



Promising Practices in the Mitigation of the Impacts of Adverse Childhood Experiences (ACES) in Children Ages 0 to 6

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Table of Contents

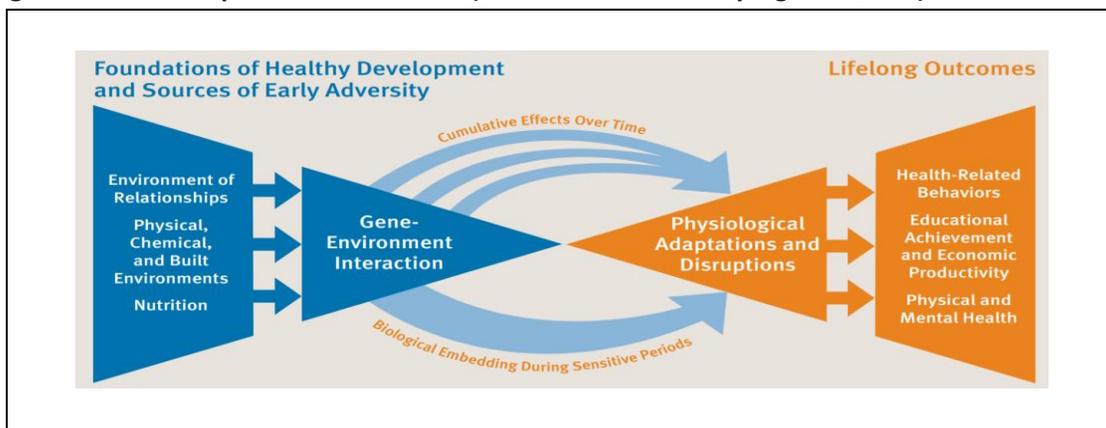
1.	Introduction	3
1.1	Current Report.....	4
2.	Impacts of ACEs	4
3.	Screening and Assessment for ACEs	5
3.1	Debate Over Universal ACEs Screening.....	8
4.	Factors that Mitigate the Impact of ACEs in Young Children	13
4.1	Building Resilience.....	13
4.2	Trauma-Informed Approach.....	14
4.3	Protective/Positive Experiences	17
4.3.1	Role of Parents.....	18
4.3.2	HOPE: Health Outcomes from Positive Experiences	19
4.3.3	Protective and Compensatory Experiences (PACES)	20
4.4	Other Notable Findings	23
5.	Limitations of Review.....	24
6.	Conclusion	24
	References.....	26

1. Introduction

The Centers for Disease Control and Prevention (CDC) defines adverse childhood experiences (ACEs) as “potentially traumatic events in childhood from 0 to 17 years, such as enduring assault, abuse, or neglect; witnessing violence in the home; and having a family member attempt or commit suicide” (Centers for Disease Control, 2019, p.7). Additionally, ACEs can include growing up in a household with substance abuse, mental health issues, or instability due to parental separation or the incarceration of a household member (CDC, 2019). Another definition interpreted ACEs as “childhood events, varying in severity and often chronic, occurring within a child's family or social environment that cause harm or distress, thereby disrupting the child's physical and psychological health and development” (Kalmakis et al., 2014, p.1495). The original ACEs research, conducted by the CDC and Kaiser Permanente group from 1995 to 1997, including 17,000 adult (19 to 60 years old) participants, concluded that childhood abuse, neglect, and household dysfunction had a strong and cumulative impact on risk factors that contributed to disease, disability, and social problems, which in turn contributed to early death later in life (Felitti et al., 1998).

As described by the World Health Organization, the life course approach is a frequently used concept that acknowledges the role of earlier experiences in the development of disease throughout life. This approach also recognizes the opportunity to prevent and control diseases at important phases of life, including preconception, pregnancy, infancy, childhood, adolescence, and adulthood (Jacob et al., 2017). Most aspects of early development and subsequent health are heavily influenced by interactions between experiences, genes, age, and the surroundings in which young children live, according to Harvard University's National Scientific Council on the Developing Child (National Scientific Council on the Developing Child, 2020). Using the biodevelopmental framework (Figure 1), the Council on the Developing Child emphasized that identifying early, controllable influences on positive and negative life outcomes, and providing effective policies and services for young children and families to address these influences, can have long-term effects on a child's physical and mental health, as well as cognitive, language, and social skills (Center on the Developing Child, n.d.).

Figure 1. Biodevelopmental framework (Center on the Developing Child, n.d.)



The environments and experiences that young children and their families are exposed to have an impact on not only children's developing brains, but also many other physiological systems, including cardiovascular function, immune response, and metabolic function, all of which can have a long-term impact on their health and well-being (National Scientific Council on the Developing Child, 2020). Disorders like diabetes, cardiovascular disease, asthma, and depression appear to be linked to increased inflammation, which is influenced by early childhood adversities (National Scientific Council on the Developing Child, 2020).

1.1 Current Report

The purpose of this report is to define ACEs and their impact on development, health, and well-being; describe how ACEs are identified in children ages 0 to 6; and investigate evidence-based practices being used with children ages 0 to 6 and parent/caregiver-child dyads to mitigate (make less severe or harmful) the impacts of ACEs in childhood and beyond. This report provides an introduction to the topic area. The scope of the issues surrounding ACEs are much broader than can be covered in one report and additional literature reviews may be required to cover the breadth of the topic area for specific programs and services. This report will inform educational efforts regarding ACEs in young children and advocacy for the importance of addressing this issue across sectors working in the early years.

2. Impacts of ACEs

As described by the CDC, health conditions in later life that could be reduced by mitigating ACEs include depressive disorders, chronic obstructive pulmonary disease, asthma, kidney disease, stroke, coronary heart disease, cancer, diabetes, and overweight/obesity (CDC, 2019). According to a Dutch study, there was a 20-year drop in life expectancy found to be associated with ACE scores, with those who had no ACEs living to an average of 80 years, compared to those who had six or more ACEs living to an average of 60 years (Browne et al., 2009). The fact that those with a high ACE burden are more likely to develop a chronic disease in their early adult years adds to rising worries about the long-term effects of childhood trauma.

Research has shown that ACEs can contribute to toxic stress (i.e., prolonged activation of the stress-response system; CDC, 2019). There is increasing evidence that toxic stress during childhood can harm the development of the nervous, endocrine, and immune systems, as well as have epigenetic effects. Resulting changes to the brain can affect attention, impulsive behaviour, decision-making, learning, emotional regulation and expression, and response to stress. This can create challenges with family, relationships, schooling, alcohol and drug use, other health-risk behaviours, violence, crime, work, finances, and mental health concerns (CDC, 2019).

