Adverse Childhood Experiences Disparities in South Dakota

Avera Health
Sioux Falls, SD
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Oglala Lakota
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Director, INMED
UND School of Medicine and Health Sciences
Objectives

1. Describe the types of adverse childhood experiences that have an impact on adult health outcomes

2. Describe ACE disparities in South Dakota
The ACE Study

- A joint research project of Kaiser Permanente in San Diego and the CDC
- The largest investigation ever conducted to determine the associations between child maltreatment and health and well-being in later life
- More than 17,000 participants – volunteered to give detailed information about their childhood experiences

Source: http://www.cdc.gov/ace/demographics.htm
WHAT ARE ACES? 
Adverse Childhoood Experiences

- ACEs are experiences in childhood that are unhappy, unpleasant, hurtful.

Sometimes referred to as toxic stress or childhood trauma
## ON WHICH ADVERSE CHILDHOOD EXPERIENCES DID THE STUDY FOCUS?

<table>
<thead>
<tr>
<th>“The Usual Suspects”</th>
<th>Family Dysfunction as well</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical abuse</td>
<td>1. Parent who’s an alcoholic</td>
</tr>
<tr>
<td>2. Sexual abuse</td>
<td>2. Parent who’s diagnosed as mentally ill</td>
</tr>
<tr>
<td>4. Physical neglect</td>
<td>4. Family member in prison</td>
</tr>
<tr>
<td>5. Emotional neglect</td>
<td>5. Parent who disappears through abandonment or divorce</td>
</tr>
</tbody>
</table>

Source: [http://acestoohigh.com/about/](http://acestoohigh.com/about/)
### ON WHICH ADVERSE CHILDHOOD EXPERIENCES DID THE STUDY FOCUS?

<table>
<thead>
<tr>
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<td>5. Parent who disappears through abandonment or divorce</td>
</tr>
</tbody>
</table>

- Many types of childhood trauma (e.g. watching a sibling being abused, losing a parent, homelessness, surviving and accident)

- The 10 ACEs included in the study were those identified as most common – well studied in the literature

Source: [http://acestoohigh.com/about/](http://acestoohigh.com/about/)
## Prevalence of ACES in Original Study Population

<table>
<thead>
<tr>
<th>Number of Adverse Childhood Experiences (ACE Score)</th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>34.5</td>
<td>38.0</td>
<td>36.1</td>
</tr>
<tr>
<td>1</td>
<td>24.5</td>
<td>27.9</td>
<td>26.0</td>
</tr>
<tr>
<td>2</td>
<td>15.5</td>
<td>16.4</td>
<td>15.9</td>
</tr>
<tr>
<td>3</td>
<td>10.3</td>
<td>8.6</td>
<td>9.5</td>
</tr>
<tr>
<td>4 or more</td>
<td>15.2</td>
<td>9.2</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Source: http://acescoohigh.com/about/
### PREVALENCE OF ACES IN ORIGINAL STUDY POPULATION

<table>
<thead>
<tr>
<th>Number of Adverse Childhood Experiences (ACE Score)</th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>34.5</td>
<td>38.0</td>
<td>36.1</td>
</tr>
<tr>
<td>1</td>
<td>24.5</td>
<td>27.9</td>
<td>26.0</td>
</tr>
<tr>
<td>2</td>
<td>15.5</td>
<td>16.4</td>
<td>15.9</td>
</tr>
<tr>
<td>3</td>
<td>10.3</td>
<td>8.6</td>
<td>9.5</td>
</tr>
<tr>
<td>4 or more</td>
<td>15.2</td>
<td>9.2</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**What do you notice?**

1. Gender differences?
2. Number of ACEs?
3. No ACEs?
4. 4 or more ACEs?

- Women with 3 or more ACEs = 25.5%
- Men with 3 or more ACEs = 17.8%

Source: [http://acesstoohigh.com/about/](http://acesstoohigh.com/about/)
ADVERSE CHILDHOOD EXPERIENCES ARE COMMON

