University of Massachusetts Amherst

Increasing Staff Knowledge and Screening Practices for Adverse Childhood Experiences in Primary Care

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Increasing Staff Knowledge and Screening Practices for Adverse Childhood Experiences in Primary Care

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Abstract

Adverse childhood experiences (ACE) are important to future health outcomes. Many health care providers lack the knowledge or training to assess for ACE. *Purpose.* The purpose of this quality improvement project is to increase the identification of ACE among adult clients in a primary care clinic in Saint John New Brunswick Canada, through the delivery of an education session for the health care team members and patient screening for ACE. *Methods.* Staff at one clinic attended an educational program about ACE. Staff completed a pre and post education survey questionnaire (N = 8). Additionally, clinic patients (N= 32) were screened for childhood trauma using the ACE questionnaire. Post-screening surveys were completed by the clinicians who screened for ACE. *Results.* Most staff (85.7%) reported inadequate training/knowledge of ACE pre-education session; improvement in knowledge/understanding of ACE post session; and better prepared to discuss/screen patients for ACE. Nearly all of the 32 clinic patients reported a positive ACE score, and 62.7% had a score of four or more. Time to screen was not reported as a barrier by clinicians, and 10.0% of patients who screened positive were referred for counselling or booked a follow-up appointment. *Conclusion.* Health care providers lack education/training on ACE and patients are not regularly screened for ACE. To do this effectively, a trauma informed care approach must be used. A history of ACE in the patient sample was found to be high, yet previously unknown to the clinicians. This information has implications for primary care practice, community programing and policy development.

Keywords: adverse childhood experiences, (adult) screening and primary care.

Introduction

Trauma experienced in childhood has been identified as an important social determinant of health for adult clients accessing primary care services in Saint John, New Brunswick Canada. Since the opening a new urban primary health care clinic, clinicians practicing observed that childhood trauma was a potential significant factor impacting adult clients' mental and physical wellbeing. It was identified by the clinic's interdisciplinary team, that a trauma informed care (TIC) approach was required to meet this unmet need. Trauma informed care is an approach to providing health care that recognizes the widespread impact of trauma and paths for recovery, while recognizing the signs and symptoms of trauma in patients and families; responding by fully integrating knowledge about trauma information policy, procedures and practices and seeks to actively resist re-traumatization (Substance Abuse and Mental Health Services Administration [SAMHSA], 2016).

The clinic's team members expressed feeling ill prepared and lacking knowledge and comfort in identifying and intervening when a client was identified as having lived through adverse childhood experiences (ACE). Information regarding ACE was sometimes disclosed by the patient to the members of the health care team, when completing the client intake form at their initial appointment. It was decided by the clinics health care team this was an area that needed greater attention, as part of meeting the client's holistic health care needs through the adoption of a TIC approach.

Background

Toxic trauma and adversity in childhood has been identified in the literature as important health considerations for childhood development and resultant future adult

health outcomes (Felliti et al, 1998; Centers for Disease Control and Prevention [CDC], 2016). Twenty plus years of research data has highlighted this as an important public health concern. The Substance Abuse and Mental Health Services Administration (SAMHSA, 2017) state that ACEs include: physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect, intimate personal violence, mother treated violently, substance misuse within the household, household mental illness, parental separation or divorce, and incarcerated household members.

As a means to provide conceptual clarity in regards to this topic, Kalmakis and Chandler (2013) sought to operationally define the concept of childhood trauma. Their analysis resulted in the following definition for ACE "childhood events, varying in severity and often chronic, occurring in the child's family of social environment that cause harm or distress, thereby disrupting the child's physical or psychological health and development (Kalmakis & Chandler, 2013, p. 1489).

Adverse childhood experiences (ACE) occur in approximately 60% of the United States population (Kalmakis & Chandler, 2015) yet many health care providers lack the education or knowledge required to address ACE. In a landmark study completed in partnership with the Center for Disease Control and Prevention (CDC) and Kaiser Permanente, over 17,000 adult participants completed surveys for ACE between 1995 to 1997, using the ACE score questionnaire. The authors identified a strong graded relationship between the amount of exposure to abuse or household dysfunction during childhood and multiple risk factors for several of the leading causes of death in adults (Felitti et al., 1998). The ACE pyramid was developed to visually represent the

conceptual framework for the ACE study and how it impacts the individual's health (CDC, 2016; Appendix A).

This sentinel study has since sparked interest in both nursing and medicine regarding the important role childhood trauma plays in increasing ones adult lifetime risk of developing chronic diseases such as cardiovascular disease, obstructive pulmonary disease, cancer, asthma, autoimmune disease and depression (Hornor, 2015). However, health care providers continue to lack the knowledge and confidence to screen and discuss ACE with clients.

The CDC (2016) reports that ACE have been linked to risky health behaviours (smoking, alcoholism, drug abuse), chronic health conditions (obesity, diabetes, depression, suicide attempts, sexually transmitted diseases, heart disease, cancer, cerebral vascular disease, chronic obstructive pulmonary disease and broken bones), low life potential (decreased high school graduation rates, decreased academic achievement, lost time from work) and premature mortality. Research completed has demonstrated that when children are exposed to chronic stressful events, their neurodevelopment is negatively affected (SAMHSA, 2017). This is turn has been shown to negatively impact their cognitive functioning leading to adopting future maladaptive coping mechanisms, such as drug abuse and self harm (SAHSA, 2017). This is particularly true for mental illness, as the risk of suicide increases by 50% as one's ACE scores increases by one point (Glowa, Olson, & Johnson, 2016).

To translate the current research into practice, the adoption and utilization of a trauma informed care approach was urgently needed to address ACE among adult clients in primary care. Roberts, Chandler and Kalmakis (2019) present a model for TIC in

primary care that consists of five components, which include: screening and trauma recognition; understanding the health effects of trauma; patient-centered communication and care; emphasizing emotional safety and avoiding triggers; and knowledge of helpful treatments for patients with a history of trauma. This model will provide the foundational basis for this quality improvement project, translating TIC into the routine primary health care practice.

Problem Statement

Unrecognized effects of adverse childhood experiences (ACE) among adult patients may result in increased rates of mental illness, chronic disease, low socioeconomic status (SES) and drug addictions. This may be a result of the health care team's lack of knowledge and comfort in addressing ACE, and the lack of both routine ACE screening and inadequate use of a trauma informed approach.

Organization "Gap" Analysis of Project Site

Community health needs assessments were completed on various communities in New Brunswick, including the greater Saint John area, by the regional health authority Horizon Health Network in 2014. It was clearly identified by the residents of the greater Saint John area that improved access to mental health care services was desperately needed as well as a provincial poverty reduction strategy. Various communities in Saint John were identified as "priority" communities due to high rates of the following: families/children living in poverty, single parent families, rates of unemployment and illicit drug use, low literacy/incompletion of high school diploma, food insecurity and inadequate affordable housing (Human Development Council, n.d.).

According to community assessments completed by both community partners and the Government of New Brunswick, the target community involved in this project was identified as a "priority" neighbourhood. A clinic to assist this community and its residents in meeting their primary health care needs, utilizing a team, community participatory-based approach was opened. It was quickly identified by the clinic's staff, it's clients, and community partners that trauma, in particular childhood trauma, was an area that needed urgent attention.

