6)	87 (83.7)	11 (55.0)	18 (50.0)
other	27 (49.1)	68 (22.6)	10 (21.7)	15 (25.4)	17 (16.4)	9 (45.0)	18 (50.0)
	P<0.0001 ^c		Reference	P=0.66 ^c	P=0.43 ^c	P=0.055 ^c	P=0.0074 ^c
<i>Education</i>	n=53	n=300	n=46	n=58	n=104	n=20	n=34
Less than high school or high school	22 (41.5)	128 (42.7)	8 (17.4)	19 (32.8)	60 (57.7)	4 (20.0)	19 (55.9)
More than high school	31 (58.5)	172 (57.3)	38 (82.6)	39 (67.2)	44 (42.3)	16 (80.0)	15 (44.0)
	P=0.88 ^c		Reference	P=0.08 ^c	P < 0.0001 ^c	P=0.80 ^c	P=0.0003 ^c
<i>Health insurance</i>	n=49	n=273	n=44	n=52	n=94	n=18	n=32
Private/Military/Other	13 (26.5)	176 (64.5)	32 (72.7)	32 (61.5)	59 (62.8)	10 (55.6)	4 (12.5)
Not insured/Medicaid	36 (73.5)	97 (35.5)	12 (27.3)	20 (38.5)	35 (37.2)	8 (44.4)	28 (87.5)
	P < 0.0001 ^c		Reference	P=0.25 ^c	P=0.25 ^c	P=0.19 ^c	P < 0.0001 ^c
<i>Marital status and living arrangements</i>	n=55	n=298	n=45	n=60	n=103	n=20	n=36
Married or cohabiting	25 (45.5)	162 (54.4)	27 (60.0)	27 (45.0)	59 (57.3)	7 (35.0)	18 (50.0)
Not married and not cohabiting	30 (54.6)	136 (45.6)	18 (40.0)	33 (55.0)	44 (42.7)	13 (65.0)	18 (50.0)
	P=0.22 ^c		Reference	P=0.13 ^c	P=0.76 ^c	P=0.063 ^c	P=0.37 ^c
<i>Child status</i>	n=55	n=303	n=46	n=60	n=104	n=20	n=36
None	34 (61.8)	118 (38.9)	21 (45.7)	26 (43.3)	38 (36.5)	17 (85.0)	17 (47.2)
Any	21 (38.2)	185 (61.1)	25 (54.4)	34 (56.7)	66 (63.5)	3 (15.0)	19 (52.8)
	P=0.002 ^c		Reference	P=0.81 ^c	P=0.29 ^c	P=0.003 ^c	P=0.88 ^c

^a I = 'Chief executives, senior officials and legislators', 'Professionals'; II= 'Technicians and associate professionals', 'Clerks', 'Service and sales workers'; III= 'Skilled agricultural, fishery and forestry workers', 'Craft and related trades workers', 'Plant and machine operators and assemblers', 'Elementary occupations'; IV = 'Full-time student', 'Homemaker', V='Unemployed – Never worked/Worked previously'.

^b Column percentages are presented.

^c P represents Pearson's Chi-square test statistical significance.

^d P represents Fisher's exact test statistical significance.

Table IV.12. Discrepancies in employment status by selected socio-demographic characteristics

	<i>Discrepancies in employment status</i>			
	<i>Both employed</i> (n=238) N (%) ^a	<i>Woman employed only</i> (n=37) N (%) ^a	<i>Partner employed only</i> (n=59) N (%) ^a	<i>Both unemployed</i> (n=18) N (%) ^a
<i>Woman's characteristics</i>				
<i>Age (years)</i>	n=238	n=37	n=59	n=18
18-24	117 (49.2)	23 (62.2)	32 (54.2)	14 (77.8)
25+	121 (50.8)	14 (37.8)	27 (45.8)	4 (22.2)
	Reference	P=0.14 ^b	P=0.49 ^b	P=0.019 ^b
<i>Race and ethnicity</i>				
	n=234	n=37	n=59	n=18
white, non-hispanic	201 (85.9)	28 (75.7)	45 (76.3)	11 (61.1)
other	33 (14.1)	9 (24.3)	14 (23.7)	7 (38.9)
	Reference	P=0.11 ^b	P=0.07 ^b	P=0.006 ^b
<i>Education</i>				
	n=236	n=37	n=59	n=18
Less than high school or high school	65 (27.5)	12 (32.4)	21 (35.6)	3 (16.7)
More than high school	171 (72.5)	25 (67.6)	38 (64.4)	15 (83.3)
	Reference	P=0.53 ^b	P=0.22 ^b	P=0.41 ^c
<i>Health insurance</i>				
	n=220	n=34	n=55	n=16
Private/Military/Other	128 (58.2)	10 (29.4)	36 (65.5)	5 (31.3)
Not insured/Medicaid	92 (41.8)	24 (70.6)	19 (34.6)	11 (68.8)
	Reference	P=0.002 ^b	P=0.002 ^b	P=0.04 ^b
<i>Partner's characteristics</i>				
<i>Age (years)</i>	n=237	n=37	n=59	n=18
18-24	82 (34.6)	22 (59.5)	24 (40.7)	9 (50.0)
25+	155 (65.4)	15 (40.5)	35 (59.3)	9 (50.0)
	Reference	P=0.004 ^b	P=0.38 ^b	P=0.19 ^b
<i>Race and ethnicity</i>				
	n=235	n=37	n=59	n=18
white, non-hispanic	187 (79.6)	17 (45.9)	42 (71.2)	11 (61.1)
other	48 (20.4)	20 (54.0)	17 (28.8)	7 (38.9)
	Reference	P < 0.0001 ^b	P=0.17 ^b	P=0.07 ^c
<i>Education</i>				
	n=236	n=36	n=58	n=17
Less than high school or high school	101 (42.8)	17 (47.2)	25 (43.1)	5 (29.4)
More than high school	135 (57.2)	19 (52.8)	33 (56.9)	12 (70.6)
	Reference	P=0.62 ^b	P=0.97 ^b	P=0.28 ^b
<i>Health insurance</i>				
	n=215	n=32	n=51	N=17
Private/Military/Other	138 (64.2)	5 (15.6)	34 (66.7)	8 (47.1)
Not insured/Medicaid	77 (35.8)	27 (84.4)	17 (33.3)	9 (52.9)
	Reference	P < 0.0001 ^b	P=0.74 ^b	P=0.16 ^b
<i>Marital status and living arrangements</i>				
	n=235	n=37	n=56	n=18
Married or cohabiting	120 (51.1)	16 (43.2)	37 (66.1)	9 (50.0)
Not married and not cohabiting	115 (48.9)	21 (56.8)	19 (33.9)	9 (50.0)
	Reference	P=0.38 ^b	P=0.042 ^b	P=0.93 ^b
<i>Child status</i>				
	n=237	n=37	n=59	n=18
None	91 (38.4)	21 (56.8)	25 (42.4)	13 (72.2)
Any	146 (61.6)	16 (43.2)	34 (57.6)	5 (27.8)
	Reference	P=0.03 ^b	P=0.57 ^b	P=0.005

^a Column percentages are presented.

^b P represents Pearson's Chi-square test statistical significance.

^c P represents Fisher's exact test statistical significance.

Table IV.13. Women’s employment characteristics in relation to intimate partner violence

		<i>Employment status</i>			
		<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)^a</i>
<i>Employment status:</i>				<i>Model I</i>	<i>Model II</i>
Unemployed		81	11.1	0.89 (0.41-1.94)	0.57 (0.22-1.46)
Employed		284	12.3	1.00	1.00
		<i>Type of occupation</i>			
		<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)^b</i>
<i>Occupational group:^c</i>				<i>Model III</i>	<i>Model IV</i>
I		70	10.0	1.00	1.00
II		164	12.2	1.25 (0.50-3.11)	1.48 (0.54-4.09)
III		10	10.0	1.00 (0.11-9.10)	1.21 (0.13-11.54)
IV		50	8.0	0.78 (0.22-2.83)	0.67 (0.15-2.95)
V		33	15.1	1.61 (0.47-5.50)	1.13 (0.23-5.54)

^a The multivariate model for employment status (Model II) includes woman’s race/ethnicity, health insurance and marital status/living arrangements.

^b The multivariate model for type of occupation (Model IV) includes woman’s education, health insurance and marital status/living arrangements.

^c I = ‘Chief executives, senior officials and legislators’, ‘Professionals’; II= ‘Technicians and associate professionals’, ‘Clerks’, ‘Service and sales workers’; III= ‘Skilled agricultural, fishery and forestry workers’, ‘Craft and related trades workers’, ‘Plant and machine operators and assemblers’, ‘Elementary occupations’; IV = ‘Student’, ‘Homemaker’, V = ‘Unemployed –Never worked/Worked previously’.

Table IV.14. Partner's employment characteristics in relation to intimate partner violence

		<i>Employment status</i>			
		<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)^a</i>
<i>Employment status:</i>				<i>Model I</i>	<i>Model II</i>
	Unemployed	55	18.2	1.71 (0.79-3.69)	2.07 (0.86-4.98)
	Employed	304	11.5	1.00	1.00
		<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)^b</i>
<i>Occupational group:^c</i>				<i>Model III</i>	<i>Model IV</i>
	I	46	10.9	1.00	1.00
	II	60	5.0	0.43 (0.098-1.91)	0.39 (0.085-1.73)
	III	104	16.4	1.60 (0.55-4.64)	1.15 (0.37-3.53)
	IV	20	5.0	0.43 (0.048-3.95)	0.42 (0.045-3.86)
	V	36	25.0	2.73 (0.83-9.04)	2.18 (0.62-7.59)

^a The multivariate model for employment status (Model II) includes partner's race/ethnicity, health insurance and marital status/living arrangements.

^b The multivariate model for type of occupation (Model IV) includes partner's education.

^c I = 'Chief executives, senior officials and legislators', 'Professionals'; II= 'Technicians and associate professionals', 'Clerks', 'Service and sales workers'; III= 'Skilled agricultural, fishery and forestry workers', 'Craft and related trades workers', 'Plant and machine operators and assemblers', 'Elementary occupations'; IV = 'Student', 'Homemaker', V = 'Unemployed –Never worked/Worked previously'.

Table IV.15. Discrepancies in employment characteristics between women and their partners by intimate partner violence

	<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)^a</i>
<i>Employment status discrepancies:</i>				
Both employed	238	11.3	1.00	1.00
Woman employed only	37	18.9	1.82 (0.73-4.55)	2.12 (0.73-6.18)
Partner employed only	59	10.2	0.89 (0.35-2.25)	0.76 (0.26-2.21)
Both unemployed	18	16.7	1.56 (0.43-5.75)	1.19 (0.24-6.05)

^a The multivariate model includes woman's race/ethnicity, woman's health insurance, partner's education and partner's health insurance.

CHAPTER VI
INTIMATE PARTNER VIOLENCE, SUBSTANCE USE, DEPRESSION AND
SOCIAL SUPPORT AMONG WOMEN SEEKING PREGNANCY TERMINATION
IN IOWA

Overview

In *Aim II*, associations of substance use, depressive symptoms and social support with physical, sexual and/or psychological abuse perpetrated by current intimate partners against women seeking pregnancy termination were examined. The following exploratory research questions were evaluated:

- Are women who have experienced IPV likely to report consuming higher levels of alcohol than their non-abused counterparts?
- Are women who have experienced IPV likely to report higher levels of alcohol consumption by their partners than their non-abused counterparts?
- Are women who have experienced IPV likely to report binge drinking more frequently than their non-abused counterparts?
- Are women who have experienced IPV likely to report binge drinking by their partners more frequently than their non-abused counterparts?
- Are women who have experienced IPV likely to report recreational drug use more frequently than their non-abused counterparts?
- Are women who have experienced IPV likely to report recreational drug use by their partners more frequently than their non-abused counterparts?

- Are women who have experienced IPV more likely to report higher depressive symptoms than their non-abused counterparts?
- Are women who have experienced IPV likely to report less perceived social support than their non-abused counterparts?

Tables IV.16-IV.20 present analyses pertaining to the hypothesized relationships between substance use indicators and IPV. In general, IPV was found to be more consistently associated with the partners' rather than with the woman's substance use characteristics, after adjustment for relevant socio-demographic characteristics.

Women's alcohol intake and intimate partner violence

Of 373 women in the study sample, 294 (78.8%) reported using alcohol in the 3 months prior to pregnancy awareness. IPV prevalence rate was non-significantly higher among users versus non-users of alcohol (13.6% vs. 7.6%, $P=0.15$). Overall, the mean (\pm standard deviation) and median numbers of alcoholic drinks per week were estimated to be 6.8 (\pm 13.8) and 2.0, respectively. Among women reporting IPV, the mean (\pm standard deviation) and median alcoholic drinks per week were estimated to be 8.9 (\pm 16.2) and 3.4, respectively. Among women not reporting IPV, the mean (\pm standard deviation) and median alcoholic drinks per week were 6.6 (\pm 13.6) and 2.0, respectively. Alcohol intake was not normally distributed in the overall study sample as well as by IPV status (Shapiro-Wilk's test; $P < 0.0001$). Wilcoxon's rank sum test suggested no significant difference by IPV status in women's alcohol intake defined as a continuous variable ($P=0.26$) (data not shown).

When defined in quartiles, the distribution of woman's alcohol intake (drinks/week) was as follows: (Q1) '0-<0.06' (n=114, 28.9%); (Q2) '0.06-<2' (n=88, 22.3%); (Q3) '2.0-7.0' (n=85, 21.5%); (Q4) ' ≥ 7 ' (n=108, 27.3%). Odds ratios for the relationship between woman's alcohol intake defined in quartiles and IPV were as follows: 'Q2 vs. Q1': 1.58 (0.68-3.71); 'Q3 vs. Q1': 1.29 (0.51-3.26); 'Q4 vs. Q1': 1.46 (0.59-3.62). No significant linear dose-response relationship was noted between IPV and women's alcohol intake defined as quartiles, coded as integers (1, 2, 3 and 4) and entered as a continuous variable into a logistic model (Wald Chi-square=0.87; $P_{\text{trend}}=0.35$) (data not shown).

Because women's alcohol intake was not normally distributed and showed no linear dose-response relationship in relation to IPV, we decided to analyze it as a dichotomous variable with a cut-off point defined according to the median level of alcohol intake. Specifically, women's alcohol intake was defined as 'less than 2 drinks per week' or '2 or more drinks per week'. White non-hispanic women were more likely to report an alcohol intake at or above the median level of 2 drinks per week when compared to women of other racial/ethnic groups. Similarly, the percentage married or cohabiting or having children was less among women reporting at least median level (versus those reporting below median level) of alcohol consumption (Table IV.17). As shown in Table IV.16 and IV.19, the prevalence of IPV did not differ significantly among women who consumed two or more alcoholic drinks per week compared to women who consumed less than two alcoholic drinks per week (13.4% vs. %10.9; unadjusted OR=1.25; 95% CI: 0.88-3.71). Therefore, regardless of how alcohol intake is defined, crude analyses did not show a clear association of women's alcohol intake with IPV

prevalence. However, stratified analyses suggested that the relationship between women's alcohol intake and IPV was heterogeneous across levels of selected socio-demographic characteristics. In particular, IPV was more strongly associated with woman's alcohol intake among employed (stratum-specific OR=2.18, 95% CI: 0.96-5.00) versus unemployed (stratum-specific OR=0.28, 95% CI: 0.055-1.48) women (Breslow-Day Chi-square=3.31, P=0.021). Similarly, the relationship between woman's alcohol intake and IPV differed according their health insurance status (Breslow-Day Chi-square=3.41, P=0.065). IPV was less strongly associated with woman's alcohol intake among those with public or no health insurance (stratum-specific OR=0.67, 95% CI: 0.26-1.76) versus those with a private health insurance (stratum-specific OR=2.56, 95% CI: 0.88-7.41). Further logistic modeling suggested that the observed disparities in the alcohol intake-IPV association according to employment and health insurance status of women were merely chance findings. By contrast, woman's race/ethnicity and marital status/living arrangements were identified as important confounders and were therefore included in the final logistic model. After adjusting for these confounders, the association between IPV and alcohol intake became stronger but remained statistically non-significant (adjusted OR=1.81; 95% CI: 0.88-3.71) (Table IV.19).