Abuse
1. Physical abuse – 28%
2. Sexual abuse – 21%
3. Emotional abuse – 11%

Neglect
1. Physical neglect – 10%
2. Emotional neglect – 15%

Family Dysfunction
1. Parental substance abuse – 27%
2. Parental sep/divorce – 23%
3. Parental mental illness – 17%
4. Battered mother – 13%
5. Fam criminal behavior – 6%

Source: http://acestoohigh.com/about/
## PREVALENCE OF ACES BY GENDER

<table>
<thead>
<tr>
<th>ACE Category</th>
<th>Female (%) (N=9,367)</th>
<th>Male (%) (N=7,970)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abuse</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Abuse</td>
<td>13.1</td>
<td>7.6</td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>27.0</td>
<td>29.9</td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>24.7</td>
<td>16.0</td>
</tr>
<tr>
<td><strong>Neglect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Neglect</td>
<td>16.7</td>
<td>12.4</td>
</tr>
<tr>
<td>Physical Neglect</td>
<td>9.2</td>
<td>10.7</td>
</tr>
<tr>
<td><strong>Family Dysfunction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother treated violently</td>
<td>13.7</td>
<td>11.5</td>
</tr>
<tr>
<td>Parental substance abuse</td>
<td>29.5</td>
<td>23.8</td>
</tr>
<tr>
<td>Parental mental illness</td>
<td>23.3</td>
<td>14.8</td>
</tr>
<tr>
<td>Parental Separation/Divorce</td>
<td>24.5</td>
<td>21.8</td>
</tr>
<tr>
<td>Incarcerated household member</td>
<td>5.2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Source: [http://www.cdc.gov/ace/prevalence.htm](http://www.cdc.gov/ace/prevalence.htm)
WHY DO WE CARE ABOUT THIS STUDY?

- The study revealed a relationship between childhood experiences and physical and mental health of adults – including the *Leading Causes of Death*.

- It documents the conversion of traumatic emotional experiences in childhood into organic disease later in life.
OUTCOMES MEASURED IN STUDY

HEALTH RISK FACTORS

- Current smoker
- Severe obesity
- No leisure-time physical activity
- Two or more weeks of depressed mood in the past year
- Ever attempted suicide
- Considers self an alcoholic
- Ever used illicit drugs
- Ever injected drugs
- Had 50 or more intercourse partners
- Ever had a sexually transmitted disease
OUTCOMES MEASURED IN STUDY

CHRONIC ILLNESS

- Heart disease
- Any cancer
- Stroke
- Diabetes

OTHER

- Ever had a skeletal fracture
- Ever had hepatitis or jaundice
- Self-rated health – fair or poor
WHAT DID THEY FIND?

EFFECTS OF ACES

A Dose-Response Relationship

As the dose gets bigger, the response also gets bigger.

Translation: The more ACEs a person has, the more serious health issues they probably have.

ACES AND MENTAL HEALTH
Childhood Experiences Underlie Chronic Depression

![Bar chart showing the percentage of individuals with a lifetime history of depression by ACE score and gender.](chart)

Childhood Experiences Underlie Suicide Attempts

ACE Score and Hallucinations

*Adjusted for age, sex, race, and education.

ACES AND PHYSICAL HEALTH/RISK FACTORS
Risk of Adult Heart Disease Increases with more Adverse Childhood Experiences

Source: Dong et al., 2004

Risk of Lung Cancer by ACE Score

Risk of Adult Substance Abuse Increases with more Adverse Childhood Experiences (ACEs)

Self-Report: Alcoholism

<table>
<thead>
<tr>
<th>ACEs</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk/Prevalence (%)</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Dube et al., 2002

Self-Report: Illicit Drugs

<table>
<thead>
<tr>
<th>ACEs</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk/Prevalence (%)</td>
<td>2</td>
<td>5</td>
<td>8</td>
<td>12</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Dube et al., 2003