Studies have shown that ACEs impact children in a dose-response fashion. For children aged 36 to 71 months, one study found that for every additional reported ACE there was a 32% increase in the odds of having a behaviour issue, a 21% increase in the odds of having a chronic medical condition,

and a 77% increase in the odds of having low socialization skills (Kerker et al., 2015). Looking at a school population, as the level of ACE exposure increased, the rates of academic failure, attendance problems, and school behavior problems, particularly exhibiting both internalizing and externalizing behaviors, increased (Blodgett & Lanigan, 2018).

Issues experienced by children who have lived through or are living through ACEs fall within three categories: learning difficulties, behaviour issues, and health issues (Sciaraffa et al., 2018). Examples of the many problems within these categories are listed in Figure 2.

Figure 2. Examples of issues found in children who have ACEs (Sciaraffa et al., 2018)

Learning difficulties	Behavior issues	Health issues
Attention deficits Language deficits Difficulty with problem solving Difficulty acquiring new skills or taking in new information Problems with consequential reasoning	Struggle with self-regulation Lack impulse control Oppositional, volatile Extreme reactions Defensive, aggressive Self-harm, substance abuse, runaway, prostitution	Physical injuries Poor health Alterations in immune functions Increases in inflammatory markers Physical complaints

3. Screening and Assessment for ACEs

The original ACEs questionnaire, which was developed for screening adults, includes 10 childhood traumatic experiences that were well-researched and were the most frequently chosen items in the original survey (Felitti et al., 1998). These traumatic experiences fall within the categories of abuse, neglect, and household dysfunction. The 10 childhood traumatic experiences, broken down by these categories, can be seen in Figure 3.

Figure 3. Categories of Childhood Traumatic Experiences (Felitti et al., 1998)

Abuse	Neglect	Household Dysfunction
1. physical 2. emotional 3. sexual	4. physical 5. emotional	6. parental mental illness 7. incarcerated relative 8. mother treated violently 9. household substance abuse 10. divorce or parental separation

Currently, screening for ACEs in children is rare. Despite extensive research regarding the impact of ACEs on health and well-being throughout life, this information has yet to meaningfully impact clinical practice. A survey of a representative sample of members of the American Academy of Pediatrics found that the majority of respondents had not heard of the ACEs research or associated screening tools. Although most respondents agreed that childhood stressors can have an impact on

future health and that pediatricians could have a role in influencing that trajectory, only one third screened for some ACEs and only 4% screened for all ACEs on a regular basis (Kerker et al., 2016). These findings suggest that providing pediatricians with training that emphasizes their ability to influence the experience of their patients and includes information about strategies they can implement to help mitigate the impact of ACEs might increase their willingness to screen for ACEs. Another contributing factor to the lack of progress in addressing ACEs in the pediatric population is the lack of validated screening tools and limited evidence-based interventions to mitigate ACEs for this age group.

In response to this need, researchers and clinicians are working to develop screening tools and interventions to address ACEs. The Centre for Addiction and Mental Health (CAMH) has created a Childhood Trauma Toolkit, which among many other pieces, includes a pediatric ACE screen that is the original 10 ACE questions – worded to be asking about a current child or teen (CAMH, n.d.). This screen is scored like the adult version, in which the respondent is asked to check each of the experiences that apply to the child, and then these are added up for an ACEs score. It is suggested that this is a sensitive and effective screening tool that can be incorporated into routine pediatric clinical sessions and follow-up appointments as the screening takes less than 10 minutes (Watson, 2019a). The findings are then addressed with participants, often caregivers, in a nonjudgmental manner to encourage participation and support in treatment planning, which could include parenting therapy, individual psychotherapies, treatment of parental mental health and substance use, and other options. Re-screening for ACEs on a regular basis was recommended, to confirm that therapies are working and that risk factors are being addressed (Watson, 2019a).

The Centre for Youth Wellness has developed the Adverse Childhood Experiences Questionnaire (ACE-Q) with two sections: 1) an adapted version of the original screen, and 2) additional questions on child trauma hypothesized to be associated with a dysregulated stress response (Center for Youth Wellness, n.d.). These additional experiences include serious medical procedures or life-threatening illness of the child, separation from caregiver via deportation or migration, discrimination, being a victim of bullying, and seeing or hearing neighbourhood and school violence. This tool was developed to address the toxic stress resulting from ACEs by providing routine screening and interventions involving a multidisciplinary approach aimed at treating the child and their caregivers (Center for Youth Wellness, n.d.). In addition to the ACE-Q, the Center for Youth Wellness and partners have developed a comprehensive collection of trauma-informed services, which are delivered in partnership with the patient's primary medical home.

To address the paucity of validated tools to screen for ACEs in childhood, a pediatric ACEs questionnaire was developed with input from patient families and providers for use in clinical practice (Koita et al., 2018). The 17-item screen includes the 10 original ACEs categories (Felitti et al., 1998), plus related life events, including exposure to discrimination, food insecurity, housing instability, community violence, physical illness/disability of a caregiver, death of a caregiver, and forced separation from the caregiver (Koita et al., 2018). This screening tool, called the

Pediatrics Adverse Childhood Experiences and Related Life Events Screener (PEARLS) was used to screen children aged 0-11 years for ACEs and assess the links between ACEs score, related life events, and health problems (Thakur et al., 2020). Findings included that the probability of reporting one of the initial ACEs was strongly linked to related life events, indicating that these cumulative lifetime exposures frequently co-occur (Thakur et al., 2020). The PEARLS demonstrated concurrent validity and was effective at identifying children with issues such as poor global executive functioning and a high risk for other indicators of poor health. The need for longitudinal research was identified in order to pick up on health issues that take longer to appear. Screening using PEARLS, along with other social risk screening, was recommended to help connect families with important resources and assistance (Thakur et al., 2020).

Researchers interested in being able to assess the risk for experiencing ACEs, as well as exposure to ACEs, created a questionnaire called the Whole Child Assessment (WCA) to test their pediatric patients for ACEs during normal well-child visits (Marie-Mitchell et al., 2019; Marie-Mitchell et al., 2020). They found that use of the WCA was an acceptable and feasible way to screen for ACEs during routine pediatric visits, and that the WCA improved the ability to identify children who had experienced multiple ACEs over no screening (Marie-Mitchell et al., 2019). It was also found that the WCA is a valid method of screening for ACEs and assessing the risk of poor outcomes in children aged 5 to 11 years old (Marie-Mitchell et al., 2020). Additionally, by including measures of the risk of ACEs, predictive validity was increased, and clinicians were provided the ability to recognize existing risk of ACEs and thereby help prevent ACEs (Marie-Mitchell et al., 2020). For example, ". . . a positive response to the question concerning hitting or spanking signals a risk for child physical abuse, but it also allows clinicians to intervene by advising families on stress management, child development, and alternate approaches to regulating problem behavior" (Marie-Mitchell et al., 2020, p.7). Another area of risk that this screen assesses is whether the parent perceives the child as difficult. This may be due to characteristics of the child, such as autism, or the level of stress the parent is experiencing. With this information, the clinician has the opportunity to intervene to prevent maltreatment.

