### ARTICLE IN PRESS

Women's Health Issues xxx-xx (2014) e1-e10





Original article

# Social Support and Employment Status Modify the Effect of Intimate Partner Violence on Depression Symptom Severity in Women: Results from the 2006 Behavioral Risk Factor Surveillance System Survey

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Article history; Received 24 July 2013; Received in revised form 20 February 2014; Accepted 28 March 2014

#### ABSTRACT

*Background:* Depression and intimate partner violence (IPV) are significant health issues for U.S. women. Interaction effects between IPV and other psychosocial factors on the severity of depressive symptoms have not been fully explored. This study assessed effect modification, that is, how IPV interacts with sociodemographics, psychosocial factors and health risk behaviors, on the severity of depressive symptoms in women.

Methods: We utilized cross-sectional data from female respondents (n=16,106) of the 2006 Behavioral Risk Factors Surveillance Survey. Sociodemographics, psychosocial variables, and health risk behaviors determined to be significantly associated with depression were tested for interaction effects with IPV. Weighted ordinal logistic regression and predicted probabilities illustrated the effect of IPV status on depressive symptom severity, stratified by interaction effects. Results: Recent and lifetime IPV exposure were associated with more severe depressive symptoms compared with no IPV exposure. IPV history interacted with employment status and social support on the severity of depressive symptoms in women. Overall, any IPV exposure was associated with more severe depressive symptoms among women with low social support and unemployment, although the effect of recent (versus lifetime) IPV was most pronounced among women with high social support or employed women.

Conclusions: Social support and employment status interact with IPV on the severity of depressive symptoms in women. Therefore, social support or workplace interventions designed to improve depressive symptoms should examine IPV history.

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Intimate partner violence (IPV) —physical, sexual, or psychological harm caused by a current or former partner or spouse (Centers for Disease Control and Prevention [CDC], n.d.)—is a serious public health problem that affects millions of American

Funding/Support: Dr. McCall-Hosenfeld's contribution on the project was funded by the NIH Office of Research on Women's Health's Building Interdisciplinary Research Careers in Women's Health (BIRCWH) Career Development Award, 5 K12 HD05582. There were no financial conflicts of interest involving any of the authors during this study.

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women (Black et al., 2011). IPV is prevalent in both heterosexual and same-sex couples, whether or not they engage in sexual intimacy (Saltzman, Fanslow, McMahon, & Shelley, 1999). In the United States, more than one in three women (35.6%) experience physical and/or sexual harm and nearly half of all women (48.4%) experience psychological aggression by an intimate partner in their lifetime (Black et al., 2011). Moreover, nearly 5.3 million intimate partner victimizations occur among U.S. women ages 18 and older each year, resulting in about 2 million injuries and nearly 1,300 deaths annually (Centers for Disease Control and Prevention, 2003).

Women exposed to IPV are at increased risk for medical and psychosocial comorbidity. Among the adverse health-related consequences of IPV in women, the most significant are mental

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health conditions, including depression, anxiety, and post-traumatic stress disorder (Blasco-Ros, Sanchez-Lorente, & Martinez, 2010). This often results in increased health care utilization among abused women (Thompson et al., 2006) and increased frequency of adverse health risk behaviors, such as heavy drinking and binge drinking, recreational drug use, and HIV risk factors (Breiding, Black, & Ryan, 2008).

Because of the significant impact of IPV on women's mental health, extensive research has examined the association between IPV victimization and depressive symptoms. In a systematic review of longitudinal studies, Devries and co-workers (2013) noted a bidirectional relationship between IPV and depression, in which women exposed to IPV were at an increased risk of experiencing depressive symptoms, whereas women who reported depressive symptoms were more likely to subsequently experience IPV. Other studies have found a temporal relationship between IPV exposure and subsequent mental health problems (Coker et al., 2002). Whereas some reports show levels of depressive symptoms may decrease within a few months of leaving an abusive relationship (Campbell, Sullivan, & Davidson, 1995; Dutton & Painter, 1993), others have shown that depression in battered women can also be chronic, with symptoms continuing to exist over time despite the absence of recent re-victimization (Campbell, Kub, Belknap, & Templin, 1997; Campbell & Soeken, 1999; Campbell et al., 1995). Although disagreement exists on the duration and timing of depression, numerous studies have shown that women exposed to IPV report at least moderate to high levels of depression (Campbell et al., 1995).