Improving awareness and addressing ACE through the utilization of a TIC approach is very relevant to the projects target community in Saint John, New Brunswick. Saint John is Canada's oldest incorporated city. It also is home to communities with some of the country's highest rates of poverty in Canada (Vibrant Communities & Human Development Council, 2014). According to a report published by Vibrant Communities and the Human Development Council (2014), the overall poverty rate for this community is 25.2%, compared to the national average of 14.5%. Even more concerning is the child poverty rate is 41.1%, a stark comparison to the national average of 19.1% and the overall Saint John average of 29.3%. Lone parents families in this community were reported at 27% compared to the national average of 16.3% (Human Development Council, n.d.).

Review of the Literature

To complete the literature review, the databases PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PsychInfo were chosen. Search keywords included: ACE, screening and primary care. For PubMed, adult screening was used in place of screening, to narrow down the number of articles found. Inclusion criteria included: full text, English language research studies or meta-analysis, utilizing

human subjects, between 2010 and 2018. Exclusion criteria included: commentaries, editorials, letters to the editor, case reports, dissertations and duplicate studies. Using these keywords resulted in 111 articles in PubMed, ten articles in PsychInfo and eleven articles in the CINAHL. Once the articles were reviewed as per the inclusion and exclusion criteria (taking into account duplicate studies), eleven articles met the criteria for the review.

To assess for strength and quality of the evidence reviewed, the John Hopkins Nursing Evidenced-based Practice Rating Scale (Newhouse, Poe, Pugh & White, 2005) was utilized. One article reviewed was classified as Level IA, as it was the only systematic review on the topic of ACE, using a meta-analysis procedure PRISMA (Kalmakis & Chandler, 2015; Newhouse et al., 2005). Seven of the studies reviewed were rated as Level II for strength of the evidence; two of these rated A or high for quality of evidence and the remainder rated as level B or good for quality of evidence (Newhouse et al., 2005). Two studies reviewed were of a qualitative design and therefore were rated a Level III for strength of the evidence; one rated B for good quality evidence (Conn et al, 2018) and the other rated C or low quality due to its very small sample size (Mitchell, Studer, & O'Connor, 2016). One of the studies reviewed was that of a mixed-method study blending both web-based questionnaires and online focus groups (Kalmakis, Chandler, Roberts & Leung, 2017). For this study, it would be a rated as a Level II/III for strength of the evidence and B for quality of the evidence.

Study limitations most commonly cited included: small sample size (Bright et al, 2015; Mitchell, Studer & O'Connor, 2016), generalizability of results due to population/sample used (i.e., homogenous sample or self selection biases; Conn et al,

2018; Goldstein et al., 2017; Johnson et al., 2017; Kalmakis et al, 2017; Weinreb et al., 2010), cross-sectional study indicating associations do not imply causality (Kerker et al, 2016; Szilagyi et al, 2016), low or suboptimal response rates (Kalmakis et al, 2017; Kerker et al, 2016; Szilagyi et al, 2016; Weinreb et al, 2010), retrospective self reported measures of ACE and response bias (Goldstein, Athale, Sciolla & Catz, 2017; Kalmakis et al, 2017; Kerker et al., 2016; Weinreb et al, 2010).

Results

Provider awareness and education. It is apparent from the literature reviewed for this project, that health care providers, in particular paediatricians and primary care providers (both physicians and Nurse Practitioner), lack education and training regarding the landmark ACE study and the important impact and sequelae ACE have on childhood development and future adult health outcomes. Better understanding the deleterious effects childhood trauma has future health outcomes has been found to be an important new link between ACE and epigenetics, lending to the generational effects of childhood trauma and adversity (Bright, Thompson, Esernio-Jenssen, Alford, & Shenkman, 2015; Con et al, 2018; Folger et al, 2018; Goldstein, Athale, Sciolla, & Catz, 2017; Kerker, et al., 2016; Weinreb et al., 2010).

Kerker et al. (2016) found that the majority of the paediatricians they surveyed have never heard of the original ACE study. This lack of education and training among paediatricians and primary care providers was echoed in other studies reviewed (Kerker et al., 2016; Mitchell, et al., 2016; Weinreb et al., 2010). This lack of knowledge and training regarding ACE, the possible screening tools available and the short term and long term impact of ACE on adult health contributes to a common barrier cited in the

literature - clinicians unfamiliarity with ACE, lack of validated screening tools and lack of confidence in assessing for ACE and the resultant discussion and intervention that would need to occur for those that screened positive.

Screening practices. Weinreb et al. (2010) found that screening for ACE among adult primary care patients was not a routine practice, citing a large number of physicians did not screen for childhood trauma or underestimate childhood trauma experienced by their patients. In their exploratory study, Weinreb et al. (2010) suggest that based on their study findings, targeted screening for ACE in primary care may be the most useful approach. Targeted screening would give primary care providers the benefit of knowing the prevalence of ACE and the types of associated symptoms among their patients (when to suspect and when to screen), provide a structured format to screen to assess for such history when suspected and provide a concerted approach to respond to patients who report ACE/childhood trauma (Weinreb et al, 2010).

Bright et al. (2015) examined if paediatricians were adhering to the American Academy of Paediatrics recent policy statement outlining their central role in screening for “precipitants of toxic stress (e.g., adverse experiences)” (p. 686) and managing positive screens as part of caring for low-income families. Toxic stress is defined by the National Scientific Council on the Developing Child (2005) as extended or frequent activation of the stress response system without the presence of a positive buffer. They found that while paediatricians agreed that screening for ACE is important, the risk is often underestimated and screening practices were inconsistent.

Evidenced based practice recommendations are lacking regarding routine screening for ACE in primary care (Kalmakis & Chandler, 2014). McLennan and

MacMullan (2016) state that as clinicians we should not be "lulled into a false sense of security" (p. 1) for use of an ACE screening, citing that more "rigorous debate and scrutiny of empirical evidence" (p.1) is required before such recommendations can be made.

Barriers to screening. Many barriers to implementing ACE screening into primary care practice were cited in the literature. Glowa et al. (2016) exploratory study examined the feasibility of screening for ACE in a family medicine setting. Their study supported the feasibility of screening for ACE in primary care, citing that 91% of the visit remained at or under 5 minutes in duration. However, even though 62% of patients screened positive for at least one ACE, this did not change the referral process or follow-up plan. This supports the call for increased awareness, training and education regarding ACE and ensuring that referral mechanisms are in place to assist clients with a positive ACE score to receive the needed supports.

Fear of retraumatization and disclosing personal, sensitive information was also cited as a barrier in the literature to screening for ACE in primary care. However, Goldstein et al. (2017) found in their cross sectional study, that most patients were comfortable and felt it was acceptable to be screened for ACE and trauma. It was also noted that study participants believed their clinician was able to address their trauma related problems. The authors suggest that their study provides support for universal screening, and that patient's value being asked about their lived trauma and having their stories heard and validated (Goldstein et al., 2017).

