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Screening for Adverse Childhood Experiences and Other Determinants of Health in School Based Health Centers:

A Program Evaluation

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A DNP project submitted in partial fulfillment of the
requirements for the degree of

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Abstract

Introduction: Adverse Childhood Experiences (ACEs), such as abuse, neglect, and various household stressors, are common, connected, and contribute to multiple adverse health and wellbeing outcomes throughout life. Consequently, there has been a push to screen for adversity and toxic stress in primary care to facilitate prevention and early intervention. The purpose of this project was to evaluate and optimize the use of the Broad Level Integrated Screener (BLIS) in Neighborcare Health (NCH) School Based Health Centers (SBHCs) in Seattle, WA.

Methods: An online survey including nineteen Likert-scale questions and five open-ended free response questions was administered to all middle school and high school NCH SBHC providers.

Results: The survey had a response and completion rate of 100% (N=10). The most common barrier identified was time and the most common benefits identified were patient honesty and identification of issues that patients would otherwise be reluctant to bring up. Knowledge about ACEs emerged to be a determining factor for survey responses, influencing perceived utility and content of the BLIS as well as perceived responsibility to screen for and address ACEs in practice.

Discussion: The data highlights the need to provide more education about ACEs and toxic stress to providers working with pediatric and adolescent populations. The study suggests that screening for ACEs and other determinants of health using the BLIS is feasible, acceptable, and yields actionable results.

Keywords: adverse childhood experiences, ACEs, screening, resilience, trauma informed care, toxic stress

Contents

Screening for Adverse Childhood Experiences and Other Determinants of Health in School Based Health Centers: A Program Evaluation

Childhood trauma is a public health crisis (Copeland et al., 2018). Adverse Childhood Experiences (ACEs), such as abuse, neglect, and various household stressors, are common, connected, and contribute to multiple adverse social, behavioral, and health outcomes throughout life. Over two thirds of adults have reported having one or more ACEs and one in eight adults have experienced four or more ACEs (Felitti et al., 1998). In Washington state the prevalence of ACEs is slightly higher than the national average, with over 11% of children reporting three or more ACEs (U. S. Census Bureau, 2016). Not only are ACEs common, but research has revealed a significant dose-response relationship between ACEs and negative health outcomes including COPD, cardiovascular disease, sleep disturbances, obesity, smoking, depression and anxiety, substance abuse, and early death (Anda et al., 2008; Kalmakis & Chandler, 2015; Petruccelli & Berman, 2019).

The prevalence of ACEs as well as the depth of the negative health and wellbeing outcomes associated with ACEs underscores the importance of preventing ACEs from occurring and providing support and resources to those who have already experienced them (Anda, Butchart et al., 2010). Until recently, ACEs have been largely ignored by the healthcare community. However, there is a growing body of evidence indicating health consequences associated with ACEs can be prevented and treated. Leading voices in healthcare including the Centers for Disease Control and Prevention (CDC), American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP) and the National Academies of Sciences, Engineering and Medicine (NASEM) have advocated in favor of screening for adversity and toxic stress to facilitate prevention and early intervention (American Academy of Family

Physicians [AAFP], 2019; American Academy of Pediatrics [AAP], 2014a; Emmerson, 2019; Harris, 2020; NASEM, 2019).

In 2014 Dr. Robert Block, the former president of the AAP, proclaimed ACEs to be the single greatest unaddressed public health threat facing the nation (Harris, 2014). The purpose of this project was to evaluate and optimize the use of the Broad Level Integrated Screener (BLIS) in Neighborcare Health (NCH) School Based Health Centers (SBHCs) in Seattle, WA. The specific aims were to understand the current barriers to screening for ACEs and other determinants of health; assess the feasibility and acceptability of using the BLIS to screen for ACEs at SBHCs, adapt the BLIS to improve utility and acceptability for providers, create an accompanying toolkit, and ultimately improve the ability of providers to identify and address ACEs in clinical practice.

Background

Literature Review

Adverse Childhood Experiences (ACEs)

Adverse Childhood Experiences is a term used to describe stressful and traumatic events that occur in childhood (Centers for Disease Control and Prevention [CDC], 2021). The domains include physical, emotional, and sexual abuse; physical and emotional neglect; mental illness of a caregiver; incarceration of a relative; violence toward the mother; substance abuse in the home; and parental divorce or separation (Felitti et al., 1998). The foundational Adverse Childhood Experiences Study (1998) not only revealed that ACEs are common, but it also found a statistically significant ($p < 0.001$) association between ACEs and numerous health conditions (Felitti et al., 1998). In the study, which included over 17,000 adult patients at Kaiser Permanente in San Diego, nearly two-thirds of participants reported having at least one ACE, 40% reported two or more ACEs and one in eight adults reported having experienced four or more ACEs (Felitti et al., 1998). People who had experienced four or more ACEs had a 4-fold increased likelihood of having Chronic Obstructive Pulmonary Disease (COPD) compared to people with no ACEs. Their likelihood of having depression increased by 460%, for alcoholism it increased by 700% and people with 6 or more ACEs were 3000% more likely to attempt suicide compared to those with no ACEs (Felitti & Anda, 2015; Felitti et al., 1998). Another critical outcome of the study was the discovery of a graded dose-response relationship between ACEs and negative health and well-being outcomes across the lifespan. In other words, the researchers discovered that as the number of ACEs increased so did the risk for adverse health outcomes such as chronic disease, illicit drug use, suicide, and early death (Afifi et al., 2008; Hughes, 2017).

