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# Lifetime prevalence of gender-based violence in US women: Associations with mood/anxiety and substance use disorders

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ABSTRACT

No population-representative US study has examined how lifetime exposure to gender-based violence (GBV) is related to a broad range of mood/anxiety and substance use disorders. The current study advances the literature by examining the relative contributions of developmental timing of earliest GBV exposure and amount of lifetime GBV exposure on risk for eight mood/anxiety and ten substance use disorders. Participants were 20,089 women from wave 2 (2004–2005) of the National Epidemiologic Survey of Alcohol and Related Conditions. Women reporting lifetime GBV (25%; n = 5284) had 3.6 and 2.5 times the odds of meeting lifetime mood/anxiety and substance use disorder criteria, respectively. Number of types and number of incidents of GBV were associated with risk for both types of disorders in a dose–response fashion; when examined simultaneously, number of types of GBV was the stronger predictor of mood/anxiety and substance use disorders. Relative to those who first experienced GBV during adulthood, first exposure during childhood and adolescence was associated with increased risk for mood/anxiety and substance use disorders. One in four women reported lifetime GBV, which had pernicious effects on mood/anxiety and substance use disorders, particularly for women who had experienced multiple types of GBV. The GBV effect varied by developmental period of exposure. Prevention of GBV is critical to reducing its burden. Among those exposed to GBV, clinicians should consider assessing a range of disorders and providing integrated treatment targeting multiple outcomes.


## 1. Introduction

Gender-based violence (GBV) is an important global health and medical issue (Devries et al., 2013; Heise et al., 2002; Krug et al., 2002; Russo and Pirlott, 2006). GBV can occur in many forms, and has been broadly defined as including physical and sexual violence against women, as well as stalking (Rees et al., 2011). Using this definition, Australian studies have demonstrated strong associations between GBV and lifetime mental disorder and associated disability (Rees et al., 2011) as well as suicidal behavior (Rees et al., 2014). Although US studies have examined specific types of GBV [e.g., intimate partner violence (IPV)] in relation to selected negative health outcomes (Afifi et al., 2009), no US studies have examined associations between this broad GBV construct and a wide range of mood/anxiety and substance use disorders (SUDs).

Knowledge of the public health impact of GBV on US women has four major limitations. First, types of GBV co-occur (Clemmons et al., 2007; Edwards et al., 2003) but are seldom studied in combination. For example, Centers for Disease Control (CDC) data suggest that women often experience more than one type of GBV (Black et al., 2011); however many studies focus on one type (e.g., rape) without considering the effects of other types (e.g., physical violence) (Walsh et al., 2012). Focusing on single types of GBV may underestimate associations between GBV and negative outcomes, as Australian data indicate a dose–response relationship between exposure to multiple types of GBV and risk for mood/anxiety and SUDs (Rees et al., 2011).

A second limitation is that US studies have focused on GBV occurring only during specific timeframes, rather than assessing lifetime GBV that occurred during different periods including childhood *and* adulthood. For example, some studies have examined childhood adversity, including GBV, and risk for mood/anxiety

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(Chapman et al., 2007, 2004; Clemmons et al., 2007; Edwards et al., 2003; Green et al., 2010; Kessler et al., 2010; Phillips et al., 2005) and SUDs (Anda et al., 2002; Dube et al., 2002; Enoch, 2011; Keyes et al., 2011) without considering the influence of adult GBV exposure. The IPV literature often focuses on violence within a current romantic relationship (e.g., marriage), without considering how GBV earlier in life may contribute to mood/anxiety or SUDs (Afifi et al., 2012; Basile et al., 2004; Okuda et al., 2011). For example, the CDC IPV study only assessed violence occurring at age 11 or later (Black et al., 2011), but GBV can occur earlier. Individuals who are exposed to some forms of GBV in childhood are at increased risk for subsequent GBV (Walsh et al., 2012; Widom et al., 2008); thus, assessing GBV only during childhood, from adolescence onward, or within current adult relationships may overlook important information.

Third, little is known about whether GBV exposure during particular developmental periods is differentially associated with risk for particular types of outcomes. Cross-sectional studies suggest that childhood adversity, including GBV, experienced early in life predicts maladaptive outcomes relative to violence experienced later in life, perhaps due to exposure during a critical developmental period (Manly et al., 2001). A neuroimaging study revealed differential effects of the timing of sexual abuse on various brain structures such that abuse during early childhood/adolescence was associated with reduced volume in the hippocampus (a brain region associated with memory and implicated in PTSD risk), while abuse during late adolescence was associated with diminished frontal cortex volume (a brain region associated with executive function and implicated in externalizing behaviors including substance abuse) (Andersen et al., 2008). These findings suggest that developmental age of GBV exposure is associated with distinct patterns of brain development that have been linked with different mental disorder phenotypes. Further, in a prospective longitudinal cohort of substantiated abuse cases and matched controls, earlier age of exposure to childhood abuse or neglect was associated with increased risk for adult depression and anxiety, while later exposure predicted more adult behavioral problems (Kaplow and Widom, 2007). However, evidence is mixed on the immediacy of mood/anxiety and SUD onset related to GBV exposure. Some studies indicate immediately increased risk for disorder onset (Turner et al., 2006), while other studies indicate more distal risk (e.g., stress sensitization due to effects of childhood exposure) (McLaughlin et al., 2011). No single study has examined whether risk for onset of mood/anxiety and SUDs varies by age of earliest exposure to GBV.