Partner's alcohol intake and intimate partner violence

Of 368 partners in the study sample, 310 (84.2%) consumed alcoholic beverages during the 12 months that preceded the survey. IPV prevalence was non-significantly higher among women whose partners consumed alcohol versus those who did not (13.9% vs. 5.2%, P=0.07). In addition, the mean (\pm standard deviation) and median numbers of

alcoholic drinks per week were estimated to be 10.2 (\pm 18.0) and 3.5, respectively. Among women reporting IPV, the mean (\pm standard deviation) and median alcoholic drinks consumed per week by their partners were estimated to be 20.8 (\pm 25.6) and 11.0, respectively. Among women not reporting IPV, the mean (\pm standard deviation) and median alcoholic drinks consumed per week by their partners were 8.8 (\pm 16.3) and 3.5, respectively. Partner's alcohol intake was not normally distributed in the overall study sample as well as by IPV status (Shapiro-Wilk's test; $P < 0.0001$). Wilcoxon's rank sum test suggested a significant difference by IPV status in partner's alcohol intake defined as a continuous variable ($P=0.001$) (data not shown).

When defined in quartiles, the distribution of partner's alcohol intake (drinks/week) was as follows: (Q1) '0-<0.5' (n=126, 31.9%); (Q2) '0.5-<3.5' (n=84, 21.3%); (Q3) '3.5-11.0' (n=84, 21.3%); (Q4) ' ≥ 11 ' (n=101, 25.6%). Odds ratios for the relationship between partner's alcohol intake defined in quartiles and IPV were as follows: 'Q2 vs. Q1': 1.12 (0.40-3.16); 'Q3 vs. Q1': 1.08 (0.39-3.03); 'Q4 vs. Q1': 3.49 (1.53-7.98). A significant linear dose-response relationship was noted between IPV and partner's alcohol intake defined as quartiles, coded as integers (1, 2, 3 and 4) and entered as a continuous variable into a logistic model (Wald Chi-square=9.33; $P_{\text{trend}}=0.0023$) (data not shown).

Because partner's alcohol intake was not normally distributed, we decided to analyze it as a dichotomous variable. Although the third quartile appears to define a threshold level, we selected the median level of alcohol intake as the cut-off point for comparability with woman's alcohol intake and to avoid the issue of sparse data when conducting stratified analyses. Specifically, partner's alcohol intake was defined as 'less

than 3.5 drinks per week' or '3.5 or more drinks per week'. Partners whose alcohol intake was at least median level were more frequently white, non-hispanic (Table IV.18). As shown in Tables IV.16 and IV.20, the prevalence of IPV differed significantly among partners who consumed 3.5 or more alcoholic drinks per week compared to partners who consumed less than 3.5 alcoholic drinks per week (16.6% vs. 8.7%; unadjusted OR=2.09; 95% CI: 1.06-4.09). Therefore, regardless of how alcohol intake was defined, crude analyses indicated a positive association between partner's alcohol intake and IPV prevalence. The relationship between partner's alcohol intake and IPV was neither confounded nor modified by any of the selected partner's socio-demographic characteristics. Therefore, women whose partners consumed at least 3.5 alcoholic drinks per week were twice as likely to experience IPV compared to those whose partners consumed less than 3.5 alcoholic drinks per week.

Women's binge drinking and intimate partner violence

Binge drinking was reported by 185 of 363 (50.9%) women. White non-hispanic women were more likely to report binge drinking when compared to women of other racial/ethnic groups. Furthermore, young age, more than high school education and having private health insurance were positively associated with binge drinking. Finally, the proportion married or cohabiting or having children was less among women who reported binge drinking versus those who did not report binge drinking (Table IV.17). IPV prevalence was higher among women who reported binge drinking (15.1%) versus those who did not (10.1%) in the three months prior to pregnancy awareness. However, the crude relationship between IPV and woman's binge drinking was statistically non-

significant (unadjusted OR=1.58; 95% CI: 0.84-2.98; P=0.15) (Table IV.16 and IV.19). Stratified analyses suggested that the relationships of woman's binge drinking and IPV varied by employment status (Breslow-Day Chi-square =2.80, P=0.09). Specifically, IPV was significantly associated with woman's binge drinking among employed (stratum-specific OR=2.10, 95% CI: 1.00-4.57), but not among unemployed (stratum-specific OR=0.54, 95% CI: 0.13-2.36) women. Further logistic modeling suggested no significant interaction effect between woman's binge drinking and employment status in relation to IPV (data not shown). By contrast, woman's race/ethnicity and marital status/living arrangements were identified as important confounders for the hypothesized relationship. After controlling for race/ethnicity and marital status/living arrangements, women who reported binge drinking were nearly twice as likely to experience IPV compared to those who did not report binge drinking (adjusted OR=1.98, 95% CI: 0.99-3.94), (Table IV.19).

Partner's binge drinking and intimate partner violence

Binge drinking was reported in 192 of 346 (55.5%) of male partners. On the other hand, binge drinking partners were more frequently white, non-hispanic, employed and less likely to be involved with women who had children in their homes (Table IV.18). Crude analyses suggested that the prevalence of IPV was significantly higher among women whose partners had a history of binge drinking in the past 12 months versus those who had no history of binge drinking (16.7% versus 6.5%, unadjusted OR=2.88; 95% CI: 1.37-6.07; P=0.004) (Table IV.16). The relationship between IPV and partner's binge drinking was heterogeneous according to partner's race/ethnicity (Breslow-Day Chi-square=4.4; P=0.04) and education (Breslow-Day Chi-square=4.05; P=0.044). The

strength of the association between IPV and partner's binge drinking was considerably less among white, non-hispanic (stratum-specific OR=1.73, 95% CI: 0.73-4.10) than among other racial/ethnic groups (stratum-specific OR=10.8, 95% CI: 2.25-51.4). Moreover, the strength of the association between IPV and partner's binge drinking was considerably higher among partners who had at least a high school education (stratum-specific OR=12.4, 95% CI: 1.59-96.2) versus those with less than a high school education (stratum-specific OR=1.55, 95% CI: 0.64-3.79). However, when tested in a logistic model, the observed heterogeneities did not persist as significant interaction terms. Overall, women who reported that their partners were binge drinkers were nearly three times as likely to have experienced IPV, as compared to women whose partners were non-binge drinkers.

Woman's recreational drug use and intimate partner violence

Recreational drug use was reported for 50 of 370 (13.5%) women. White non-hispanic women were more likely to report recreational drug use when compared to women of other racial/ethnic groups. Young age was also positively associated with recreational drug use among women. By contrast, women who were recreational drug users more frequently reported a lower education, no children and were less likely to have private insurance (Table IV.17). Crude analyses suggested that IPV prevalence was not significantly different among women who reported recreational drug use versus non-users of recreational drugs (16.0% versus 11.9%; unadjusted OR=1.41; 95% CI: 0.62-3.24; P=0.41) (Table IV.16 and IV.19). Stratified analyses suggested no heterogeneities in the hypothesized relationship according to woman's socio-demographic characteristics. However, race/ethnicity was identified as an important confounder.

The association between women's recreational drug use and IPV remained statistically non-significant even after controlling for woman's race/ethnicity (adjusted OR=1.64; 95% CI: 0.71-3.83) (Table IV.19).

Partner's recreational drug use and intimate partner violence

Recreational drug use was reported for 65 of 365 (17.8%) partners. Recreational drug users were less likely than non-users to be employed or to have private health insurance (Table IV.18). Women whose partners were recreational drug users reported a significantly higher prevalence of IPV than those whose partners were non-users of recreational drugs (21.5% versus 10.3%, unadjusted OR= 2.38; 95% CI: 1.19-4.79; P=0.01) (Table IV.16 and IV.20). Stratified analyses suggested no significant heterogeneities in the hypothesized relationship by partner's socio-demographic characteristics. Also, none of these socio-demographic characteristics were identified as important confounders for the relationship between partner's recreational drug use and IPV (Table IV.20). As such, women whose partners used recreational drugs were nearly three times as likely to experience IPV as compared to women whose partners did not use recreational drugs.

Tables IV.21-IV.25 present analyses pertaining to the hypothesized relationships between depressive symptoms, social support and IPV. Overall, depressive symptoms and perceived availability of social support were strongly associated with IPV. The positive relationship between IPV and depressive symptoms was not confounded by selected socio-demographic characteristics, but was modified by child status. The negative relationship between IPV and perceived availability of social support was neither confounded nor modified by selected socio-demographic characteristics.

Depressive symptoms and intimate partner violence

Depressive symptoms were assessed on a 10-item Likert-type scale using the Center for Epidemiologic Studies Depression (CESD-10) screening tool (Table IV.21). Using 359 complete CESD-10 responses, Cronbach α was estimated to be 0.78, suggesting that the 10-item CESD scale was reliable for this patient population. Among 338 women with known IPV status, the total depressive symptoms score ranged between 0 and 30, with a mean of 10.8 and a standard deviation of 5.6. Women who experienced IPV had a significantly (t-test; $P=0.0013$) higher depressive symptoms score (14.4 ± 7.4) than their non-abused counterparts (10.3 ± 5.2). Overall, 192 (56.8%) women scored 10 or higher on the CESD-10 scale and were, thus, labeled as having ‘high’ depressive symptoms. The remaining 146 (43.2%) women scored less than 10 on the CESD-10 scale and were, thus, labeled as having ‘low’ depressive symptoms. More than high school education was positively associated with ‘high’ depressive symptoms; similarly, women having ‘high’ depressive symptoms were more likely to be employed (Table IV.23). Table IV.24 presents logistic models for the relationship between depressive symptoms and IPV. Women having ‘high’ depressive symptoms ($CESD-10 \geq 10$) had over three-fold increased odds of IPV compared to those who had ‘low’ depressive symptoms ($CESD-10 < 10$) (16.7% versus 5.5%; $OR=3.45$, 95% CI: 1.54-7.74). Stratified analyses (Breslow-Day Chi-square=5.11, $P=0.02$) and follow-up logistic modeling ($P_{interaction} < 0.1$) suggested the presence of a significant interaction effect between depressive symptoms and child status in relation to IPV. Specifically, the relationship between depressive symptoms and IPV appears to depend on whether or not children were present

in the woman's home. This relationship was stronger in the presence (OR=10.0, 95% CI: 2.27-44.0) than in the absence of children (OR=1.39, 95% CI: 0.49-4.00).

Perceived availability of social support and intimate partner violence

Perceived availability of social support was assessed with the Social Support Questionnaire – Short Form (SSQ-SF) (Table IV.22). Using 383 IWHES patients with valid data on all SSQ-SF items, Cronbach's α for SSQ-SF was estimated to be 0.96, suggesting that the 5-item SSQ-SF scale was reliable for this patient population. However, the high internal consistency for the 5-item SSQ-SF could be due to chance variation. Among 362 women with known IPV status, the total SSQ-SF score ranged between 5 and 25, with a mean of 23.2 and a standard deviation of 3.7. Racial/ethnic minority and unemployed women scored lower on the social support scale. However, these relationships were of borderline statistical significance (Table IV.23). Women who experienced IPV had a significantly lower social support score than their non-abused counterparts (20.4 ± 5.3 vs. 23.6 ± 3.2 , $P=0.0003$). Logistic modeling revealed a negative association between IPV status and perceived availability of social support (unadjusted OR=0.85; 95% CI: 0.79-0.91). This relationship was neither confounded nor modified by woman's socio-demographic characteristics.

Key findings

In conclusion, the burden of substance use appears to be high among women seeking elective abortion services and their partners. Similarly, depressive symptoms and low social support appear to be problematic in this "high-risk" population of women

seeking pregnancy termination. Clearly, partner's substance use was found to be a stronger marker of IPV than women's substance use. Specifically, IPV was more strongly associated with the partner's than the woman's alcohol intake, binge drinking and recreational drug use. The weaker association between IPV and woman's alcohol use indicators may be due to the fact that women who experienced IPV were of predominantly minority race/ethnicity, while those who reported high levels of alcohol consumption were predominantly white, non-hispanic. Interestingly, distinct socio-demographic characteristics were also noted for partners who consumed high levels of alcohol compared to those who used recreational drugs. Whereas those who used recreational drugs appeared to be disadvantaged, those who consumed high levels of alcohol frequently had more resources. Despite socio-demographic disparities among these two groups of substance users, both alcohol and recreational drugs appear to be important factors in the context of IPV perpetration. Although employment status was marginally associated with IPV, it was found to influence the relationship between IPV and various indicators of alcohol consumption. These findings suggest that while employment status may be acting as an environmental factor that can facilitate IPV, behaviors such as alcohol consumption may be the triggering factor for IPV. Women experiencing IPV were more likely to report 'high' depressive symptoms and less perceived availability of social support as compared to those who were not abused by their partners. Interestingly, women who reported 'high' depressive symptoms as well as those who experienced IPV were more likely to be employed. However, the strength of the association between IPV and 'high' depressive symptoms was considerably higher than that between IPV and employment status in women. Finally, the relationship

between 'high' depressive symptoms and IPV was stronger for female patients who reported having children in their homes compared those who had no children in their homes. *Aim II* analyses identified several "high-risk" sub-groups within the population of women seeking pregnancy termination, as follows: (1) women whose partners alcohol intake was above the median level (3.5 drinks per week); (2) women whose partners were binge drinkers; (3) women whose partners used recreational drugs; (4) women who had 'high' depressive symptoms; (5) women who obtained a lower score on the social support scale.

Table IV.16. Woman's and partner's patterns of substance use by intimate partner violence status

	Overall (n=373) N (%) ^a	Any IPV (n=46) N (%) ^b	No IPV (n=327) N (%) ^b
<i>Woman's substance use</i>			
<i>Alcohol intake:</i>			
≥ 2 drinks/week	187 (53.3)	25 (13.4)	162 (86.6)
< 2 drinks/week	164 (46.7)	18 (10.9)	146 (89.0)
			P=0.49 ^c
<i>Binge drinking:</i>			
Yes	185 (50.9)	28 (15.1)	157 (84.9)
No	178 (49.0)	18 (10.1)	160 (89.9)
			P=0.15 ^c
<i>Recreational drug use:</i>			
Yes	50 (13.5)	8 (16.0)	42 (84.0)
No	320 (86.5)	38 (11.9)	282 (88.1)
			P=0.41 ^c
<i>Partner's substance use</i>			
<i>Alcohol intake:</i>			
≥ 3.5 drinks/week	181 (52.9)	30 (16.6)	151 (83.4)
< 3.5 drinks/week	161 (47.1)	14 (8.7)	147 (91.3)
			P=0.029 ^c
<i>Binge drinking:</i>			
Yes	192 (55.5)	32 (16.7)	160 (83.3)
No	154 (44.5)	10 (6.5)	144 (93.5)
			P=0.004 ^c
<i>Recreational drug use:</i>			
Yes	65 (17.8)	14 (21.5)	51 (78.4)
No	300 (82.1)	31 (10.3)	269 (89.7)
			P=0.01 ^c

^a Column percentages are presented.