Synthesis. Upon completion of this literature review, it is apparent that additional research is needed regarding screening for ACE in primary care. Screening for ACE in

children from low-income families is recommended by the American Academy of Paediatrics (APA, 2012). The usefulness of targeted screening for ACE has been suggested as beneficial and it has been shown that screening for ACE in the family medicine setting is feasible and warrants further study (Weinreb et al, 2010; Glowa et al, 2016). The most commonly cited tool in the literature used for screening was the ACE score. Although this is seen as a very useful and important resource, it is still unknown whether this tool and screening for ACE in general practice is something that is found to be evidenced based practice and/or will result in improved health outcomes. Murphy et al (2015) found that the 10-item ACE score used in the original ACE study to have good to excellent test-retest reliability and good internal consistency (Cronbach's alpha: 0.88; Folger et al, 2018).

The short and long term impact of ACE on child and adult health outcomes are well documented, and research informs primary care providers that the majority of clients are open and willing to share their stories regarding their trauma. After completion of this review, it is clear that enhanced education and training for primary care providers is needed to improve the recognition and assessment of ACE, before interventions or a plan can be developed to address the sequelae of childhood trauma. It is hypothesized that increased knowledge and education would increase primary care providers comfort is assessing, discussing and addressing ACEs.

Evidenced Based Practice: Verification of Chosen Option

The literature reviewed supports the notion that health care providers require training on ACE and how it impacts adult health outcomes. It has been identified that many patients of the target clinic have experienced pain and trauma in their life, often as

a child. As discussed in the literature, the majority of patients want the opportunity to share their story, have their experiences validated and assist in developing care plans to address their lived childhood trauma. Educating health care providers and support staff about ACE and the importance of utilizing a TIC approach, while also screening clients for ACE is suggested to be healing and in turn improve future mental health outcomes and the associated poor lifestyle choices and unhealthy coping mechanisms adopted as a result of such trauma. Knowing a client's ACE score will provide valuable information in regards to a client's risk for increased morbidity and mortality and provide clinicians the opportunity to provide participatory guidance in the case of parents (with young children) identified as having ACEs (Folger et al, 2018).

To accomplish this, a quality improvement (QI) project was completed, translating the knowledge of the impact of ACEs on future health outcomes and how health care providers and support staff can better address this issue. An education session was delivered to the target clinic's health care team, about ACE, utilizing a TIC approach and the impact ACE have on child development, poor lifestyle choices and how this impacts future adult physical and mental health outcomes. The team was questioned pre and post intervention to rate their knowledge and perceptions about ACE. Secondly, during the intervention phase of the project, all clients that meet the inclusion criteria were invited to participate in screening for ACE by the clinics health care team.

Evidenced Based Practice Model

The practice model that underpins this QI project is the building community resilience (BCR) model. This model outlines an innovative, transformative approach that fosters collaboration across child health systems, community based agencies, and

intersectorial partners to address the root causes of toxic stress and childhood adversity, and build community resilience (Ellis & Dietz, 2017; Appendix B). The BCR model was selected as it encourages clinicians to widen their lens beyond the clinical environment, to address the social determinants of health that result in ACE and community experiences that negatively impact childhood development (Ellis & Dietz, 2017). As stated by the authors, the BCR approach aims to "provide a seamless continuum of cross-sector cooperation and services to build the social scaffolding that will support children and families and contribute to community resilience (Ellis & Dietz, 2017, p. S87). Its use also emphasizes the importance of integrating a network of partners through intersectorial and community engagement, to link communities and organizations with an emphasis on increasing supports for families and individuals (Ellis & Dietz, 2017). This is very relevant to the clinic involved in the QI project, as the clinic was developed to meet the health care needs of a priority community, identified through the collaboration of the private and public sectors as well networking with community agencies and organizations.

The building community resiliency model is also one that focuses on community strength and resiliency. The BCRs authors define community resilience as "the capacity to anticipate risk, limit effects, and recover rapidly through survival, adaptability, evolution, and growth in the face of turbulent change and stress" (Ellis & Dietz, 2017, p. S87). This is an important concept as to often residents of vulnerable or priority communities are viewed in a negative light, focusing on problems and weaknesses.

The BCR model not only addresses ACE at the individual level, but also examines the impact of adverse community environments, which include lack of

opportunity, limited economic mobility, community violence and the associated effects of poverty and joblessness (Redstone, 2017). Redstone (2017) proposed that together ACEs and adverse community environments be defined as the "pair of ACEs" (Redstone, 2017; Appendix B). The BCR model's focus on resilience is believed to be a fundamental strategy to preventing and reducing chronic disease through addressing the root causes of adversity (Redstone, 2017). This model fits well into the goals and mission of the target clinic; which is to meet the health care needs of the community, through the use of a team-based approach and with collaboration of community members and partners and the private and public sectors.

Goals, Objectives and Expected Outcomes

The purpose of this QI project is to increase the clinic' health care team knowledge and comfort in addressing ACE with clients, while utilizing a TIC approach and to implement ACE screening for adults clients. Therefore, the objectives of this project were as follows: (a) improve staff knowledge and comfort in discussing ACE and understanding its impact on childhood development and future health outcomes, through the delivery of an education session on TIC and ACE (by mid-October 2018 through the examination of pre and post education surveys); (b) increase recognition of adult clients with ACE by 40%, through screening for ACE between mid-October 2018 to February 2019 (through the examination of questionnaires completed by the clinic staff post screening a patient for ACE); (c) and a 25% increase in referrals to mental health services or follow-up with the clinics health care team for those patients who screen positive for ACE from October 2018 to February 2019. The expected outcomes included: (a) increased staff knowledge, comfort and confidence in addressing and screening for ACE

in adult patients; (b) increased screening rates for ACE in adult clinic patients and translation of research (adoption of TIC approach, including identifying patients with a positive ACE score) into practice, (c) increased recognition of clinic patients with a positive ACE score, (d) a better understanding of the health care needs of the community and clients serviced by the target clinic, (e) and increased referrals to mental health or follow-up with the primary care provider for those client's who screened positive for ACEs.

Methods

The project design for this quality improvement project included a pre and post survey to evaluate an educational intervention on TIC and ACE, screening via a questionnaire for ACE among clinic patients, and data collection to assess provider comfort with screening.

Procedure

To meet the stated objectives, an education session on TIC and ACE was provided to the clinics staff to increase knowledge and comfort in addressing lived trauma and enhance their understanding of the impact of ACEs on patients health. Furthermore, implementation of screening for ACE in adult patients ages 21 years and older who presented for non-urgent health care visits was carried out between mid October 2018 to February 2019.

In the first phase, quantitative data was collected on the health care team members (six health care professionals and two administrative staff), comparing knowledge/attitudes/perceptions of ACEs pre and post education session. To do this, a survey using a Likert scale rating scale, including an area for comments and suggestions

was developed (Appendix D). The responses were coded using SPSS to generate descriptive statistics to better understand the impact staff's improved knowledge and comfort levels in assessing clients ACE changed post education session. Once the health care team completed the education session and pre and post surveys, they began identifying patients who met the inclusion criteria.