Fourth, most studies of GBV have focused on single, specific outcomes such as posttraumatic stress disorder (PTSD), and thus may have overlooked the broad public health impact of GBV on a wide range of mood/anxiety and SUDs. International studies have begun to illuminate associations between GBV and a wider range of important mood/anxiety and SUDs (Rees et al., 2011), but no nationally representative US studies have examined associations between GBV and a broad range of mood/anxiety and SUDs.

In summary, although US studies have focused on particular types of GBV occurring during specific timeframes and in relation to specific outcomes, no single study has examined associations between GBV during critical developmental periods and risk for a range of mood/anxiety and SUDs. We used data from female participants in the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) to address three specific aims. First, we documented the prevalence of GBV and its associations with lifetime mood/anxiety and SUDs in a nationally representative US sample of women. Second, we examined associations between level of GBV exposure (number of types and number of incidents) and earliest age of first GBV exposure in relation to lifetime mood/anxiety and SUDs. Third, we examined associations between developmental age of earliest GBV exposure and onset of mood/anxiety and SUDs during that same age and over the lifecourse.

## 2. Material and methods

### 2.1. Sample and procedures

Data were from 20,089 women who participated in wave 2 (2004–2005) of the NESARC, a face-to-face survey of non-institutionalized adults living in households and group quarters (Grant et al., 2008; Hasin et al., 2007). The Wave 2 re-interview response rate among eligible Wave 1 participants was 86.7%, yielding a cumulative response rate over both waves of 70.2% (Grant et al., 2008). Young adults, Blacks, and Hispanics were oversampled; therefore, data were weighted to reflect the demographic characteristics of the US population based on the 2000 census (Grant et al., 2008). The study received full ethical approval from the US Census Bureau and the US Office of Management and Budget (Grant et al., 2008). The current study focused on women from the second wave as GBV was assessed only at that wave.

### 2.2. Measures

#### 2.2.1. Gender-based violence

Respondents were asked about exposure to 23 potentially traumatic events including: sexual assault ("ever sexually assaulted, molested, raped, or experienced unwanted sex"); physical assault [three items assessing "physical attacks/beating/injuries by: 1) a parent/caregiver before age 18, 2) a romantic partner, or 3) someone else"]; and stalking ("someone followed you or kept track of your activities in a way that made you feel you were in serious danger"). Individuals who responded affirmatively to any of these items were coded as experiencing lifetime GBV and asked follow-up questions about the number of times GBV occurred and their age when GBV first and most recently occurred. We examined three important characteristics of GBV: (a) number of types of GBV (1, 2, or 3); (b) number of occurrences of GBV (1, 2–3, 4–9, 10+ incidents): and (c) age of earliest exposure to GBV (2–10, 11–14, 15–17, 18–24, 25–34, 35–44, 45 or older). Because age of each GBV exposure was not assessed, we focused on earliest age of GBV exposure. We used age periods consistent with the CDC national IPV study (Black et al., 2011), but also included the developmental period prior to age 11 and separated adolescence into early and late adolescence, consistent with developmental studies (Andersen et al., 2008; Guttmannova et al., 2011).

#### 2.2.2. Mood/anxiety and substance use disorders

The Alcohol Use Disorder and Associated Disabilities Interview, Schedule IV (AUDADIS-IV) was used to assess the following lifetime DSM-IV disorders: eight mood/anxiety disorders [PTSD, Social Phobia, Generalized Anxiety Disorder (GAD), Depression, Panic Disorder, Bipolar Disorder, Dysthymia, and Specific Phobia] and ten SUDs (alcohol, sedative, tranquilizer, opioid, amphetamine, cannabis, hallucinogen, cocaine, inhalant, and heroin). Among respondents who met lifetime criteria for a disorder, age of first episode onset, number of episodes, and age of most recent episode were ascertained. Because age of each episode was not assessed, we focused on risk of first episode onset by age of first GBV exposure. First episode onset was computed separately for mood/anxiety and SUDs, controlling for any onset of the same type of disorder at an earlier age. Test-retest reliability range from fair (*Kappa* = 0.42 for panic disorder) to excellent (*Kappa* = 0.84 for alcohol dependence) (Grant et al., 2003, 2004; Hasin et al., 1997; Ruan et al., 2008).