A study assessing how well the questions in the original 10-item ACEs screening tool predicted poor health outcomes found that many of the adverse childhood experiences included in the ACEs index, such as physical abuse, emotional abuse, sexual assault, and witnessing domestic violence, were good predictors of trauma symptoms for children, whereas others, such as divorce and parental imprisonment, were unrelated to this outcome (Turner et al., 2020). Therefore, it was stressed that it is important to look at improving the predictive accuracy of ACEs measures by identifying those that have a significant impact in flagging children at considerable risk of developing trauma symptoms and other related consequences, as it may be ineffective to flag children who are not at high risk (Turner et al., 2020). The researchers suggested starting with a much bigger list of presumed ACEs derived from many conceptual domains, with rigorous research leading to the construction of a more empirically based ACEs screening tool (Turner et al., 2020).

A study was conducted to validate the Traumatic Events Screening Inventory (TESI) for ACEs in children and see if TESI can be adapted as a primary-care ACEs screening tool. By mapping ACEs and crime statistics by neighbourhood, identifying ACEs subgroups (high, moderate, and low ACEs), and discovering a relationship between ACEs subgroups and behavioural dysfunction requiring a behavioural health referral and intervention, it was concluded that the community adapted TESI is a valid ACEs screening tool (Choi et al., 2019). Even after controlling for child resilience and parent depression, the high ACE subgroup was found to have a greater risk of clinical-level attention difficulties (Choi et al., 2019).

To screen for ACEs in children aged 0-5 years, a different approach was employed, using the Family Map Inventories-ACEs screening tool (FMI-ACE) implemented by home visitors through semi-structured interviews and coded observations (McKelvey et al., 2017). The FMI-ACE was used to screen for ACEs and health outcomes. Items from the FMI were chosen to represent the original ACEs constructs (Felitti et al., 1998). With the purpose of exploring different approaches to screening for ACEs, researchers identified “current ACEs as experienced by the child, using questions that did not specifically categorize child abuse and neglect or other illicit behaviour by the parents” (McKelvey et al., 2017, p. 426). This study found that the FMI-ACE scores were significantly associated with the health and development of children, particularly for children in families with FMI-ACE scores of four or more, similar to the associations established in earlier studies that directly assessed ACEs (e.g., Kerker et al., 2015; McKelvey et al., 2017).

3.1 Debate Over Universal ACEs Screening

Multiple researchers have expressed the importance of having universal ACEs screening within pediatric primary care to begin to address the increasing epidemic of early trauma and the resulting impacts on long-term health and well-being (Bryant et al., 2019; Marie-Mitchell et al., 2016; Watson, 2019). In contrast, there are those that feel strongly that it is premature to begin widespread screening for ACEs. Part of the challenge with this debate is that there are different understandings of the purpose of the screening and what the next steps are following a high score. Those opposed tend to see the screen as something that should identify specific targeted interventions (e.g., Finkelhor, 2018), whereas those in favour tend to see it as an indicator that further assessment is required (e.g., Harris, 2020).

Those opposed to universal ACEs screening (at this point in time) argue that we need more research that informs us on precisely what we should be screening for; what are effective, evidence-based interventions for each of the issues that are screened for; and what are any potential negative outcomes or costs to such screening (Finkelhor, 2018). They question whether it is ethical to screen for conditions when evidence-based interventions for these conditions cannot be assured. It is argued that a careful assessment of the risks and benefits of such screening should be done, and the established principles for preventive screening should be applied to ACEs screening (Campbell, 2020a).

When ACEs screenings were systematically examined using recommended criteria for evaluating a screening, it was determined that the key criteria for appropriate screening were not met (McLennan et al., 2019). For example, there is a lack of an evidence-based connection between a high score on an ACE screen and available and effective interventions that lead to a reduction in future poor health outcomes that are a result of the high number of ACEs (Campbell, 2020a; Campbell, 2020b; Finkelhor, 2018; McLennan et al., 2019). It is argued that each adverse experience screened for may have a different influence on health outcomes and require different types of interventions, and there is a lack of evidence to guide practice, i.e., who receives what intervention (Campbell, 2020a).

Authors opposed to universal screening acknowledged that there are evidence-based interventions that address many specific ACEs (e.g., sexual abuse, exposure to domestic violence); however, it is noted that these programs are not available in all or even most communities (Finkelhor, 2018; McLennan et al., 2019). Within most primary care services there is a lack of time and resources to provide the kind of follow-up behavioural health resources that are recommended (Campbell, 2020b). Therefore, although screening may lead to expectations that assistance will be provided, this may be misleading as the appropriate evidence-based interventions may not be available (McLennan et al., 2019). It is suggested that it is unethical to screen and identify a health problem if effective evidence-based interventions are not able to be offered (Campbell, 2020b). It is argued that, if and when research identifies interventions that reliably improve the health outcomes for those with high ACEs, an increase of behavioural health resources to primary care can be advocated for at that time. When interventions that are supported by evidence are available for everyone, it would then be ethical to screen for ACEs (Campbell, 2020b).

Other potential concerns include that some patients may find a screen asking such personal and sensitive questions intrusive, upsetting, offensive, and/or that it could contribute to, or create a feeling of being stigmatized. These issues could erode trust within the healthcare relationship (Campbell, 2020a). In addition, some healthcare professionals may find conducting the screen objectionable, as they do not see addressing ACEs as their role, or do not feel that they have the tools to address issues raised by the screen, and this also could detrimentally affect the healthcare relationship (Finkelhor, 2018).

There are concerns regarding the potential impact of labelling someone as having multiple ACEs and being at high risk of having significant mental and physical health problems in the future. There is the potential for adverse psychological consequences of being aware of this label, as well as negative consequences from the “expectancy effect” where others look for confirmation of predicted poor outcomes (Campbell, 2020a). In addition, without a better understanding of who with a high ACE score will actually benefit from an intervention, there is the risk of overtreatment, adding burden to an already over-burdened system (Campbell, 2020a). There is also the potential for creating skepticism about the benefit of mental health services, or

potentially activating problems due to the low threshold for reporting the suspicion of child abuse, i.e., inaccurate reports (Finkelhor, 2018).

It has also been suggested that it is important to determine whether the screen is effective in identifying more than what would or could be identified through standard clinical care, and to ensure there is low potential for false positives (McLennan et al., 2019). Some suggest that rather than having a standard screening for everyone, if need is identified by specific child or family signs and symptoms, ACEs-related questions can be asked as part of the regular clinical assessment. Limiting such an assessment to those who have shown indications of adverse experiences could reduce the possibility of a false positive. In addition, within a clinical assessment, there should be assurances that questions are asked in a sensitive and safe way, that consider the needs of the patient, and include a discussion about the limits of confidentiality prior to any questions being asked (McLennan et al., 2020).