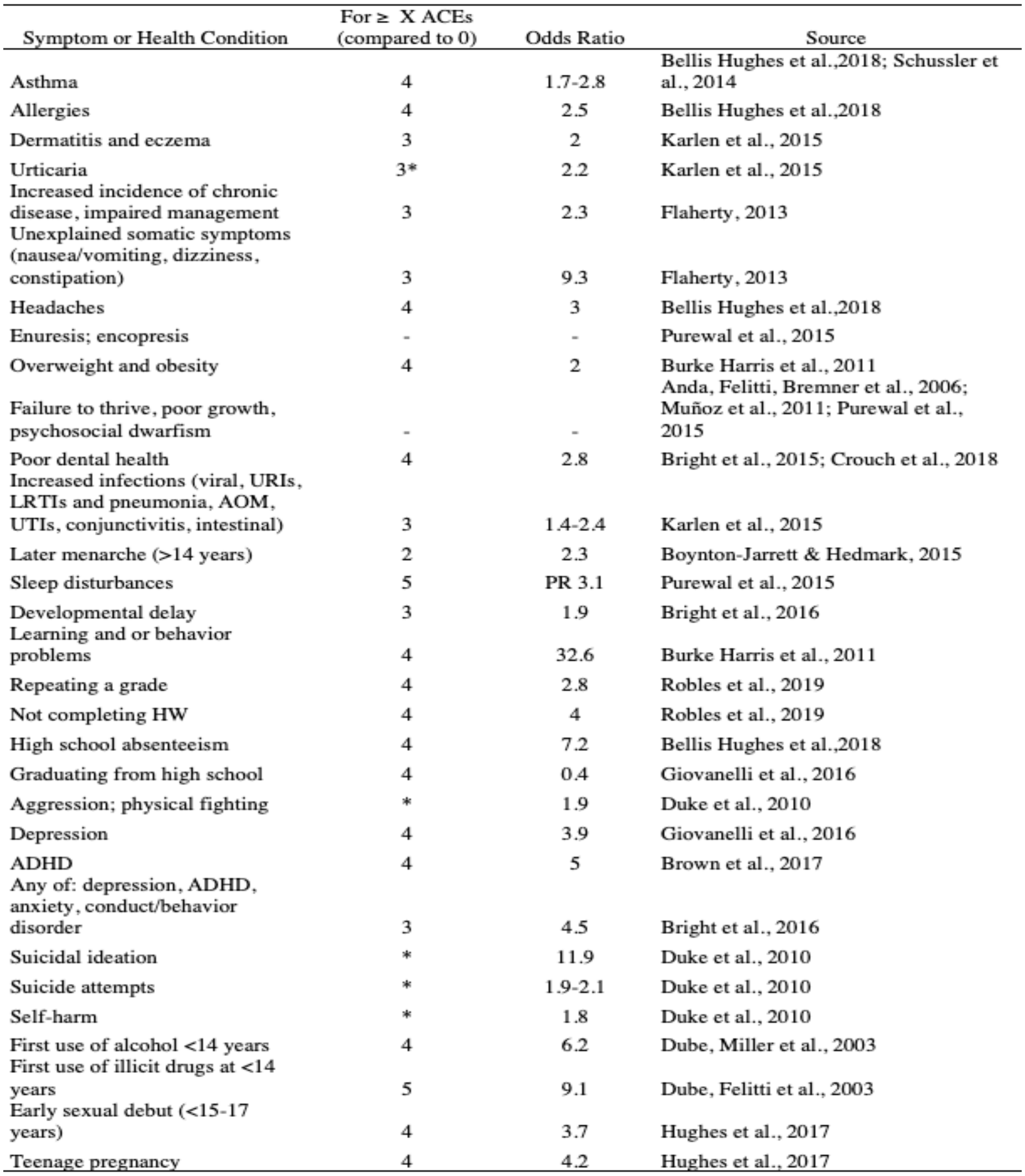
Over the past twenty years a consensus of scientific research has confirmed the link between childhood trauma and long-term-health and wellbeing. These studies have not only identified over 40 negative health and wellbeing outcomes associated with ACEs, but they have also demonstrated the high incidence of ACEs within the population (Bright & Thompson, 2018; Kalmakis & Chandler, 2015; Petruccelli et al., 2018). Using the data from the 2016 National Survey of Children's Health (NSCH), Merrick et al. (2018) found that nearly half of all children nationally have experienced one ACE and that close to one in six children have experienced four or more ACEs. Findings also showed that ACEs disproportionally affect minorities and people of color, with Black and Hispanic children more likely to experience ACEs than their White and Asian peers (Merrick et al., 2018).

In 2019 Petruccelli et al. conducted a systematic review of the health outcomes associated with ACEs. Their review identified 96 articles studying health outcomes related to the original

ACEs and observed a clear graded relationship between ACEs and nearly all psychosocial, behavioral, and medical outcomes, from the leading causes of death in the US to poor school performance and increased rates of risk-taking behavior (Petruccelli et al., 2019). Tables 1 and 2 below list the ACE-Associated health conditions in the pediatric and adult populations.

