

Adverse Child Events (ACES) and their Negative, Long-Term Impacts on Mental, Behavioral, and Physical Health

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ABSTRACT

Exposure to adverse childhood experiences (ACEs) is violent, stressful, or traumatic experiences undergone in childhood. It is estimated that about 16 % of adults in the U.S. have had four or more types of adverse childhood experiences, which are significantly associated with poorer health outcomes, health risk behaviors, and socioeconomic challenges. Research has found a relationship between exposure to ACEs and morbidity and mortality later in life. The high prevalence of ACEs, along with their effect on health, social, and medical costs has led this issue to be a matter of public health globally. This paper discusses the impact of ACEs, how ACEs are measured, and the linkages ACEs have to different health outcomes. Future research is needed to better understand adverse childhood events, specifically how to assess, address and prevent these experiences in children.

Introduction

Exposure to adverse childhood experiences (ACEs) is violent, stressful, or traumatic experiences undergone in childhood which can include abuse, neglect, and other problems in the household (Anda, 2018; Stein et al., 2017). Examples include being exposed to physical and sexual abuse, to domestic violence or being raised by individuals with substance use disorder (SUD). Research has shown that ACEs can have

lasting and deleterious effects on health throughout a person's lifespan. This is due to disrupted neurodevelopment that can occur when children are exposed to adverse events. Mental health can also suffer, as individuals may have difficulty coping with disruptive emotions or form unhealthy coping mechanisms such as substance use or self-harm. It is estimated that about 16 % of adults in the U.S. have had four or more types of adverse childhood experiences, which are significantly associated with poorer health outcomes, health risk behaviors, and socioeconomic challenges (Merrick, 2019). Moreover, when children experience ACES exposure, most encounter "poly-victimization", or in other words, more than one type of ACES (Finkelhor et al., 2011; Ford et al., 2010; Shin et al., 2009). The high prevalence of ACES, along with their effect on health, social, and medical costs (Anda, 2018; Bethell et al., 2014; Centers for Disease Control and Prevention (CDC), 2010; Felitti et al., 1998), has led this issue to be a matter of public health globally (Bethell et al., 2014; Cronholm et al., 2015; Dube et al., 2003; Felitti et al., 1998).

How Are ACES Measured

Reliable research methods are required to understand the constructs of the ACES. Depending on the study environment, different measures of ACES have been used. In their literature review, Bethell et al. (2017) found 14 different ACES assessment methods. Settings have included healthcare clinics, public health, and traditional research environments. The number of items (questions) asked ranged from 6 to 20. The most common were parental incarceration, domestic violence, household mental illness/suicide, and household alcohol or substance abuse. Common additional content includes assessing exposure to neighborhood violence, bullying, discrimination, or parental death. Examples of validated scales currently represented in the literature include the NSCH-ACES, the National Survey of Child and Adolescent Well-being (NSCAW), the Yale-Vermont Adversity in Childhood Scale adult, youth, youth self-reported, and clinician-reported versions, 4) Center for Youth Wellness Adverse

Childhood Experiences Questionnaire child, youth, and youth self-reported versions, 5) the Marie-Mitchell and O'Connor Child ACES algorithm, 6) the Montefiore Group Attachment Based Intervention study Clinical ACES measure, 7) Philadelphia Childhood Adversity Questionnaire (CAQ), 8) Washington State University (WSU) ACES tool for schools, 9) WSU ACES tool for Head Start, and 10) the Crittenton Foundation/Aspen Institute ACES assessment tool. A typical 10-item questionnaire would contain the following questions:

- 1) Did a parent or other adult in the household often or very often... Swear at you, insult you, put you down, humiliate you? or Act in a way that made you afraid that you might be physically hurt?
- 2) Did a parent or other adult in the household often or very often... Push, grab, slap, or throw something at you? or ever hit you so hard that you had marks or were injured?
- 3) Did an adult or person at least 5 years older than you ever... Touch or fondle you or have you touched their body in a sexual way? or attempt or have oral, anal, or vaginal intercourse with you?
- 4) Did you often or very often feel that ... No one in your family loved you or thought you were important or special? or your family didn't look out for each other, feel close to each other, or support each other?
- 5) Did you often or very often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
- 6) Were your parents ever separated or divorced?
- 7) Was your mother or stepmother: Often or very often pushed, grabbed, slapped, or had something thrown at her? or sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or ever repeatedly hit over at least a few minutes or threatened with a gun or knife?