And finally, it is questioned whether the experiences included in the original ACE questionnaire are the best predictors of poor health outcomes, since the original ACEs list was not developed using a rigorous scientific process (Finkelhor, 2018). It may be that some experiences included are not as significant for long-term health, and that others that impact health are not included in the screen. There are researchers currently using a variety of rigorous processes to develop more sensitive and specific screening tools, with some suggesting additions and/or removal of list items (Finkelhor, 2018). However, these new tools need to be appropriately evaluated.

For all the above identified reasons, multiple authors have suggested that it is inappropriate to do universal ACEs screening until rigorous evaluation demonstrates that the benefits outweigh costs and potential harms (Campbell, 2020a; Finkelhor, 2018; McLennan et al., 2019). Despite these concerns regarding universal ACEs screening, it is agreed that it is important for healthcare providers to be aware of, and knowledgeable about, ACEs and their impacts on health and well-being (McLennan et al., 2020).

Those in support of screening have argued that ACEs meet evidence-based criteria for screening, i.e., they are common, detectable, and there are evidence-based early interventions for the associated conditions (Watson, 2019a). It is indicated that ACEs screening can fit easily within a clinical appointment, and research suggests that parents find the screening acceptable and even helpful (Watson, 2019a). In addition, those in support of widespread screening generally have different understandings of the purpose of ACEs screening and next steps following a high score.

Rather than basing interventions on the overall score on an ACEs screen, what is recommended is that following a high ACEs screen score, there should be a more detailed clinical assessment of the specific experiences and needs of the child (Watson, 2019b). The result of this assessment then guides which relevant, evidence-based interventions will be recommended. There are evidence-based interventions for most of the ACEs (e.g., parental mental health and substance

use, and family dysfunction). Even in the case where ACEs for which there are not currently evidence-based interventions, such as severe abuse or neglect, many would agree that this is important information for the primary healthcare provider to know (Watson, 2019b).

Others have suggested that the purpose of ACEs screening is not about identifying specific adverse experiences, but to help determine whether a patient has cumulative adversity that can contribute to the physiological impacts of toxic stress (i.e., dysregulation of the biological stress response with altered metabolic, immune, neuroendocrine systems, and epigenetic impacts; Harris, 2020). Having a score that indicates cumulative adversity points to the need for a more comprehensive clinical assessment that would include identifying protective factors and ACE-associated health conditions (Harris, 2020). It is argued that, in the absence of more precise clinical diagnostic criteria and biobehavioural measures of toxic stress, screening for ACEs allows for systematic identification of risk related to the impacts of toxic stress, even in currently asymptomatic patients (Harris, 2020).

It is argued that ACEs screening meets a criterion for optimal screening known as 'latency between exposure and outcome' (Harris, 2020). This latency allows for the implementation of interventions prior to, or early in progression to the associated negative health outcomes, when interventions are most effective and economical. Screening for adversity and toxic stress, through an ACEs screen, enables prevention, early intervention, and better management of adversity-related health impacts (e.g., obesity, depression) (Gordon et al., 2020; Harris, 2020). Research has shown that early detection and intervention for toxic stress improves outcomes (Harris, 2020). Interventions such as supportive relationships, promoting healthy lifestyle behaviours, and mental health care are associated with improved functioning of physiological systems related to immunity, inflammation and other factors that contribute to long-term health (Harris, 2020). For example, research has shown that psychosocial support reduces the risk of depression in maltreated children (Gordon et al., 2020). Research suggests that even just being able to talk about their ACEs and being listened to in a compassionate, nonjudgmental way can contribute to healing (Gordon et al., 2020).

It is also suggested that ACEs screening can be a risk assessment tool that allows for interventions to stop or mitigate identified adverse conditions (e.g., abuse, poor parent mental health, poverty) (Gordon et al., 2020). Others suggest a public health approach to ACEs, in which ACEs screening is understood as surveillance (i.e., objectively detecting disease and related risk factors at a population level) (Dube, 2018).

Research on ACEs screening has found no evidence of harm, and that it is associated with improved patient satisfaction, trust of clinician, and healthcare use (Harris, 2020). The goal of ACEs screening is not to label people, but to intervene and change the trajectory towards healthier outcomes. Currently, individuals with toxic stress symptoms (especially people of colour) are often mislabeled, go without treatment, and may instead end up in the criminal

justice system (Harris, 2020). It is argued that it is essential that we increase our understanding of the impacts of toxic stress that are often hidden and stigmatized, can occur across generations, and include experiences of historical, cultural, and gender-related trauma (Dube, 2018).

A compromise between the two sides of the ACEs screening debate is a suggestion that before standard ACEs screening is implemented in any population, feasibility and acceptability assessments should be conducted to determine if screening is appropriate in that particular population, at that time (Dube, 2018). For each population, it is important to look at whether the benefit from screening outweighs the costs, and this may change over time.

Among all engaging in this debate, there is agreement that there is need for further research regarding interventions to improve outcomes for individuals with ACEs (Gordon et al., 2020). Yet those in support of screening argue that the prevalence of trauma and stress in our society has resulted in a public health crisis, such that even when the information is not definitive, there is an ethical obligation to respond by translating, sharing, and acting upon the existing evidence-based knowledge to impact public health (Dube, 2018). Given what we know about the short- and long-term consequences of childhood trauma, it is argued that the cost of not acting outweighs the cost of acting. Continued research is imperative, to identify and improve upon evidence-based interventions, but it needs to happen alongside cautious action (Dube, 2018).

The strong evidence of the toxic effects of ACEs has motivated some US governmental bodies and professional associations to recommend standard screening (Watson, 2019b). Since 2012, the American Academy of Pediatrics has recommended: 1) increasing education that childhood adversity is a public health crisis, 2) implementing trauma-informed care, and 3) the use of research knowledge towards developmental screening in clinical practice (Dube, 2018). Yet these recommendations have not been implemented to any significant extent. In fact, few pediatricians are even aware of the ACE research (Kerker et al., 2016). Research is needed to understand the barriers to addressing this important public health crisis.

In addition, medical and allied health training needs to include education and training on ACEs and resilience science (Dube, 2018). ACEs screening and research can inform changes in the healthcare culture to be more trauma-informed and increase societies' recognition that trauma is widespread and associated with numerous health problems (Dube, 2018). In addition, ACEs screening and assessment can increase clinician understanding of the patient's perspective, and ability to provide true patient-centred care. In summary, it is argued that "Ethically speaking, we really cannot afford to wait another twenty years to take the needed action for addressing and preventing ACEs" (Dube, 2018, p. 184).