For the screening phase, clients who presented for routine appointments and met the inclusion criteria were invited to participate. To do this, the10-item ACE questionnaire (Appendix B) was utilized. Once screening was completed, the clinician completed a post screen survey (Appendix E). This survey included questions to assess: comfort in addressing ACE with the patient; if the patient had a known history of ACE prior to screening; identify those with a positive screen; utilization of mental health services to address ACE prior to screening; if a referral for mental health services or follow-up with a clinics primary care provider was arranged for patients with a positive screen; time it took to screen; if screening will become a part of the clinician's routine practice; and lastly an open ended question for comments and or suggestions regarding screening patients for ACE. This information was coded into SPSS to generate descriptive statistics (Kellar & Kelvin, 2013).

Inclusion criteria for client participation included: current clinic patients, ages 21 years and older, English speaking. Exclusion criteria included clients under the age of 21, who spoke a language other than English as their primary language. Language was considered important, as this clinic services a growing number of families whose native language is Arabic and who speak limited English. All patients who presented for a

routine visit during the implementation phase (October 2018 to Feb 2019) and who met the inclusion criteria were asked to participate in screening for ACE.

Measurement Instruments

In order to measure the outcomes of this QI project, three separate instruments were utilized. Initially, the clinic's staff was given a developed survey to assess their knowledge, attitudes and perceptions of ACEs (Appendix D). After the education session was provided to the clinic's staff via a power point presentation and discussion, staff were then asked to complete the same survey to assess if their knowledge, attitudes and perceptions of ACE had changed 48 hours post education session.

For the next step, patients booked for non-urgent health care visits were asked to participate in the project, by completing the 10-item ACE score questionnaire (Felitti et al, 1998; Appendix C). Questionnaire results were scanned into the patient's electronic health record. The clinician who performed the screening completed a post screen survey (Appendix E), to assess for prior knowledge of ACE, comfort and confidence in completing and discussing ACE screening, current mental health involvement or referral mental health. The surveys/questionnaires completed by the clinics health care team member and clients were coded with a corresponding ID number to ensure participant privacy was maintained.

Pre-intervention. The clinic's staff was presented with an outline of the QI project, including the process for recruiting participants. The staff completed the developed survey (Appendix C), to assess knowledge, perceptions and attitudes about ACE and trauma informed care (TIC) pre-education session.

Educational Intervention. An education session was presented to the clinic's health care team regarding TIC, ACE, the original ACE study and how ACE impact child development and future health outcomes in adults. The education session consisted of a power point presentation, including a copy of the ACE questionnaire. The session lasted approximately 60 minutes, with time reserved at the end for discussion and questions. Future questions or concerns about further education needed by the team will be addressed at the monthly clinic meetings. The team was again asked to complete the questionnaire to assess knowledge, perceptions and attitudes about ACEs 48 hours post education.

During the intervention phase, the clinics secretary was asked to give all English speaking clients 21 years of age and older booked for a non-urgent appointment a brief overview of the QI project, consent form and the ACE questionnaire. The clinics health care team member then reviewed the material with the client and assisted them in completing any components of project package (if health literacy was an issue, i.e., staff asked the ACE questions to the client and recorded their responses). This provided the clients ACE score. After the visit was completed, the clinic health care team member then completed the post screen survey (Appendix E). The patient's 10-item ACE questionnaire was entered into their electronic health record for future reference.

Post intervention. Once the education was completed, quantitative data from the clinics staff questionnaires, clients' demographics and ACE scores and health care provider's post screen surveys were coded (survey Likert scale responses and individual ACE scores) and inputted into SPSS. From this, descriptive statistics were generated and analyzed.

Data Analysis

For this QI project, quantitative data was collected on the clinics health care team members comparing knowledge/attitudes/perceptions pre education session and 48 hours post education session (N = 8). Quantitative data, including descriptive statistics was examined on a convenience sample of English speaking adult NEW-C clients (21 years and older) booked for a non-urgent appointment (N =32). Client demographics and ACE scores were tallied and entered into SPSS for examination of descriptive statistics. Post intervention/screening, the clinic's health care team members survey responses were assessed similarly, to examine comfort and confidence in screening, prior history of ACE, if any referral (to mental health services for example) or follow-up visit was made to address a positive ACE history, time to screen and if screening will become a routine part of the care provided by the clinician. Again, this information will be coded into SPSS to generate descriptive statistics.

Ethical Considerations

The University of Massachusetts, Amherst (UMass) Internal Review Board (IRB) and Horizon Health Network's IRB approved of the project. All participants are protected by the Personal Health Information Privacy and Access Act of 2009, which, among other guarantees, protects the privacy of persons' health information (Government of New Brunswick, 2009). Additionally, the DNP student and practice personnel who carefully conducted this project followed the *Standards of Care* for practice in a primary care office. All data collected, as part of evaluating the impact of the proposed intervention were aggregated data from the project participants and did not include patient identifiers.

Results

This QI project was completed at a small primary care clinic in Saint John New Brunswick Canada, servicing approximately 510 clients. The project was broken into two phases: (a) an education session for the clinics health care team, that included the completion of pre and post education surveys, and (b) screening clients for ACE. The clinic's health care team was comprised of eight staff; one Nurse Practitioner, a community Registered nurse, a community connector (whose role is to assist clinic patients in accessing and using available community resources to meet their health care and social needs), three social workers and two secretaries. The mean age of all staff was 40.6 years. One member of the staff was male, the rest were female.

To analyze and compare pre and post survey responses, descriptive statistics were coded, the survey response data from the pre and post Likert surveys were entered into SPSS, and all data was double-checked for accuracy. It was evident from the responses that staff felt more education and training was needed to better understand ACE and TIC. Of the staff participants, 85.7% reported that they did not have adequate education or training about ACE and TIC pre-education. An improvement in knowledge and understanding about these concepts was achieved post education, demonstrated by an increase in self-report of knowledge about ACE from 28.5% pre-education to 42.5% post-education. The vast majority of staff (71.4%) felt they had received sufficient training about ACE post education to feel confident in their ability to discuss ACE with clients. This increase was echoed by staff responses to comfort in discussing ACE with patients. Pre-education, 71.4% reported lack of comfort in discussing ACE with clients compared to 14.3% post education. Overall understanding of the health consequences of ACE remained the same pre and post education. Interestingly, staff's intent to incorporate

ACE screening into their routine practice decreased post education session (71.4% strongly agreed with screening pre-session versus 42.9% agreed/strongly agreed post educational session).

Comments reported on the pre-education session survey echoed the staff sentiments that they received no formal training in ACE or TIC prior to this project and interest in future/ongoing education regarding the impact of trauma on health. Staff disclosed that screening for ACE using a TIC approach was critical to the work they do and reported it to be “extremely valuable”. Lastly, two staff commented that they felt it important that all health care providers and allied staff (at all levels) should receive training in TIC and ACE, to promote a change in the model of care provided at the clinic, to that of a trauma informed care approach.

In phase two of the project, clients who met the inclusion criteria were invited to participate in the study. Once the client was screened, the clinician seeing the patient then completed a post-screen survey (Appendix E). Client’s ACE scores and clinician responses to the post-screening survey were coded and entered into SPSS and descriptive statistics were generated (see Table 1 and Figure 1).