ACE Score and the Risk of Perpetrating Domestic Violence

Adverse Childhood Experiences vs. Likelihood of > 50 Sexual Partners

Childhood Experiences Underlie Later Being Raped

% Reporting Rape

ACE Score

0 1 2 3 4+

ACES AND DAILY FUNCTIONING
ACE Score and Indicators of Impaired Worker Performance

EXAMPLES OF ADDITIONAL VICTIMIZATION AND ADVERSITY ITEMS

Included in subsequent ace studies

- Peer victimization (bullying)
- Someone close had a bad accident or illness
- Exposure to community violence
- Socioeconomic Status!!
- Parent deployed to war zone
- Disaster
- Physical disability
- Family homeless

South Dakota Health Survey

The survey included questions on:

• Basic information, including age, sex, race;
• Self-reported health status, including chronic diseases, depression, and other health issues;
• Mental Health Screening;
• Access to services, including cost, distance, and other access issues; and
• Adverse Childhood Experiences.
South Dakota Health Survey

OVERALL RESPONSES

**MAIL SURVEY**
- Total Sample: 17,004
  - Exit/Ineligible: 1,267
  - Adjusted Sample: 15,737
  - Refused: 1,213
  - Survey Complete: 7,246 (46.0%)

**IN-PERSON SURVEY**
- Includes 2,467 Non-Responders + 337 New Sample from Tribal Areas
  - Total Sample: 2,804
    - Survey Complete: 440 (16.1%)