4. Factors that Mitigate the Impact of ACEs in Young Children

There are many different factors that have been found to contribute to the mitigation of the negative impact of ACEs. The research comes from different theoretical approaches, including resilience, trauma-informed, and child development. These approaches overlap in factors found to benefit children with ACEs, but each also offers a unique perspective that adds to our understanding of how to support children with ACEs and their families.

4.1 Building Resilience

Resilience is defined by the American Psychological Association as “the process of adapting well in the face of adversity, trauma, tragedy, threats, or even significant sources of stress” (American Psychological Association, 2012 para. 4). Protective factors that are frequently identified as being important for developing resilience in children include a healthy attachment relationship and proper caregiving; skills to regulate emotions; self-awareness; the ability to visualize the future; and a motivation system that drives the child to learn, grow, and adapt to their environment (Southwick et al., 2014).

Studies on building resilience have found support for concepts such as the provision of safe environments, giving attention, building trust, positive listening and responding, providing opportunities, and raising awareness across sectors (Pizzolongo & Hunter, 2011; Sciaraffa et al., 2018). Sciaraffa et al. (2018) stressed the relevance of three interrelated ‘core protective systems’ that promote resilience: 1) individual capacities, 2) attachment to and sense of belonging with a caring caregiver, and 3) a protective community. Early childhood educators are seen as critical in recognizing when young children have experienced ACEs and in mitigating issues by assisting children in developing factors that promote resilience (Sciaraffa et al., 2018).

The Research-based Developmentally Informed (REDI) preschool intervention is an example of an intervention involving early childhood educators that was able to boost resilience and protect children from the detrimental impacts of ACEs (Sanders et al., 2020). Based on both parent and child reports collected over 10 years, it was concluded that adolescent mental well-being was affected by early ACEs, and the REDI preschool intervention helped to minimize the impact of ACEs and improve resilience (Sanders et al., 2020). The core of the REDI intervention is an evidence-based preschool Social Emotional Learning (SEL) program called *Preschool PATHS* (Promoting Alternative THinking Strategies) that involved the educators providing lessons on prosocial skills for the development of friendships, emotional awareness, self-control, and social problem resolution (Domitrovich et al., 2007).

Building Community Resilience (BCR) is a project that involves an approach to resilience in which community resilience is viewed as an essential component to support child health and well-being (Norris et al., 2008). Community resilience is defined 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. 87). Within this project they interviewed

physicians, members of social services agencies, and experts in toxic stress and ACEs; and found they all reported that a shared understanding of the connection between toxic stress, ACEs, and community resilience is necessary within a health system as well as across a partner network (Ellis & Dietz, 2017). Reducing fragmentation of healthcare delivery, developing strategies to enhance capabilities and capacities of providers, and involvement of community members and stakeholders were all regarded as important factors for public health promotion and community health improvement (Ellis & Dietz, 2017). The participants agreed that through a systematic approach to child health systems, the BCR strategy works to provide a seamless continuum of cross-sector partnerships and services that will benefit children and families (Ellis & Dietz, 2017). In short, BCR uses a community-integrated approach to address the root causes of toxic stress and ACEs while also building community resilience (Ellis & Dietz, 2017).

To answer the question "What specifically can be done in pediatric clinical practice to build resilience to ACEs?", Traub and Boynton-Jarrett (2017) reviewed the research on resilience in children to investigate possible malleable characteristics of a child's social and family environment associated with increasing resilience to ACEs. This study discovered significant evidence for five modifiable factors: 1) a positive appraisal style and good executive function, 2) nurturing parenting, 3) maternal mental health, 4) good self-care skills and consistent household routines, and 5) understanding of trauma (Traub & Boynton-Jarrett, 2017). The researchers made 10 recommendations to assist in addressing these modifiable resilience factors in pediatric clinical settings. The recommendations include:

1. Train all pediatric clinic staff on trauma-informed care
2. Screen pediatric patients for ACEs
3. Employ non-physicians to conduct psychosocial screenings
4. Create a medical home (i.e., comprehensive, compassionate care that meets healthcare needs) for children with ACEs
5. Integrate behavioural health care into pediatric offices
6. Offer group-based parenting education and support
7. Offer peer-based group education and anticipatory guidance
8. Customize pediatric health care to the needs of the family
9. Familiarize pediatric staff with resources in the community
10. Be cognizant of barriers to engagement for families of children with ACEs (Traub & Boynton-Jarrett, 2017).

4.2 Trauma-Informed Approach

According to the Substance Abuse and Mental Health Services Administration (SAMHSA):

A trauma-informed program, organization, or system realizes the widespread impact of trauma and understands potential pathways for recovery; recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system; and

responds by fully integrating knowledge about trauma into policies, procedures, and practices, and seeks to actively resist re-traumatization. (p.9)

Some research utilizes the phrase trauma-informed practice as an umbrella word to refer to any trauma-informed response, whether it entails activities performed in treatment, training, parenting, education, or policy formulation (Tebes et al., 2019).

Despite the widespread interest and engagement in developing resilient, trauma-informed communities, Matlin et al. (2019) pointed out the fact that there is still little or no empirical evidence to justify the implementation of specific interventions (Matlin et al., 2019). They attempted to close the gap by describing and conducting the first phase of a community-wide intervention aimed at creating a trauma-informed, resilient community. This initiative, named Pottstown Trauma-Informed Community Connection (PTICC), prioritized the protective power of human connection in healing, recovery, and prevention of ACEs (Matlin et al., 2019). The education sector, as well as social and behavioural health services sectors were initially targeted, but the initiative was later expanded to 14 additional sectors. For PTICC, a population health model of trauma-informed practice was used as a theoretical framework (Tebes et al., 2017). A logic model was developed that included short, intermediate, and long-term results, and three working groups were created: education and training, communications, and networking (Matlin et al., 2019). In addition, a social emotional learning (SEL) component, designed to strengthen children's competencies and enhance family engagement, was incorporated into pre-K to grade 9 schools. An evaluation of the PTICC effort found that knowledge and positive beliefs around trauma-informed practices increased during the initiative, but that the levels were already relatively high, due to prior sharing within the network of service providers (Matlin et al., 2019). Participation in the community partner meetings increased during the project and this participation was sustained over the 3 years. This was in part due to new participation from service sectors that were connected with the schools that had implemented SEL. One important result of this study was that the organizations in the service network lacked system support for trauma-informed practices, despite willingness on the part of their employees to apply them (Matlin et al., 2019).

Based on these findings, the steering committee determined that future trainings should include a focus on how to implement specific trauma-informed practices that address ACEs. In addition, more supports for organizations were deemed to be important for making system level changes needed to provide the supports for trauma-informed practice that service providers were interested in providing. A key aspect of this initiative was the commitment to continuous learning and evaluation. Ongoing evaluation informed adaptations during the project and informed the generation of future goals aimed at addressing the expressed needs of the network members. A goal of the PTICC initiative was to provide a path for other communities to follow.