Table 1

Pediatric Health Conditions and Symptoms Associated with ACEs

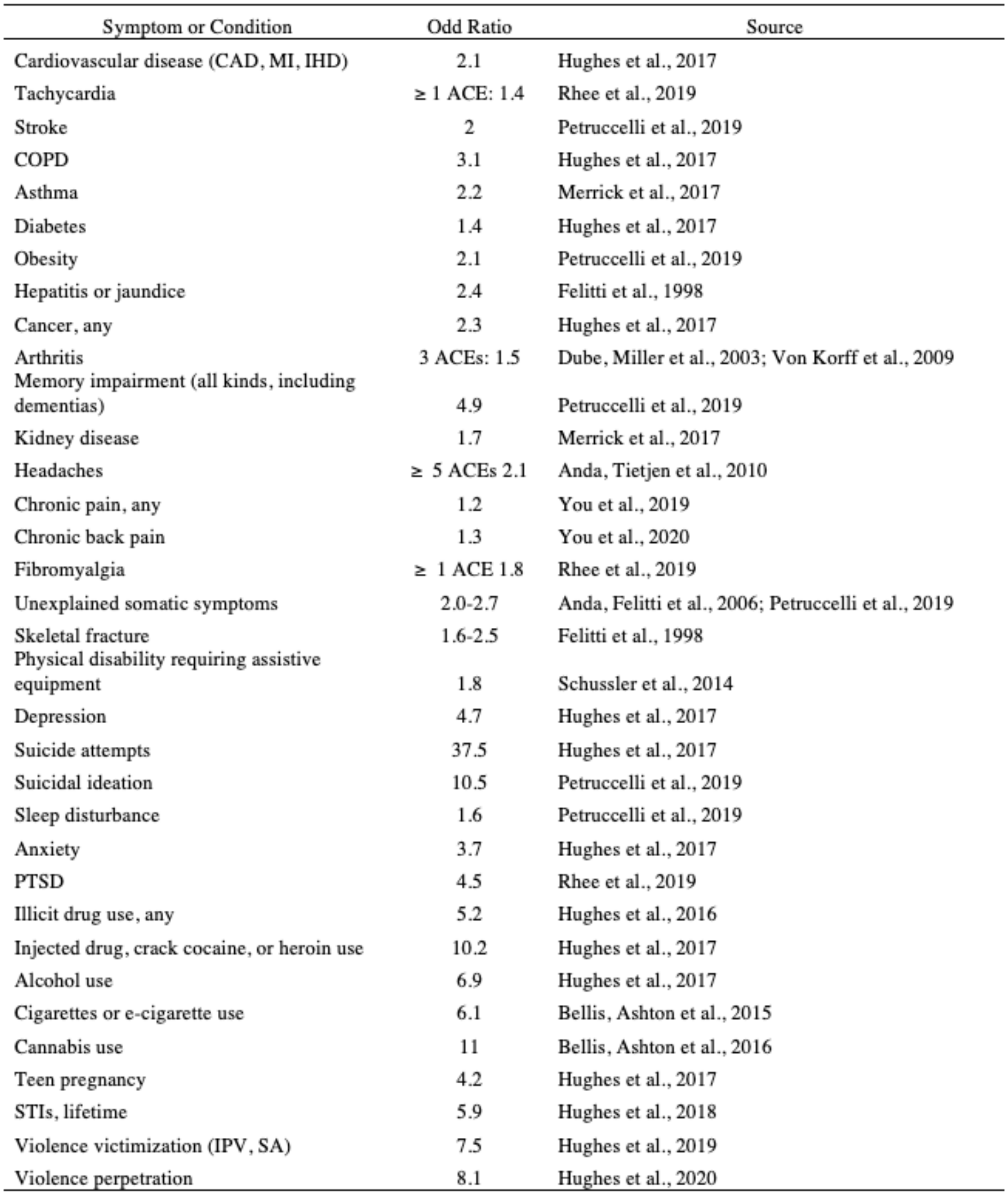


Symptom or Health Condition	For ≥ X ACEs (compared to 0)	Odds Ratio	Source
Asthma	4	1.7-2.8	Bellis Hughes et al.,2018; Schussler et al., 2014
Allergies	4	2.5	Bellis Hughes et al.,2018
Dermatitis and eczema	3	2	Karlen et al., 2015
Urticaria	3*	2.2	Karlen et al., 2015
Increased incidence of chronic disease, impaired management	3	2.3	Flaherty, 2013
Unexplained somatic symptoms (nausea/vomiting, dizziness, constipation)	3	9.3	Flaherty, 2013
Headaches	4	3	Bellis Hughes et al.,2018
Enuresis; encopresis	-	-	Purewal et al., 2015
Overweight and obesity	4	2	Burke Harris et al., 2011
Failure to thrive, poor growth, psychosocial dwarfism	-	-	Anda, Felitti, Bremner et al., 2006; Muñoz et al., 2011; Purewal et al., 2015
Poor dental health	4	2.8	Bright et al., 2015; Crouch et al., 2018
Increased infections (viral, URIs, LRTIs and pneumonia, AOM, UTIs, conjunctivitis, intestinal)	3	1.4-2.4	Karlen et al., 2015
Later menarche (>14 years)	2	2.3	Boynton-Jarrett & Hedmark, 2015
Sleep disturbances	5	PR 3.1	Purewal et al., 2015
Developmental delay	3	1.9	Bright et al., 2016
Learning and or behavior problems	4	32.6	Burke Harris et al., 2011
Repeating a grade	4	2.8	Robles et al., 2019
Not completing HW	4	4	Robles et al., 2019
High school absenteeism	4	7.2	Bellis Hughes et al.,2018
Graduating from high school	4	0.4	Giovanelli et al., 2016
Aggression; physical fighting	*	1.9	Duke et al., 2010
Depression	4	3.9	Giovanelli et al., 2016
ADHD	4	5	Brown et al., 2017
Any of: depression, ADHD, anxiety, conduct/behavior disorder	3	4.5	Bright et al., 2016
Suicidal ideation	*	11.9	Duke et al., 2010
Suicide attempts	*	1.9-2.1	Duke et al., 2010
Self-harm	*	1.8	Duke et al., 2010
First use of alcohol <14 years	4	6.2	Dube, Miller et al., 2003
First use of illicit drugs at <14 years	5	9.1	Dube, Felitti et al., 2003
Early sexual debut (<15-17 years)	4	3.7	Hughes et al., 2017
Teenage pregnancy	4	4.2	Hughes et al., 2017