Prior studies have confirmed that, when addressing depressive symptomatology irrespective of IPV exposure, there are associations between depression and sociodemographic characteristics, psychosocial variables, and health risk behaviors including obesity, smoking, physical inactivity, and heavy drinking (Kessler et al., 2003; Lorant et al., 2003; Scarinci et al., 2002; Strine et al., 2008; Timko, Sutkowi, Pavao, & Kimerling, 2008; Wilhelm, Mitchell, Slade, Brownhill, & Andrews, 2003). Similarly, IPV exposure is independently associated with an increased risk of adverse mental health diagnoses, substance abuse, family and social problems, depression, anxiety/neuroses, and tobacco use among women (Bonomi et al., 2009). Thus, depression and IPV have numerous common covariates. However, many prior studies of the association between IPV and depression are limited in that they lack comprehensive control of potential confounders (Devries et al., 2013). Furthermore, because many existing studies are limited in that they may not entirely account for shared risk factors between IPV and depression, it is difficult to fully elaborate differences in the magnitude of their association (Devries et al., 2013).

IPV victimization is undoubtedly a significant life stressor. Examination of the association between stress and depression has shown that personal characteristics interact with stress to affect the development of depressive symptoms (Hammen, 2005). A diverse array of modifying factors affects the relationship between stressful events and depression (Gotlib & Hammen, 1992; Mrazek & Haggerty, 1994; Taylor & Aspinwall, 1996). Factors that predict attenuation of the relationship between stressful life events and depression include access to social support, various aspects of one's personality, intellectual capabilities, interpersonal skills, and various coping strategies (Kessler, 1997). Individual differences in stress reactivity may also be related to characteristics of the individual or of the environment in which the individual is embedded that modify

stress effects, commonly referred to as stress-buffering factors (Kessler, 1997). Factors including social support and socioeconomic resources, such as household income, education, and employment, have all been found to play an important role in supporting resilient coping strategies when addressing extremely stressful life events (Hobfoll, 1991; Updegraff, Taylor, Kemeny, & Wyatt, 2002). Overall, stressors and their impact on depression have been shown to vary with elements of an individual's social and demographic roles and contexts, which ultimately moderate the association between stress and depression (Hammen, 2005).

Thus, not all individuals who are exposed to stressors such as IPV develop depressive symptoms, and effect modification—interaction of IPV with aspects of the individual's psychosocial or biological environment—may in part explain why. The potential effect-modifying properties of common sociodemographic, biopsychosocial variables, and health risk behaviors on the association between IPV and depressive symptoms has not been previously explored within a large, population-based sample and a better understanding of whether IPV interacts with health risk behaviors and/or psychosocial factors to exacerbate the occurrence or severity of depressive symptoms is needed.

In this study, we examined whether prespecified covariates previously shown to be associated with IPV and depression not only affect the prevalence of depression in women with and without exposure to IPV, but may also function as effect modifiers in this association. To investigate this, we utilized data from the 2006 Behavioral Risk Factor Surveillance System (BRFSS) to examine whether factors, such as sociodemographics. psychosocial variables, and health risk behaviors, interact with IPV exposure on depressive symptom severity in women. We first examined the severity of depression by the timing of IPV victimization, hypothesizing that IPV exposure is associated with depressive symptom severity, with more severe symptoms seen among women with more recent IPV exposure. Additionally, we explored the potential for sociodemographics, biopsychosocial factors, and health risk behaviors to modify the effect of IPV on the severity of depression.

#### Methods

Data Collection and Participants

This study used cross-sectional data from female respondents of the 2006 BRFSS in the eight U.S. states and territories (Arkansas, Hawaii, Louisiana, Montana, Nevada, Virgin Islands, Virginia, and West Virginia) that incorporated both the optional Anxiety and Depression Module and Intimate Partner Violence Module of that survey year. The BRFSS is an ongoing, state-based, random-digit telephone survey of non-institutionalized persons aged 18 years or older in the United States, Guam, Puerto Rico, and the Virgin Islands. The BRFSS collects information regarding the prevalence of health risk behaviors and preventive health practices that affect health status. The BRFSS methods, including the weighting procedure, are described elsewhere (Centers for Disease Control and Prevention, 2006) and all BRFSS questionnaires, data, and reports are available at <a href="https://www.cdc.gov/brfss">www.cdc.gov/brfss</a>. This study was reviewed and exempted by our Institutional Review Board.

Measures: Independent Variable

IPV status was categorized into a three-level variable, defined as recent, lifetime, or no IPV exposure, based on responses to the

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