A few studies exist that examine the implementation of trauma-informed approaches in school systems. The development and piloting of the Trauma Informed Elementary School (TIES) program was based on the attachment, self-regulation, and competency (ARC) framework (Blaustein & Kinniburgh, 2010). TIES was created to bring trauma-informed practices into schools by training teachers to recognize and respond to trauma indicators as well as collaborate with the child's family to create a healthy child development milieu (Rishel et al., 2019). When compared, classrooms receiving the TIES program demonstrated improvement in the emotional support domain (recognizing positive and negative climates, teacher sensitivity, and regard for student perspectives) and classroom organization domain (behaviour management, productivity, and instructional learning formats) (Rishel et al., 2019).

Some who recommend a trauma-informed approach in school settings advise against using ACEs screening for all children as they believe a trauma-informed approach should not be about singling out the students who have experienced ACEs but should rather focus on transforming an entire school's culture, norms, and practices to create a safe and supportive environment for all students (Murphey & Sacks, 2019). They proposed three strategies for bringing about a change: building interpersonal relationships and social and emotional skills, supporting students' physical and mental health needs, and eliminating practices that could lead to traumatic stress or re-traumatization (Murphey & Sacks, 2019). Similarly, Stegelin et al. (2020) offered recommendations based on literature highlighting a sharp increase in the number of preschool programs accompanied by an increase in suspensions and expulsions in preschools in the United States. It included workforce recommendations such as professional development for preschool teachers on trauma awareness, understanding the effects of trauma on young children, and skills to recognize it; as well as policy recommendations such as reducing and eventually eliminating punitive suspensions and expulsions, addressing mental health from a health perspective rather than disciplinary, and investing in and supporting an informed and skilled workforce (Stegelin et al., 2020).

Addressing the overuse of expulsion as an approach to discipline, and the associated negative sequela including gaps in achievement, destructive bullying, and a school to jail pipeline, requires the recognition that more children than previously realized have lived through adversities and they enter school with a higher sense of danger resulting from their experiences (Cole, 2014). This heightened sense of danger affects their ability to focus, behave appropriately, or learn at their optimal levels. It is essential to recognize the relationship between a child's sense of safety and their overall success. A safe and supportive school-wide culture, where all students are able to form relationships with adults and other children, and feel safe to take risks, provides opportunities to learn appropriate behaviour and experience academic success (Cole, 2014).

From the legal perspective, contributing to such a culture change in the school system requires much more than just adding new laws to old ones. Currently, in the U.S., rules governing schools

are fragmented and narrowly focused on specific concerns, missing the causes of the problems. One example of an initiative aimed at changing rules, policies, and laws to recognize the relationship between social, emotional, and educational requirements in schools is the Trauma and Learning Policy Initiative (TLPI; Cole, 2014). The TLPI is refocusing efforts to give schools the time and resources to integrate and align the many initiatives necessary to create supportive whole school environments that better address the educational needs of all students including those who have been traumatized. This includes modifying laws to support a whole school culture shift, moving away from punitive approaches and emphasizing the connections between social, emotional, and educational needs. It is stated that the development of such a wholistic framework is at heart a social movement, involving education, advocacy, collaboration, mobilization, evaluation, and patience (Cole, 2014). The goal of such a movement is to create environments that provide all children with protective factors, including positive experiences that can help to counteract the impact of ACEs.

4.3 Protective/Positive Experiences

Within the ACEs field, there is a growing recognition that young children are not only at the most risk of harm from adverse experiences, but also most likely to benefit from efforts to promote healthy development, and these benefits can be protective against the negative impacts of ACEs (Center on the Developing Child, 2010; Narayan et al., 2021; Sege & Harper Browne, 2017). Protective/positive childhood experiences are associated with better physical and mental health (Center on the Developing Child, 2010). When these positive experiences happen regularly, they contribute to improved neuronal functioning and a healthy stress response system (Center on the Developing Child, 2010). Studies have found that positive childhood experiences are associated with such factors as self-regulation, positive mood, good social skills, successful relationships, and an appreciation for learning; as well as predict higher education, better productivity, and responsibility in adulthood (Center on the Developing Child, 2010; Kosterman et al., 2011; Sege & Harper Browne, 2017).

A review of research on risk and resilience, developmental psychopathology, and attachment highlighted that experiencing early adversity is not deterministic of adverse outcomes, as early protective and promoting experiences can counteract the impact of early adversity (Narayan et al., 2021). The authors of the review pointed out that although experiencing more ACEs are more likely to lead to future problems, there are many who do not follow this path. The outcome of a child who has ACEs is dependent on the convergence of both adverse and protective factors. Early attachment experiences, as well as the overall context in which a child develops, can impact the development of an individual's ability to make use of resources, cope, and recover from adversity (Narayan et al., 2021). Factors such as positive parenting, social support, and opportunities for success, are helpful for general development, but particularly beneficial for children experiencing adversity (Narayan et al., 2021). Narayan et al. summarized research that found that among children with ACEs, those who experienced factors such as positive communication, support, safety, trust, and a sense of belonging in childhood were more

likely to have better mental health, lower stress, and better adjustment as children and later in life. Narayan et al. also found that early experiences are interactive and cumulative, meaning they influence each other and build on each other, i.e., the more positive factors in a child's life the more additional positive experiences they are likely to have. This is even the case for children who have experienced multiple ACEs.

Child-Centered Play Therapy (CCPT; for children aged 3 to 9 years) has been found to promote connections and interactions in a safe, therapeutic environment, suggesting that it could be a beneficial support for children with many ACEs (Haas et al., 2020). Facilitated by Registered Play Therapists, play therapy for children is viewed as what counselling is for adults (Center for Play Therapy, n.d.). For a group of African American children exposed to ACEs, a combination of individual and group child-centered play therapy significantly decreased problematic behaviours that impacted academic performance and classroom functioning, and decreased general worry and negative intrusive thoughts (Patterson et al., 2018).

Narayan et al. (2021) recommended that to address ACEs in children, in addition to screening for ACEs, there should also be screening for positive experiences. However, they point out that parental biases in reporting may be an issue, so recommend using an instrument that assess positive childhood experiences from multiple sources such as the Child and Youth Resilience Measure (CYRM). The CYRM was developed to assess multiple types of positive childhood experiences (interpersonal and intrapersonal assets) in a culturally sensitive way (Liebenberg, Ungar & LeBlanc, 2013; Ungar and Liebenberg, 2011).

4.3.1 Role of Parents

Parenting is one of the modifiable protective factors for ACEs (Traub & Boynton-Jarrett, 2017), and as such Yamaoka and Bard (2019) investigated whether the protective benefits of positive parenting practices continue even in the face of adversity in a sample of children 0-5 years. Storytelling, singing, reading stories, playing with peers, family outings, and limited total time spent by child watching TV (≤ 2 hours a day) were included in positive practices. This study found that not only do these practices help ameliorate the effects of negative adversities (especially in the areas of social-emotional skill and general development in early childhood), but also the absence of these positive practices can be seen as extra adversity, and, at the extreme, equivalent to the addition of four or more adverse experiences (Yamaoka & Bard, 2019).