Note: Adapted from DHCS, 2020. * For each additional ACE

Table 2

Adult ACEs Associate Health Conditions



Symptom or Condition	Odd Ratio	Source
Cardiovascular disease (CAD, MI, IHD)	2.1	Hughes et al., 2017
Tachycardia	≥ 1 ACE: 1.4	Rhee et al., 2019
Stroke	2	Petruccelli et al., 2019
COPD	3.1	Hughes et al., 2017
Asthma	2.2	Merrick et al., 2017
Diabetes	1.4	Hughes et al., 2017
Obesity	2.1	Petruccelli et al., 2019
Hepatitis or jaundice	2.4	Felitti et al., 1998
Cancer, any	2.3	Hughes et al., 2017
Arthritis	3 ACEs: 1.5	Dube, Miller et al., 2003; Von Korff et al., 2009
Memory impairment (all kinds, including dementias)	4.9	Petruccelli et al., 2019
Kidney disease	1.7	Merrick et al., 2017
Headaches	≥ 5 ACEs 2.1	Anda, Tietjen et al., 2010
Chronic pain, any	1.2	You et al., 2019
Chronic back pain	1.3	You et al., 2020
Fibromyalgia	≥ 1 ACE 1.8	Rhee et al., 2019
Unexplained somatic symptoms	2.0-2.7	Anda, Felitti et al., 2006; Petruccelli et al., 2019
Skeletal fracture	1.6-2.5	Felitti et al., 1998
Physical disability requiring assistive equipment	1.8	Schussler et al., 2014
Depression	4.7	Hughes et al., 2017
Suicide attempts	37.5	Hughes et al., 2017
Suicidal ideation	10.5	Petruccelli et al., 2019
Sleep disturbance	1.6	Petruccelli et al., 2019
Anxiety	3.7	Hughes et al., 2017
PTSD	4.5	Rhee et al., 2019
Illicit drug use, any	5.2	Hughes et al., 2016
Injected drug, crack cocaine, or heroin use	10.2	Hughes et al., 2017
Alcohol use	6.9	Hughes et al., 2017
Cigarettes or e-cigarette use	6.1	Bellis, Ashton et al., 2015
Cannabis use	11	Bellis, Ashton et al., 2016
Teen pregnancy	4.2	Hughes et al., 2017
STIs, lifetime	5.9	Hughes et al., 2018
Violence victimization (IPV, SA)	7.5	Hughes et al., 2019
Violence perpetration	8.1	Hughes et al., 2020

Note: Adapted from DHCS, 2020. All odds ratios for ACEs ≥ 4 compared to 0 unless otherwise indicated.

Toxic Stress

Recent research has focused on the physiologic process through which long-term health and wellbeing outcomes develop in response to ACEs. Adverse Childhood Experiences take place during a sensitive neurobiological developmental period (Hughes et al., 2017). Current research suggests that maladaptation of the stress response is responsible for the adverse long-term health outcomes (Bucci et al., 2016). There are three distinct types of stress responses in children: positive, tolerable, and toxic (Garner et al., 2012). A positive stress response involves an increase in heartrate and blood pressure, and activation of the hypothalamic-pituitary-adrenal (HPA) axis to prepare the body for the fight, flight, freeze response (Shonkoff et al., 2012). A critical aspect of positive stress is that the stress self-regulates through negative feedback in the absence of the stressor (Shonkoff et al., 2012). Tolerable stress involves exposures and responses that are greater in magnitude while still maintaining the ability to return to baseline. Toxic stress on the other hand results from strong, frequent, or prolonged activation of the body's stress response, without the ability to return to baseline (Bucci et al., 2016; Garner et al., 2012; Shonkoff et al., 2021). With toxic stress, dysregulation of the neuro-endocrine-immune network leads to an overproduction of cortisol, epinephrine, and norepinephrine, permanently changing brain architecture and function (Garner et al., 2012). These changes lead to impaired impulse control and resistance to disease, increased risky behaviors, and premature onset of disease, disability and death (Center of the Developing Child at Harvard University, 2016).

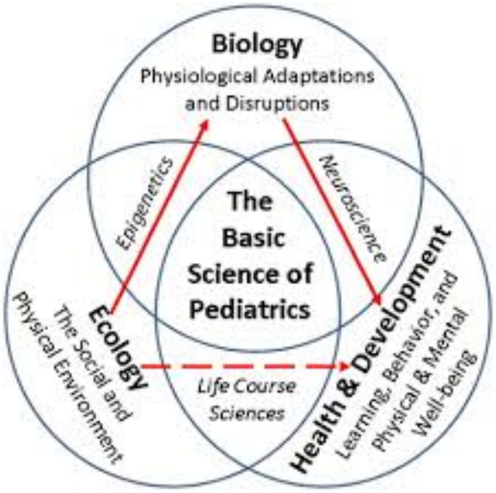
While physiological development strongly influences health and wellbeing, it does not occur in isolation (Conn et al., 2018). The plasticity of the developing brain, what makes a child particularly vulnerable to the long-term consequences of ACEs, presents an opportunity for intervention (Bucci et al., 2015). Research indicates that several protective factors can prevent or ameliorate the adverse effects of ACEs (NASEM, 2019; Purewal et al., 2018; Shonkoff et al., 2012). These factors include a positive supportive relationship with an adult (Moore & Ramirez, 2016; Shonkoff et al., 2012), exercise, mindfulness skills, sleep (Purewal et al., 2018), mental health support (Traub & Boynton-Jarrett, 2017), a child's own interpersonal skills (Oral et al., 2015; Traub & Boynton-Jarrett, 2017 and trauma informed care (Oral et al., 2015), among others.