^b Row percentages are presented.

^c P is the significance level for Pearson's chi-square test.

Table IV.17. Woman's substance use indicators by socio-demographic characteristics

Woman's characteristics	Alcohol intake (drinks/week) (≥ 2 vs. < 2)		Binge drinking (Yes vs. No)		Recreational drug use (Yes vs. No)	
	≥ 2 (N=187)	< 2 (N=164)	Yes (N=185)	No (N=178)	Yes (N=50)	No (N=320)
<i>Age group (years)</i>	N=187	N=164	N=185	N=178	N=50	N=320
18-24	100 (53.5)	86 (52.5)	105 (56.8)	87 (48.8)	33 (66.0)	165 (51.6)
≥ 25	87 (46.5)	78 (47.6)	80 (43.2)	91 (51.1)	17 (34.0)	155 (48.4)
	P=0.85		P=0.13		P=0.06	
<i>Race and ethnicity</i>	N=186	N=161	N=182	N=177	N=50	N=316
white, non-hispanic	165 (88.7)	117 (72.7)	159 (87.4)	132 (74.6)	46 (92.0)	251 (79.4)
other	21 (11.3)	44 (27.3)	23 (12.6)	45 (25.4)	4 (8.0)	65 (20.6)
	P = 0.0001		P=0.002		P=0.03	
<i>Education</i>	N=184	N=163	N=182	N=177	N=49	N=317
Less than high school or high school	49 (26.6)	50 (30.7)	44 (24.2)	59 (33.3)	19 (38.8)	84 (26.5)
More than high school	135 (73.4)	113 (69.3)	138 (75.8)	118 (66.7)	30 (61.2)	233 (73.5)
	P=0.41		P=0.06		P=0.08	
<i>Employment status</i>	N=186	N=158	N=182	N=173	N=49	N=313
Unemployed	34 (18.3)	39 (24.7)	36 (19.8)	42 (24.3)	12 (24.5)	67 (21.4)
Employed	152 (81.7)	119 (75.3)	146 (80.2)	131 (75.7)	37 (75.5)	246 (78.6)
	P=0.15		P=0.31		P=0.63	
<i>Health insurance</i>	N=176	N=152	N=170	N=166	N=46	N=295
Private/Military/Other	87 (49.4)	84 (55.3)	92 (54.1)	73 (43.9)	18 (39.1)	149 (50.5)
Not insured/Medicaid	89 (50.7)	68 (44.7)	78 (45.9)	93 (56.0)	28 (60.9)	146 (49.5)
	P=0.29		P=0.06		P=0.15	
<i>Marital status and living arrangements</i>	N=184	N=161	N=184	N=173	N=49	N=315
Married or cohabiting	86 (46.7)	92 (57.1)	90 (48.9)	100 (57.8)	27 (55.1)	165 (52.4)
Not married and not cohabiting	98 (53.3)	69 (42.9)	94 (51.1)	73 (42.2)	22 (44.9)	150 (47.6)
	P=0.06		P=0.09		P=0.72	
<i>Child status</i>	N=187	N=163	N=185	N=177	N=50	N=319
None	94 (50.3)	58 (35.6)	97 (52.4)	60 (33.9)	29 (58.0)	130 (40.8)
Any	93 (49.7)	105 (64.4)	88 (47.6)	117 (66.1)	21 (42.0)	189 (59.3)
	P=0.006		P=0.0004		P=0.022	

P= significance level for chi-square test.

Table IV.18. Partner's substance use indicators by socio-demographic characteristics

<i>Partner's characteristics</i>	<i>Alcohol intake (drinks/week)</i> (≥ 3.5 vs. < 3.5)		<i>Binge drinking</i> (Yes vs. No)		<i>Recreational drug use</i> (Yes vs. No)	
	≥ 3.5 (N=219)	< 3.5 (N=123)	Yes (N=192)	No (N=154)	Yes (N=65)	No (N=300)
<i>Age group (years)</i>	N=219	N=122	N=192	N=153	N=64	N=300
18-24	88 (40.2)	47 (38.5)	82 (42.7)	50 (32.7)	29 (45.3)	113 (37.7)
≥ 25	131 (59.8)	75 (61.5)	103 (67.3)	103 (67.3)	35 (54.7)	187 (62.3)
		P=0.76		P=0.06		P=0.25
<i>Race and ethnicity</i>	N=218	N=122	N=191	N=152	N=65	N=297
white, non-hispanic	170 (77.9)	73 (59.8)	150 (78.5)	98 (64.5)	48 (73.9)	213 (71.7)
other	48 (22.0)	49 (40.2)	41 (21.5)	54 (35.5)	17 (26.2)	84 (28.3)
		P = 0.0004		P=0.004		P=0.73
<i>Education</i>	N=218	N=118	N=189	N=150	N=65	N=294
Less than high school or high school	87 (39.9)	53 (44.9)	80 (42.3)	65 (43.3)	33 (50.8)	121 (41.2)
More than high school	131 (60.1)	65 (55.1)	109 (57.7)	85 (56.7)	32 (49.3)	173 (58.8)
		P=0.37		P=0.85		P=0.16
<i>Employment status</i>	N=216	N=114	N=188	N=146	N=62	N=290
Unemployed	31 (14.4)	21 (18.4)	23 (12.2)	30 (20.6)	15 (24.2)	38 (13.1)
Employed	185 (85.7)	93 (81.6)	165 (87.8)	116 (79.5)	47 (75.8)	252 (86.9)
		P=0.33		P=0.04		P=0.03
<i>Health insurance</i>	N=201	N=104	N=172	N=135	N=55	N=266
Private/Military/Other	77 (38.3)	47 (45.2)	107 (62.2)	74 (54.8)	19 (34.6)	169 (63.5)
Not insured/Medicaid	124 (61.7)	57 (54.8)	65 (37.8)	61 (45.2)	36 (65.5)	97 (36.5)
		P=0.25		P=0.19		P < 0.0001
<i>Marital status and living arrangements</i>	N=216	N=121	N=188	N=153	N=65	N=294
Married or cohabiting	116 (53.7)	65 (53.7)	102 (54.3)	82 (53.6)	31 (47.7)	159 (54.1)
Not married and not cohabiting	100 (46.3)	56 (46.3)	86 (45.7)	71 (46.4)	34 (52.3)	135 (45.9)
		P=0.99		P=0.90		P=0.35
<i>Child status</i>	N=219	N=123	N=192	N=153	N=65	N=299
None	100 (45.7)	49 (39.8)	100 (52.1)	50 (32.7)	32 (49.2)	124 (41.5)
Any	119 (54.3)	74 (60.3)	92 (47.9)	103 (67.3)	33 (50.8)	175 (58.5)
		P=0.29		P=0.0003		P=0.25

P= significance level for chi-square test.

Table IV.19. Association of woman's substance use indicators with intimate partner violence status

<i>Woman's substance use</i>	<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)</i>
<i>Alcohol intake:</i> ^a				
≥ 2 drinks/week	187	13.4	1.25 (0.66-2.39)	1.81 (0.88-3.71)
< 2drinks/week	164	10.9	1.00	1.00
<i>Binge drinking:</i> ^b				
Yes	185	15.1	1.58 (0.84-2.98)	1.98 (0.99-3.94)
No	178	10.1	1.00	1.00
<i>Drug use:</i> ^c				
Yes	50	16.0	1.41 (0.62-3.24)	1.64 (0.71-3.83)
No	320	11.9	1.00	1.00

^a Multivariate model was adjusted for woman's race/ethnicity and marital status/living arrangements.

^b Multivariate model was adjusted for race/ethnicity and marital status/living arrangements.

^c Multivariate model was adjusted for race/ethnicity.

Table IV.20. Association of partner's substance use indicators with intimate partner violence status

<i>Partner's substance use</i>	<i>n</i>	<i>% IPV</i>	<i>Unadjusted OR (95% CI)</i>	<i>Adjusted OR (95% CI)</i>
<i>Alcohol intake:</i> ^a				
≥ 3.5 drinks/week	181	16.6	2.09 (1.06-4.09)	2.09 (1.06-4.09)
< 3.5 drinks/week	161	8.7	1.00	1.00
<i>Binge drinking:</i> ^b				
Yes	192	16.7	2.88 (1.37-6.07)	2.88 (1.37-6.07)
No	160	6.5	1.00	1.00
<i>Drug use:</i> ^c				
Yes	65	21.5	2.38 (1.19-4.79)	2.38 (1.19-4.79)
No	300	10.3	1.00	1.00

^a Unadjusted and adjusted measures of association are the same.

^b Unadjusted and adjusted measures of association are the same.

^c Unadjusted and adjusted measures of association are the same.

Table IV.21. Depressive symptoms among women who report having a current intimate partner

CESD-10 items: ^a	Rarely or none of the time N (%)	Some or a Little of the time N (%)	Occasionally or Moderate Amount of the Time N (%)	Most or all of the Time N (%)	Total N (%)
<i>In the month that preceded the pregnancy ...</i>					
I was bothered by things that usually don't bother me.	139 (37.6)	129 (34.9)	76 (20.5)	26 (7.0)	370 (100)
I had trouble keeping my mind on what I was doing.	150 (40.9)	116 (31.6)	77 (20.9)	24 (6.5)	367 (100)
I felt depressed.	183 (49.9)	92 (25.1)	60 (16.4)	32 (8.7)	367 (100)
I felt that everything I did was an effort.	161 (43.5)	105 (28.4)	75 (20.3)	29 (7.8)	370 (100)
I felt hopeful about the future.	67 (18.3)	88 (24.0)	105 (28.7)	106 (28.9)	366 (100)
I felt fearful.	233 (64.2)	72 (19.8)	38 (10.5)	20 (5.5)	363 (100)
My sleep was restless.	124 (33.5)	116 (31.4)	74 (20.0)	56 (15.1)	370 (100)
I was happy.	29 (7.9)	77 (20.9)	128 (34.8)	134 (36.4)	368 (100)
I felt lonely.	197 (54.4)	88 (24.3)	46 (12.7)	31 (8.6)	362 (100)
I could not get "going".	137 (37.4)	117 (31.9)	73 (19.9)	39 (10.6)	366 (100)

^a Row percentages.

Table IV.22. Perceived availability of social support among women who report having a current intimate partner

SSQ-SF items ^a	Agree Strongly	Agree Somewhat	Neither agree nor disagree	Disagree somewhat	Disagree Strongly	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
<i>There is someone available who would ...</i>						
Help you feel better when are under stress.	258 (69.4)	75 (20.2)	25 (6.7)	8 (2.2)	6 (1.6)	372 (100)
Accept you totally, including both your worst and best points.	282 (76.6)	54 (14.7)	16 (4.4)	9 (2.5)	7 (1.9)	368 (100)
Care about you, regardless of what is happening to you.	298 (80.5)	53 (14.3)	8 (2.2)	6 (1.6)	5 (1.4)	370 (100)
Help you feel better when you are feeling down in the dumps.	290 (78.4)	54 (14.6)	15 (4.0)	7 (1.9)	4 (1.1)	370 (100)
Console you when you are upset.	287 (77.6)	54 (14.6)	14 (3.8)	9 (2.4)	6 (1.6)	370 (100)

^a Row percentages.

Table IV.23. Woman's depressive symptoms and social support by socio-demographic characteristics

	<i>Depressive symptoms (High vs. Low)</i>		<i>Social support</i>	
	<i>High (N=192)</i>	<i>Low (N=146)</i>	<i>n</i>	<i>Mean (SD)</i>
<i>Age group (years)</i>	N=192	N=146		
18-24	108 (56.3)	73 (50.0)	195	23.2 (3.8)
≥ 25	84 (43.8)	73 (50.0)	167	23.3 (3.5)
	P=0.25		P=0.70	
<i>Race and ethnicity</i>	N=191	N=144		
white, non-hispanic	153 (80.1)	121 (84.0)	288	23.4 (3.5)
other	38 (19.9)	23 (15.9)	70	22.5 (4.3)
	P=0.36		P=0.10	
<i>Education</i>	N=191	N=145		
Less than high school or high school	49 (25.7)	48 (33.1)	102	23.1 (3.7)
More than high school	142 (74.4)	97 (66.9)	256	23.2 (3.6)
	P=0.14		P=0.76	
<i>Employment status</i>	N=189	N=142		
Unemployed	38 (20.1)	40 (28.2)	79	22.6 (3.8)
Employed	151 (79.9)	102 (71.8)	276	23.4 (3.6)
	P=0.09		0.12	
<i>Health insurance</i>	N=180	N=132		
Private/Military/Other	91 (50.6)	61 (46.2)	161	23.2 (3.8)
Not insured/Medicaid	89 (49.4)	71 (53.8)	173	23.2 (3.6)
	P=0.45		P=0.87	
<i>Marital status and living arrangements</i>	N=188	N=144		
Married or cohabiting	97 (51.6)	76 (52.8)	184	23.1 (3.8)
Not married and not cohabiting	91 (48.4)	68 (47.2)	172	23.3 (3.5)
	P=0.83		P=0.62	
<i>Child status</i>	N=192	N=145		
None	88 (45.8)	59 (40.7)	155	23.3 (3.6)
Any	104 (54.2)	86 (59.3)	206	23.1 (3.8)
	P=0.35		P=0.65	

P= significance level for chi-square test.

Table IV.24. Association of intimate partner violence with depressive symptoms and social support

	<i>n</i>	% IPV	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
<i>Depressive symptoms</i>				
<i>Model I: Overall^a</i>				
Low depressive symptoms	146	5.5	1.00	1.00
High depressive symptoms	192	16.7	3.45 (1.54-7.74)	3.45 (1.54-7.74)
<i>Model II: No children^b</i>				
Low depressive symptoms	59	10.2	1.00	1.00
High depressive symptoms	88	13.6	1.39 (0.49-3.94)	1.39 (0.49-3.94)
<i>Model III: With children^c</i>				
Low depressive symptoms	86	2.3	1.00	1.00
High depressive symptoms	104	19.2	10.0 (2.27-44.13)	10.0 (2.27-44.13)
<i>Social support</i>				
<i>Model IV: Overall^d</i>	362	--	0.85 (0.79-0.91)	0.85 (0.79-0.91)

^a Unadjusted and adjusted measures of association are the same.

^b Unadjusted and adjusted measures of association are the same.

^c Unadjusted and adjusted measures of association are the same.

^d Unadjusted and adjusted measures of association are the same.

CHAPTER VII

DISCUSSION

Study findings

The present cross-sectional study was conducted using an anonymous self-administered questionnaire targeting women who sought pregnancy termination at a family planning clinic in Iowa. The long-term goal of that study was to characterize physical, sexual and psychological abuse perpetrated by a current intimate partner and to inform the design, conduct and evaluation of screening interventions aimed at reducing the burden of intimate partner violence (IPV) against these women. *Aim I* examined the prevalence of IPV by employment characteristics of elective abortion patients and their current partners. *Aim II* examined the associations of substance use, depressive symptoms and social support with IPV perpetrated by current partners against these patients. The overall prevalence of IPV was estimated to be 12.3% (physical: 6.2%, sexual: 2.4%, psychological: 9.1%), with some overlap between IPV sub-types. Woman's race/ethnicity, partner's education and couple marital/cohabiting status appeared to play a key role in IPV. Conversely, IPV prevalence did not differ by employment characteristics of women and their partners, although non-significant trends were noted whereby IPV was more frequent if the partner was unemployed or the woman was employed. Also, the prevalence of IPV was highest in couples where the woman was employed and the partner was unemployed. In general, substance use characteristics of the partner were more strongly correlated with IPV than the woman's substance use characteristics. Women who experienced IPV were more likely to report depressive symptoms, especially when young children were present in their homes. Also, women experiencing IPV reported a lower level of social support. Presented below is a summary of the

rationale for conducting these analyses and a detailed interpretation of study findings. Emphasis is placed on methodological issues with an effort to provide insight into psychosocial mechanisms that may link individual-level characteristics to violence against elective abortion patients in the context of an intimate relationship.