- 8) Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?
- 9) Was a household member depressed or mentally ill, or did a household member attempt suicide?
- 10) Did a household member go to prison?

While the original set of questions did cover a lot of significant areas, we know many other factors that can be traumatizing. ACES Connection¹ codifies trauma into three core areas. The first includes household trauma, such as those factors captured in the original study, which include things like incarceration of a family member, experiencing homelessness, physical abuse, or neglect, etc. The next is community-level trauma, which is things that happen even before an adverse childhood experience might occur; things such as poverty, structural racism, community violence, and intergenerational or historical trauma. The third dimension includes the environment, which are factors like natural disasters, pandemics, etc. Additionally, it is important to note that two people can experience the exact same traumatic event and have very different experiences.

The ACES Pyramid in Figure 1 represents the conceptual framework for the study and was designed to assess what was “scientific gaps” about the origins of risk factors. These gaps are depicted as the two arrows linking Adverse Childhood Experiences to risk factors that lead to the health and social consequences higher up the pyramid. Specifically, the study was designed to provide data that would help to answer the following question: “If risk factors for disease, disability, and early mortality are not randomly distributed, what influences precede the adoption or development of them?” By offering information to answer this question, we hoped to provide scientific information that would be useful for developing new and more effective prevention programs. The ACES Study takes a whole life perspective, as indicated on the orange arrow leading from conception to death. By working

1 For more information, go to <https://www.acesconnectioninfo.com/>.

within this framework, the ACES Study began to progressively uncover how adverse childhood experiences (ACES) are strongly related to development and prevalence of risk factors for disease and health and social well-being throughout the lifespan (Centers for Disease Control and Prevention, 2012, pp. 1-2).

Relationship of ACES to adverse mental, physical, and behavioral health outcomes

Research has found a relationship between exposure to ACES and morbidity and mortality later in life. Most of this research has been conducted in the U.S. In a “first of its kind” study of ACES, between 1995 and 1997 the Centers for Disease Control and Prevention (CDC) surveyed 17,000 participants about former experiences of childhood maltreatment, family dysfunction, and current health conditions. The study (Felitti et al., 1998) found that more than a quarter (28 %) of study participants had experienced physical abuse and 21 % had experienced sexual abuse. Many also reported experiencing a divorce or parental separation or having a parent with a mental and/or substance use disorder. Almost 40 % experienced two or more ACES and 12.5 % experienced four or more. Because there can be an additive effect, researchers have begun looking at the cumulative effects of ACES. Moreover, the research —unsurprisingly— found that ACES had a “dose-response” relationship with certain outcomes, indicating that greater specificity is needed when administering ACES surveys. Given that the investigation was longitudinal, the study team could follow individuals over time, and the dose-response effect was shown to have negative impacts on various health, social, and behavioral problems throughout their lifespan.

Numerous studies since this foundational study have shown that ACES are associated with long-term physical health problems. Danese et al. discovered a link between ACES exposure and obesity, high blood pressure, high cholesterol, and cardiovascular disease (2009). Other research has found similar outcomes, including links to cancer and higher overall mortality rates (Anda et al., 2009; Brown

et al., 2009). ACES exposure has been associated with a number of neurodevelopmental and behavioral health conditions, including learning disability (Burke et al., 2011) and anxiety (Briggs & Price, 2009; Kessler et al., 2010; Mersky et al., 2013; Schilling et al., 2007). In their study child maltreatment, particularly emotional abuse and neglect is associated with a wide range of long-term adverse health and developmental outcomes.