ACEs in the Context of Primary Care

In recent years, there has been an impetus to address ACEs in primary care (Felitti & Anda, 2015; Gilgoff et al., 2020). Shonkoff et al. (2012) suggests that the first step in addressing ACEs in primary care is the adoption of an eco-bio-developmental (EBD) framework. The EBD framework illustrated in Figure 1 below explains how early childhood experiences and environmental factors can influence brain architecture and long-term health. Because of the research that suggests the trajectory of ACEs can be broken, early identification and intervention could have profound impacts on health and well-being, particularly for low-income minorities who are disproportionally affected by ACEs.

Figure 1

Eco-bio-developmental Framework



Note: This figure illustrates the Eco-bio-developmental framework essential for addressing ACEs in primary care. (Shonkoff, et al., 2012).

In 2011 the American Academy of Pediatrics (AAP) issued a policy statement urging pediatricians to focus on early prevention and management of ACEs and toxic stress in their practices (Shonkoff et al., 2012). Pediatric primary care providers (PCPs), including nurse practitioners (NPs), physicians, and physician assistants (PAs) are ideally situated to identify and mitigate the effects of ACEs (Petruccelli et al., 2019). This is largely due to their training in prevention and health promotion, regular contact with children and families, and the trusting relationship developed through routine visits (Cohen et al., 2008; Conn et al., 2018; Gilgoff et al., 2020; Gillespie, 2019; Pardee, 2017). Forkey & Conn (2018) argue that addressing trauma in a primary care setting is analogous to how PCPs manage infectious disease. Whereas a PCP manages infectious disease through prevention, detection and treatment, they would manage ACEs through resilience promotion, trauma detection, and treatment (Forkey & Conn, 2018). Multiple studies have shown that addressing ACEs in pediatric primary care is feasible, acceptable, and has favorable outcomes including improved identification of trauma, connecting patients and families with needed services, treating ACE-related health conditions, preventing the accumulation of ACEs, identifying buffers to toxic stress, the potential to reduce or remove stigma around discussing trauma histories and providing a mechanism for preventing the transmission of trauma from one generation to the next (Bodendorfer et al., 2019; Conn et al., 2015; Flynn et al., 2015; Gillespie, 2019).

Resilience. Resilience promotion in primary care is an intervention aimed at primary prevention. Just as a vaccine can protect against disease when later exposure occurs, resiliency can mitigate or prevent the effects of being exposed to trauma (Conn & Forkey, 2018). As previously mentioned, research indicates that several protective factors can prevent or ameliorate the adverse effects of ACEs (Moore & Ramirez, 2016). For example, studies have demonstrated that the presence of a stable caregiver or mentor can act as a buffer and prevent a trauma exposure from leading to toxic stress (Bellis, Hardcastle et al., 2017; Bradley et al., 2013). Traub & Boynton-Jarrett (2017) identified five modifiable resilience factors that can improve a child's short- and long-term health outcomes. These include individual cognitive traits (positive appraisal style and executive function skills), parenting, maternal mental health, self-care skills and household routines, and trauma understanding (Traub & Boynton-Jarrett, 2017). In addition to training all staff working with pediatric patients in the principles of trauma informed care, their research on resilience emphasizes the importance of screening patients for ACEs to leverage the identified modifiable resilience factors to help children withstand and recover from adversity (Traub & Boynton-Jarrett, 2017).

Trauma Detection. As a result of the extensive body of research surrounding the negative sequelae associated with toxic stress, many leading voices in healthcare including the AAP, the CDC, the AAFP, and NASEM have advocated for routine screening by primary care clinicians for ACEs and other precipitants of toxic stress (AAFP, 2019; Purewall et al., 2018). Primary care providers are ideally situated to screen for exposure to adversity (Oh et al., 2018; Petruccelli et al., 2019). A growing body of evidence demonstrates that early detection and intervention of toxic stress improves outcomes (NASEM, 2019; Harris, 2020; Marie-Mitchell & Kostolansky, 2019). Screening for cumulative adversity through the lens of ACEs is particularly useful because it allows for systematic identification of toxic stress risk during the latent or early symptomatic stage (Burke-Harris, 2018; Oh et al., 2018a). Furthermore, screening and other secondary prevention interventions have the potential to protect children from additional ACEs after screening positive for just one (Petruccelli et al., 2019). As such, widespread screening for

ACEs is a fundamental step in the identification and management of ACEs and toxic stress in primary care (Flynn et al., 2015; Gillespie, 2020; Kerker et al., 2016;).

