



Adverse childhood experiences, gender, and HIV risk behaviors: Results from a population-based sample

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ABSTRACT

Recent HIV research suggested assessing adverse childhood experiences (ACEs) as contributing factors of HIV risk behaviors. However, studies often focused on a single type of adverse experience and very few utilized population-based data. This population study examined the associations between ACE (individual and cumulative ACE score) and HIV risk behaviors. We analyzed the 2012 Behavioral Risk Factor Surveillance Survey (BRFSS) from 5 states. The sample consisted of 39,434 adults. Eight types of ACEs that included different types of child abuse and household dysfunctions before the age of 18 were measured. A cumulative score of ACEs was also computed. Logistic regression estimated of the association between ACEs and HIV risk behaviors using odds ratio (OR) with 95% confidence intervals (CIs) for males and females separately. We found that ACEs were positively associated with HIV risk behaviors overall, but the associations differed between males and females in a few instances. While the cumulative ACE score was associated with HIV risk behaviors in a stepwise manner, the pattern varied by gender. For males, the odds of HIV risk increased at a significant level as long as they experienced one ACE, whereas for females, the odds did not increase until they experienced three or more ACEs. Future research should further investigate the gender-specific associations between ACEs and HIV risk behaviors. As childhood adversities are prevalent among general population, and such experiences are associated with increased risk behaviors for HIV transmission, service providers can benefit from the principles of trauma-informed practice.

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1. Introduction

We have entered the fourth decade of HIV/AIDS pandemic. In the United States, an approximate of 1.2 million people is living with HIV/AIDS, while 50,000 individuals are getting infected each year (Centers for Disease Control and Prevention, 2014). Risk behaviors for HIV infection and transmission include the sharing of needles and syringes, the conduct of unprotected anal intercourse, the exchange of sex for drug or money, and the contraction of other sexual transmitted diseases (McGowan et al., 2004; Patrick et al., 2012). These behaviors are associated with a range of psychosocial problems such as depression and suicidal ideation (Pettes et al., 2015; Hallfors et al., 2004; Brown et al., 2006), psychological distress (Brown et al., 2006; DiClemente

et al., 2001; Elkington et al., 2010), alcohol and marijuana use (Patrick et al., 2012; Elkington et al., 2010), disrupted social support (St. Lawrence et al., 1994; Diaz et al., 2004; DiClemente et al., 2008), and interpersonal violent experience (Salas-Wright et al., 2015; Kouyoumdjian et al., 2013).

Despite the rich literature concerning HIV risk behaviors, new perspectives continue to emerge in recent years. Adverse childhood experiences (ACEs), including abuse, neglect, and household dysfunction (Anda et al., 2008), have acquired attention in HIV research. Large-scale cohort studies from countries such as Finland, the United States, and the Philippines demonstrate that the majority of general public (52%–74%) have experienced at least one form of ACEs before they reached 18 years old (Anda et al., 2006; Felitti et al., 1998; Haatainen et al., 2003; Hillis et al., 2000; Ramiro et al., 2010; Schussler-Fiorenza Rose et al., 2014). ACEs have been linked to alteration of the neurobiological stress–response systems (Anda et al., 2006), resulting in negative physical health outcome, such as cancers (Brown et al., 2010; van der Meer et al., 2012), asthma (Remigio-

Abbreviations: ACE, adverse childhood experience; BRFSS, Behavioral Risk Factor Surveillance Survey; OR, Odds ratio; CI, confidence intervals.

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Baker et al., 2015), chronic obstructive pulmonary disease (Anda et al., 2008), and premature mortality (Brown et al., 2009). Childhood adversities are also linked with poor mental health and substance use outcomes (Schilling et al., 2007).

1.1. ACEs and gender

Studies have shown that females are more likely to experience childhood sexual abuse (Cavanaugh et al., 2015; Afifi et al., 2008) and witness domestic violence (Afifi et al., 2008), while males are more likely to report childhood physical abuse (Haatainen et al., 2003; Afifi et al., 2008) and familial substance abuse (Messina et al., 2008). Whether the manifestation of ACE differs by gender remains inconclusive. Some studies suggest that there is no gender difference between childhood sexual abuse and long-term physical health (Dube et al., 2005) and mental health outcomes (Schilling et al., 2007; Mersky et al., 2013). However, others indicate that compared to their male counterparts, females who experienced ACEs are more likely to feel hopelessness (Haatainen et al., 2003), smoke cigarettes (Fuller-Thomson et al., 2013), and have depression and anxiety disorder in adulthood (Cavanaugh et al., 2015; Afifi et al., 2008), while males are more likely to report alcohol abuse or misuse (Dube et al., 2002) and antisocial behavior in young adulthood (Schilling et al., 2007).