Research in Latin America and Implications for Peru

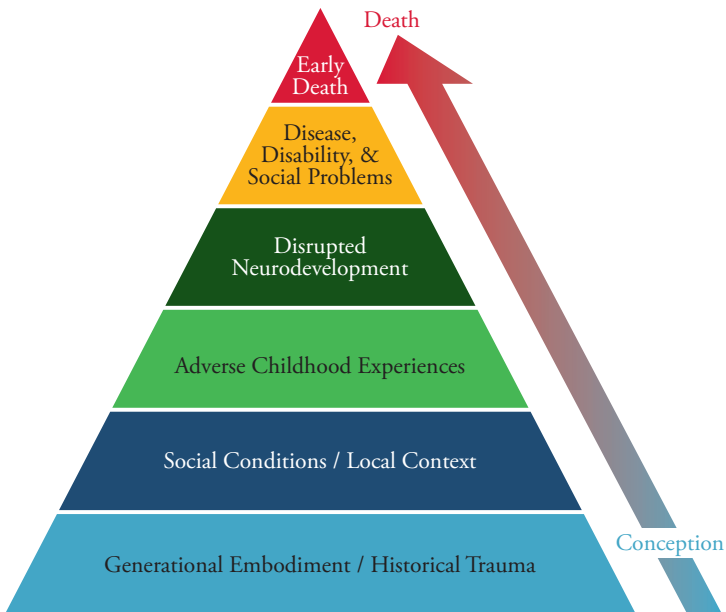
Although it is important that girls, boys, and adolescents recognize their rights, this is not enough to avoid situations of family violence. There are studies finding that of minors who are victims of family violence, only 1 in 10 recognizes that the abuse should be reported to authorities. Of 4 out of 10 minors who report the abuse of someone, only 1 of them is taken to an institution to report it (Bardales-Mendoza, 2006). Something that is extremely important to be aware of is the situation of normalization of violence in Peruvian culture since adult's mention recognizing that they "punish" rather than mistreat their children (Bardales-Mendoza, 2006). There is still a lot of work to raise awareness among the population about family violence and especially about child abuse, in all aspects. It is essential that they manage to identify these harms as serious problems, which bring various physical and emotional consequences in the short, medium, and long term. (Bustamante, Rivera, Matos, 2013). Disseminating the consequences of child abuse in relation to the development of children, as well as the predisposition to the appearance of psychopathology and physical diseases, is something that is lacking in our environment, and that we think could generate a greater impact on prevention and materialization of complaints.

Conclusion

Adverse Childhood Experiences (ACES) are experiences that may be traumatic to children and youth during the first 18 years of life such as

experiencing violence or other types of emotionally disturbing exposures in their homes and communities. Future research is needed to better understand adverse childhood events, specifically how to assess, address and prevent these experiences in children. Previous research has focused more on adult populations; therefore, improved surveillance in younger populations would be a more “upstream” approach to assessing these harms. Research has found that variability exists within risk groups, but the further investigation should be taken to understand differing effects for similar groups of children. Though we know that there are some protective factors, more research is needed to better understand the variable effects of ACEs; this in turn can produce guidance about the prevention and treatment necessary.

Figure 1



References

- Anda, R. (2018). The Role of Adverse Childhood Experiences in Substance Misuse and Related Behavioral Health Problems. 6.
- Anda, R. F., Dong, M., Brown, D. W., Felitti, V. J., Giles, W. H., Perry, G. S., Valerie, E. J., & Dube, S. R. (2009). The relationship of adverse childhood experiences to a history of premature death of family members. *BMC Public Health*, 9, 106. <https://doi.org/10.1186/1471-2458-9-106>
- Bethell, C. D., Carle, A., Hudziak, J., Gombojav, N., Powers, K., Wade, R., & Braveman, P. (2017). Methods to Assess Adverse Childhood Experiences of Children and Families: Toward Approaches to Promote Child Well-being in Policy and Practice. *Academic Pediatrics*, 17(7 Suppl), S51–S69. <https://doi.org/10.1016/j.acap.2017.04.161>
- Bethell, C. D., Newacheck, P., Hawes, E., & Halfon, N. (2014). Adverse childhood experiences: Assessing the impact on health and school engagement and the mitigating role of resilience. *Health Affairs (Project Hope)*, 33(12), 2106–2115. <https://doi.org/10.1377/hlthaff.2014.0914>
- Briggs, E. S., & Price, I. R. (2009). The relationship between adverse childhood experience and obsessive-compulsive symptoms and beliefs: The role of anxiety, depression, and experiential avoidance. *Journal of Anxiety Disorders*, 23(8), 1037–1046. <https://doi.org/10.1016/j.janxdis.2009.07.004>
- Brown, D. W., Anda, R. F., Tiemeier, H., Felitti, V. J., Edwards, V. J., Croft, J. B., & Giles, W. H. (2009). Adverse childhood experiences and the risk of premature mortality. *American Journal of Preventive Medicine*, 37(5), 389–396. <https://doi.org/10.1016/j.amepre.2009.06.021>
- Burke, N. J., Hellman, J. L., Scott, B. G., Weems, C. F., & Carrion, V. G. (2011). The impact of adverse childhood experiences on

