

The Role of Adverse Childhood Experiences in Substance Misuse and Related Behavioral Health Problems

“ACEs have created a chronic public health disaster.”

– Robert Anda, M.D., M.S., Co-Principal Investigator,
Adverse Childhood Experiences Study

WHAT ARE ADVERSE CHILDHOOD EXPERIENCES?

Adverse childhood experiences (ACEs) are stressful or traumatic events, including abuse and neglect. They may also include household dysfunction, such as witnessing domestic violence or growing up with family members who have substance use disorders. ACEs are strongly related to the development and prevalence of a wide range of health problems throughout a person’s lifespan, including those associated with substance misuse.

When children are exposed to chronic stressful events, their neurodevelopment can be disrupted. As a result, the child’s cognitive functioning and/or ability to cope with negative or disruptive emotions may be impaired. Over time, and often during adolescence, the child may adopt unhealthy coping mechanisms, such as substance use or self-harm. Eventually, these coping mechanisms can contribute to disease, disability, and social problems, as well as premature mortality. Figure 1 depicts the lifespan impact of ACEs.

Figure 1. Lifespan Impact of ACEs



THE ADVERSE CHILDHOOD EXPERIENCES STUDY

Many studies have examined the relationship between ACEs and a variety of known risk factors for disease, disability, and early mortality. The Division of Violence Prevention at the Centers for Disease Control and Prevention (CDC), in partnership with the health maintenance organization Kaiser Permanente, conducted a [landmark ACE study](#) from 1995 to 1997 with more than 17,000 participants. Participants, who were mostly middle class, white adults with health insurance, completed a confidential survey containing questions about childhood maltreatment and family dysfunction, as well as items detailing their current health status and behaviors. The study found that (Felitti et al., 1998):

- **ACEs are common.** For example, 28% of study participants reported physical abuse and 21% reported sexual abuse. Many also reported experiencing a divorce or parental separation, or having a parent with a mental and/or substance use disorder.
- **ACEs cluster.** Almost 40% of the Kaiser sample reported two or more ACEs and 12.5% experienced four or more. Because ACEs cluster, many subsequent studies now look at the cumulative effects of ACEs rather than the individual effects of each.
- **ACEs have a dose-response relationship with many health problems.** As researchers followed participants over time, they discovered that a person's cumulative ACE score has a strong, graded (i.e., dose-response) relationship to numerous health, social, and behavioral problems throughout their lifespan, including substance use disorders. Furthermore, many problems related to ACEs tend to be co-morbid or co-occurring.

Since the launch of the initial ACE Study, numerous other studies with different populations have been conducted with similar results (Brown, Masho, Perera, Mezuk, & Cohen, 2015; Smith, Gotman, & Yonkers, 2016; & Windle et al., 2018).

THE RELATIONSHIP OF ACES TO SUBSTANCE USE AND RELATED BEHAVIORAL HEALTH PROBLEMS

Research has demonstrated a strong, graded relationship between ACEs and a variety of substance-related behaviors, including:

- **Early initiation of alcohol use.** ACEs can predict earlier age of drinking onset. Therefore, underage drinking prevention programs may not work as intended, unless they help youth recognize and cope with stressors of abuse, household dysfunction, and other adverse experiences (Rothman, Edwards, Heeren, & Hingson, 2008).
- **Higher risk of mental and substance use disorders as an older adult (50+ years).** ACEs, such as childhood abuse (physical, sexual, psychological) and parental substance abuse, are associated with a higher risk of developing a mental and/or substance use disorder later in life. (Choi, DiNitto, Marti, & Choi, 2017).

- **Continued tobacco use during adulthood.** Prevalence ratios for current and ever smoking have been shown to increase as ACE scores increase. (Ford et al., 2011).
- **Prescription drug use.** For every additional ACE score, the rate of number of prescription drugs used increased by 62%. (Forster, Gower, Borowsky, & McMorris, 2017).
- **Lifetime illicit drug use, drug dependency, and self-reported addiction.** According to a study on childhood abuse, neglect, and household dysfunction and the risk of illicit drug use, each ACE increased the likelihood of early initiation into illicit drug use by 2- to 4-fold. (Dube et al, 2003)

Research has also demonstrated a strong, graded relationship between ACEs and related behavioral problems, including:

- **Suicide attempts.** One study found that ACEs in any category increased the risk of attempted suicide by 2- to 5-fold throughout a person's lifespan (Dube et al., 2001). According to a more recent article, individuals who reported 6 or more ACEs had 24.36 times increased odds of attempting suicide (Merrick et al., 2017).
- **Lifetime depressive episodes.** Exposure to ACEs may increase the risk of experiencing depressive disorders well into adulthood—sometimes decades after ACEs occur (Ege, Messias, Thapa, & Krain, 2015).
- **Sleep disturbances in adults.** People with a history of ACEs have a higher likelihood of experiencing self-reported sleep disorders (Kajeepeeta, Gelaye, Jackson, & Williams, 2015).
- **High-risk sexual behaviors.** Women with ACEs have reported risky sexual behaviors, including early intercourse, having had 30 or more sexual partners, and perceiving themselves to be at risk for HIV/AIDS (Hillis, Anda, Felitti, & Marchbanks, 2001). Sexual minorities who experience ACEs also demonstrate earlier sexual debut (Brown et al., 2015).
- **Fetal mortality.** Fetal deaths attributed to adolescent pregnancy may result from underlying ACEs rather than adolescent pregnancy (Hillis et al., 2004).
- **Pregnancy outcomes.** Each additional ACE a mother experienced during early childhood is associated with decreased birth weight and gestational age of her infant at birth (Smith et al., 2016).
- **Negative physical health outcomes.** Experiencing adverse childhood family experiences may increase the risk for long-term physical health problems (e.g., diabetes, heart attack) in adults (Monnat & Chandler, 2015).
- **Poor dental health.** Children who have experienced at least one ACE are more likely to have poor dental health (Bright, Alford, Hinojosa, Knapp, & Fernandez-Baca, 2015).

INTEGRATING ACES INTO SUBSTANCE MISUSE PREVENTION EFFORTS

Because ACEs are common and strongly related to a variety of substance misuse and related behavioral health outcomes, preventing ACEs and engaging in early identification of people who have experienced them could have a significant impact on a range of critical health problems. Specifically, practitioners can strengthen their substance misuse prevention efforts by:

- Collecting state- and county-level ACEs data to inform local decision-making (e.g., by incorporating ACEs indicators into Behavioral Risk Factors Surveillance Systems).
- Increasing awareness of ACEs among state- and community-level substance misuse prevention professionals, emphasizing the relevance of ACEs to behavioral health disciplines.
- Including ACEs among the primary risk and protective factors when engaging in prevention planning efforts.
- Selecting and implementing programs and strategies designed to address ACEs, including efforts focused on reducing intergenerational transmission of ACEs.
- Using ACEs research and local ACEs data to identify groups of people who may be at higher risk for substance use disorders and to conduct targeted prevention.

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