Summary of rationale

Why is it important to examine the role of employment, substance use, depression and social support in relation to IPV and in the context of pregnancy or pregnancy termination? Violence perpetrated by an intimate partner is a global health problem that impacts women disproportionately²³. The propensity for men to commit acts of aggression against their female partners, including injury and murder, has been tentatively explained through a number of theories in other fields besides epidemiology. For instance, many authors have adopted an evolutionary approach and concepts related to “parental investment theory” and the “selfish gene” to explain gender-based violence⁴³¹. Males are genetically inclined to be violent in their efforts to guarantee paternity of a maximum number of offspring and have a tendency towards sexual jealousy and possessiveness⁴³¹. Other authors have turned to the concept of empathy and psychological explanations of female battering and have identified a role of past (childhood and adolescence) experiences that may explain a man’s tendencies towards violence, in general, and towards his female partner, in particular⁴³¹. While all human beings may be either threatened or driven by feelings that can lead to violence, men are more likely than women to take action in order to confirm their masculinity by exerting power and control over their intimate partners⁴³¹. There is also anthropological evidence

that male partners envy women for their reproductive capacity which is manifested in certain 'primitive' societies as 'couvades' or sympathetic pregnancy⁴³². The term 'couvade' refers to a medieval custom in which the father, during or immediately after the birth of a child, took to bed, complained of having labor pains, and was accorded the treatment usually shown women during pregnancy or after childbirth⁴³². Further evidence comes from mythology and in almost all cultures of a phenomenon known as 'misogyny' or woman-hating which manifests in a multitude of symbols and myths and other cultural representations. These manifestations and representations have been muted in contemporary societies by the ongoing struggle of the successive women liberation movements, but they manage to reappear in therapeutic situations, such as psychotherapy. The above mentioned envy is aggravated into hatred (and hence violence) in particular instances when a contemporary man fails to meet the requirements of masculinity by being the main provider for his family and is thus reminded of his incapacity to 'produce' in comparison with his partner who is able to 'reproduce'. A woman's pregnancy may be one of the precipitating factors that would unleash a man's envy, hatred and violence or reinforce it if it already exists. His feelings of possessiveness towards his female partner and jealousy towards the unborn child may also trigger violence in the context of pregnancy. Women might seek to end their pregnancy in an attempt to curb man's envy or jealousy by removing the reason or triggering factor. Women may also feel responsible for their progeny and their propensity to nurturance which assumes the presence of a nurturing environment that a violent partner is unable to provide. On the other hand, substance use and depression may facilitate the expression of violence within an intimate relationship. It has been empirically proven that unintended pregnancies are linked with

IPV, substance use and depression. Because women who seek elective abortions are likely to have had an unintended pregnancy, the prevalence of substance use and depression may be higher than expected in these women and their intimate partners. Furthermore, women seeking elective abortion are often stigmatized and may feel socially isolated. Their social isolation may be aggravated by an abusive situation. Both IPV and abortion-seeking behavior are stressful situations. Therefore, we expect a high frequency of depression among these women in general, and more depression in those experiencing IPV. By the same token, social stigma associated with abortion-seeking behavior may predispose these women to becoming or remaining socially isolated. Because abusive partners often try to exert power and control over these women, we expect that social isolation would be a more prominent issue in abortion-seeking women who have recently experienced IPV. Prevention of IPV and its various health correlates, including substance use and depression, requires a better understanding of the inter-relationships among these different health outcomes. Evidence for clustering of IPV, substance use, depression and social isolation can be used in designing future interventions that target the needs of women seeking pregnancy termination.

Intimate partner violence: descriptive epidemiology

Prevalence and co-existence of intimate partner violence sub-types

Overall, 12.3% of women seeking elective abortions reported physical, sexual and/or psychological violence by their current partners. Furthermore, 6.2%, 2.4% and 9.1% of these women reported physical, sexual and psychological abuse, respectively. Analyses suggested some overlap between IPV sub-types. In particular, physical assaults

and psychological abuse often co-existed in the same women. By contrast, sexual assaults were rare occurrences mostly reported by women who also experienced physical assaults and psychological abuse.

The co-existence of physical, sexual and psychological sub-types of IPV is in line with the conceptual framework known as the “Cycle of Violence.” Typically, women may experience IPV in three phases. The *Tension Building Phase* is characterized by poor communication between intimate partners and fear of causing violent outbursts, which is likely to be perceived by IPV victims as psychological abuse. This is followed by an *Acting-out Phase* whereby outbursts of violence and abusive incidents may occur. In the *Honeymoon Phase*, displays of affection and apology are accompanied by an apparent end of violence¹⁹⁸⁻²⁰⁸. This last phase may be perceived retrospectively as an act of manipulation as it serves to mislead the woman into believing that the violence was a single non-repeatable episode. Hence, this phase could be considered a manifestation of implicit psychological abuse.

Because of its chronic nature, it is expected that psychological abuse would be more prevalent than physical or sexual assaults. However, unlike previously published research of pregnant and non-pregnant women, this study indicated that, in a “high-risk” population of elective abortion patients, psychological abuse was nearly as common as physical assaults by a current intimate partner. In a study of 399 women attending a family medicine clinic, the prevalence of any violence, psychological violence and physical violence by an intimate partner were estimated to be 44.3%, 43.5% and 10.3%, respectively²⁹. In another study of 7,591 pregnant women, 1% experienced physical cruelty, 4.8% experienced emotional cruelty and 5.1% experienced any victimization at

18 weeks of gestation¹⁴³. In a survey of 100 pregnant women attending an abortion clinic in Canada, 41.5% suffered from physical and emotional abuse, 36.6% were abused emotionally and 12.2% were abused emotionally, physically and sexually, 4.9% reported sexual abuse alone and 2.4% reported both physical and sexual abuse¹⁷⁴. The choice of screening instruments (AAS and WEB) might explain discrepant results with previously conducted studies. The AAS asks direct but non-specific questions about episodes of physical and sexual assaults, whereas the WEB asks indirectly about specific aspects of psychological abuse. Although none of the currently available IPV instruments can be viewed as the ‘gold standard’, previous studies have cross-validated IPV instruments against one another and found that the estimated IPV prevalence depends on the type of instrument being administered. It is also plausible that, in our study, survey non-response was associated with psychological abuse by a current partner. Alternatively, physical assault may constitute one of the multiple reasons for seeking elective abortions in this “high-risk” population.

The relatively low prevalence of sexual assaults may be counter-intuitive given that the study sample consists of women with unintended pregnancies who are seeking elective abortions. However, previous research also implied that sexual assaults were more frequently experienced by teenagers and women who are under 25 years of age^{260, 265}. Since women less than 18 years of age were excluded from this study, the prevalence of sexual assaults in the overall study population may have been underestimated. Other studies have indicated that having an unintended pregnancy, which constitute an important risk factor for seeking elective abortions, was mostly the result of non-use of contraception or contraceptive failure and was rarely the outcome of sexual assault or

rape¹⁶⁴. Therefore, an intimate partner's controlling behaviors and other forms of psychological abuse could be associated with a reduced access to contraception leading to unintended pregnancies and subsequent elective abortions. Alternatively, it is plausible that women in a current intimate relationship, especially those who are married to their intimate partners, may (for cultural reasons) under-report instances of sexual assault perpetrated by that partner. Specifically, women who have experienced forced sex by their husband or long-term partner may not interpret this as being sexual assault. These women may have mitigated their beliefs as to what constitutes a 'normal' sexual relationship in such a way as to perceive the sexual assault by their partners as acceptable. This 'cognitive dissonance' is a well-studied psychological mechanism aimed at reducing the emotional tension created by a gap between beliefs and behaviors. By contrast, instances of physical assault, especially those resulting in medical, social and legal interventions, are easily remembered, even in the context of a marital relationship. Interestingly, 11 (32.4%) of 34 women who reported sexual assault in the prior 12 months confirmed that their pregnancy was the outcome of a sexual assault. Due to the subjective nature of sexual assault questions and the absence of a detailed description of what constitutes a sexual assault in the instrument being used, these figures may underestimate the true number of pregnancies that can be attributed to a sexual assault. In other words, women may not be able to accurately say whether or not their pregnancy is related to sexual assault, suggesting under-reporting. Alternatively, these figures, if accurate, would imply that most of these women who are predominantly young, white, high school educated or better were seeking elective abortions for reasons that go beyond sexual assault.

Intimate partner violence: general population vs. clinical population

Study results were consistent with the literature which indicates that women identified within healthcare institutions, especially pregnant women seeking elective abortion services, experienced IPV at a higher frequency than pregnant or non-pregnant women in the general population. Numerous cross-sectional and longitudinal studies have been conducted in an effort to estimate the burden of IPV in the general population of the United States^{43, 259}. For instance, the National Crime Victimization Survey data estimated the annual prevalence of IPV against women to be 7.7 per 1,000¹. Based on state-specific Centers for Disease Control Pregnancy Risk Assessment Monitoring Surveillance data, 2.4%-6.6% of women report physical or sexual assaults by an intimate partner during pregnancy¹⁶¹. In 2005, the Behavioral Risk Factor Surveillance System (BRFSS) introduced for the first time an IPV module to collect data on a nationally representative sample of 70,000 respondents from 16 states and 2 territories^{433, 434}. The BRFSS definition included current and former intimate partners and encompassed lifetime and 12-months physical and/or sexual assaults but did not include psychological abuse or battering. Among women, the estimated lifetime prevalence of IPV, including threatened physical, attempted physical, completed physical and unwanted sex was 26.4% (95% CI: 25.7%-27.2%). By contrast, the 12-months prevalence of completed physical and/or sexual violence was only 1.4% (95% CI: 1.2%-1.7%)⁴³⁴. In this study, 26 out of 373 (6.9%) women were physically and/or sexually abused by their current partners in the past 12 months. Thus, the annual prevalence of physical and/or sexual assaults by an intimate partner appears to be considerably higher in women who sought elective abortions versus those in the general population of the United States.

Study findings are also compatible with cross-sectional studies of women identified in various clinical settings. Women who seek health services in primary care clinics or emergency departments often have a substantially higher prevalence of IPV than women who are surveyed in the general population^{20, 21, 24-33}. This well-established finding has been attributed to the fact that IPV can lead to increased healthcare utilization as a result of various physical and mental health outcomes associated with being in an abusive relationship^{229, 283}. Previous studies have suggested that victims of IPV experience injury^{109, 113}, disability^{20, 25}, chronic pain^{20, 26, 109, 113, 119}, arthritis²⁰, headaches or migraine^{20, 26}, gastrointestinal signs^{20, 109, 113}, vaginal bleeding and sexually transmitted infections^{26, 109, 113, 209} more frequently than non-victims. Moreover, substance use and abuse^{53, 109}, social dysfunction^{109, 113}, insomnia^{109, 113}, post-traumatic stress disorder^{119, 275-278}, anxiety^{109, 113}, depression^{59, 67, 111, 116-120} and suicidal thoughts^{26, 127, 279} are more frequently reported in IPV. In sum, a plethora of health problems may be afflicting women who have experienced IPV and healthcare settings provide an opportunity for identifying and treating IPV as well as IPV-associated health problems. Even if IPV is not the primary complaint, screening for IPV can help healthcare providers while counseling their patients to reduce the risk of IPV and its associated health problems. Because elective abortions are conducted in primary care settings, women seeking elective abortions may be at high risk for IPV and its associated health problems. This clinical population should, therefore, be classified as a group vulnerable for IPV alongside other women seeking primary or urgent care.

Intimate partner violence in the context of pregnancy termination

Because women frequently seek healthcare while pregnant, numerous studies have attempted to evaluate how pregnancy can influence patterns of IPV^{4, 18, 115, 117, 141-160}. Yet, it remains uncertain whether the risk of IPV initiation or escalation increases, decreases or remains the same as a result of pregnancy¹⁵⁵. Despite the dearth of evidence, prevention programs have mainly targeted pregnant women in prenatal care settings^{13, 115, 117, 140, 230, 290, 392, 435}. Women seeking pregnancy termination have not received the same level of attention^{384, 386}. As the issue of abortion is still present in the American public debate, and as its legitimacy is not universally accepted, it is plausible to assume that seeking pregnancy termination is not totally devoid of social stigma, hindering as such the attention it deserves.

Women who choose to terminate a pregnancy through an elective abortion may do so for a variety of reasons, including interpersonal problems with their intimate partners¹⁸². On the other hand, abortion patients represent a sub-group of a larger population of women with unintended pregnancies, who often delay or forego entry into prenatal care¹⁶⁷. Thus, opportunities to screen for IPV are often lacking for many women with unintended pregnancies, and especially those who seek abortions. A history of IPV and a higher frequency of risk factors for IPV (e.g. substance abuse and depression) have repeatedly been reported among women with unintended pregnancies^{16, 167-173}. Although the psychosocial mechanism linking IPV to unintended pregnancies has not been elucidated, several alternative explanations have been advanced. In some instances, IPV could precede an unintended pregnancy and be a direct 'cause' of it. At other times, an unintended pregnancy may be the event that causes IPV. Alternatively, unintended

pregnancy and IPV may co-exist because of factors such as substance abuse and depression that are related to both conditions ¹⁶.

While being a “high-risk” group for IPV, elective abortion patients have less opportunity for IPV screening and intervention. The notion that women seeking pregnancy termination are “high-risk” for physical, sexual and/or psychological abuse by an intimate partner has been suggested by a recent study that compared the prevalence of IPV among women seeking elective abortion services to that in women who continue their pregnancy to term ³⁸⁴. Bourrasa and Berube ³⁸⁴ assessed IPV prevalence in 350 women seeking abortion services at family planning clinics compared to 653 women continuing their pregnancy in prenatal care clinics. For elective abortion patients, the annual prevalence rate of IPV (including psychological, physical, and/or sexual abuse) was almost three times higher (25.7% vs. 9.3%, $P < 0.0001$), and the risk of being a victim of physical and/or sexual IPV in the past year was almost four times higher (7.1% vs. 1.8%, $P < 0.0001$) than for women who continued their pregnancy to term ³⁸⁴.

On the other hand, women seeking pregnancy termination constitute a sub-group of patients who are seeking family planning services. Studies that were restricted to women seeking elective abortion services in family planning settings found an annual prevalence rate of IPV that ranged between 13.8% ¹⁷⁶ and 25.7% ³⁸⁴. However, methods used to estimate the frequency of IPV in this target population differed among studies and were not easily comparable. Although several of those studies used a non-probability sampling strategy and a self-administered questionnaire, they differed in many other respects. For instance, sample sizes ranged between 51 ¹⁷⁵ and 818 ¹⁷⁶ women. While most studies defined IPV as abuse perpetrated in the context of a current or former

intimate relationship, many did not include psychological forms of abuse in their definition of IPV^{162, 174-177, 183, 384}. Despite variations in case definition, the present study suggests an annual prevalence rate of physical, sexual and/or psychological violence by a current intimate partner that approximates findings from studies conducted in abortion clinics and is higher than rates reported in the general population. Thus, the cited findings of this study underscore the legitimacy of the classification of this clinical subgroup of abortion-seeking women as vulnerable to IPV.