**TOTAL RESPONSES**
- Total: 7,686

**TOTAL RESPONSE RATE**
- 48.8%

**PLUS**
- Immigrants Refugees: 100
- Couch Surfers Multi-Family: 117
- Homeless: 301
- Total Surveys: 8,204

**MAIL**
- Phone: 312
- Online: 314
- In-Person: 440
## DEMOGRAPHIC CHARACTERISTICS FOR AI AND NON-AI RESPONDENTS

<table>
<thead>
<tr>
<th>Age</th>
<th>American Indian (n = 516)</th>
<th>Non-American Indian (n = 7078)</th>
<th>Total (n = 7593)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–34</td>
<td>36.63%</td>
<td>29.69%</td>
<td>30.34%</td>
<td>.0002</td>
</tr>
<tr>
<td>35–64</td>
<td>57.62%</td>
<td>49.94%</td>
<td>50.65%</td>
<td></td>
</tr>
<tr>
<td>65 and older</td>
<td>5.75%</td>
<td>20.37%</td>
<td>19.01%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>American Indian (n = 516)</th>
<th>Non-American Indian (n = 7078)</th>
<th>Total (n = 7593)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>37.16%</td>
<td>43.08%</td>
<td>42.53%</td>
<td>.21</td>
</tr>
<tr>
<td>Female</td>
<td>62.84%</td>
<td>56.92%</td>
<td>57.47%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AI</td>
<td>Non-AI</td>
<td>Total</td>
<td>p-value</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------</td>
<td>------------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Not employed</td>
<td>31.60%</td>
<td>7.58%</td>
<td>9.64%</td>
<td></td>
</tr>
<tr>
<td>Employed part time</td>
<td>11.91%</td>
<td>19.63%</td>
<td>18.97%</td>
<td></td>
</tr>
<tr>
<td>Employed full time</td>
<td>49.59%</td>
<td>54.47%</td>
<td>54.05%</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>6.89%</td>
<td>18.31%</td>
<td>17.34%</td>
<td></td>
</tr>
<tr>
<td><strong>Income (%FPL)</strong></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>&lt;50% FPL</td>
<td>38.90%</td>
<td>12.73%</td>
<td>15.17%</td>
<td></td>
</tr>
<tr>
<td>50–138% FPL</td>
<td>22.48%</td>
<td>10.18%</td>
<td>11.33%</td>
<td></td>
</tr>
<tr>
<td>138–250% FPL</td>
<td>17.29%</td>
<td>22.46%</td>
<td>21.98%</td>
<td></td>
</tr>
<tr>
<td>250–400% FPL</td>
<td>11.13%</td>
<td>28.75%</td>
<td>27.11%</td>
<td></td>
</tr>
<tr>
<td>&gt;400% FPL</td>
<td>10.20%</td>
<td>25.88%</td>
<td>24.42%</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Less than high school</td>
<td>9.95%</td>
<td>3.23%</td>
<td>3.85%</td>
<td></td>
</tr>
<tr>
<td>High school diploma or GED</td>
<td>39.29%</td>
<td>32.40%</td>
<td>33.05%</td>
<td></td>
</tr>
<tr>
<td>Vocational or 2-yr. degree</td>
<td>24.86%</td>
<td>23.87%</td>
<td>23.96%</td>
<td></td>
</tr>
<tr>
<td>4-year college degree</td>
<td>22.47%</td>
<td>25.69%</td>
<td>25.39%</td>
<td></td>
</tr>
<tr>
<td>Advanced or graduate degree</td>
<td>3.44%</td>
<td>14.81%</td>
<td>13.75%</td>
<td></td>
</tr>
<tr>
<td>Adverse Childhood Experiences Domains</td>
<td>American Indian (n = 516)</td>
<td>Non-American Indian (n = 7078)</td>
<td>Significance</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Abuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Abuse</td>
<td>30.10%</td>
<td>17.41%</td>
<td>.0008*</td>
<td></td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>24.51%</td>
<td>12.31%</td>
<td>.0002*</td>
<td></td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>15.53%</td>
<td>9.60%</td>
<td>.0263*</td>
<td></td>
</tr>
<tr>
<td>Neglect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Neglect</td>
<td>25.87%</td>
<td>14.00%</td>
<td>.0005*</td>
<td></td>
</tr>
<tr>
<td>Physical Neglect</td>
<td>15.89%</td>
<td>2.78%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Household Dysfunction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother Treated Violently</td>
<td>23.76%</td>
<td>5.31%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Household Substance Abuse</td>
<td>50.04%</td>
<td>21.49%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Household Mental Illness</td>
<td>24.36%</td>
<td>13.89%</td>
<td>.0032*</td>
<td></td>
</tr>
<tr>
<td>Parental Separation or Divorce</td>
<td>39.34%</td>
<td>20.17%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
<tr>
<td>Incarcerated Household Member</td>
<td>22.57%</td>
<td>3.73%</td>
<td>&lt;.0001*</td>
<td></td>
</tr>
</tbody>
</table>
Prevalence: Mental Health Screens

Participants who screened positive for a condition using standardized mental health screening tools.

- Depression
- Anxiety
- Post Traumatic Stress Disorder (PTSD)

- Statewide
- Urban
- Rural
- Isolated
- Reservation
STATEWIDE PREVALENCE OF MENTAL HEALTH CONDITIONS, ALCOHOL MISUSE, AND SMOKING STATUS BY AMERICAN INDIAN RACE/ETHNICITY COMPARED WITH NON-AMERICAN INDIAN RESPONDENTS

<table>
<thead>
<tr>
<th>Condition</th>
<th>American Indian (n = 516)</th>
<th>Non-American Indian (n = 7078)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttraumatic stress disorder (PC-PTSD)</td>
<td>13.2%</td>
<td>5.3%</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>35.2%</td>
<td>15.1%</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Depression (PHQ-2)</td>
<td>9.5%</td>
<td>5.1%</td>
<td>.07</td>
</tr>
<tr>
<td>Severe Alcohol Misuse (AUDIT-C 9+)</td>
<td>3.3%</td>
<td>2.4%</td>
<td>.46</td>
</tr>
<tr>
<td>Alcohol Misuse (AUDIT-C)</td>
<td>40.2%</td>
<td>42.6%</td>
<td>.63</td>
</tr>
<tr>
<td>Anxiety (GAD-2)</td>
<td>8.1%</td>
<td>7.4%</td>
<td>.80</td>
</tr>
</tbody>
</table>
Self-Rated Health Status

