Alberta Addiction & Mental Health Research Partnership Program

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Research-to-Practice Spotlight: Adverse Childhood Experiences in Alberta: Results from a Population-based Telephone Survey

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Background

There is growing documentation linking childhood traumatic experiences and poor physical and mental health outcomes later in life. Adverse Childhood Experiences (ACEs) include childhood trauma in the form of abuse, neglect, living in a home where there is violence, or having a mentally ill or substance abusing parent. Consistently, associations have been found between ACEs and unhealthy lifestyles, poor physical and mental health, low educational achievement, and low economic productivity in adulthood. Accumulating evidence suggests that early maltreatment and adversity can lead to stress-induced neurobiological changes in children early on with long lasting effects. Exposure to ACEs influences the stress response and coping strategies leading to health and social problems in adulthood.

The original ACE study was conducted in the 1990's through collaboration between Kaiser Permanente and the Centres for Disease Control and Prevention to examine associations between childhood trauma and adult health outcomes. Categories of ACEs include childhood abuse (emotional, physical, sexual), neglect (emotional and physical), and household dysfunction (exposure to domestic violence, marital discord, and mentally ill, addicted, or criminal household members) experienced before the age of 18 years. Common approaches to studying ACEs may oversimplify or overestimate early trauma as a risk factor for adult health outcomes, seriously compromising translation of findings into targeted interventions. For example, a cumulative approach, such as the ACE score (i.e., number of ACEs), assumes equal weighting for ACEs and that any joint effects are additive. In this study, we sought to explore a more comprehensive approach to understand early trauma. We developed a four category ACE risk profile

variable that captured both ACE category and ACE score, and examined ACEs as risk factors for diagnosed health conditions using data drawn from a population-based survey in Alberta, Canada.

Methods

A computer-assisted telephone survey was conducted with a random sample of Albertan adults by the Population Laboratory of Alberta (University of Alberta). Eight questions were asked on adversity during childhood, covering domains of abuse and household dysfunction. These items were based on the original ACE survey and modified to reflect the Canadian context and research methodology. Questions on 11 diagnosed health conditions in adulthood, including physical health, mental health and substance abuse were asked. Additional components of the survey included an introduction and demographic questions. A domain-specific approach that considered the number of ACEs within each domain was used to develop a single ACE risk profile variable, which consisted of four categories: (1) low risk abuse, low risk household dysfunction; (2) low risk abuse, high risk household dysfunction; (3) high risk abuse, low risk household dysfunction; (4) high risk abuse, high risk household dysfunction. Similar medical conditions were combined to derive four grouped health conditions: mental health condition/addiction, circulatory condition, respiratory condition, and chronic pain.

Statistical analyses were performed to examine the relationship between the four-category ACE risk profile variable (lowest risk profile taken as the reference group) and each of the grouped diagnosed health conditions. The analysis also included sociodemographic variables, such as age, household income, employment status, education, marital status, number of children in household, community type, Canadian born, ethnicity, and gender.

Results

Among the 1207 respondents, the majority were married or living common-law (65.8%), had completed post-secondary education (78.2%), and were Caucasian (86.2%) with a mean age of 52.4 years (SD=16.3). Approximately one-third (27.3%) experienced at least one type of abuse, and almost half (49.5%) experienced at least one form of household dysfunction. ACEs were highly interrelated. For example, given one ACE, the median probability of experiencing at least one additional ACE was 68%. Sixty-three percent fell into the lowest risk profile category, with the remaining 37% divided among the three higher risk profile categories. Overall, the single ACE risk profile variable was significantly associated with diagnosed mental health condition/addiction and chronic pain, controlling for sociodemographic characteristics. The strongest association was seen for the highest risk profile category (high risk abuse and high risk household dysfunction) compared to the lowest risk profile.

Discussion

To our knowledge, this is one of the few population-based studies in Canada and the only one in Alberta to describe the general public's exposure to adverse childhood experiences and their association to diagnosed health outcomes in adulthood. Key findings indicate that a risk profile of at least one ACE in the abuse

domain and at least two ACEs in the household dysfunction domain confers the greatest risk for poor adult health outcomes, compared to risk profiles in which ACEs are clustered within a domain. This increased risk was identified specifically for diagnosed mental health conditions/addiction and conditions of chronic pain. In addition, this study aligns with previous research that documents the high interrelatedness of ACEs, providing justification for conceptualizing ACEs in a more comprehensive manner than simpler approaches such as by individual ACEs or total ACE score. Taken together, the results from this study suggest that there may be a toxic threshold effect of at least three ACEs across both domains.