Table 1

Descriptive Statistics of Participants Screened

Variable	*n*	M	SD	Frequency
Age	32	*3.31	1.51	
Total ACE score	32	4.91	2.99	
ACE score males	10	5.44	3.50	
ACE score	22	4.83	2.93	

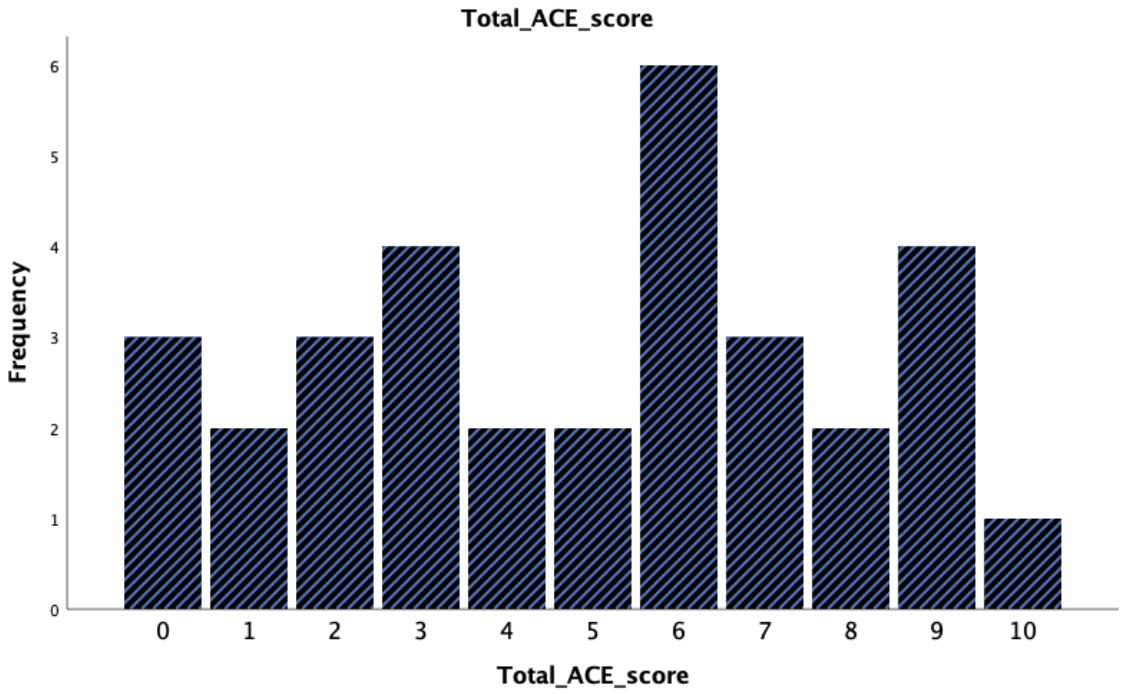
females		
Positive screen	32	90.6%
ACE score 1-3	32	28.2%
ACE score ≥ 4	32	62.7%

* 3 = ages 40-50 years of age

Figure 1. Total ACE score (N = 32)

Figure 1.

Participant's Total ACE score



In total, 32 patients who presented for a regularly scheduled office visit were screened for ACE. All clients screened identified as White, English speaking Canadians. The sample consisted of 68.8% females and 31.3% males and the mean client age was between 41 and 50 (Table 1). The mean ACE score for the sample was 4.91 (SD = 2.99)

(Table 1). Of the 32 participants screened, 90.6% screened positive (having answered yes to at least one ACE question). Of those that screened positive, 28.2% had scores between one and three and 62.7% had scores greater than four (Figure 1). Of the 17 questions (combined into 10 questions addressing seven categories of childhood exposure) from the ACE questionnaire, positive responses ranged from 28.1% for a participants household member incarcerated to 62.5% for participants who responded they felt unloved and that their family didn't feel close or supportive of each other. Over 40% of the participants responded yes to all the remaining questions, including: experiences of sexual and physical abuse, neglect, lacking basic necessities of life, witnessing abuse towards their mother, family mental illness and/or suicidality and family drug abuse.

After participants were screened for ACE, the staff member completing the screening was then asked to complete a post-screening survey (Appendix E). Three staff members completed screening of participants for ACE (N=20); one Nurse Practitioner, the community RN and the community connector. Of this group, all were female with a mean age of 44 years. Data was inputted into SPSS and descriptive statistics were analyzed. Overall, staff felt comfortable discussing ACE with the client (85%). Prior to the project, staff reported that only 20.0% of clients screened had a previously known history of ACE. Interestingly, referrals placed to mental health for counselling for those with a positive screen was found to be low (10.0%). Unfortunately, this did meet the project's objective of a 25.0% increase in referrals placed to mental health services for clients that screened positive for ACE. Staff reported that 20.0% of clients had been referred to mental health services to address ACE prior to screening and 35.0% had completed counselling or discussed ACE with a mental health clinician, prior to

screening. Overall, the group reported that time to screen was not a significant barrier to screening (75.0% reported time was not a barrier). Half of the group (50.0% reported yes, and 45% unknown) reported that ACE should become part of routine clinical practice.

Discussion

One of the most significant finding from this project was the staggeringly high number of positive screens for ACE among the participants (90.6%) and those with a score of four or more (62.7%). These results are much higher than that reported in the original ACE study (52.1% screened positive; Felitti et al, 1998). According to the CDC, 12.5% of the United States population have an ACE score of four or more. The analysis of the projects data found that 40% of patients with a positive screen answered "yes" to having a history of six ACEs, including: sexual and physical abuse, neglect, lack of basic necessities of life, witnessing abuse towards their mother, family mental illness and/or suicidality, and family drug/substance abuse.

The high rate of ACEs may partially be explained due to the small sample size in comparison to the larger Kaiser-Permente CDC study and differences in demographics between the two groups. In the original ACE study, the sample consisted of primarily White middle-class, highly educated individuals, with a mean age was 56.1 years (43% had graduated from college, only 6.0% had not graduated from high school; Felitti et al, 1998). This is a very different from the sample obtained from target clinic in this QI project, whom the majority live in poverty and many without high school education. It was expected that the percentage of ACE in the projects sample would be high, given the high needs, medical complexity and low socioeconomic status of the population the clinic services. Although the clinic's staff had identified this as an area needing more attention,

only 20.0% of the participants screened had a previously known history of ACE; this well exceeded the projects objective of an increased recognition of clients with ACE by 40% (80.0% of participants screened did not have a previously known history of ACE). This is a large area for improvement to better understanding the needs and complexities of the community serviced by the clinic, while utilizing a trauma informed primary care approach.

Knowing a clients ACE has significant implications in better understanding patients, from a holistic perspective, in particular in understanding their increased risk for morbidity and mortality. According to Felitti et al (1998) people who reported an ACE score of four or more, compared to those who had experienced none, had a 4- to 12-fold increase in health risks for alcoholism, drug abuse, depression and suicide attempt; a 2- to 4-fold increase in smoking, poor self rated health, over 50 sexual intercourse partners, and sexually transmitted diseases; and a 1.4- to 1.6 fold increase in physical inactivity and severe obesity. People with high rates of ACE, in particular six or more have been found to die 20 years earlier on average than those without a history of ACE (Department of Health and Human Services USA, CDC & Children's Bureau, n.d.).