There are several relationship-based therapies aimed at preventing the progression of parental ACEs to PTSD symptoms, which can lead to impaired caregiving and children's ACEs (Narayan et al., 2021). The following are some of the interventions and relationship-based therapies that are implemented during pregnancy and early childhood and aim to prevent or address parent-related ACEs in young children.

- Child-Parent Psychotherapy (CPP) is a type of therapy that is often administered to caregivers and children from birth to 5 years and has been used by National Child Traumatic Stress Network (The National Child Traumatic Stress Network, 2012).
- Mom Power is a trauma informed and attachment theory-based intervention that aims to improve mothers' mental health and relationship to their children aged 0 to 5 (Rosenblum et al., 2017).
- Child FIRST (Child and Family Intra-agency, Resource, Support, and Training) is a home-based program that has shown effectiveness with multi-risk families raising children aged 6-36 months (Lowell et al., 2011).
- Legacy for Children™ (Centers for Disease Control and Prevention, 2021), Perinatal CPP (Lieberman et al., 2020), and The Survivor Moms' Companion (Sperlich & Seng, 2018) are interventions that have been used during pregnancy and found to increase Mom's understanding of the impact of ACEs and support healthy parent-infant attachment relationships (Narayan et al., 2021).

In New Zealand, The Growing Up in New Zealand (GUiNZ) cohort study (2009-2015) found ACEs to have a negative impact on school readiness (Walsh et al., 2019). They found that positive mother-partner factors had the strongest association as a protective factor, leading to children not having an ACE, despite being in a high-risk group.

4.3.2 HOPE: Health Outcomes from Positive Experiences

Through a holistic approach to promoting child health, which recognizes the complex interaction between the various social determinants of child health, Sege and Harper Browne (2017) recognized the importance of promoting positive childhood experiences that contribute to healthy development and well-being in conjunction with specifically addressing ACEs. Drawing on research detailing the impacts of early experiences on life-long health, Sege and Harper Browne developed the HOPE (Health Outcomes from Positive Experiences) framework with the goal of providing balance to the focus on the negative impacts of adverse experiences. Within the framework are four foundations of HOPE:

- Nurturing, supportive relationships
- Environments that are safe, stable, protective, and equitable (to live, develop, play, and learn in)
- Opportunities for constructive social engagement and connection
- Learning social and emotional competencies

The HOPE framework is based on the understanding that both positive and negative experiences impact children's brain development. The authors argue that to provide experiences that prevent and mitigate the impact of ACEs and promote positive experiences, we must not only focus on the individual child, but also on the family, community, and overall culture and policies that impact the stability of the family, and

therefore the experiences of the child (Sege & Harper Browne, 2017). Sege and Harper Browne provide examples of efforts at each of these levels that have the potential to both reduce the risk of adverse experiences and increase positive experiences. Examples of family-focused efforts include home visiting and the Strengthening Families approach, which involves promoting the ability to provide early positive experiences through parental resilience, social connections, practical supports, and knowledge of parenting, as well as child development and social-emotional competence. At the community-level, they describe approaches that link families to services (e.g., Help Me Grow, Safe Environment for Every Kid [SEEK]), and highlight community-based family resource centers as the way that various resources are made accessible to families. At the societal level, government policies and cultural norms are described as having an influence on whether support for families with young children is seen positively and supported broadly.

4.3.3 Protective and Compensatory Experiences (PACEs)

Hays-Grudo and Morris (2020) examined the large body of research on child development to identify evidence-based ways to promote resilience and support positive developmental outcomes in children who have experienced ACEs. They found that the known factors that benefit all children are even more important when a child has experienced ACEs. Specifically, they found that the need for consistency and nurturance is even greater for children with ACEs, and to facilitate this, caregivers need supportive interventions and policies (Hays-Grudo & Morris, 2020). Based on decades of developmental research, they developed a comprehensive model synthesizing the effects of adverse and protective childhood experiences on biological and behavioural systems, development, and associated outcomes (the Intergenerational and Cumulative Adverse and Resilience Experiences (ICARE); Hays-Grudo & Morris, 2020). The primary assumption of the ICARE model is that protective and compensatory experiences (PACEs) can counteract the impact of adverse experiences, i.e., that ACEs increase physiological stress responses and PACEs buffer this stress response. PACEs include many different factors including parenting practices, promotion of self-regulation, parents healing from own ACEs, avoidance of harsh discipline, and healthy attachment relationships. Practices that promote PACEs include preventive programs, resilience-promoting relationships and resources, therapeutic interventions, and supportive systems and policies (Hays-Grudo & Morris, 2020).

Parenting Practices

Hays-Grudo and Morris (2020) synthesized the research to identify parenting practices that promote resilience and positive development, which are especially important for children who have experienced ACEs. For children ages 0 to 5 they highlighted the following parent practice-related experiences:

- Being nurtured
- Having a playmate

- Attending a play group
- Interactions that foster empathy
- Having multiple caregivers
- The home being safe and child-friendly
- Opportunities to learn (e.g., quality early learning)
- Going on fun and interactive family outings
- Daily opportunities for physical activity
- Having rules and routines

The authors state that a regular routine is particularly important for children who have experienced ACEs because it helps them feel safe and know what to expect. These protective routines include the following:

- Regular bedtimes and sufficient sleep
- Regular healthy meals and eating together
- Limited screen time
- A safe place to play
- Cognitively stimulating activities (e.g., talking, reading, singing)
- Daily physical activity throughout the day

Self-regulation and Coregulation

Self-regulation has been shown to be important in healing from ACEs (Hays-Grudo & Morris, 2020). To help children who have experienced ACEs learn to self-regulate, caregivers need to stay calm and regulate their own emotions and responses when interacting with their children (Hays-Grudo & Morris, 2020). Examples of how caregivers can increase their own self-regulation include the following:

- Practice mindful parenting (be calm, not rushed, fully present, listen with full attention)
- Practice nonjudgemental acceptance of self and child
- Practice emotional awareness
- Have compassion for the self and child
- Increase executive functioning of self and child (e.g., matching games, freeze dance)

An example given by Hays-Grudo and Morris (2020) of an intervention that includes mindfulness in a parenting program is Active Parenting's First Five Years (FFY). Activities included are ones that parents can enjoy with their young children, such as fun breathing exercises (e.g., balloon breaths, butterfly breaths).

Research has shown that children with ACEs benefit from coregulation, where children learn about emotional regulation through observation, how they are responded to, and the emotional environment of the family (Hays-Grudo & Morris, 2020). The authors describe how caregivers, especially those with ACEs themselves, benefit from

encouragement and support to provide positive, nurturing relationships and demonstrate self-regulation of their emotions when interacting with the child and other family members.

