Adverse Childhood Experiences Survey: What are the Implications for Adulthood?

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Disclosure

I have no potential or actual conflicts of interest related to this presentation
Goals and Objectives

• At the conclusion of this presentation, the audience will be able to:
  – Understand how early childhood experiences impact long term health and psychosocial outcomes
  – Review the literature related to adverse childhood experiences and impact on adult health
  – Discuss how exposure to childhood adversity may impact diagnosis and treatment of adult health conditions
Building a Strong Foundation

• Brain development begins in the prenatal period and lays the foundation for
  – Healthy development
  – Physical health
  – Social-emotional health
  – School achievement
  – Executive functioning
Before age 5
90% of a child’s brain development happens

90%
Brain development before age 5

10%
Brain development after age 5

Source: Harvard Center for the Developing Child

www.buildingbrightfutures.org
Neurons and Synapses: Blooming and Pruning


Source: Adapted from Corel, JL. The postnatal development of the human cerebral cortex. Cambridge, MA: Harvard University Press; 1975
Toxic Stress Changes Brain Architecture

Normal: Typical neuron with many connections

Toxic Stress: Neuron damaged by toxic stress -- fewer connections

Prefrontal Cortex and Hippocampus

Center on the Developing Child, Harvard University
It doesn't just stay in the brain...
How Early Experiences Alter Gene Expression and Shape Development

1. EXTERNAL EXPERIENCES (e.g., stress, nutrition, toxins) spark signals between neurons

2. NEURAL SIGNALS launch production of gene regulatory proteins inside cell

3. GENE REGULATORY PROTEINS attract or repel enzymes that add or remove epigenetic markers

4. EPIGENETIC “MARKERS” control where and how much protein is made by a gene, effectively turning a gene “on” or “off,” thereby shaping how brains and bodies develop

GENE – a specific segment of a DNA strand

DNA strands encircle histones that determine whether or not the gene is “readable” by the cell

CHROMOSOME – can pass on genes to next generation

The Importance of Early Intervention

The brain’s ability to change in response to experiences vs. The amount of effort such change requires.

Source: Levitt (2009)

Center on the Developing Child, Harvard University

www.developingchild.harvard.edu
**Adverse Childhood Experiences: CDC-Kaiser Study (1995-1997)**

**Methods:** Written survey, n=9,508 (70% response rate)

**Participants:**
- Adult patients at Kaiser Permanente Medical Clinic in Southern California
- Mean age 56 yo, 52% women, 79% white, 43% college graduates

**Key Findings:**
- 25% reported two or more adverse childhood exposures
- Graded relationship between the number of ACEs and adult health risk behaviors and diseases
- Up to 4 to 12 times increased risk for patients with four or more ACEs

**Source:** Centers for Disease Control and Prevention

**Credit:** Robert Wood Johnson Foundation
Prevalence of ACEs by Category for CDC-Kaiser ACE Study Participants, Waves 1 and 2

**Types of ACEs**

The ACE study looked at three categories of adverse experience: **childhood abuse**, which included emotional, physical, and sexual abuse; **neglect**, including both physical and emotional neglect; and **household challenges** which included growing up in a household were there was substance abuse, mental illness, violent treatment of a mother or stepmother, parental separation/divorce or had a member of the household go to prison. Respondents were given an **ACE score** between 0 and 10 based on how many of these 10 types of adverse experience to which they reported being exposed.

### Abuse

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>11%</td>
<td>Emotional</td>
</tr>
<tr>
<td>28%</td>
<td>Physical</td>
</tr>
<tr>
<td>21%</td>
<td>Sexual</td>
</tr>
</tbody>
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### Household Challenges

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13%</td>
<td>Mother treated violently</td>
</tr>
<tr>
<td>27%</td>
<td>Substance abuse</td>
</tr>
<tr>
<td>19%</td>
<td>Mental illness</td>
</tr>
<tr>
<td>23%</td>
<td>Separation/divorce</td>
</tr>
<tr>
<td>5%</td>
<td>Incarcerated household member</td>
</tr>
</tbody>
</table>

### Neglect

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>Emotional</td>
</tr>
<tr>
<td>10%</td>
<td>Physical</td>
</tr>
</tbody>
</table>

Note: Research papers that use Wave 1 and/or Wave 2 data may contain slightly different prevalence estimates.