Self-assessment of general health status

- Excellent
- Very Good
- Good
- Fair or Poor

Statewide
Urban
Rural
Isolated
Reservation
# AI ACE Disparities in South Dakota

<table>
<thead>
<tr>
<th>Number of ACEs (Score)</th>
<th>AI</th>
<th>Non-AI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>16.84%</td>
<td>50.02%</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>1</td>
<td>21.59%</td>
<td>23.02%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16.20%</td>
<td>9.60%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12.99%</td>
<td>6.09%</td>
<td></td>
</tr>
<tr>
<td>4–5</td>
<td>13.10%</td>
<td>7.38%</td>
<td></td>
</tr>
<tr>
<td>≥6</td>
<td>19.28%</td>
<td>3.89%</td>
<td></td>
</tr>
</tbody>
</table>

*Note

*statistically significant*
WHAT DID THEY FIND?

AI/AN Health Disparities

Average age at death in SD: 81 v 54
AI/AN Health Disparities

Life expectancy at birth, males, 2012

Years

63.86
64
66
68
70
72
74
76
78
80
82
82.44
AI/AN Health Disparities

Average age at death in ND (2010 – 2014):

77.4 Years in the White Population

56.6 Years in the AI Population
AI/AN Health Disparities

Death rates from preventable diseases among AI/ANs are significantly higher than among non-Indians:

- Diabetes 208% greater
- Alcoholism 526% greater
- Accidents 150% greater
- Suicide 60% greater

Indian Health Service. *Regional Differences in Indian Health*
Age-Adjusted Suicide Death Rates by IHS Area

- **Adjusted for Race Misreporting**
- **Unadjusted**

- **U.S. All Races = 10.6**
- **IHS Adjusted Total - All Areas = 20.2**

- **Nashville**
- **Oklahoma**
- **California**
- **Phoenix**
- **Albuquerque**
- **Navajo**
- **Billings**
- **Portland**
- **Bemidji**
- **Tucson**
- **Aberdeen**
- **Alaska**

Rate per 100,000 Population
### State Suicide Mortality rates by Race, 1990-2002

<table>
<thead>
<tr>
<th>State</th>
<th>Race</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Dakota</td>
<td>White</td>
<td>11.3</td>
</tr>
<tr>
<td></td>
<td>American Indian</td>
<td>26.0</td>
</tr>
<tr>
<td>South Dakota</td>
<td>White</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>American Indian</td>
<td>27.0</td>
</tr>
</tbody>
</table>

Underlying mortality data provided by NCHS (www.cdc.gov/nchs). Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups, Census P25-1130) standard.
## Significant Challenges

<table>
<thead>
<tr>
<th>Social Determinants</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td>Poverty</td>
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<td>Suffering and Death</td>
</tr>
</tbody>
</table>

- Poverty
- Trauma
- Politics
- Inattention/Neglect
- Racism
- Inequity

- Health Disparities
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Significant Challenges

Social Determinants
- Poverty
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- Inattention/Neglect
- Racism
- Inequity

Outcomes
- Health Disparities
- Education Inequality
- Generational Poverty
- Ongoing Racism
- Worsening Inequity
- Suffering and Death

Need to address issues in a comprehensive manner—medical, behavioral, public health...
Research and Programming Needs

• Improve understanding of Historical Trauma
Research and Programming Needs

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• How do we prevent ACEs?
  – Home visiting, parenting skills, community engagement
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Research and Programming Needs

- Improve understanding of Historical Trauma
- How do we prevent ACEs?
  - Home visiting, parenting skills, community engagement
- How do we mitigate the impact of HT and ACEs?
- Develop a Diverse Workforce
- Workforce Development Programs
  - INMED (UND, USD)
  - NDSU MPH, others…
Blackfeet Saying

A child is sacred. And when that child comes into the home, the family must welcome it. And if the child is happy and feels the want, he will come into this world very, very strong. And not to know this is to know nothing.