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### **Traumatic childhood takes 20 years off life expectancy**

People who experienced considerable trauma during their childhood died 20 years prematurely, CDC researchers have found.

And those suffering this substantial childhood trauma have double the risk for early death compared with adults who had not endured adverse childhood experiences.

"That's pretty striking," says Dr. David Brown, an epidemiologist at the Centers for Disease Control and Prevention, and lead author on the publication. "It's pretty striking that someone with six or more ACEs died 20 years earlier."

The study, which appears in the November issue of the *American Journal of Preventive Medicine*, is the latest in the ongoing 14-year-old Adverse Childhood Experiences Study. The study involves 17,337 adults who became members of Kaiser Permanente, a health care maintenance organization in San Diego, between 1995 and 1997. After visiting a primary care facility at the HMO, they voluntarily filled out a standard medical questionnaire that included questions about their childhood.

The questionnaire asked them about 10 types of child trauma:

- Three types of abuse (sexual, physical and emotional).
- Two types of neglect (physical and emotional).
- Five types of family dysfunction (having a mother who was treated violently, a household member who's an alcoholic or drug user, who's been imprisoned, or diagnosed with mental illness, or parents who are separated or divorced).

Each type of trauma — not the number of incidents of each trauma — was given an ACE score of 1. So, a person who has been emotionally abused, physically neglected and grew up with an alcoholic father who beat up his wife would have an ACE score of 4.

Since the first of 50 research papers was published in 1998, the findings have stunned researchers, including the co-founders of the study, Dr. Vincent Felitti, who headed Kaiser's Department of Preventive Medicine, and Dr. Robert Anda, a research physician and CDC epidemiologist, for three reasons:

- They found a strong link between adverse childhood experiences and adult onset of chronic illness. Those with ACE scores of 4 or more had significantly higher

rates of heart disease and diabetes than those with ACE scores of zero. The likelihood of chronic pulmonary lung disease increased 390 percent; hepatitis, 240 percent; depression, 460 percent; suicide, 1,220 percent. Those with an ACE score of 6 had a 4,600 percent increase in the likelihood of becoming an IV drug user. "You almost never see that kind of increase in health studies of any kind," Anda said. "It's almost unprecedented."

- Adverse childhood experiences are common: 64 percent of the study participants had experienced one or more categories of adverse childhood experiences.
- The 17,337 people who participated in the ACE study are typical, middle-class, working Americans — 75 percent white, 11 percent Latino, 7 percent Asian, and 5 percent African-American. They're educated: 75 percent attended college and 40 percent have a basic or higher college education. When they filled out the questionnaire, their average age was 57. Most of them had jobs. Half were women, half were men. All of them had good health insurance.

"The study is disquieting in its description of the frequency of abuse against children and how often families appear to be dysfunctional," wrote epidemiologist Dr. William Foege, former director of the CDC and a senior fellow with the Bill and Melinda Gates Foundation, in an editorial in the *American Journal of Preventive Medicine* when the first ACE research was published in 1998. "It is not what we want to believe about our culture, our neighborhoods, or ourselves. And yet as troubling as the data seem to be, we need to confront the problems described and find an appropriate public health response."

In the study made public today Tuesday that compares childhood trauma and mortality, researchers used the National Death Index, which captures information about most deaths in the United States, to identify 1,539 deaths that occurred in the Kaiser group between 1995 and 2006. The researchers found that people with six or more ACEs died nearly 20 years earlier on average than those without ACEs — 60.6 years versus 79.1 years. In this particular research, neglect was not included.

The study has limitations. Brown cautions that this is the first research to examine the link between mortality and ACEs, and the group that they analyzed is relatively small. Nevertheless, he says, "even if you take the absolute number out of it, they're dying substantially younger." In five years, Brown said, the researchers will repeat the analysis on the next group of deaths among those who participated in the ACE Study.

The significance of the study is that it supports the previous research — that child trauma is an important public health issue, Brown said.

“Throughout all of the ACE studies, we’ve tried to reinforce the importance of prevalence of exposure (to childhood trauma), Brown said. “Being able to tie (ACEs) to premature mortality further reinforces the public health importance and why we need to further look at this.”

“What it meant to me when I saw the data is that all the levels of the ACE pyramid are now filled in,” said Anda, the ACE Study co-founder and co-author on the current research. The pyramid is the conceptual framework for the study. From research in the 1980s and 1990s, the CDC knew that disease risk factors — such as smoking, obesity and alcohol abuse — aren’t distributed randomly throughout the U.S. population.

Research also shows that if a person has one risk factor, he or she usually has another. So, the ACE Study researchers asked: If risk factors for disease, disability and early mortality aren’t randomly distributed, what influences their adoption or development?

Anda, Felitti and other researchers who’ve been working on the data for more than a decade identified that childhood trauma was linked to disease, disability and social problems.

“Neurobiologists filled in the next level,” Anda said.

In parallel research, the neuroscience community has found that that trauma alters the function and development of children’s brains and nervous systems. Epigeneticists, who study how a person’s experiences turn their genes off and on, have found that trauma can turn on genes that manufacture the chemical stressors that affect the brain.

That’s what’s happening in the brains of traumatized children who become hyper-vigilant, edgy, impulsive, and have hot tempers. They’re unable to focus on their schoolwork, they can’t sit still, and they regard social interactions as threats — all behaviors that can get them in trouble or suspended, and that can lead to engaging in risky behaviors, such as smoking, drinking too much alcohol, workaholism, eating too much, etc., that can affect their health.

“This study shows that high levels of ACEs do indeed lead to premature mortality, indeed mediated by pathways we’ve been documenting,” said Anda, who was

nevertheless surprised that the relationship among this group was so profound. He thought that the odds were stacked against them in finding a relationship between childhood trauma and early mortality in the Kaiser group. Why?

"Because most of the people in the study were middle aged and older people," he explained. "We've been showing that the risk between social problems and health is so strongly related to ACEs, that older people with high ACE scores are less likely to have survived. It's research 101: if you go into a coal mine to look for people with bad lung disease and you don't find much, it's because the sick ones aren't in the coal mine anymore."

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