Source: Centers for Disease Control and Prevention, Kaiser Permanente. The ACE Study Survey Data [Unpublished Data]. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2016
2010 Behavioral Risk Factor Surveillance Survey

- National cross-sectional random digit dial survey of adults
  - 10 states and DC included an optional ACE module (similar to original study but just 9 ACEs)
  - n=53,998
  - 44% reported 1-3 ACEs; 16% reported more than 4 ACEs
  - 80% white, 60% female, range of socio-economic status
  - Graded relationship between number of ACEs reported and health risk behavior or disease
  - Increased risk of MI, asthma, fair/poor health, frequent mental distress, disability, coronary heart disease, stroke and diabetes
Prevalence of ACEs by Category for Participants Completing the ACE Module on the 2010-2014 BRFSS

Prevalence of ACEs by Category for Participants Completing the ACE Module from the 2011-2014 BRFSS

**ABUSE**
- 34% EMOTIONAL
- 18% PHYSICAL
- 12% SEXUAL

**HOUSEHOLD CHALLENGES**
- 18% INTIMATE PARTNER VIOLENCE
- 28% SUBSTANCE ABUSE
- 17% MENTAL ILLNESS
- 28% SEPARATION/DIVORCE
- 8% INCARCERATED HOUSEHOLD MEMBER


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ACES can have lasting effects on:

**Health** (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)

**Behaviors** (smoking, alcoholism, drug use)

**Life Potential** (graduation rates, academic achievement, lost time from work)

ACEs have been found to have a graded dose-response relationship with 40+ outcomes to date.

Risk for Negative Health and Well-being Outcomes

*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.*

Centers for Disease Control and Prevention

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Association between ACEs and Cancer in Adulthood

• Systemic review of literature
  – 12 studies included
  – Association between ACE summary scores and increased risk of cancer in adulthood
    • Physical abuse associated with risk of any cancer – 3 studies
    • Psychological abuse associated with risk of any cancer – 2 studies
    • Sexual abuse associated with risk of any cancer (1 study) and cervical cancer (1 study)
  – Limitations
    • Significant heterogeneity across studies
    • Mechanisms unclear, not able to look at different types of cancer in detail

Association between ACEs and adult out of pocket medical expense

• Survey of 4,784 households (6,775 adults)
  – 1/5 experienced three or more ACEs
  – ~50% female, 15% non-white, 6% Latino/Hispanic
  – Average age 48
  – <15% live in poverty

• Results
  – When 3 or more ACEs reported
    • 2X odds of annual medical costs >10% of household income/exceed the entirety of liquid assets
    • 2X odds of medical debt
  – When 1-2 ACEs reported
    • 1.5X odds of OOP healthcare costs greater than savings

Schickedanz A et al. Adverse Childhood Experiences and Out-of Pocket Healthcare Costs; American Journal of Preventative Medicine, 56 (5); May 2019
Factors which predispose children to positive outcomes in the face of adversity

• A sense of self-efficacy and perceived control
• Opportunities to strengthen adaptive skills and self-regulatory capacities
• Ability to mobilize sources of faith, hope, and cultural traditions
• The single most common factor for children who develop resilience is at least one stable and committed relationship with a supportive parent, caregiver, or other adult
Implications for adult medical care

• **Assessment of risk**
  – Screen for trauma history
  – Encourage engagement in care plan
  – Patient education

• **Address social influences of health**
  – Refer to community resources
  – Assistance with mobilizing social supports

• **Mental health and substance abuse treatment**
  – Trauma-focused therapies
  – Integrated behavioral health care
System-based approaches to care

• Trauma-informed practices – “What we identify as maladaptive behaviors are really misapplied survival skills” (www.thesanctuaryinstitute.org)
  – Realize the wide-spread impact of trauma
  – Recognize the signs and symptoms of trauma in patients
  – Respond through policies, procedures and practices
  – Resist re-traumatization through our own systems

• Secondary prevention
  – Perinatal mood and anxiety disorder screening
  – Parent support resources
Staff Wellness

• Personal histories of trauma
  – May impact how staff manage day to day stresses or relate to patients and other staff

• Vicarious trauma
  – Sometimes called compassion fatigue
  – Persistent anxiety or thinking about trauma experienced by patients
  – Manifested in many ways, from “numbness” to anger

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Resources

• www.cdc.gov/violenceprevention/childabuseandneglect/acestudy

• Center on the Developing Child at Harvard University https://developingchild.harvard.edu

• Substance Abuse and Mental Health Services Administration. SAMHSA’s Concept of Trauma and Guidance for a Trauma-Informed Approach. HHS Publication No. (SMA) 14-4884. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.
Questions?

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