Exposure to trauma across abuse and household dysfunction domains may overtax an individual's coping and stress response in a domain. Further, a child may not have an opportunity for a 'safe haven' when adversity crosses different domains. Brain research helps us to understand this relationship: the toxic stress from trauma damages the structure and function of the developing brain. Safe, supportive and nurturing environments can reduce the effects of toxic stress; however, the absence of these foundations may permanently alter regulation of the stress response system, immunologic responsiveness, effective self-regulation and early establishment of health-promoting behaviours.

The four category ACE risk profile variable was associated with mental health problems and chronic pain, suggesting that the association between early trauma and these conditions are mediated by the same biological mechanism involving upregulation of the immune system. A common underlying biological process involving inflammation as a result of early life stress is one potential explanation for the results in the present study. Unknowns such as timing of diagnosis, chronicity of ACEs over time, and experiences of other adversities such as poverty, social isolation, and other life stressors, underscore the complexities in explaining how early trauma translates into disease outcomes later in life. In addition, many other factors may mitigate or exacerbate outcomes among those who were exposed to adversities during childhood; there rarely is a direct causal pathway leading to a particular outcome, and likely a number of specific and common underlying pathways exist.

The results of this study have implications for prevention of ACEs and recovery from ACEs to decrease the burden of disease. Prevention strategies may include effective programs and interventions to stop child maltreatment and foster safe environments that support nurturing and stable relationships for children and families. Co-occurrence of adverse experiences is important to consider when identifying and treating children who have been exposed to any one type of maltreatment. Interventions that target children and families who are already exposed to adverse childhood events can involve supportive interventions that may be short or long-term, individual or group-based, formal or informal. Further, interventions should be individualistically responsive the child's familial context focusing on minimizing disruption and stabilizing the environment. A commitment to social change is also needed to address root causes and the social determinants of health like poverty, lack of stable housing, and lack of social support.

Acknowledgements
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Other Stories of Interest: Care for Children and Youth With Mental Disorders

The Canadian Institute of Health Information (CIHI) released a report examining trends and patterns over the past 6 years in the use of hospital-based services and psychotropic medications among children and youth with mental disorders. Below is an excerpt from the press release. The entire news release can be found here. The complete report can be found here.

"Many more young Canadians using health services for mental disorders

May 7, 2015—The rate of hospitalizations and emergency department (ED) visits by children and youth in Canada for mental disorders has increased substantially since 2006–2007.

Care for Children and Youth With Mental Disorders, a new study by the Canadian Institute for Health Information (CIHI), shows that rates (defined as the number of patients per 100,000 population) of ED visits for mental disorders among children and youth (age 5 to 24) increased by 45% from 2006–2007 to 2013–2014. Similarly, rates of inpatient hospitalizations that involved at least 1 overnight stay increased by 37% for Canadian children and youth over the same time period.

Although the use of hospital services is increasing, there is no evidence to suggest that the prevalence of mental disorders in this age group has grown.

"The rising rates of hospital visits by young Canadians for mental disorders could be due to a number of factors," said Jeremy Veillard, CIHI's vice president of Research and Analysis. "We may be seeing more patients in the hospital because the stigma around mental disorders is decreasing, and young people are more willing to seek help. The question for the health system is whether those services are best provided in hospitals, or whether young people could be more effectively treated in primary care or community-based settings."

Rate increases largest for youth age 10 to 17
CIHI's study broke down the use of these hospital services across age groups (from age 5 to 24) and found that since 2006–2007, youth age 15 to 17 have had the largest volumes of ED visits and hospitalizations. Additionally, this age group has experienced a significant increase in rates of hospital service use since 2006–2007, with ED visit rates up 53% and inpatient rates up 74%.

Although 10- to 14-year-olds made up a significantly smaller proportion of patients, this age group also experienced a large increase in hospital service use. The study found that their rate of ED visits increased by 68%, and inpatient hospitalization rates rose by 64%.

1 in 12 youth received medication for mental disorder
In addition, 1 in 12 youths age 15 to 24 from Manitoba, Saskatchewan and British Columbia were dispensed a mood/anxiety or antipsychotic medication in 2013–2014. This rate has also increased substantially, primarily among youth living in urban or suburban areas who were dispensed selective serotonin reuptake inhibitors and quetiapine, the most commonly prescribed antipsychotic drug. Further examination of medication dosages found that quetiapine was often dispensed in doses low enough to indicate treatment of conditions other than schizophrenia or bipolar disorders (e.g., as a sleep aid, as a treatment for symptoms of attention deficit hyperactivity disorder or conduct disorder)."