1.2. ACEs, gender difference, and HIV risk behaviors

Empirical studies have investigated the relationship between ACEs, gender, and HIV risk behaviors. However, they often focus on a single type of adverse experience (e.g., childhood sexual abuse), or a specific population (e.g. men who have sex with men). For example, a systematic literature review of childhood sexual abuse and subsequent sexual risk behavior has documented that childhood sexual abuse is linked with increased HIV risk behaviors among both females and males (Senn et al., 2008). Studies using convenience samples also suggest that childhood sexual abuse was associated with multiple sexual partners and unprotected sex among heterosexual males, compared to homosexual males and heterosexual females (Whetten et al., 2012). Among gay and bisexual men, those who had a history of childhood sexual abuse are at an increased risk to have multiple sexual partners and use recreational drugs before sex (Brennan et al., 2007). A large-scale study suggests that females who had experienced more ACEs were likely to report greater sexual risk behaviors (Hillis et al., 2001). In a separate study, the same group of authors also found that sexually transmitted diseases increased as the number of ACE exposure elevated for both males and females (Hillis et al., 2000). Notably, the two studies were based on a landmark study whose data were collected in 1995–1996 and consisted of responses from managed care company members who predominately collected from a middle- or upper-middle-class background (Cronholm et al., 2015).

The purpose of this study is to build on previous literature on ACE and HIV risk behaviors. There is a need for more HIV prevention research that examines a more comprehensive measure of ACE, understands the role of gender, and employs current, population-based data. Using the 2012 Brief Risk Factor Surveillance Survey (BRFSS) data, the present study conducts gender-specific analyses to understand the relationship between a range of childhood adversities and HIV risk behaviors. We also examined the cumulative impact of multiple ACEs because different forms of ACEs are likely to co-occur (Dube et al., 2009). The study tested two hypotheses: 1) each individual form of ACE is positively associated with HIV risk behaviors; and 2) the number of ACEs is positively linked to HIV risks.

2. Methods

2.1. Data and study sample

The 2012 BRFSS dataset is a nationally representative, cross-sectional telephone (both landline and cellular) survey developed in collaborations between the U.S. Center for Disease Control and Prevention (CDC) and each state's public health departments. Using standardized questionnaires, BRFSS asks adults who are 18 years of age and older living in households questions concerning their risk behaviors about chronic health conditions as well as their preventive health practices (Centers for Disease and Prevention, 2013a). To ensure that the BRFSS is a uniform and yet state-specific survey, each year the questionnaire consists of core questions that all states must use and optional modules that each state can select. Five states – Iowa, North Carolina, Oklahoma, Tennessee, and Wisconsin – included ACE modules in their 2012 BRFSS (Centers for Disease and Prevention, 2013a). Detailed information about the study design and methodology is available from the CDC's website: <http://www.cdc.gov/brfss/>. As BRFSS datasets are publicly accessible and the data do not contain personally identifiable information, the study is exempted from the university's ethics review.

2.2. Measures

2.2.1. Adverse childhood experiences

We assessed eight ACEs that happened before the participants were 18 years old. They included: 1) living with someone who had mental health issues (“Did you live with anyone who was depressed, mentally ill, or suicidal?”); 2) living with someone who abused alcohol or drugs (“Did you live with anyone who was a problem drinker or alcoholic?”); 3) living with someone who was incarcerated (“Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional experiences?”); 4) parents separated or divorced (“Were your parents separated or divorced?”); 5) witnessing physical violence at home (“How often did your parents or adults in your home ever slap, hit, kick, punch, or beat each other up?”); 6) experiencing physical abuse “How often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? Do not include spanking.”); 7) experiencing verbal abuse (“How often did a parent or adult in your home ever swear at you, insult you, or put you down?”); 8) sexual abuse (if participant answers “once” or “more than once” to one of the following three items: “How often did anyone at least 5 years older than you or an adult ever touch you sexually?”, “How often did anyone at least 5 years older than you or an adult try to make you touch them sexually?”, and “How often did anyone at least 5 years older than you or an adult force you to have sex?”). All responses were dichotomized into “yes” or “no”.

2.2.2. Depression

Participants were asked one question, “Has a doctor, nurse, or other health professional ever told you that you have a depressive disorder, including depression, major depression, dysthymia, or minor depression?” (0 = “No”, 1 = “Yes”).

2.2.3. Alcohol and tobacco use

Participants reported their drinking behavior on this question, “During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?”. Their responses were coded as: 0 = “Abstinence” (0 drink per day), 1 = “Moderate” (1 drink per day for females; 1 or 2 drinks per day for males), and 2 = “Heavy” (2 or more drinks per day for females; 3 or more drinks per day for males). They also self-reported their smoking on one question, “Do you now smoke cigarettes every day, some days, or not at all?” Their smoking status was categorized into 0 = “Not current smoker” and 1 = “Current smoker”.

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