The feasibility and acceptability of screening for ACEs in primary care is well established in the literature. Numerous studies have demonstrated that screening for ACEs in various primary care settings is feasible and results in favorable outcomes (Bordendorfer et al., 2020; Bryant & VanGraafeiland, 2020; DiGangi & Negriff, 2020; Flynn et al., 2015; Keeshin et al., 2020; Purewall et al., 2016; Purewall et al., 2018; Thompson et al., 2021). Screening is not only feasible, but acceptable to patients, parents, and providers (Goldstein et al., 2017; Kia-Keating et al, 2019). In a study examining parental perspectives on screening for ACEs in the pediatric primary care setting, Conn et al. (2018) determined that parents not only strongly support screening for ACEs in primary care, but that they also see PCPs as advocates who play essential roles in meeting their parenting goals (Conn et al., 2018). In 2020, California took ground breaking action to address ACEs and toxic stress with the ACEs Aware initiative. Led by Nadine Burke Harris, the California Surgeon General, and the Department of Health Care Services (DHCS), California allocated nearly 40 million dollars to reimburse Medi-Cal providers for conducting ACEs screening (State of California Department of Health Care Services [DHCS], 2020). In addition to paying providers for screening, the ACEs Aware initiative partnered with communities and organizations across the health care system to ensure providers have adequate training, tools and resources to successfully incorporate ACEs screening into their practices (DHCS, 2020).

Despite meeting the Wilson and Junger criteria for optimal screening, some argue it is still premature to call for universal ACEs screening due to unanswered questions relating to the cost, gaps in evidence-based interventions and potential unintended harm (Campbell, 2020;

Finkelhor, 2018). While re-traumatization is a valid concern, there is no evidence to support this claim (Edwards, 2003). Multiple studies have revealed that patients and parents are comfortable being asked about ACEs, and very few reported any distress (Ford et al, 2019). When faced with these questions it is important to remember that the purpose of screening for ACEs is not for diagnosis, but rather for the identification risk factors for toxic stress physiology, and for providing a patient-centered a view of health in the context of a child’s lived experiences (Gordon et al., 2020). Furthermore, research shows that even if a child has not been exposed to ACEs, screening can serve as an educational tool for engaging and educating families and children about the importance of safe, stable, nurturing relationships, and how to recognize and manage stress and learn resilience (Bethell, 2017).

Treatment. The evidence-based interventions most likely to have an impact on patient outcomes fall well within the scope and abilities primary care providers. The first line response to ACEs and toxic stress is the application of the principles of trauma informed care (TIC), which recognizes the signs, symptoms and potential consequences of trauma to better support to patients (DHCS, 2020; SAMHSA, 2014). The six principles of TIC include safety, trustworthiness and transparency, peer support, collaboration and mutuality, empowerment voice and choice, and cultural, historical and gender issues (SAMHSA, 2014). In light of this, there are currently over 27 states that have statutes and resolutions associated with ACEs and TIC (Racine et al., 2019). Another critical intervention is to introduce skills that can help increase resilience and mitigate the adverse effects of toxic stress. Traub and Boynton-Jarett (2017) have identified five modifiable resilience factors that improve patient outcomes that can easily be addressed in primary care. These include enhancing trauma understanding (education), positive appraisal style and executive function skills, responsive and positive parenting skill building, treating maternal mental health problems, and enhancing self-care skills and routines (Traub & Boynton-Jarett, 2017). Trauma education is a particularly well studied and effective intervention that aligns with established public health principles (Forkey & Conn, 2018; Marie-Mitchell & Kostolansky, 2019). Along with screening for ACEs in pediatric care settings, the ACEs Aware initiative includes an accompanying provider toolkit with resources to aid in the clinical response. The authors identify five key aspects of intervention. These include applying the principles of trauma informed care (1), identification and treatment of ACEs related health conditions by supplementing traditional care with patient education on toxic stress and strategies to regulate the stress response (2), identification and validation of strengths and protective factors (3), referral to patient resources and interventions (4) and follow up (5) (DHCS, 2020). In a systematic literature review aimed at summarizing the current evidence from RCTs on the efficacy of interventions to prevent the negative health outcomes associated with ACEs, Marie-Mitchell & Kostolansky (2019) confirmed that multicomponent interventions involving professionals can reduce child physical and behavioral/mental health problems associated with ACEs. This research supports the idea that connecting patients to needed resources is a critical part of ACEs and toxic stress intervention and situates evidence-based interventions well within the scope of primary care.

Gaps in the Literature

Multiple gaps in the literature exist in the translation of ACEs research into practice. Despite the AAP's 2010 policy statement calling on pediatricians to actively screen for precipitants of toxic stress and the extensive literature on the relationship between ACEs and health, ACEs screening in the primary care setting is lacking. Analyzing data from the 2013 AAP Periodic Survey, Kerker et al. (2016) discovered that two-thirds of pediatricians had no familiarity with the ACEs study and that only 4% of pediatricians screened for all of the ACEs.

Similarly, Kalmakis & Chandler (2017) discovered only one-third of NPs regularly screened for ACEs and believed it was their responsibility to do so. The literature has identified several barriers to screening including perceived lack of time, lack of education about ACEs, lack of knowledge about screening tools, resources and proven interventions, and discomfort in asking about abuse (Gillespie, 2019; Kalmakis & Chandler, 2017).