The mechanism linking IPV to abortion-seeking behaviors is not well understood. However, empirical evidence exists suggesting that primary motives for seeking an abortion are relationship issues with the intimate partner, which may involve interpersonal violence. For various reasons, the survey did not include detailed questions about motives for seeking pregnancy termination at the clinic. However, in a study by Glander *et al.*¹⁷⁵, relationship issues were the only reason for pregnancy termination given more often by abused versus non-abused women. Furthermore, abused women were significantly less likely than their non-abused counterparts to inform their partners of the pregnancy or to have partner support for an abortion decision¹⁷⁵. In a cross-sectional study of 818 abortion patients, Woo *et al.*¹⁷⁷ reported a 14% prevalence rate of physical and/or sexual abuse over the past 12 months. In addition, 17.2% of abortion patients did not disclose their abortion-seeking behaviors to their partners. Physical and/or sexual abuse was twice as high among non-disclosers (23.7% compared with 12.0%, $P = 0.001$). Among non-disclosers, 45.3% indicated that 'the relationship with the partner had no future', 37.4% did not feel 'obliged to notify their partners', 20.9% suggested that 'the partner would oppose the abortion', and 7.9% replied that 'disclosure

would result in physical harm¹⁷⁷. Thus, abortion-seeking behaviors may be markers for interpersonal problems in the context of an intimate relationship. Women who decide to terminate a pregnancy are, therefore, at increased risk for physical, sexual and/or psychological abuse by their intimate partners. More importantly, women who are abused by their intimate partners are often limited in terms of their reproductive choices.

Whereas abusive partners may coerce these women into seeking an abortion, they may also be opposed to abortion-seeking behaviors. In the former situation, abortion-seeking behavior is in itself a marker of IPV. In the latter situation, inadvertent disclosure of abortion-seeking behaviors to an abusive partner may put these women at risk for further abuse. Given the high prevalence of IPV among women seeking pregnancy termination, laws that require women to disclose their decision to seek an abortion to their partners should be averted.

Socio-demographic correlates of intimate partner violence

This study indicated that women seeking abortions who reported physical, sexual and/or psychological abuse by their current partners were more likely to come from a minority racial or ethnic group. Less than high-school education distinguished partners who perpetrated physical, sexual and/or psychological violence versus those who were non-abusers. Also, married or cohabiting women experienced violence by their current partners at a higher frequency than those involved in a dating relationship. Other socio-demographic characteristics of women and their partners were not associated with IPV.

A higher frequency of IPV in minority racial or ethnic groups is consistent with the literature^{19, 40, 43, 44, 212, 259} and may be explained by either the subculture of violence

whereby “some groups in society accept violence as a means of conflict resolution more than others ¹⁹” or the social structural theory whereby “intimate partner violence is associated not with the cultural characteristics of the group but with the societal structural conditions” such as “poverty, under-nutrition, and high unemployment that characterize the life of members of a particular minority group ¹⁹.” More importantly, belonging to a minority disadvantaged group is conducive to feelings of powerlessness of its individuals in comparison to individuals from mainstream groups, and is likely to make them compensate for their powerlessness by ‘scapegoating’ a suitable vulnerable individual within their reach and in their own potential power circle. Partner’s level of education ^{26, 38, 39} is one of many indicators of socioeconomic status which could be associated with behavioral characteristics (such as substance abuse) leading to violence perpetration against women in the study population. Previous studies have found that couples who were married or cohabiting ^{37, 38, 56, 110, 116, 269} were at increased risk for experiencing IPV in their lives. The fact that violence against women in the context of a marital or cohabiting relationship is higher than in a dating relationship is expected. In fact, men who are prone to violence have greater access to their partners and more opportunities arise for them to perpetrate physical, sexual and/or psychological abuse when the couple is living together. ‘Marriage’ or ‘cohabitation’ imply a high level of commitment in intimate partner relationships in comparison with the dating relationship where the partner’s commitment is still ‘conditional’ and pending until proven advantageous to both parties. It is likely that ‘married’ or ‘cohabiting’ male partners are more comfortable and less strained in their resorting to physical, sexual and/or psychological abuse than their dating counterparts.

The lack of association between IPV and established socio-demographic risk factors including a woman's age and her level of education are suggestive of self-selection bias which may have resulted in a homogeneous group of women who agreed to part-take in the study. As mentioned previously, the study sample consists of women who are younger and more educated than those found in the overall study population. Although the paper-and-pencil option was offered to all eligible women, it is plausible that computer literacy may have limited survey respondents to mostly younger well-educated women.

Portraying disparities in IPV prevalence by socio-demographic characteristics for the group of women seeking pregnancy termination at a family planning clinic in Iowa was necessary even though the aims of the study do not refer directly to them. This portrayal helps set a background to build upon the results pertaining to the aims of the study.

Methodologic issues

Definition of intimate partner violence

This study examined the burden of physical, sexual and/or psychological abuse perpetrated by a current intimate partner against a "high-risk" group of women who sought elective abortion services at a major family planning clinic in Iowa. The self-administered questionnaire included modified AAS and WEB scales that focused on recent experiences with IPV. Therefore, this study did not assess lifetime or childhood experiences with IPV and its sub-types. Also, the two scales (AAS and WEB) did not

include questions about threatened physical or sexual violence. While the AAS which measures physical and sexual assaults was administered to all survey participants, the WEB which measures psychological abuse was solely administered to women involved in a current relationship. In order to simultaneously examine the three IPV sub-types, analyses were restricted to women who had a partner at the time of survey administration and IPV was defined in the context of a current relationship. It is worth noting that the comparison group consists of women classified as non-abused by their current partners who may have experienced abuse by a former partner, a family member, an acquaintance or another individual. Thus, currently non-abused women represent a mix of those who never experienced abuse, those who experienced abuse by a former partner or non-partner and those who experienced abuse by their current partner at an earlier time period. The definition of IPV as an outcome and the choice of comparison group have numerous implications for the interpretation of *Aim I* and *Aim II* study findings. For instance, IPV case and comparison groups may be similar to each other, resulting in an underestimation of measures of association between IPV and other variables. In future studies, both lifetime and recent experiences with physical, sexual and/or psychological abuse should be evaluated. Furthermore, the survey instrument should be modified to allow the assessment of different types of abuse for all women, regardless of their current partner status.

Measurement of intimate partner violence

In this study, an anonymous self-administered questionnaire was used to identify women at risk for IPV. While self-administration may have reduced the chance of

interviewer-interviewee bias, the use of explicit “yes” or “no” questions to screen for physical and/or sexual violence may have resulted in IPV misclassification due to individual differences in subjective evaluation of abusive situations. By contrast, the use of a 10-item WEB scale to evaluate psychological abuse may have resulted in more accurate measurement. Moreover, women’s literacy level could have influenced their understanding of questions asked on the AAS and the WEB. Although self-administration may eliminate barriers to answering sensitive questions, good reading skills are prerequisites to valid reporting of experiences with IPV. Previous exposure to this type of questionnaire may also influence the validity of responses to IPV questions. Thus, current study results should be interpreted with caution and in light of the aforementioned limitations.

Intimate partner violence: prevalence vs. incidence

The reliance on prevalence as a measure of disease frequency is less than ideal for etiological research that focuses on better understanding of IPV risk and protective factors⁴²⁹. However, it is often difficult to estimate the incidence of IPV. A first occurrence of physical, sexual and/or psychological abuse is often ill-defined, especially that certain aspects of IPV, such as psychological abuse, are chronic by nature. The phenomenon of “Cycle of Violence” which characterizes IPV obscures further the recall of abusive episodes. In addition, a cross-sectional design allows only the identification of prevalent cases of IPV, which represent a mix of pre-existing and new IPV victims. Therefore, women included in the study sample may have been exposed to IPV with a wide range of duration and severity. Prevalence-incidence bias is another issue to be

taken into account. While acute cases of IPV leading to injury or death may be under-represented in the study sample, IPV ‘survivors’ may be over-represented. Thus, a hypothesized relationship of demographic, socioeconomic, lifestyle and health characteristics with IPV may reflect the effect of those characteristics on IPV risk, duration or both. Nevertheless, it is possible to evaluate the degree to which IPV prevalence differs according to selected individual-level characteristics, with the aim of identifying sub-groups who are experiencing IPV at a greater frequency than others. Based on such epidemiologic data, scarce resources within clinical settings can be re-distributed in order to target preventive strategies at patients who are likely to benefit from various interventions.

Intimate partner violence and survey completion

The estimated prevalence of IPV, its sub-types and co-existence of physical, sexual and/or psychological abuse may be partly explained by self-selection which is more likely to occur in surveys with low participation (50%) and response (56.4%) rates. Although it is difficult to infer the direction and magnitude of self-selection bias, comparing the eligible population to the study sample on basic socio-demographic characteristics is useful for the interpretation of study findings. The characteristics of the selected study sample which consists of currently partnered women having valid data on the AAS and the WEB were systematically different from the population of eligible women who attended the abortion clinic during the study period. Specifically, women included in the analyses were more likely to be young, white, high school educated or better and to have sought medical rather than surgical abortion. Although young age has

been positively associated with an increased risk of IPV^{26, 37-40}, both white race^{19, 40, 43, 44, 212, 259} and higher education^{26, 38, 39} have been negatively associated with IPV. Similarly, women seeking medical abortions at an early stage of their pregnancy may be more “health-conscious” and less likely to be experiencing IPV. On the whole, systematic differences in the socio-demographic profile of eligible subjects versus those who took part in the study suggest that the prevalence of IPV may be an underestimate of the actual prevalence in the study population. The actual direction of bias associated with non-response is difficult to determine, especially that exclusion of older women can lead to over-estimation whereas over-representation of white, highly educated and medical abortion-seekers can lead to under-estimation of IPV prevalence. In an effort to overcome under-representation of specific age groups within the larger study population, further research should be conducted to determine incentives appropriate for the different age groups.

Aim I

In *Aim I*, we sought to determine whether IPV was associated with employment characteristics of women and their partners. Accordingly, we examined differences in IPV prevalence by employment characteristics. This exploratory analysis was conducted to identify sub-groups of elective abortion patients who may benefit from a targeted intervention. As suggested by Dutton’s “nested ecologic theory”²¹¹, unemployment is an exosystem-level risk factor for IPV. Furthermore, the social structural theory implies that IPV may be higher in certain groups because of their greater propensity to adverse social conditions including a high rate of unemployment¹⁹. In the context of pregnancy

termination, the association between IPV and employment characteristics can be linked to theories of fertility, the most relevant being the ‘economic model’ first described by Becker in 1960⁴³⁶. In this model, it is implied that children are sought by prospective parents because of the ‘flow of services’ which these children might produce over time⁴³⁶. These services have been conceptualized as different types of utility, including ‘consumption’ (emotional/psychological), ‘labor productivity’ and ‘old-age security’ utilities⁴³⁶. In most developed societies, including the United States, emphasis is placed on the ‘consumption’ utility. For this reason, prospective parents in the United States often seek ‘child quality’ rather than ‘child quantity’^{436, 437}. Whereas the demand of an additional child is constrained by income, prices of other economic goods and taste, the supply of children is dependent on use of contraception and a woman’s level of fecundity^{436, 438}. The difference between potential supply and potential demand of children determines the motivation for fertility control. When supply exceeds demand, a pregnancy is often perceived as unintended. Although circumstances differ for each unintended pregnancy, population-based studies have shown that nearly half of unintended pregnancies result in elective abortions. Thus, interpersonal problems in a couple relationship, and therefore, IPV may not be the only factor responsible for abortion-seeking behaviors. The lack of adequate resources needed for child-rearing may be an alternative or additional reason for pregnancy termination. A couple who conceives under circumstances of poor employment conditions may perceive this pregnancy as unintended and be seeking abortion as an immediate solution to this economic problem. Furthermore, couples who do not have adequate resources because of poor employment conditions and are faced with an imminent problem of having to raise a child under sub-

optimal conditions may experience this situation as a stressor, which can manifest itself in the form of IPV. Therefore, it is difficult to ascertain whether (1) poor employment conditions and IPV co-exist by chance because they each constitute a motive for abortion-seeking behavior or (2) poor employment conditions in couples with an unintended pregnancy can increase the likelihood of IPV.

Intimate partner violence and unemployment

Empirical evidence indicates that, in general, unemployed individuals may be at higher risk of experiencing IPV and those who experience IPV are at higher risk for unemployment⁶⁶⁻⁷⁹. Both qualitative and quantitative studies have found that IPV is a correlate of unemployment in women seeking protective orders and those who are welfare recipients. A study by Staggs and Riger^{103, 302} examined the relationship of IPV, health, and employment stability using data from a 3-year study of over 1,000 female welfare recipients in Illinois. Chronic exposure to IPV was associated with poor health, whereas recent IPV was associated with unstable employment. However, health did not explain the effects of IPV on employment stability over the study period^{103, 302}. In this study, we did not examine the impact of IPV on employment stability, prospectively. Instead, we evaluated the cross-sectional relationship between IPV and unemployment. Specifically, current unemployment was evaluated as a potential indicator for recent experiences with physical, sexual and/or psychological abuse.

Study findings suggest that employment status of women was not significantly associated with IPV. This finding is expected since a women's employment status often depends on many factors, including personal choice, partner's preferences and family

obligations. Although the prevalence of IPV was higher when the partner was unemployed, this relationship was not statistically significant. The likelihood of experiencing IPV appears to be high among abortion-seeking women, irrespective of their employment status or that of their partners. This finding is in line with the idea that IPV and unemployment are more often than not competing reasons for pregnancy termination. Therefore, it is not necessary that IPV and unemployment co-exist in couples seeking elective abortion services. Alternatively, the lack of statistical significance may be due to inadequate power to detect weak associations between IPV and employment status.

On the other hand, the relationship between employment status and IPV appears to be more complex than described earlier, or as implied by the ‘economic model’. In particular, discrepancies in employment status which implies ‘gender role’ strain may be a more salient risk factor for IPV than employment status of either women or their partners. Specifically, a woman who is the primary provider for her household may be at an elevated risk of experiencing IPV, even though her status of being employed may also afford her social support at work and the opportunity to escape a potentially abusive relationship. Previous studies have indicated that discrepancies in educational level between women and their partners may predispose to IPV²³. Based on the National Violence Against Women Survey, individuals were more likely to report being raped, physically assaulted or stalked by a current spouse or cohabiting partner if their educational level was higher than that of their partner²³. In this study, discrepancies in employment status between couples did not influence risk of IPV. However, a non-significant trend was observed whereby women who were employed and had an

unemployed partner were more likely to experience IPV, when compared to couples where both the man and the woman were employed. This finding is in line with a previously conducted study by MacMillan and Gartner⁴³⁹. The study evaluated the association of labor force participation with spousal violence against women while considering employment as a “symbolic” rather than a “socioeconomic” resource for those women. The investigators found that the effect of woman’s employment characteristics on spousal violence was complex, as it depended on the spouse’s employment characteristics⁴³⁹. They further implied that such an association is observed because IPV could be a manifestation of a male partner’s effort to coercively control their female partners, when gender roles are switched⁴³⁹. In this study, a small sample size may have precluded the identification of weak associations between employment discrepancies and IPV. Unlike the aforementioned study, not all of the women in this study sample were married or cohabiting with their partners. This may have reduced the precision of the estimated measures of association. Moreover, since abusive partners may have better access to women in the context of a marital or cohabiting relationship, discrepancies in employment status may not be associated with IPV as frequently in a dating relationship.