Did You Know?…

- 10% to 20% of Canadian children and youth may develop a mental disorder.[1]
- Mental disorders accounted for 13% of the global burden of disease.[1]
- Between 2006-2007 and 2013-2014, rates of emergency department visits and hospitalizations for mental disorders among Canadian children and youth increased by 45% and 37%, respectively; however, rates of emergency department visits for other conditions remained stable and hospitalizations decreased by 14%.[1]
- In 2013-2014, 1 in 12 youth were dispensed a mood/anxiety or antipsychotic medication. 6.5%

(61,503) of youth living in B.C., Saskatchewan and Manitoba were dispensed at least 1 medication to treat a mood or anxiety disorder, and 1.6% (14,894) were dispensed at least 1 antipsychotic medication.[1]

Canadian Institute of Health Information. Care for Children and Youth With Mental Disorders. (2015). https://secure.cihi.ca/free_products/CIHI%20CYMH%20Final%20for%20pubs_EN_web.pdf

Research Partnership Program Progress Update

Collaborative Research Grant Initiative: Mental Wellness in Seniors and Persons with Disabilities (CRGI)

Final Research Grant Reports

Several CRGI research grant recipients have completed their research and submitted a final report. Final reports highlight research findings and outline how findings may impact policy and practice. All final reports can be found here.

Enhancing the Quality of Life of Seniors With Dementia Who Live Within Assisted Living Settings: A Review of the Literature and Current Promising Practices
Anna Litle & Suzanne Maisey (Shepherd's Care)
The objective of this project was to conduct a comprehensive review of the research and current practices specific to dementia assisted living settings. The goals of this review were to: identify promising practices specifically relevant to dementia assisted living settings that will stimulate and encourage independence to support residents who have dementia and are living within these settings; and identify services, activities, and social programs based on published evidence that will increase residents' quality of living. You can read the full report here.

The Evaluation of Smartphone and iPad Technology and Development of Training Protocols as Memory Compensation Aids for Individuals with an Acquired Brain Injury
David Winkelaar (Alberta Health Services)
This project evaluated the use of smartphone and iPad technology as memory compensation tools for acquired brain injury clients and to encourage the use of these tools following discharge from an in-patient facility. You can read the full report here.

Other Publications

Book
Dr. Sheri Melrose, a CRGI Seed/Bridge Fund Grant Recipient, has co-published an open access book based on her CRGI research. The book can be read online, on a Smartphone, or ordered in print.

"This multidisciplinary resource develops topics of interest to all those who care about and for individuals with co-occurring intellectual disabilities and mental illness. Each chapter presents current evidence informed practice knowledge. Each topic is also presented with audio enabled text boxes emphasizing 'Key Points for Caregivers.' For those who are interested in background knowledge, we provided the comprehensive literature base. And, for those interested mainly in 'what to do,' we provided text box summaries for reading and listening."

Melrose, S., Dusome, D., Simpson, J., Crocker, C., Athens, E. (2015). Supporting individuals with intellectual disabilities & mental illness: What caregivers need to know. Vancouver, British Columbia, Canada: BCcampus. Retrieved from http://opentextbc.ca/caregivers/

CRGI Snapshots
CRGI Snapshots are concise summaries of current Alberta research and evaluation regarding mental wellness in seniors and persons with disabilities. Summaries have been written for the Seed/Bridge Fund and Ideas Fund research. These summaries allow you to become familiar with the various

research projects under this initiative without having to read the complete reports. You can view the CRGI Snapshots here.

Journal Article

Barron, G., Scarlett-Ferguson, H., & Aspen, C. (2015). Measuring interactions among research grant recipients through social network analysis: Insights into evaluating and improving research collaborations. Journal of Research Administration, 46(1), 25-40.

Knowledge Translation

Addiction and Mental Health Mobile Application Directory 2015

Our Addiction and Mental Health Mobile Applications Directory has been updated! This document includes information about mobile applications (apps) related to addiction and mental health. It provides a directory of electronic resources gathered and collated from various organizational websites and other information sources in the public domain for different mobile platforms which may be used as aids in mental health or addiction conditions. It represents a brief cross-section of applications related to addiction and mental health available for the general mobile device user. You can view it here.

Information for Health Professionals – Opioids

This document provides information to health professionals about opioids – drugs such as codeine, fentanyl, and morphine – and their use and misuse. It includes information about methods of ingestion, effects on the body, dependence and withdrawal, and applicable laws. You can view it here.

Addiction and Mental Health in the Construction Industry in Alberta

Workplace Addiction and Mental Health in the Construction Industry in Alberta: Phase Two Report

This report examines data from a 2011 Institute of Health Economics study to determine the extent to which addiction and mental health problems were prevalent among workers in the construction industry. The report provides information about prevalence of alcohol use, tobacco use, illicit drug use, gambling, major depressive disorder, anxiety, and suicidal behaviour. Information regarding the availability of employee and family assistance programs and workplace policies related to substance use in the workplace is also included. Read the report here.

Funding and Job Opportunities

>> http://www.albertahealthservices.ca/11251.asp

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If you have an idea for a Knowledge Note and are not certain whether it fits with our guidelines please contact us at researchpartnership@albertahealthservices.ca.

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