Even though there are multiple screening tools for childhood adversity and trauma, there is limited research on the validity and acceptability of using such tools in a pediatric setting (Forkey & Conn, 2018; McDonald et al., 2014). The original ACEs questionnaire, which has ten categories spanning three domains of abuse, is the most rigorously studied screening tool. While screening for ACEs using this tool is feasible and acceptable for many physicians (Glowa et al., 2016) it has drawbacks. The ACEs questionnaire was developed as a research tool, not as a clinical tool, which has led some to question whether it is appropriate for a clinical setting (Finkelhor, 2018). Furthermore, a growing body of literature supports the notion that other social determinants of health including food insecurity, housing instability, violence outside the home, and discrimination act through the same dysregulated stress mechanism, resulting in similar adverse health and well-being outcomes (Bucci et al., 2016; Merksy et al., 2017; Shonkoff et al., 2021). Consequently, an optimal screening tool would include pertinent social determinants of health in addition to the original ACEs. (Koita et al., 2018; Oh et al.,, 2020; Merksy et al., 2017; Shonkoff et al., 2021; Thakur et al., 2020). In response to the lack of validated screening tools, Koita et al. (2018) piloted a study to assess the validity and acceptability of the Pediatric ACE and Other Determinants of Health Questionnaire, which assess the ten traditional ACE categories as well as items from the additional domain of social determinants of health including food insecurity, housing instability, violence outside the house and discrimination (Koita et al., 2018;

Thakur et al., 2020). While authors found high face validity and acceptability of the overall questionnaire, some providers reported discomfort with questions related to sexual abuse, community violence and separation from the caregiver (Koita et al., 2018). The Bay Area Research Consortium on Toxic Stress and Health (BARC) developed the Pediatric ACEs and Related Events Screener (PEARLS) currently being used by the ACEs Aware initiative. PEARLS is a two-part screening instrument that includes the original 10 ACEs as well as questions about other social determinants of health (Appendix B). The tool is available in identified and de-identified formats. In the identified version respondents report cumulative adversity and specify which ACEs they have experienced while in the de-identified format respondents only report the total number of ACEs (DHCS, 2020). In a study assessing the implementation of the Center for Youth Wellness ACEs Questionnaire – the precursor to the PEARLS - Purewall et al. (2016), found that using a de-identified version was preferred by clinicians, caregivers and adolescents completing the questionnaire. Preliminary findings from the ACEs Aware initiative also indicate that a de-identified version is effective and less likely to elicit a strong emotional reaction for patients (DHCS, 2020). The Broad Level Integrated Screener (BLIS) is a 46-question survey being used at middle school and high school School Based Health Centers (SBHCs) operated by Neighborcare Health (NCH). The BLIS is a comprehensive questionnaire that combines adapted versions of the Home Education/Employment, Activities, Drugs, Sexuality, Suicide/Depression (HEADSS), Primary Care Post traumatic Stress Disorder (PTSD) screen, Patient Health Questionnaire (PHQ-2), Generalized Anxiety Disorder (GAD-2), Screening Brief Intervention and Referral to Treatment (SBIRT), seven of the original ACEs, and other social determinants of health that have been shown to be precipitants to toxic stress.

Methodology

Design

This project used a non-experimental mixed-methods design to conduct a formative multisite evaluation of the BLIS at NCH SBHCs in Seattle, Washington. An online survey including nineteen Likert-scale questions and five open-ended free response questions was administered to all middle school and high school NCH SBHC providers.

Setting

While this project was conducted entirely remotely due to COVID-19, the program being evaluated took place at Neighborcare Health (NCH) School Based Health Centers (SBHCs). NCH operates nine middle school and high school SBHCs in Seattle, WA. School Based Health Centers are an ideal setting to screen for ACEs, as they can serve as a critical access point for identifying children who have experience ACEs for intervention and referral. Located within school buildings, SBHCs provide comprehensive primary medical, dental, and mental healthcare to adolescents during school hours. By working to address health concerns, prevent serious illness, and promote healthy lifestyles, SBHCs not only help students do better in school, but also decrease the barriers to accessing healthcare. Funding for NCH SBHCs comes largely from the Families, Education, Preschool and Promises Levy, the Best Starts for Kids Levy, and the City of Seattle.

Participants

Nurse practitioners, physician assistants, and other NCH SBHC middle and high school providers were invited to participate in this study. Individual schools within the Seattle Public School District (SPS) have vastly different populations with regards to race, ethnicity, socioeconomic status, and access to resources. Due to these differences, it was essential to have participants from the different SBHCs in order to gather more generalizable data. Census sampling was used to recruit participants at the NCH SBHC December bi-monthly provider in-service, where this researcher introduced herself and the project.

Cultural and Ethical Considerations

Participation in this project was voluntary and informed consent was obtained prior to data collection and implementation. Cultural consideration was taken in the writing of the questions. The questionnaire was intended to be of non-sensitive nature, and participants were informed that the questions asked in the survey were questions they could expect from patients, co-workers, or supervisors. No direct or indirect identifiers were collected or recorded for this study. Human subjects review and approval for this project were obtained from the Seattle University Institutional Review Board.

Measures

One 24-question online Qualtrics Survey with 19 Likert-scale and five open-ended questions was developed for use in this project. Consultation with the NCH SBHC medical director as well as the clinical site supervisor about program goals and aims informed the development of the survey. The project chair, the NCH SBHC medical director and the clinical site supervisor reviewed the survey prior to implementation.

Data Collection

The clinic site coordinator sent an email including a link to the survey to all middle school and high school NCH SBHC providers after the December in-service meeting. The SBHC medical director allowed the participants 10 minutes at the end of the in-service to complete the survey. The site coordinator sent a reminder email to NCH SBHC providers one week after the survey was originally distributed. Participants were given two weeks to respond to the survey.

Data Analysis

Results from the Likert-scale statements were uploaded to excel and reviewed for themes and patterns. The ordinal responses were converted to numerical values with “1,” “2,” “3,” “4,” and “5” representing “strongly disagree,” “somewhat disagree,” “neither agree nor disagree,” “somewhat agree,” and “strongly agree” respectively. Descriptive statistics were used to summarize the data in visual form and to identify patterns. The median responses to each Likert-item were calculated as well as the proportion of respondents who agreed (response greater than 3), disagreed (response less than 3) or neither agreed nor disagreed (response equal to 3) to individual statements.