Intimate partner violence and type of occupation

In this study, we assessed whether certain occupational groups increased the likelihood for violence against women seeking elective abortions by their current partners. Regardless of whether or not they reflect socioeconomic status or environmental hazards, certain occupations may be associated with a greater risk for IPV^{49, 80, 81}. For

instance, in some occupational cultures, as in construction building, harassment of women is part and parcel of the definition of masculinity. In general, women experience IPV in the home environment. However, recent reports have suggested that adverse consequences of IPV may manifest at work and that women were more frequently affected than men. According to data from the NCVS, each year, nearly 18,000 people are assaulted at work by an intimate partner, with women being five times more likely than men to be attacked by their partners^{47,49}. This finding is reminiscent of men's innate feelings of possessiveness and need to ascertain their masculinity by exerting power and control over their female partners, especially if these women were employed.

Alternatively, education, type of occupation and income are all inter-related indicators of socioeconomic status²¹⁴. Therefore, it is possible to observe disparities in IPV prevalence according to type of occupation. In the present study, we found no differences in the prevalence of IPV by occupational group of women and their partners. The lack of power to detect small differences in IPV prevalence between these groups may explain the null finding. As demonstrated by National Institute for Occupational Safety and Health (NIOSH) data, it is also plausible that IPV is more prevalent among specific types of occupations within grocery or convenience stores, eating and drinking establishments, and gasoline service stations³⁰⁸. In this study, occupations were classified into broader categories due to sample size limitations. In other words, there may be subtle differences in risks of IPV which could not be detected in this study. On the other hand, type of occupation of women and their partners were self-reported by abortion patients using an open-ended question. In many instances, the information provided was not sufficient to classify an occupation based on the selected coding system, i.e. ISCO-08. Therefore,

missing data may have resulted in selection bias and an erroneous relationship between IPV and type of occupation of women and their partners.

Although chance, self-selection and misclassification biases may play a role in the observed associations, overall results are consistent with a lack of association between IPV and employment characteristics of women and their partners. It is also plausible that stronger correlates of IPV, including having had an unintended pregnancy, may have masked the weak relationship between employment characteristics and physical, sexual and/or psychological abuse against elective abortion patients.

Aim II

In *Aim II*, we sought to determine the nature and extent of the associations between substance use, depression, social support and IPV perpetrated by current intimate partners.

Intimate partner violence and substance use

The link between substance use and IPV has been repeatedly described, with theoretical explanations falling under the following models: (1) spurious effect model; (2) indirect effect model; (3) proximal effect model. Based on the spurious model, the relationship of substance use and IPV is non-causal and is observed because both substance use and IPV are associated with potentially confounding factors. The indirect model implies that substance use is causally linked to IPV, but is mediated by other variables such as marital conflict and dissatisfaction. Finally, the proximal model suggests that psychopharmacological effects on cognitive functioning or expectancy

effects of intoxication by various substances could lead directly to IPV. Furthermore, the extent to which substance use influences IPV risk varies according to individual characteristics such as personality and relationship factors⁴⁰⁷.

Previous research has found that IPV perpetrators were more prone to be users of alcohol^{43, 44, 52-63} and other substances^{5, 53, 56}. Similarly, the use of alcohol^{15, 29, 39, 43, 44, 53, 54, 58-62, 97, 110, 111} and other substances^{15, 35, 39, 53, 54, 63, 111, 113-115} was more frequent among victims of IPV. In the current study, we examined the relationship of physical, sexual and/or psychological abuse with alcohol intake, binge drinking and recreational drug use of elective abortion patients and their current partners. After describing patterns of substance use in the study sample, we hypothesized that women who experienced IPV were more likely to report higher alcohol intake, binge drinking and use of recreational drugs (such as marijuana, hashish, cocaine, crack, amphetamines, methamphetamines and “ecstasy”) in the three months that preceded pregnancy awareness. Similarly, we hypothesized that higher alcohol intake, binge drinking and use of recreational drugs (such as marijuana, hashish, cocaine, crack, amphetamines, methamphetamines and “ecstasy”) by intimate partners in the 12 months that preceded the survey would be associated with IPV against abortion patients. Study results suggested a positive but non-significant relationship between IPV and substance use characteristics of women. Interestingly, we also found that a woman’s race/ethnicity was associated with her experience with IPV, binge drinking and recreational drug use. Specifically, women who identified themselves as ‘white, non-hispanic’ were less likely to be abused by their current partners and more likely to be binge drinkers or users of recreational drugs. Furthermore, race/ethnicity was found to be an important confounder of the substance

use-IPV relationship in women, supporting the spurious model. After adjustment for important confounders (including race /ethnicity), the odds of consuming more than 2 drinks of alcoholic beverages per week appeared to be higher among women who experienced IPV versus those who did not. Similarly, the odds of binge drinking were nearly twice as high in women who experienced IPV versus those who did not. A weaker association was observed between women's recreational drug use and IPV. However, these relationships remained statistically non-significant. By contrast, partners who consumed at least 3.5 alcoholic drinks per week, those who were binge drinkers or users of recreational drugs had significantly higher odds of perpetrating IPV against women seeking elective abortions. Regardless of how substance use is defined, partner's behaviors appear to be more salient to IPV than the woman's behaviors. These findings support the indirect or proximal effects model for the relationship between partner's substance use and IPV. These findings also highlight the need to re-focus on the partner's substance use behaviors as a means for preventing violence in the context of an intimate relationship, especially in abortion-seeking patients.

The finding that substance use patterns are important correlates of IPV is in line with previous research. In particular, binge drinking and other excessive patterns of alcohol consumption have been previously shown to be a strong correlate of IPV. By contrast, the lack of association between woman's recreational drug use and IPV is not supported by the literature. O'Leary and Schumacher⁵⁷ found that only heavy drinking and binge drinking contributed significantly to IPV. Lipsky *et al.*⁵⁴ found that an increased number of drinks per week, consuming five or more drinks per occasion, alcohol abuse and dependence, and recreational drug use were significantly associated

with the abused woman's drinking while victimized or perpetrating IPV. In a study by Cunradi *et al.*⁷⁸, past year female and male alcohol-related problems and female drug use were associated with increased risk of moderate and severe male-to-female IPV, after adjustment for important socio-demographic and psychosocial factors. Leadly *et al.*⁶² found that despite considerable concordance between couple members' drinking behaviors, discrepant drinking patterns were strongly predictive of the incidence of physical violence. Caetano *et al.*⁶⁰ observed that 30-40% of the men and 27-34% of the women who perpetrated violence against their partners reported drinking at the time of the event.

Although previous studies have repeatedly shown a significant association between IPV and substance use, the definition and measurement of substance use were inconsistent between those studies and ours. Whereas most studies examined alcohol intake, a few also considered the role of recreational drug use. Furthermore, the definition of alcohol use varied between studies, with studies focusing alternatively on heavy drinking, binge drinking, discrepancies in drinking patterns between couples and alcohol dependence. While most previously conducted studies had examined substance use that preceded a violent event, a few evaluated how the usual pattern of substance use can influence the risk of IPV. More importantly, the vast majority of these studies were focused on physical or sexual forms of violence rather than chronic psychological abuse. Others focused on severity of IPV as the outcome of interest.

In examining whether substance use plays a key role in IPV, cross-sectional design and potential for exposure misclassification should be taken into consideration⁴²⁸. In particular, the temporal relationship between substance use and IPV cannot be

elucidated with the use of a cross-sectional design. According to Caetano *et al.*⁶⁰, the role of alcohol in IPV “may be explained by people's expectations that alcohol will have a disinhibitory effect on behavior or by alcohol's direct physiological disinhibitory effect. It is also possible that people consciously use alcohol as an excuse for their violent behavior or that alcohol appears to be associated with violence because both heavier drinking and violence have common predictors, such as an impulsive personality”. The same reasoning can also be applied to the use of recreational drugs by women and their partners.

It is worth noting that substance use is particularly prone to misclassification bias. In this study, women were asked to recall their substance use in the 3 months that preceded pregnancy awareness and that of their current partners in the 12 months that preceded the survey. The recall period of 3 months prior to pregnancy awareness may suggest that some women were already pregnant during that recall period, while others were not. Furthermore, *proxy* reporting of a partner's alcohol and recreational drug use by a woman was the only available option. Because of topic sensitivity and the tendency to report socially desirable levels of consumption, women may be reluctant to provide accurate data on their substance use patterns as well as that of their partners. In particular, it is likely that women would tend to underestimate the frequency and quantity of alcohol use over the specified recall periods. However, the use of standard questions embedded within a self-administered questionnaire may have reduced the likelihood of systematic errors in self-reported substance use. Also, blinding of patients to the hypothesized relationships may have limited the chance of differential misclassification by IPV status.

Overall, study findings are consistent with that of observational studies conducted among US couples. However, due to the cross-sectional design, it would be difficult to

infer a temporal relationship between various substance use indicators and IPV. Interestingly, in this population of women seeking elective abortions, partner's substance use was more consistently associated with physical, sexual and/or psychological abuse than the female patient's own use of alcohol and recreational drugs. This finding highlights the importance of examining both the woman's and the partner's risk factors for IPV. On the other hand, this study assessed the usual pattern of substance use. We did not examine event-specific substance use or the role of substance abuse or dependence in IPV. Future surveys of women seeking elective abortions should use standard questions that measure not only usual patterns but also incident-specific substance use as well as substance abuse and dependence. This will contribute to a better understanding of the association between IPV and substance use behaviors, while facilitating comparison with the existing literature.

In general, our results do not reveal many peculiarities to women who seek elective abortions with regard to the association between substance use and IPV. As suggested by previous studies and this study, usual consumption of alcohol was less important than more excessive forms of substance use including binge drinking and recreational drug use. Nevertheless, the finding that white, non-hispanic women were at the same time less likely to be abused by their partners and more likely to be users of alcohol warrants further exploration. Also, the finding that partner's substance use indicators were more consistently associated with IPV than the woman's substance use indicators needs to be taken into consideration while designing interventions that target this "high-risk" population.

Intimate partner violence and depressive symptoms

The association between IPV and depressive symptoms has rarely been explored in studies of pregnancy women, in general, and those seeking elective abortions in particular. Clinical or unipolar depression is often used to describe the diagnosis of Major Depressive Disorder (MDD), a mental health problem characterized by low mood, low self-esteem, and loss of interest or pleasure in normally enjoyable activities. By contrast, a temporarily depressed state of mind is often screened using brief questionnaires that measure ‘depression’ or ‘depressive symptoms’. Whereas MDD is a disabling condition which adversely affects a person's family, work or school life, sleeping or eating habits, and general health, ‘depressive symptoms’ may be hallmarks of MDD. Therefore, screening for ‘depressive symptoms’ in clinical settings may help prevent MDD and its related quality-of-life issues. Depression has been described as one the *ontogenic* determinants of IPV¹⁹⁷. Therefore, IPV and depressive symptoms are likely to be correlated, and may even reinforce one another. Although physical and/or sexual abuse is an established risk factor for depression²⁸², depression^{59, 67, 111, 116-120} has also been described as a health ‘consequence’ of IPV. In a recent article, Daniels suggested that the association of IPV with depression was “deadly co-morbidity” due to the well-established risk of homicide and suicide in the presence of both conditions¹²⁰.

In this study, we evaluated whether having high levels of depressive symptoms was associated with IPV victimization of women seeking elective abortions. On the whole, 56.8% of women scored 10 or higher on the CESD-10 scale and were, thus, labeled as having high depressive symptoms. The elevated prevalence of depressive symptoms among women in the study sample is expected since unintended pregnancies

and ultimately abortion-seeking behaviors are stressful situations conducive to adjustment difficulties which could lead to depression. Conversely, abortion-seeking behaviors could also be influenced by situational depression. It is worth noting that, in this study, a screening rather than a diagnostic tool was used. Therefore, women who screen positive for depressive symptoms may or may not be depressed according to a more definitive scale such as the Beck Depression Inventory or the Composite Diagnostic International Interview.

Study results suggest that women who experience physical, sexual and/or psychological abuse by their current partners were considerably more likely than their non-abused counterparts to screen positive on the CESD-10 scale (80.0% versus 53.7%; OR=3.45, 95% CI: 1.54-7.74). This finding is consistent with current knowledge and evidence. Yet, the direction of the association between IPV and depression is less clear-cut. In a study by Martin *et al.*¹¹⁷, women who were victims of psychological aggression during the year before pregnancy were not at elevated risk for depression except when the psychological aggression was very frequent. However, during pregnancy, psychological aggression was more closely tied to women's depression levels, regardless of its frequency. In addition, women who experienced any level of physical assault or sexual coercion by their intimate partners (before or during pregnancy) were more likely to be depressed compared to non-victims. Leung *et al.*⁴⁴⁰ used the AAS and the Edinburgh Postnatal Depression Scale (EPDS) to assess the relationship between physical, sexual and/or psychological abuse and postnatal depression in a Chinese community and found that women who experienced abuse had significantly higher EPDS scores than those who did not. Recently, Rodriguez *et al.*⁴⁴¹ described depression among 210 pregnant Latinas

attending prenatal care clinics by IPV status and found that significantly more women exposed to IPV scored at or above the cutoff point for depression than women who were not (41% vs. 18.6%; $P < 0.001$).

The finding of a strong relationship between IPV and a victim's depressive symptoms, in the absence of a similar relationship between IPV and the victim's substance use has been corroborated with a previously conducted cross-sectional study¹¹¹. Lipsky *et al.*¹¹¹ found predictors of IPV perpetration to be black race, married or living with a partner, heavy drinking, recreational drug use and current depression. Depression, but not substance use, also predicted victimization, in addition to black race, being married or living with a partner, and younger age.

Our analyses also suggested that the strength of the association between IPV and depressive symptoms differed by whether young children were present in the home or not. More specifically, the association was nearly 10 times stronger among women who had children versus women who did not. Previous research suggested that, at the household level, various socioeconomic indicators including income^{26, 37, 40}, crowding index⁹⁷, and having young children in the home³⁷ were correlated with IPV. For women experiencing IPV, having young children may constitute an important barrier for escaping an abusive relationship. In the presence of young children, IPV may be accompanied by other stressful forms of family violence, including child abuse. Such situations may explain why the association of IPV and depressive symptoms is enhanced in the presence of young children^{38, 109, 117, 118, 120, 128, 442}. Furthermore, termination of pregnancy is a stressful life event and requires the mobilization of the woman's potential resources conducive to adjustment to its demands. The need to care for young children at

home in addition to the stress created by an impending pregnancy termination is likely to drain her resources. IPV deprives the woman of the most "naturally" implicated of human resources namely the intimate partner himself. It is not unwarranted to assume that the situation with multiple stressors should reinforce the feeling of helplessness of this group of women and reduce their propensity to adjust to the situation as manifested by depressive symptoms. Hence among the patients seeking pregnancy termination, women with young children are particularly vulnerable and are at a higher risk for IPV and depression and need to be screened not only for abuse but for depressive symptoms equally so as to address all stressors simultaneously.

Intimate partner violence and social support

Lack of social support has been previously identified as a major correlate of IPV, a barrier to seeking legal, social and medical services^{161, 247, 373} and a risk factor for health problems associated with IPV¹²⁷. Based on the theoretical framework of the "Stress Process", health is negatively influenced by acute and chronic stressors; the impact of these stressors on health is 'mediated' by perceived stress, coping efforts, social support, and help-seeking behaviors; personal characteristics (socioeconomic status, personality type) can affect stressors as well as factors that can "buffer" the impact of stressors on health^{122, 123, 125, 136}. Thus, social support is expected to be less available among women experiencing a stressful situation such as IPV^{122, 123, 127, 128, 133-139}. Accordingly, we hypothesized an inverse relationship between IPV and perceived availability of social support.