- an urban pediatric population. *Child Abuse & Neglect*, 35(6), 408–413. <https://doi.org/10.1016/j.chiabu.2011.02.006>
- Centers for Disease Control and Prevention (CDC). (2010). Adverse childhood experiences reported by adults—Five states, 2009. *MMWR. Morbidity and Mortality Weekly Report*, 59(49), 1609–1613.
- Cronholm, P. F., Forke, C. M., Wade, R., Bair-Merritt, M. H., Davis, M., Harkins-Schwarz, M., Pachter, L. M., & Fein, J. A. (2015). Adverse Childhood Experiences: Expanding the Concept of Adversity. *American Journal of Preventive Medicine*, 49(3), 354–361. <https://doi.org/10.1016/j.amepre.2015.02.001>
- Danese, A., Moffitt, T. E., Harrington, H., Milne, B. J., Polanczyk, G., Pariante, C. M., Poulton, R., & Caspi, A. (2009). Adverse Childhood Experiences and Adult Risk Factors for Age-Related Disease. *Archives of Pediatrics & Adolescent Medicine*, 163(12), 1135–1143. <https://doi.org/10.1001/archpediatrics.2009.214>
- Dube, S. R., Felitti, V. J., Dong, M., Giles, W. H., & Anda, R. F. (2003). The impact of adverse childhood experiences on health problems: Evidence from four birth cohorts dating back to 1900. *Preventive Medicine*, 37(3), 268–277. [https://doi.org/10.1016/s0091-7435\(03\)00123-3](https://doi.org/10.1016/s0091-7435(03)00123-3)
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245–258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8)
- Finkelhor, D., Turner, H., Hamby, S., & Ormrod, R. (2011). Polyvictimization: Children's Exposure to Multiple Types of Violence, Crime, and Abuse. *National Survey of Children's Exposure to Violence*. <https://scholars.unh.edu/ccrc/25>

- Ford, J. D., Elhai, J. D., Connor, D. F., & Frueh, B. C. (2010). Polyvictimization and risk of posttraumatic, depressive, and substance use disorders and involvement in delinquency in a national sample of adolescents. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, 46(6), 545–552. <https://doi.org/10.1016/j.jadohealth.2009.11.212>
- Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., Aguilar-Gaxiola, S., Alhamzawi, A. O., Alonso, J., Angermeyer, M., Benjet, C., Bromet, E., Chatterji, S., de Girolamo, G., Demyttenaere, K., Fayyad, J., Florescu, S., Gal, G., Gureje, O., ... Williams, D. R. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry: The Journal of Mental Science*, 197(5), 378–385. <https://doi.org/10.1192/bjp.bp.110.080499>
- Merrick, M. T. (2019). Vital Signs: Estimated Proportion of Adult Health Problems Attributable to Adverse Childhood Experiences and Implications for Prevention — 25 States, 2015–2017. *MMWR. Morbidity and Mortality Weekly Report*, 68. <https://doi.org/10.15585/mmwr.mm6844e1>
- Mersky, J. P., Topitzes, J., & Reynolds, A. J. (2013). Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: A cohort study of an urban, minority sample in the U.S. *Child Abuse & Neglect*, 37(11), 917–925. <https://doi.org/10.1016/j.chiabu.2013.07.011>
- Schilling, E. A., Aseltine, R. H., & Gore, S. (2007). Adverse childhood experiences and mental health in young adults: A longitudinal survey. *BMC Public Health*, 7, 30. <https://doi.org/10.1186/1471-2458-7-30>
- Shin, S. H., Edwards, E., Heeren, T., & Amodeo, M. (2009). Relationship between Multiple Forms of Maltreatment by a Parent or Guardian and Adolescent Alcohol Use. *The American*

- Journal on Addictions, 18(3), 226–234. <https://doi.org/10.1080/10550490902786959>
- Stein, M. D., Conti, M. T., Kenney, S., Anderson, B. J., Flori, J. N., Risi, M. M., & Bailey, G. L. (2017). Adverse childhood experience effects on opioid use initiation, injection drug use, and overdose among persons with opioid use disorder. *Drug and Alcohol Dependence*, 179, 325–329. <https://doi.org/10.1016/j.drugalcdep.2017.07.007>
- Walanj, A. S. (2014). Research ethics committees: Need for harmonization at the national level, the global and Indian perspective. *Perspectives in Clinical Research*, 5(2), 66–70. <https://doi.org/10.4103/2229-3485.128022>