Staff clearly felt that more education and training was needed to feel confident to discuss and screen for ACE with clients. This is in keeping with the literature reviewed, that the vast majority of primary care providers lack the knowledge and training about ACE and TIC, and the important research findings that have been reported since the original ACE study was conducted (Kerket et al, 2016; Mitchell et al, 2016 & Weinreb et al, 2010). Only one third of Nurse Practitioners in primary care were found to routinely screen for childhood abuse (Kalmakis, Chandler, Roberts & Leung, 2017). A three-

phased approach to ACE screening of adult patients in the primary care setting, developed by Kalmakis et al 2018, was presented during the education session to staff. This presented a brief, yet succinct method of approaching clients about ACE screening. General feedback from the clinic' staff was this was a helpful guide that they could use when discussing ACE with clients, to improve their confidence in broaching the sensitive subject matter with clients.

It was noted from the results that not only knowledge and understanding of ACE and TIC improved post education session, but also staff reported higher ratings in confidence and comfort in discussing ACE with clients. Overall, clinicians who responded to the post screen survey reported feeling comfortable and confident in discussing and screening for ACE with clients. Lack of confidence in assessing and discussing ACE was a common theme noted in the literature (Kalmakis, Chandler, Robers, & Leung, 2017; Weinreb et al, 2010). The findings demonstrate that providing an education session to clinic staff who work in this primary health care clinic, will lead to improved knowledge about ACE and TIC, as well as improved comfort and confidence in discussing ACE with clients. This result is in keeping with Kalmakis et al (2018) finding that NP student interviewers, who had received education in TIC, gained comfort and confidence in screening clients for ACE after only two patient interviews.

Three unexpected findings were noted with the analysis of the projects data. First, referrals to mental health services for counselling or arranging a follow-up visit to further discuss/address ACE with patients with a positive score was very low. This may partially be explained as between 20.0% to 35.0% of clients screened had previously been referred to a mental health clinician and/or had completed counselling regarding ACE prior to

screening. This is an area for further improvement, as access to mental health services has been previously identified by the clinic staff as lacking (especially the availability of mental health clinicians trained in TIC within the community) and cumbersome (once a referral is placed, not all clinicians can see the client within the target clinic/community making access as issue and time to be seen, once referred, can be months). Secondly, staff that attended the education session reported lower scores in their intent to make screening clients for ACE a part of their routine future practice (post education session as compared to pre education). This may, in part, be due to the fact that two of the staff that attended the education session were secretaries (that would not conduct patient screening), and three staff were social workers who may already screen or utilize other methods to address trauma and ACE with their clients in their current practice. On the post screen survey however, 50.0% of clinicians reported intent to make screening part of their clinician practice. Thirdly, time to complete ACE screening was not reported as a foreseen barrier on the pre and post education session or by staff that screened patients and completed the post ACE screen survey. This would contradict a commonly held belief that additional screening in primary care was unachievable due to time constraints (Kalmakis et al, 2017; Weinreb et al, 2010). However, concerns regarding time to screen were unfounded as an actual barrier to practice in two studies reviewed (Glowa et al, 2016; Kalmakis et al, 2018).

The results from this QI project clearly demonstrate that ACE is extremely common in the population serviced by the project's clinic and the rates of ACE were severely underestimated by the clinicians. This information is believed to be very useful, in providing the clinic's staff with a better understanding of the complex health care

needs of the patients and community it services. It has been noted by the clinics management team, that this particular community has high health care utilization – in particular emergency room visits. Having a history of ACE has been linked to increased heath care services utilization and positively correlated with the number of clinic visits (Anda et al, 2008; Roberts, Chandler, & Kalmakis, 2018). Having the information about patient's ACE history will provide clinicians and policy makers the needed information to make decisions about programming and possible health care policies that could positively impact vulnerable communities and hopefully in turn reduce the associated health care expenditures. Furthermore, adopting a TIC approach in the project's clinic, with the intent of sharing this knowledge transition with the rest of the community health centers clinics in the greater Saint John area, will aid clinicians and the clients serviced a better understanding of the long lasting impact of childhood trauma has on one's future health, in particular the poor coping mechanisms adopted to survive such trauma and the resultant chronic health conditions. To assist in this process, the BCR model presented in paper provides an approach that will be utilized to foster collaboration across health systems, community based agencies and cross-sector partners to address the root causes of ACE and also build community resilience (Ellis & Dietz, 2017).

Limitations

Limitations identified for this QI study include: a) the small sample size of both staff and client participants from a small primary health care clinic, located in a priority neighbourhood in Saint John New Brunswick making the results un-generalizable to the general population; b) the homogenous sample and lack of ethnic diversity; c) the higher

representation of women and d) potential recall bias through patient's self reports of past traumatic experiences.

Conclusion

Trauma experienced in childhood is a well-known predictor for negative future adult health outcomes. It is imperative that as part of collecting a patient's health history, that primary care providers discuss and inquire about ACE. To do this, all health care providers require education and training regarding ACE and utilizing a TIC approach. While an evidenced based questionnaire or method to assessing ACE is still lacking, what is clear is that without knowing this valuable information about patients and the communities where they reside, health care providers are missing a key piece of the puzzle to their patients health, life history and how it has impacted their future health outcomes. Through the use of a TIC approach in the primary care setting, health care providers can help their patients better understand their "story" and assist their clients in better understanding how their story shaped their future health and their well-being. This will result in a better understanding clients health care needs and more importantly, validating their story of childhood trauma and starting the process of healing.

References

American Academy of Paediatrics. (2012). Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption and Dependent Care, and Section on Developmental and Behavioural Paediatrics. Garner, A.S., Shonkoff, J.P., Siegel, B.S., Dobbins, M.I., Earls, M.F., Garner, A.S., McGuinn, L, Pascoe, J., & Wood, D.L. Policy statement: Early childhood adversity, toxic stress and the role of the paediatrician: Translating developmental science into lifelong health. *Paediatrics*, 129(e224). Doi: 10./542/peds.2011-2662

Anda, R.F., Brown, D.W., Dube, S.R., Bremmer, J.D., Felitti, V.J., & Giles, W.H. (2008). Adverse childhood experiences and chronic obstructive pulmonary disease in adults. *American Journal of Preventative Medicine*, 34, 397-403.

Bright, M.Q., Thompson, L., Esernio-Jenssen, D., Alford, S., & Shenkman, E. (2015). Primary care paediatricians' perceived prevalence and surveillance of adverse childhood experiences in low-income children. *Journal of Health Care for the Poor and Underserved*, 26, 686-700.

Center for Disease Control and Prevention. (2016). About adverse childhood experiences. Retrieved from https://www.cdc.gov/violenceprevention/acestudy/about_ace.html

Department of Health and Human Services-USA, CDC & Children's Bureau (no date). Adverse childhood experiences: Looking at how ACES affect our lives and society. Retrieved from https://vetoviolence.cdc.gov/apps/phl/images/ACES_Infographic_Accessible.pdf

Conn, A., Szilagyi, M.A., Jee, S.H., Manly, J.T., Briggs, R., & Szilagyi, P.G. (2017). *Families, Systems, & Health*, 36(1), 62-72. Doi: http//dx.doi.org/10.1037/fsh0000311

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. *American Journal of Preventive Medicine,* 14(4), 245-258.