Given the cross-sectional design, this study did not examine whether perceived availability of social support predicted higher depressive symptoms or whether perceived availability of social support was a ‘mediator’ linking IPV to depressive symptoms. Past research has established that social support may be one of many factors that can reduce the likelihood of adverse health outcomes associated with IPV. Coker *et al.*¹²² found that, among IPV victims, perceived availability of social support was associated with a reduced risk of poor physical or mental health perceptions and fewer symptoms of anxiety, depression and PTSD as well as fewer suicide attempts^{122, 123, 253}. Meadows *et al.*¹²⁷ found that higher scores on family social support had unique predictive value for suicide non-attempter status. In another study, the IPV status-depressive symptoms link was ‘mediated’ by multiple ways of coping, spiritual well-being, and social support¹²⁸. Although this study did not examine the type (emotional, appraisal, informational, instrumental) and source (family members, friends) of social support, we used perceived availability of social support. Studies by Sarason³⁷³ had indicated that “perceived availability of social support” rather than “received social support” is the best predictor of favorable health outcomes in the context of IPV¹⁶¹. Study results suggest a strong inverse relationship between IPV and perceived availability of social support. However, the cross-sectional design represents a major barrier for drawing a definitive conclusion as to the direction and causal nature of the observed relationship. Longitudinal evaluations are needed to confirm these findings.

Strengths and Weaknesses

The main strength of this study is the examination of multiple inter-related risk and protective factors for IPV among women seeking pregnancy termination. In particular, we have examined employment characteristics, substance use, depressive symptoms and social support which have been shown to be related to IPV in other pregnant and non-pregnant populations, but have not been previously assessed among women seeking pregnancy termination. Furthermore, we used a self-administered questionnaire to elicit responses on sensitive topics such as IPV, alcohol and recreational drug use. Characteristics of women and their partners were similarly defined and evaluated in relation to IPV. Such evaluations are a pre-requisite for the design of future interventions that target this “high-risk” population. Socio-demographic and health correlates of IPV may influence the success of various interventions aimed at reducing the onset, recurrence and adverse consequences of IPV. For instance, unemployment, alcohol and/or recreational drug use, depressive symptoms and lack of social support constitute ‘barriers’ to successful implementation of informational, counseling or other forms of intervention that focus on women. Thus, study findings are useful in informing future clinic-based interventions that address unmet needs of women seeking elective abortions, including correlates of IPV that may jeopardize the outcome of various preventive strategies. It is worth noting that this study is among few that have examined the relationship between IPV and depression in the context of pregnancy.

On the other hand, study findings need to be interpreted in light of several weaknesses. First of all, more than 80% of couples included in the study were non-hispanic white. The lack of racial/ethnic diversity may have precluded the ability to

generalize the study findings to women seeking elective abortion services in other geographical areas of the United States. Second, for logistical reasons, convenience rather than probability sampling was performed. In order to preserve patient confidentiality, an anonymous questionnaire was administered on-site to a consecutive sample of women seeking pregnancy termination. Because of the “high-risk” nature of this population and the potential for personal identifier disclosure, alternative sampling strategies or methods of survey administration were not feasible. Third, the cross-sectional study design did not allow us to ascertain temporal relationships or assess whether the risk of IPV is influenced by various characteristics of women and their partners. Fourth, the low participation (50%) and response (56.4%) rates may have lead to biased estimation of physical, sexual and/or psychological abuse prevalence due to self-selection. Fifth, due to sample size limitations, we could not evaluate distinct etiologies for physical, sexual and psychological types of abuse. Sixth, only individual-level characteristics were examined as correlates of IPV, which may be viewed as ‘victim-blaming’. Further multilevel analyses should be conducted in order to evaluate the respective roles of interpersonal, household and community-level characteristics. Seventh, retrospective self-reporting of data may have increased the likelihood of non-differential misclassification of exposure and outcome measurements. This issue is particularly important in the calculation of alcohol intake, using standard questions that assess the frequency and quantity of alcohol consumption over a pre-specified recall period, with *proxy* reporting of partner’s behaviors. Eighth, screening tools used to measure psychological abuse, depression and social support may not be ideal as they had been selected for their short length and established psychometric properties in other populations. Ninth, due to the observational

nature of the study, residual confounding by unmeasured variables cannot be eliminated as an alternative explanation. In particular, the magnitude of the association of IPV with socio-demographic and health characteristics may still be prone to confounding bias. The lack of data on two major risk factors for IPV, namely household income and history of child abuse, may have limited the ability to control for confounding in the assessment of hypothesized relationships. Finally, the conceptualization and operationalization of key variables, including IPV and substance use, was often different from previously conducted studies, adding to the difficulty in assessing the overall evidence. Weaknesses of this study did not obscure the importance of our research findings. In particular, this study highlighted the importance of attending to this group of women seeking abortion and examining further co-morbidities of IPV among them in order to address their needs in a comprehensive multifaceted manner and in accordance with their multiple inter-related risk factors.

Implications for policy and research

Our study findings have numerous implications that fall under the realms of screening, intervention and education. The lack of sufficient evidence for or against IPV screening and intervention programs within healthcare settings have resulted in a grade I recommendation by the United States Preventive Services Task Force (USPSTF), the Canadian Task Force on Preventive Health Care (CTFPHC) among other professional groups⁴⁴³. This recommendation implies that routine IPV screening may or may not be effective or safe and that intervention trials should be conducted in primary care settings to determine whether preventive programs can influence the risk of IPV and its adverse

health consequences. The American College of Obstetricians and Gynecologists (ACOG) recommends that physicians routinely ask women direct and specific questions about IPV⁴⁴³. The American Medical Association (AMA) recommends routine screening of IPV and referrals to community-based services⁴⁴³. The American Academy of Family Physicians (AAFP) recommends that family physicians be alert to the presence of family violence in every patient encounter⁴⁴³. The American Academy of Pediatrics Committee on Child Abuse and Neglect (AAPCCAN) recommends routine screening of all women for abuse at the time of the well-child visit and implementation of a protocol that includes a safety plan for the whole family⁴⁴³. Although family planning services are considered primary care, no recommendations have been coined for the subset of women who are seeking elective abortions. Our study indicates that the prevalence of IPV in this clinical population is comparable to that of women seeking other medical services and higher than in the general population of the United States. Because current evidence for or against IPV prevention programs is insufficient, this under-studied group of women should receive similar treatment allotted to women in other clinical settings.

IPV is a good candidate for screening, as it is potentially modifiable, highly prevalent and has been associated with adverse health problems, including substance abuse and depression. Yet, various barriers to screening and intervention have been described elsewhere. Most of these barriers can be overcome with the help of computer-based or audiotape-based technologies, including the online survey tool used in this particular study. These technologies can be further developed in a way that would allow the healthcare provider to identify “high-risk” women in real-time and tailor interventions according to patient level of exposure to IPV as well as their personal characteristics.

The usefulness of short IPV screening instruments, especially the AAS, in identifying “high-risk” women need to be further evaluated. Although a brief questionnaire may be viewed as being more acceptable for women and their healthcare providers, the validity of this questionnaire should initially be tested against the “gold standard” before it becomes part of clinical practice. Such validation studies should take place in the clinical setting of interest.

Although less feasible than in the context of prenatal care, repeated screening for IPV in women seeking abortion may be a means to counter the effect of the *Honeymoon* phase within the “Cycle of Violence”. In addition, a short inventory administered to the patients may be of help to assess their beliefs of what constitutes abuse in all its forms, the psychological in particular, their attitude towards its "legitimacy" in the context of intimate relationships, their perception of how to respond to it, the information they have about their legal rights and so on. This inventory may be a sensitization stimulus to the patient and a valuable indicator of the attitude of the patient towards IPV and hence her propensity to reporting it.

The strong relationship of IPV with depressive symptoms, especially in the presence of young children in the home is suggestive of the need to integrate family planning services with domestic violence, mental health and child support services, through the establishment of partnerships within the community. In addition to off-site referrals, counseling and support groups may also be useful on-site services given the inverse relationship between social support and IPV. By the same token, partners of women seeking elective abortion services need to be involved in IPV prevention programs that focus on substance use. Clearly, a partner’s alcohol and recreational drug

use was more consistently correlated with IPV than the female patient's substance use indicators.

Patient counseling by healthcare providers should include an evaluation of the reasons for seeking elective abortions, as they may provide an indirect measure of IPV risk in these women. Whereas lack of economic resources may have triggered the decision to seek an abortion, women who are the main provider for their family are more likely to be seeking an elective abortion because of interpersonal problems with the partner. However, women who are unemployed may also need counseling since work is a valuable resource that can help these women escape an abusive situation, when it occurs. Discrepancy in employment status among couples appears to be correlated with IPV suggesting the need to implicate the partner in interventions that focus on job-seeking and skill-building, rather than only focusing on women.

With the relatively increasing mobility of families in current times, individuals in intimate relationships are more likely to draw their social support from their partners who would probably be the most stable figure in their changing human environment. Hence women seeking elective abortion that are subjected to IPV lack a major source of social support when they mostly need it. The situation is further aggravated if the woman has just moved to a new place and has not had the chance yet to build her social network. It is recommended that women seeking elective abortions be screened for social support and be invited to community support groups. For the same reasons, laws that require women seeking elective abortions to disclose their decision to their partners should be abated.

Finally, interventions should not only target patients seeking elective abortions, but the medical staff at the family planning clinic as well. Prior to implementation of

IWHES, the educators at the clinic received Level I IPV training in collaboration with the Iowa Department of Public Health. Such training should be part of the curriculum of health professionals, including medical doctors and nurse practitioners, who provide services to women seeking elective abortions. This training is also a pre-requisite for implementation of routine screening and intervention activities within this clinical setting. Irrespective of their IPV status, patients should also be made aware of the availability of on-site and off-site services that are available to them. This educational effort can be accomplished through informational tools such as buttons, posters, tear-off cards and newsletters.

Final conclusion

Violence against women by their intimate partners is a major public health concern that has been previously linked with injuries, homicide, suicide and a wide spectrum of physical and mental health problems. Although patterns of IPV around pregnancy remain elusive, an unintended pregnancy has been associated with a greater likelihood of IPV. Most (if not all) pregnant women seeking elective abortion have had an unintended pregnancy and reasons offered for seeking abortions are often linked to relationship issues with the partner. Therefore, this clinical population can be considered as “high-risk” for IPV.

This study indicates a relatively high prevalence of IPV among women seeking pregnancy termination at a major family planning clinic in Iowa. Unlike prenatal care settings, routine screening for IPV has not been established for elective abortions patients. Accordingly, screening interventions that target this “high-risk” population need

to be developed, taking patient health characteristics into consideration. Such interventions will help reduce the burden of IPV through identification of victims and referral to on-site and off-site services. The study identified multiple characteristics of this “high-risk” population that may be helpful in designing an intervention. In particular, partner’s substance use characteristics and the woman’s depressive symptoms appear to be important mental health issues that need to be addressed in conjunction with IPV. Furthermore, these findings suggest that social support may reduce the burden of IPV and its health consequences, including depressive symptoms. However, this finding needs to be further confirmed with the use of longitudinal study designs. The lack of association between IPV and employment characteristics suggests that elective abortions patients are equally prone to physical, sexual and/or psychological abuse by their intimate partners, regardless of their employment status and type of occupation. By contrast, behavioral (substance use) and psychosocial (depression, social support) factors appear to be more strongly correlated with IPV. In sum, this preliminary study allows us to generate hypotheses regarding the inter-relationships among IPV and its various correlates. Given the compelling evidence, more advanced study designs are needed to confirm and elucidate the observed associations between IPV, substance use, depression and social support. This information will be useful for the design, implementation and evaluation of screening interventions that target the “high-risk” population of women seeking pregnancy termination.

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APPENDIX A

IOWA WOMEN'S HEALTH EXPERIENCE SURVEY: QUESTIONNAIRE

Dear Planned Parenthood of Greater Iowa Patient,

We invite you to participate in this voluntary, anonymous and confidential survey conducted by the University of Iowa. We are doing this survey to understand how we can help women and their families who are experiencing violence in their lives. Even if this doesn't apply to you, it is important for us to collect information from all women. This information will help us learn about the support and resources women and their families need when they are experiencing violence in their relationships.

Your participation in this survey is completely voluntary. Your answers will be anonymous and remain confidential. This means that no one will know if you participated in this survey and no one will be able to link your answers to you. Because this survey covers a sensitive topic, some of the questions might make you feel uncomfortable. You may skip any questions that you do not want to answer. If you decide not to do the survey, it won't affect your medical care or your eligibility for any kind of benefit in any way.

We greatly appreciate your taking time to fill out this survey. You will receive a \$5.00 gift card to compensate you for your time. The survey will take 10-15 minutes to complete. Please do not enter your name or any other personal information on the survey.

For further details about the survey, please contact Dr. Audrey F. Saftlas at the University of Iowa College of Public Health: 319-384-5013.

If you have questions about the rights of research subjects, please contact the Human Subjects Office, 300 College of Medicine Administration Building, The University of Iowa, Iowa City, IA 52242, (319) 335-6564, or e-mail irb@uiowa.edu.

Follow the instructions below before you begin:

- 1) **Do not put your name or any other personal information on the questionnaire.**
- 2) **Pay attention to the skip patterns that tell you which section or question to go to next.**

SECTION A

Please, tell us a little bit about yourself.

1) How old are you? _____years

2) What is your race and ethnicity?

1. White, Non-Hispanic
2. White, Hispanic
3. Black, Non-Hispanic
4. Black, Hispanic
5. Asian
6. Other (Specify: _____)
10. Skip

3) What is the highest level of education that you have attained so far?

1. Less than High School
2. High School
3. Some college
4. College degree
5. Graduate degree
6. Other (Specify: _____)
10. Skip

4a) What is your 5-digit Zip Code? _ _ _ _ _

4b) In what county do you live? _____

5) Are you currently employed?

1. Yes
2. No (**Skip to Question 5d**)
10. Skip (**Skip to Question 6**)

5a) Is your current employment full-time or part-time?

1. Full-time
2. Part-time
10. Skip

5b) If employed, what is your job title? _____

5c) If employed, in what business or industry do you work? _____

*******Skip to Question 6*******

5d) How would you describe your employment status?

1. Never worked, not looking for a job
2. Never worked, looking for a job
3. Worked before, not looking for a job
4. Worked before, looking for a job
5. Homemaker
6. Student
10. Skip

6) What is your health insurance status?

1. Not insured
2. Medicaid
3. Private insurance
4. Military insurance
5. Other (Specify: _____)
10. Skip

6a) What type of procedure are you here for today?

1. Medical (**Skip to Question 7**)
2. Surgical
10. Skip

6b) What is your current gestational age in weeks? _____ weeks.

7) How many children under the age of 18 years currently live with you full time or part time? _ _

7a) (*If less than 1 year of age, please, type 0 in the space provided*)

What is the age of the **first** child? _____ years

What is the age of the **second** child? _____ years

What is the age of the **third** child? _____ years

What is the age of the **fourth** child? _____ years

What is the age of the **fifth** child? _____ years

What is the age of the **sixth** child? _____ years

What is the age of the **seventh** child? _____ years

What is the age of the **eighth** child? _____ years

What is the age of the **ninth** child? _____ years

What is the age of the **tenth** child? _____ years

SECTION B

8) During the past year, have you been involved in an ongoing intimate relationship? (*By intimate partner we mean sexual partner*)

1. Yes
2. No
10. Skip

9) Currently, are you involved in an ongoing intimate relationship?

1. Yes
2. No
10. Skip

The following questions focus on your relationship with your current intimate partner (i.e. spouse, life partner, boyfriend, girlfriend).

10) For how long have you been involved with your partner?

_____ Years & _____ Months

11) How would you describe your relationship with your partner?

1. Married, living together
2. Married, not living together
3. Not married, living together
4. Not married, not living together
10. Skip

12) Is your partner aware of your current pregnancy?