Parents' Healing

Hays-Grudo and Morris (2020) highlight the importance of caregivers doing what they can to heal from their own ACEs. They acknowledge that this may be particularly challenging when interacting with children who have experienced ACEs because interactions can trigger behaviours and physiological responses in the adult based on past experiences. Several parenting programs are described that encourage self-care, including Active Parenting FFY, Triple P, and Legacy for Children. Legacy for Children is a group-based parenting program that starts during pregnancy or infancy and goes until children are 3 to 5 years old. The program is for mothers living in poverty and is designed to nurture sensitive and responsive mother-child relationships, build self-efficacy, and foster peer support. Social support from peers and professionals has been found to be highly beneficial for families coping with the impact of ACEs. Parenting interventions described as promoting social support include Nurse-Family Partnership and Triple-P.

Avoidance of Harsh Discipline

Hays-Grudo and Morris (2020) establish that research has shown that the avoidance of harsh discipline and corporal punishment is extremely important for children who have experienced ACEs. This can help to avoid retraumatizing children, causing psychological or physical harm, or having a negative impact on the attachment relationship. It is also part of breaking the cycle of abuse. Towards this end, they recommend parenting programs or parenting advice that promote discipline (i.e., ways of helping children understand the difference between right and wrong) rather than punishment.

Attachment

There is extensive evidence that early attachment relationships provide the foundation for social, emotional, and cognitive development (Hays-Grudo & Morris, 2020). The authors emphasize that for children who have experienced ACEs, sensitive and responsive caregiving is particularly important. However, they acknowledge that adverse experiences early in life may contribute to impaired attachment, making such children particularly challenging to parent as they may be avoidant or clingy, and give misleading or aversive cues due to a lack of trust or expectation they will be hurt. Unfortunately, caregivers can be triggered by these behaviours, potentially leading to responses that are frightening for the child, or at least counter-productive for a healthy attachment relationship. To address this, the authors suggest that parents be taught to understand their child's cues and override their automatic responses. They describe evidence that programs aimed at improving the attachment relationship can address the effects of early adversity and highlight two such programs. The Attachment Biobehavioral Catch-Up program involves 10 one-hour

home sessions, facilitated by a trained coach, providing in-the-moment feedback designed to increase sensitive parenting. Circle of Security uses simple illustrations and metaphors to teach the concepts of attachment, and videos and self-reflection to help caregivers see and understand their own attachment-related behaviours.

Child Therapy

The authors also point out that experiences such as early trauma or neglect can lead to serious developmental disorders, mental health concerns, and problematic behaviours in children, and require intensive treatment and therapy from professionals with expertise in working with children with ACEs and supporting the parent-child relationship (Hays-Grudo & Morris, 2020).

Systems and Policies

Hays-Grudo and Morris (2020) conclude that to address the prevention and mitigation of ACEs, it is important to incorporate what we have learned at the level of systems and policies. This means providing universal access to the various elements identified within the research as important for healthy child development, particularly for children who have experienced ACEs, including information on positive parenting, parenting programs, resources for children's activities, enriching learning environments, and high-quality mental health services for children and families.

4.4 Other Notable Findings

ACEs in Law

The ACE reduction law in Washington State, with extensive bipartisan support, was passed on June 15, 2011. This is legislation geared towards prevention of ACEs, reduction of its prevalence, and mitigation of its impacts, making Washington the first state in the United States, and first region in North America, to enact such a law. The law recognizes that co-occurring child abuse and neglect, parental substance abuse, parental mental illness, divorce or separation, incarceration of a family member, and/or witnessing intimate partner violence constitute "a powerful common determinant of a child's ability to be successful at school and, as an adult, to be successful at work, to avoid behavioral and chronic physical health conditions, and to build healthy relationships" (Kagi & Regala, 2012, p. 272).

The law also promoted private-public partnership to prevent, reduce, and mitigate ACEs by requiring the cooperation of diverse groups, including community organizations, philanthropy, and state agencies to enact this mandate (Kagi & Regala, 2012). One such private-public entity, Thrive by Five, was formed by philanthropic organizations and the state to provide quality early childcare (Kagi & Regala, 2012).

ACEs in Indigenous Populations

A Canadian systematic review examined the extent of ACEs among Indigenous peoples and demonstrated that there is a significant lack of research on ACEs and their effects on this demographic, notably in Canada (Radford et al., 2021). As a result, the authors of this review included the global Indigenous population, yet only 21 papers matched the requirements for review. When compared, ACEs were found to be higher in Indigenous populations than non-Indigenous (Radford et al., 2021). Those higher scores were linked to higher rates of suicidality and psychological distress, whereas cultural identification and connectedness, education, social support, and psychological resilience were found to be protective factors in reducing the impact of ACEs (Radford et al., 2021). Understanding how the ACE model might be applied in Indigenous Canadian contexts will allow for comparison with the existing model, which is mostly based on data gathered from non-Indigenous groups (Radford et al., 2021).

5. Limitations of Review

A limitation of this review is due to the lifelong and intergenerational nature of the impacts of ACEs. ACEs are experienced during childhood; however, impacts might be revealed early or much later in life. The literature review was done to look for best or promising practices that can be implemented for children 0-6 years to reduce the impacts of ACEs. Therefore, many interventions were excluded as they were found to be targeted at adolescence and adulthood, with the aim of reducing the impacts that are manifested during these life phases. Although these interventions were excluded, it could be argued that any intervention that reduces the impact of ACEs on health and well-being at any point throughout life is important, and that interventions directed towards adults with ACEs might also help in prevention of ACEs in their children that may occur through intergenerational transmission of trauma.

6. Conclusion

As one pediatrician interviewed by Ellis and Dietz (2017) stated, “[Despite] what we know about ACEs, we still don't know what to do with them or who to call for help. We need partners” (p. 87). This review identified significant potential for the development of evidence-based interventions; however, fragmented findings and limited integration of these findings into preventative measures to mitigate the impact of adverse childhood experiences were found.

Although there are multiple advancements in the development of reliable and valid screening tools for pediatric population, there is debate as to whether there should be universal implementation of ACEs screening for the pediatric population. We are reminded that screening is just the first step of many in effectively addressing ACEs and their impact on life-long health and well-being. Evidence-based interventions for families whose children screen high in ACEs are needed to mitigate the impacts.

Research has shown that childhood adversity is a driver of health disparities, and likely contributes to an increasing economic burden on the healthcare systems (Sonu & Feinglass, 2019). This review suggests that comprehensive and multi-sectoral efforts have the potential to prevent ACEs and mitigate their impact. However, it is important that research continues to help identify interventions that are effective in preventing or mitigating ACEs and that these interventions are taken up and implemented.

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