Folger, A.T., Eismann, E.A., Stephenson, N.B., Shapiro, R.A., Macaluso, M., Brownrigg, M.E., & Gillespie, R.J. (2018). Parental adverse childhood experiences and offspring development at 2 years of age. *Paediatrics*, 141(4), 1-9. Doi: https://doi.org/10.1542/peds.2017-2826.

Glowa, P. T., Olson, A.L., & Johnson, D.J. (2016). Screening for adverse childhood experiences in a family medicine setting: A feasibility study. *Journal of the American Board of Family Medicine*, 29(3), 303-308. doi: 10.3122/jabfm.2016.03.150310

Goldstein, E., Athale, N., Sciolla, A.F., & Catz, S.L. (2017). Patient preferences for discussing childhood trauma in primary care. *The Permanente Journal*, 21(16). Retrieved from https://doi.org/10.7812/TPP/16-055

Government of New Brunswick. (2009). Personal health information privacy and access act. Retrieved from http://laws.gnb.ca/en/showfulldoc/cs/P-7.05/20121030

Hornor, G. (2015). Childhood trauma exposure and toxic stress: What the PNP needs to know. *Journal of Pediatric Health Care*, 29(2), 191-198. Retrieved from http://dx.doi.org/10.1016/j.pedhc.2014.09.006

Human Development Council. (n.d.). Ward profiles. Retrieved from http://0104.nccdn.net/1_5/0e4/1e6/049/Final-Ward-Infograohics.pdf

Johnson, K., Woodward, A., Swenson, S., Weis, C., Gunderson, M., Deling, M., Cristiani, V., & Lynch, B. Parents' adverse childhood experiences and mental health screening using home visiting programs: A pilot study. *Public Health Nursing*, 34, 522-530. Doi: 10.1111/phn.12345

Kalmakis, K.A., Chandler, G.E., Roberts, S.J., & Leung, K. (2017). Nurse practitioner screening for childhood adversity among adult primary care patients: A mixed-method study. *Journal of the American Association of Nurse Practitioners*, 29, 35-46. Doi: 10.1002/2327-6924.12378

Kalmakis, K. A., & Chandler, G.E. (2015). Health consequences of adverse childhood experiences: A systematic review. *Journal of the American Association of Nurse Practitioners*, 27, 457-465. doi: 10.1002/2327-6924.12215

Kalmakis, K.A. & Chandler, G.E. (2013). Adverse childhood experiences: towards a clear conceptual meaning. *Journal of Advanced Nursing*, 9, 1489-1501.

Kerker, B.D., Storfer-Isser, A., Szilagyi, M., Stein, R.E., Garner, A.S., O'Connor, K.G., Hoagwood, K.E., & Horwitz, S.M. (2016). Do paediatricians ask about adverse childhood experiences in paediatric primary care? *Academic Pediatrics*, 16(2), 154-160.

McLennan, J.D., & MacMillan, H.L. (2016). Routine primary care screening for intimate partner violence and other adverse psychosocial exposures: What's the evidence? *BMC Family Practice*, 17, 1-4. doi: 10.1186/s12875-016-0500-5

Mitchell, A.M., Studer, K.R., & O'Connor, T.G. (2016). How knowledge of adverse childhood experiences can help paediatricians prevent mental health problems. *Families, Systems, & Health*, 34(2), 128-135. Retrieved from http://dx.doi.org/10.1037/fsh0000179

Murphy, A., Steele, M., Dube, S.R., Bate, J., Bonuck, K, Meissner, P., Goldman, H., & Steele, H. (2013). Adverse childhood experiences (ACEs) questionnaire and adult attachment interview (AAI): Implication for parent child relationship. *Child Abuse and Neglect*, 38, 224-233.

Newhouse, R., Dearholt, S., Poe, S., Pugh, L.C., White, K. (2005. The John Hopkins nursing evidence-based practice rating scales. The John Hopkins Hospital; John Hopkins University School of Nursing. Baltimore, MD.

Redstone, S. (2017). Building community resilience: Coalition building and communications guide. Milken Institute School for Public Health. The George Washington University, Global Center for Prevention and Wellness. Retrieved from https://publichealth.gwu.edu/sites/default/files/downloads/Redstone-Center/BCR%20Coalition%20Building%20and%20Communications%20Guide.pdf

Roberts, S.J., Chandler, G.E., & Kalmakis, K. (2018). A model for trauma-informed primary care. *Journal of the American Association of Nurse Practitioners*, 00(00), 1-6.

Substance Abuse and Mental Health Services Administration. (2014). SAMHSA's concept of trauma and guidance for a trauma-informed approach. Retrieved from http://www.traumainformedcareproject.org/resources/SAMHSA%20TIC.pdf

Substance Abuse and Mental Health Services Administration. (2017). Adverse childhood experiences. Retrieved from https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences

Szilagyi, M., Kerker, B.D., Storfer-Isser, A., Stein, R. E., Garner, A., O'Connor, K.G., Hoagwood, K.E., & McCue Horwitz, S. (2016). Factors associated with whether paediatricians inquire about parents' adverse childhood experiences. *Academic Pediatrics*, 16(7), 668-675.

Weinreb, L., Savageau, J. A., Candib, L.M., Reed, G.W., Fletcher, K.E., & Hargraves, J.L. (2010). Screening for childhood trauma in adult primary care patients: A cross-sectional survey. *Journal of Clinical Psychiatry*, 12(6), 1-19. doi: 10.4088/PCC.10m00950blu

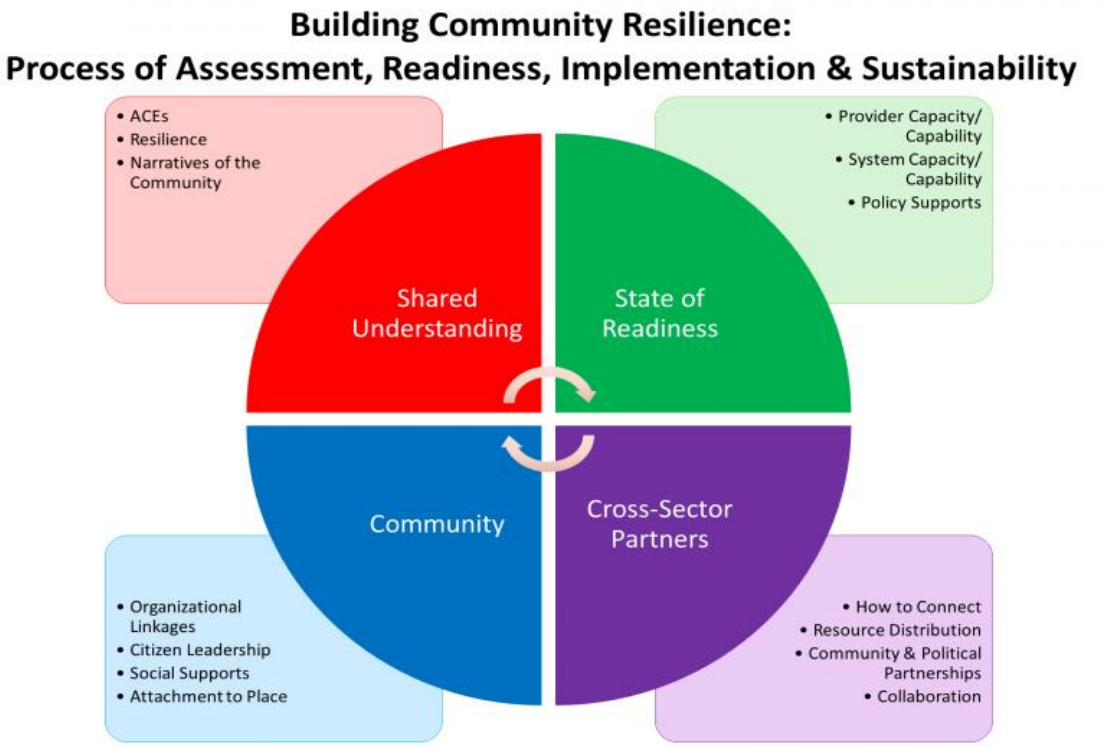
Vibrant Communities and the Human Development Council. (2014). A poverty outline for Saint John, NB. Retrieved from https://docs.wixstatic.com/ugd/a57d80_23c61305370b40168a46183429847bad.pdf