1. Yes
2. No (**Skip to Question 14**)
10. Skip (**Skip to Question 14**)

13) Is your partner aware of your decision to terminate this pregnancy?

1. Yes (**Skip to Question 15**)
2. No
10. Skip (**Skip to Question 15**)

14) If your partner is not aware of your current pregnancy or your decision to terminate the pregnancy, is it because...

	Yes	No
1. Your relationship with your partner doesn't have a future.	€	€
2. It is your choice. You don't feel that you need his opinion.	€	€
3. He opposes abortion.	€	€
4. He would physically hurt you.	€	€
5. You are unable to contact the father.	€	€
6. You are not sure who the father is.	€	€
7. Other(Specify: _____)	€	€

15) How would you rate your satisfaction with your relationship with your partner?

1. Excellent
2. Very Good
3. Good
4. Fair
5. Poor
10. Skip

SECTION C

Please, tell us a little bit about your partner.

16) How old is your partner? _____ years

17) What is your partner's race and ethnicity?

1. White, Non-Hispanic
2. White, Hispanic
3. Black, Non-Hispanic
4. Black, Hispanic
5. Asian
6. Other (Specify: _____)
10. Skip

18) What is your partner's highest level of education attained so far?

1. Less than High School
2. High School
3. Some college
4. College degree
5. Graduate degree
6. Other (Specify: _____)
10. Skip

20a) Is your partner currently employed?

- 1. Yes
- 2. No (**Skip to Question 20e**)
- 10. Skip (**Skip to Question 21**)

20b) Is your partner's current employment full-time or part-time?

- 1. Full-time
- 2. Part-time
- 10. Skip

20c) If employed, what is your partner's job title?

20d) If employed, what is your partner's business or industry?

*******Skip to Question 21*******

20e) How would you describe your partner's employment status?

- 1. Never worked, not looking for a job
- 2. Never worked, looking for a job
- 3. Worked before, not looking for a job
- 4. Worked before, looking for a job
- 5. Student
- 10. Skip

21) What is your partner's health insurance status?

- 1. Not insured
- 2. Medicaid
- 3. Private insurance
- 4. Military insurance
- 5. Other (Specify: _____)
- 10. Skip

SECTION D

The following are statements that women have used to describe their lives with their intimate partners. Please, indicate how much you agree or disagree with each statement.

	Agree Strongly	Agree Somewhat	Agree a Little	Disagree a Little	Disagree Somewhat	Disagree Strongly
22) My partner makes me feel unsafe even in my own home.	€	€	€	€	€	€
23) I feel ashamed of the things my partner does to me.	€	€	€	€	€	€
24) I try not to rock the boat because I am afraid of what my partner might do.	€	€	€	€	€	€
25) I feel like I am programmed to react a certain way to my partner.	€	€	€	€	€	€
26) I feel like my partner keeps me prisoner.	€	€	€	€	€	€
27) My partner makes me feel like I have no control over my life, no power, no protection.	€	€	€	€	€	€
28) I hide the truth from others because I am afraid not to.	€	€	€	€	€	€
29) I feel owned and controlled by my partner.	€	€	€	€	€	€
30) My partner can scare me without laying a hand on me.	€	€	€	€	€	€
31) My partner has a look that goes straight through me and terrifies me.	€	€	€	€	€	€

SECTION E

32) Within the last year, were you forced to have sex or engage in a sex act when you didn't want to?

1. Yes
2. No (**Skip to question 34**)
10. Skip (**Skip to question 34**)

33) Who did this to you? Was it ...

	Yes	No
1. Your current partner	€	€
2. An ex-partner	€	€
3. A family member	€	€
4. A person known to you	€	€
5. A stranger	€	€
6. Other person	€	€

34) Within the last year, have you been hit, slapped, kicked, or otherwise physically hurt by anyone?

1. Yes
2. No (**Skip to question 38**)
10. Skip (**Skip to question 38**)

35) How many times (within the last year) have you been hit, slapped, kicked or otherwise physically hurt?

1. One
2. Twice
3. Three times
4. 4-5 times
5. 6 or more times
6. Not sure
10. Skip

36) Who did this to you? Was it ...

	Yes	No
1. Your current partner	€	€
2. An ex-partner	€	€
3. A family member	€	€
4. A person known to you	€	€
5. A stranger	€	€
6. Other person	€	€

37) Overall, how would you describe the severity of your injury or injuries?

1. Very mild
2. Mild
3. Moderate
4. Severe
5. Very severe
10. Skip

38) Was this pregnancy the result of forced sex?

1. Yes
2. No
3. Not sure
10. Skip

39) Have your experiences with physical and/or sexual abuse in any way influenced your decision to end this pregnancy?

1. Yes
2. No
3. Not sure
4. Skip

Now we would like to know about your attempts to end, reduce or cope with controlling or violent behavior of your partner.

40) In regard to violence you may be experiencing, are you trying to do anything that you believe will help reduce it, end it, or even try to cope with it better?

1. I am not physically or sexually abused. (**Go to Section F**)
2. Yes, I have been doing something for more than six months. (**Go to question 40a**)
3. Yes, I have been doing something for less than six months. (**Go to question 40a**)
4. No, but I intend to in the next 30 days. (**Go to question 40b**)
5. No, but I intend to in the next six months. (**Go to question 40b**)
6. No, and I do not intend to in the next six months. (**Go to question 40c**)
10. Skip (**Go to Section F**)

40a) What measures have you taken to help you end, reduce or cope with physical or sexual abuse?

	Yes	No
I sought advice from a family member .	€	€
I sought advice from a friend .	€	€
I sought advice from a co-worker .	€	€
I sought advice from a religious leader .	€	€
I sought information by reading pamphlets about domestic violence.	€	€
I sought information by searching the internet .	€	€
I sought care from a counselor .	€	€
I sought care from a doctor .	€	€
I sought care from a nurse .	€	€
I sought care from a psychiatrist .	€	€
I sought care from a psychologist .	€	€
I sought care from a social worker .	€	€
I sought care from other health professional .	€	€
I sought no-contact order .	€	€
I called 911 for help.	€	€
I called Domestic Violence Hotline .	€	€
I called the shelter for abused women.	€	€
I tried to leave the relationship .	€	€
I took other measures.	€	€

*****Skip to Question 41*****

40b) What do you plan to do to help you end, reduce or cope with physical or sexual abuse?

	Yes	No
Seek advice from a family member .	€	€
Seek advice from a friend .	€	€
Seek advice from a co-worker .	€	€
Seek advice from a religious leader .	€	€
Seek information by reading pamphlets about domestic violence.	€	€
Seek information by searching the internet .	€	€
Seek care from a counselor .	€	€
Seek care from a doctor .	€	€
Seek care from a nurse .	€	€
Seek care from a psychiatrist .	€	€
Seek care from a psychologist .	€	€
Seek care from a social worker .	€	€
Seek care from other health professional .	€	€
Seek no-contact order .	€	€
Call 911 for help.	€	€
Call Domestic Violence Hotline .	€	€
Call the shelter for abused women.	€	€
Try to leave the relationship .	€	€
Take other measures.	€	€

*****Skip to Question 41*****

40c) If you are not planning to take measures to try to end, reduce, or cope with physical or sexual abuse in the next 6 months, please, help us understand why.

	Yes	No
I feel too ashamed to talk about it.	€	€
I can't afford to get the help I need.	€	€
I don't know where to go to get the help I need.	€	€
The services I need are too far away.	€	€
I don't have my own transportation.	€	€
I can't get away because I have to take care of my child or children.	€	€
I am afraid to seek help because my partner might find out and hurt me.	€	€
I would feel guilty for getting help because of my religious beliefs.	€	€
I don't think other people can help me with my problems.	€	€
I am just too overwhelmed.	€	€
Other	€	€

SECTION F

41) During the **three months** BEFORE you found out that you were pregnant, did **you** use any alcoholic beverages?

1. Yes
2. No (**Skip to question 42**)
10. Skip (**Skip to question 42**)

41a) During the **three months** BEFORE you found out that you were pregnant, how often did **you** have any kind of drink containing alcohol?

By drink we mean a 12 ounce can or glass of beer, a 5 ounce glass of wine, or a drink containing 1 shot of liquor.

1. Every day
2. 5 to 6 times a week
3. 3 to 4 times a week
4. Twice a week
5. Once a week
6. 2 to 3 times a month
7. Once a month
8. 3 to 11 times in the past year
9. 1 or 2 times in the past year
10. Skip

41b) During the **three months** BEFORE you found out that you were pregnant, how many alcoholic drinks did **you** have on a typical day when drinking alcohol?

1. 25 or more drinks
2. 19 to 24 drinks
3. 16 to 18 drinks
4. 12 to 15 drinks
5. 9 to 11 drinks
6. 7 to 8 drinks
7. 5 to 6 drinks
8. 3 to 4 drinks
9. 2 drinks
10. 1 drink
100. Skip

41c) During the **three months** BEFORE you found out that you were pregnant, how often did **you** have 4 or more drinks containing any kind of alcohol within a two-hour period?

1. Every day
2. 5 to 6 days a week
3. 3 to 4 days a week
4. Two days a week
5. One day a week
6. 2 to 3 days a month
7. One day a month
8. 3 to 11 days in the past year
9. 1 or 2 days in the past year
10. Never
100. Skip

42) During the last **twelve months**, has **your partner** used any alcoholic beverages?

1. Yes
2. No (**Skip to question 43**)
10. Skip (**Skip to question 43**)
0. No current partner (**Skip to question 43**)

42a) During the last **twelve months**, how often did **your partner** have any kind of drink containing alcohol? (*By drink we mean a 12 ounce can or glass of beer, a 5 ounce glass of wine, or a drink containing 1 shot of liquor*)

1. Every day
2. 5 to 6 times a week
3. 3 to 4 times a week
4. Twice a week
5. Once a week
6. 2 to 3 times a month
7. Once a month
8. 3 to 11 times in the past year
9. 1 or 2 times in the past year
10. Skip

42b) During the last **twelve months**, how many alcoholic drinks did **your partner** have on a typical day when drinking alcohol?

1. 25 or more drinks
2. 19 to 24 drinks
3. 16 to 18 drinks
4. 12 to 15 drinks
5. 9 to 11 drinks
6. 7 to 8 drinks
7. 5 to 6 drinks
8. 3 to 4 drinks
9. 2 drinks
10. 1 drink
100. Skip

42c) During the last **twelve months**, how often has **your partner** had 5 or more drinks containing any kind of alcohol within a two-hour period?

1. Every day
2. 5 to 6 days a week
3. 3 to 4 days a week
4. Two days a week
5. One day a week
6. 2 to 3 days a month
7. One day a month
8. 3 to 11 days in the past year
9. 1 or 2 days in the past year
10. Never
100. Skip

43) During the **three months** BEFORE you found out that you were pregnant, did **you** use any drugs such as marijuana/hashish, cocaine/crack, amphetamines or methamphetamines, "ecstasy" etc.?

1. Yes
2. No (**Skip to question 44**)
10. Skip (**Skip to question 44**)

43a) During the **three months** BEFORE you found out that you were pregnant, how often did **you** use any kind of drugs?

1. Every day
2. 5 to 6 times a week
3. 3 to 4 times a week
4. Twice a week
5. Once a week
6. 2 to 3 times a month
7. Once a month
8. 3 to 11 times in the past year
9. 1 or 2 times in the past year
10. Skip

44) During the last **twelve months**, did **your partner** use any drugs such as marijuana/hashish, cocaine/crack, amphetamines or methamphetamines, "ecstasy" etc.?

1. Yes
2. No (**Skip to question 45**)
10. Skip (**Skip to question 45**)
0. No current partner (**Skip to question 45**)

44a) During the last **twelve months**, how often did **your partner** use any kind of drugs?

1. Every day
2. 5 to 6 times a week
3. 3 to 4 times a week
4. Twice a week
5. Once a week
6. 2 to 3 times a month
7. Once a month
8. 3 to 11 times in the past year
9. 1 or 2 times in the past year
10. Skip

SECTION G

Please, indicate how much you agree or disagree with the following statements describing the social support available to you.

There is someone available who would...

	<i>1. Agree Strongly</i>	<i>2. Agree Somewhat</i>	<i>3. Neither agree nor disagree</i>	<i>4. Disagree somewhat</i>	<i>5. Disagree Strongly</i>
45. Help you feel better when are under stress.	€	€	€	€	€
46. Accept you totally, including both your worst and best points.	€	€	€	€	€
47. Care about you, regardless of what is happening to you.	€	€	€	€	€
48. Help you feel better when you are feeling down in the dumps.	€	€	€	€	€
49. Console you when you are upset.	€	€	€	€	€

Below is a list of some of the ways you may have felt or behaved. Please, indicate how often you felt this way during the month before you learned of your pregnancy by checking the appropriate space.

During the month before I learned of my pregnancy...

	<i>0.Rarely or none of the time</i>	<i>1.Some or a Little of the Time</i>	<i>2.Occasionally or Moderate Amount of the Time</i>	<i>3.Most or all of the Time</i>
50. I was bothered by things that usually don't bother me.	€	€	€	€
51. I had trouble keeping my mind on what I was doing.	€	€	€	€
52. I felt depressed.	€	€	€	€
53. I felt that everything I did was an effort.	€	€	€	€
54. I felt hopeful about the future.	€	€	€	€
55. I felt fearful.	€	€	€	€
56. My sleep was restless.	€	€	€	€
57. I was happy.	€	€	€	€
58. I felt lonely.	€	€	€	€
59. I could not get "going".	€	€	€	€

60. Of the following categories, who do you think are best able to help people who experience violence in their intimate relationships?

	1. Yes	2. No	3. Not sure
Family	€	€	€
Friends	€	€	€
Co-workers	€	€	€
Healthcare providers	€	€	€
Social workers	€	€	€
Religious leaders	€	€	€
Police	€	€	€
Other	€	€	€

SECTION H

We are interested to know your opinion regarding this survey questionnaire. Please, indicate on a scale of 1 (Agree strongly) to 5 (Disagree strongly) how you felt about the different aspects of this questionnaire.

	1 (Agree strongly)	2 (Agree somewhat)	3 (Neither agree nor disagree)	4 (Disagree somewhat)	5 (Disagree strongly)
The length of the survey was acceptable.	€	€	€	€	€
The questions were easy to understand.	€	€	€	€	€
Although some of these questions cover sensitive topics, I believe it is important to ask women these questions.	€	€	€	€	€

Please, feel free to provide us with any remarks or suggestions regarding the survey questionnaire.

This is the end of the survey. Thank you for completing the questionnaire!

Please, feel free to ask the Planned Parenthood educator for information on support services available to women in abusive relationships.

APPENDIX B**IOWA WOMEN'S HEALTH EXPERIENCE SURVEY: SCRIPTS**Script #1:

You are invited to take part in a survey concerning violence against women. This survey is being conducted by the University of Iowa College of Public Health. We are doing this survey to understand how we can help women and their families who are experiencing violence in their lives. The survey is expected to take 10-15 minutes of your time. You will receive a \$5.00 gift card to compensate you for your time. Your participation in this survey is completely voluntary. Your answers to this survey will be anonymous and remain confidential. Your medical care at Planned Parenthood will not be affected in any way should you decide not to do the survey. Would you be willing to participate in this survey?

Script #2:

If you are interested to learn about resources available to women who suffer from intimate partner violence in their lives, we will be glad to provide you with this information.

Script #3:

The survey is offered in Spanish or English. Which would you prefer?

Script #4:

We thank you for your time. Your answers show that you are not eligible to complete the survey. If you would like some information on resources for women who are experiencing violence in their lives, please ask the Planned Parenthood educator.

Script #5:

We were filling out paper work relating to her health history.