Appendix A

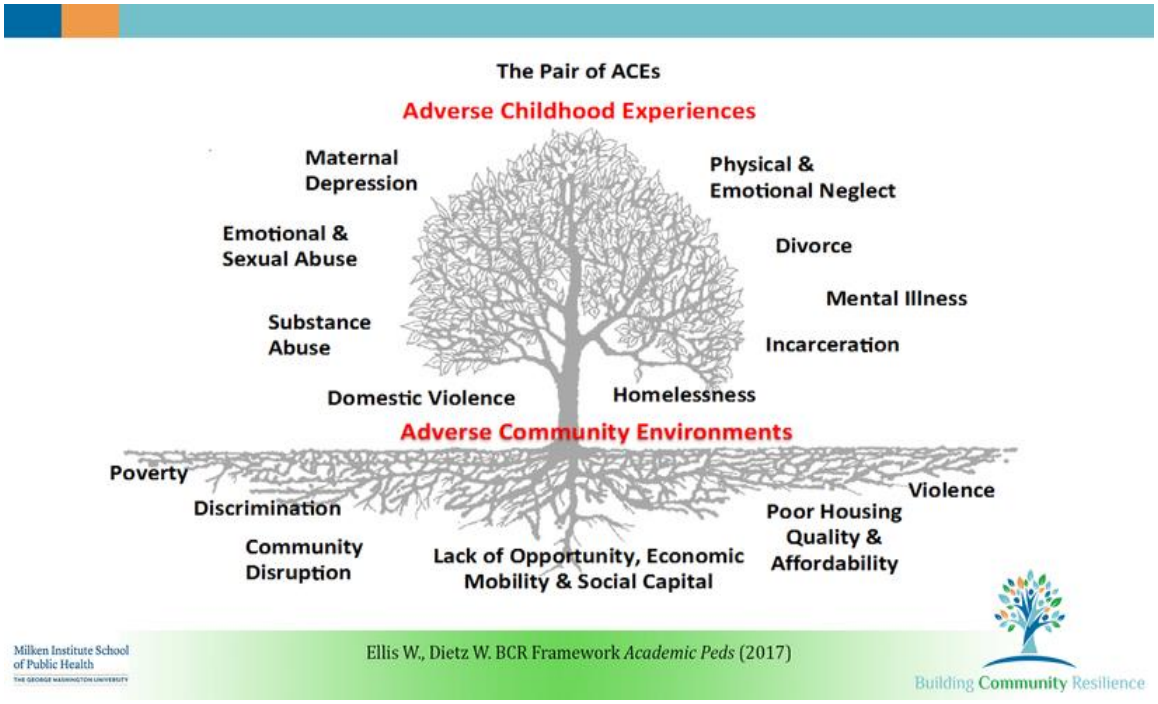
ACE Pyramid

Appendix B

Building community resilience model and pair of ACEs



Ellis, W., Dietz, W. (2017) A New Framework for Addressing Adverse Childhood and Community Experiences: The Building Community Resilience (BCR) Model. Academic Pediatrics. 17 (2017) pp. S86-S93. DOI information: 10.1016/j.acap.2016.12.011



Appendix C **Patient label**

Adverse Childhood Experience (ACE) Questionnaire - Finding your ACE Score

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household often - Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt? **Yes or No, If yes enter 1 _____**

2. Did a parent or other adult in the household often - Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured? **Yes or No, If yes enter 1 _____**

3. Did an adult or person at least 5 years older than you ever - Touch or fondle you or have you touch their body in a sexual way? or Try to or actually have oral, anal, or vaginal sex with you? **Yes or No, If yes enter 1 _____**

4. Did you 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? **Yes or No, If yes enter 1 _____**

5. Did you 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? **Yes or No, If yes enter 1 _____**

6. Were your parents ever separated or divorced? **Yes or No, If yes enter 1 _____**

7. Was your mother or stepmother - Often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or 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? **Yes or No, If yes enter 1 _____**

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs? **Yes or No, If yes enter 1 _____**

9. Was a household member depressed or mentally ill or did a household member attempt suicide? **Yes or No, If yes enter 1 _____**

10. Did a household member go to prison? **Yes or No If yes enter 1 _____**

Now add up your "Yes" answers: _____This is your ACE Score

Appendix D

Health care team questionnaire – to be administered pre and post education session.

Please answer the following questions, reflecting on your practice/job role at the NEW-C.

Answer key:

1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = Agree, 5 = Strongly Agree, NA = Not applicable

Question	**1**	**2**	**3**	**4**	**5**	**NA**
I understand what trauma informed care means?						
I am knowledgeable about adverse childhood experiences (ACE).						
I have received adequate education/training about ACE (in school/work/education sessions).						
I feel comfortable discussing ACE with clients.						
Discussing ACE is too difficult/sensitive for clients.						
Discussing ACE is too difficult/sensitive for me.						
Discussing ACE with clients is time consuming.						
I need more training in ACE to feel confident to discuss this with clients.						
Adverse childhood experiences negatively impact future adult physical health.						
Adverse childhood experiences negatively impact future mental health.						
Clients do not want to tell their story about ACE						

I plan on incorporating ACE screening as a routine part of my practice at the NEW-C						
Do you have any comments or suggestions about the education of health care providers in regards to ACE screening?						

Appendix E

Questionnaire to be completed by the health care team member *post screening* for ACE in adult NEW-C clients.

Client ID number: Age:

Date and time to complete: Gender and Race:

Questions	**Yes**	**No**	**Unknown**
During the client encounter, did you feel comfortable to discuss (and screen for) ACE with the client?			
Prior to this QI project, the client had a known history of ACE.			
After screening for ACE – the client has a positive screen.			
Prior to this QI project, the client was *referred* to mental health services (counsellor, community mental health, psychologist/psychiatrist) to address ACE.			
Prior to this QI project, the client had *completed* counselling or discussed ACE with a mental health clinician.			
After screening for ACE, the client was referred to mental health services/counselling to address ACE.			
After screening for ACE, the client was booked for a follow-up visit to discuss or address ACE further.			
Was time to screen clients for ACE a barrier for you?			
Will ACE screening become a part of your routine clinical practice at the NEW-C?			
Do you have any additional comments or thoughts about screening your client for ACE?			