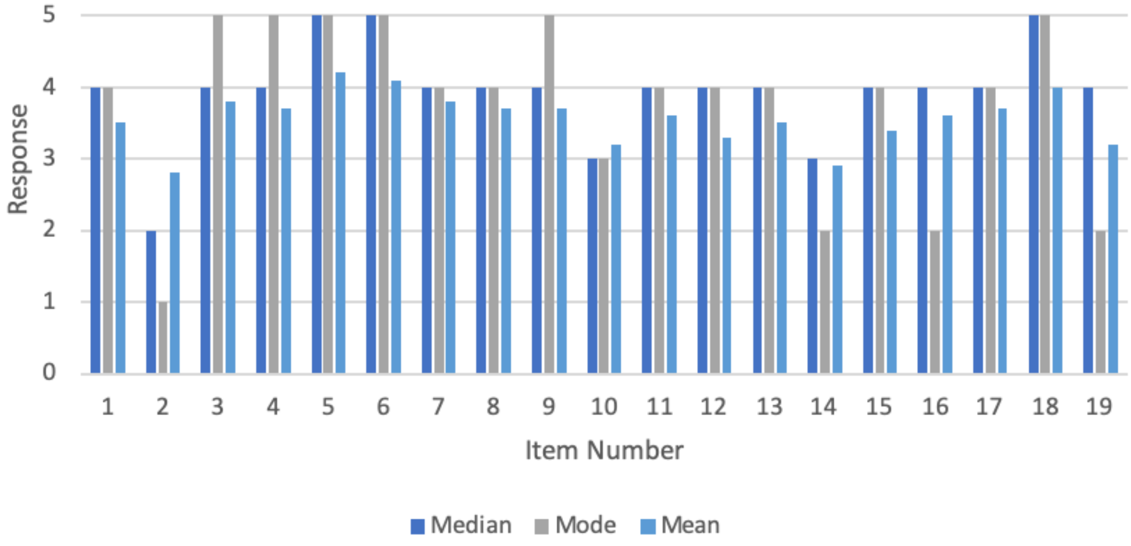
Braun and Clark’s (2015) six phases of thematic analysis guided the qualitative data analysis. The open-ended survey responses were indexed, coded, and visualized for themes and patterns using the Qualtrics Data Analysis software. Word clouds were generated to visually display word frequency and identify patterns. Stop words included “for” “the” “and” “of” “but” and “if.” These words were excluded to provide better clarity about meaningful patterns and themes in the data.

Results

The survey had a response and completion rate of 100% (N=10). Figure 1 below illustrates the median, mean, and mode for the 19 Likert-type statements.

Figure 2

Mean, Median, Mode for Individual Statements 1-19



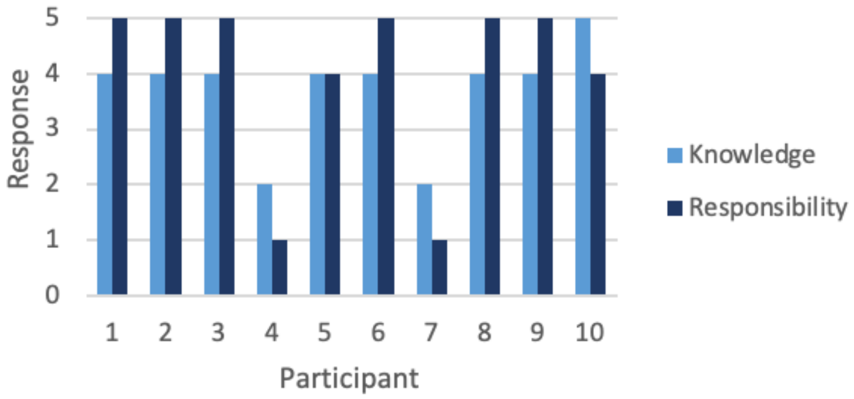
As demonstrated in figure 2, median responses ranged from two to five, modes ranged from one to five, and means ranged from 2.8 to 4.2. There were three items with a median of five, 10 items with a median of four, two items with a median of 3, and one item with a median of two. Out of the 19 items, 12 had identical medians and modes, implying more homogeneity among participants in these responses.

The 19 individual Likert-items included three types of statements. Statements about ACEs (n = 2), statements about the use of the BLIS in practice (n = 13), and statements about the content of the BLIS (n = 4). Providers agreed (median score of 4 or 5) to 12 of the 13 statements about use of the BLIS (1, 3-9, 13, 15, and 16), three of the four statements about content (11, 12, and 19) and two out of two statements about ACEs (17 and 18). Providers neither agree nor disagreed (median score of 3) to statements 10 and 14. Respondents disagreed (median score of 2) to statement two.

Statements 17 and 18 pertained to self-rated knowledge about and perceived responsibility to address ACEs. Statements 17 and 18 asked participants to identify the degree to which they agree or disagree to the statement “I feel confident in my knowledge about Adverse Childhood Experiences (ACEs) and their impact on long-term health and wellbeing,” and “It is my job to screen for and intervene with ACEs.” Eighty-percent of participants reported feeling confident about their knowledge about ACEs and 80% thought it was within their purview to screen for and address ACEs. Interestingly, the eight participants who agreed to statement 17, also agreed to question 18, and vice versa. Figure 2 illustrates the relationship between self-rated knowledge of ACEs and perceived responsibility of addressing ACEs.

Figure 3

Relationship between knowledge about ACEs and Perceived Responsibility

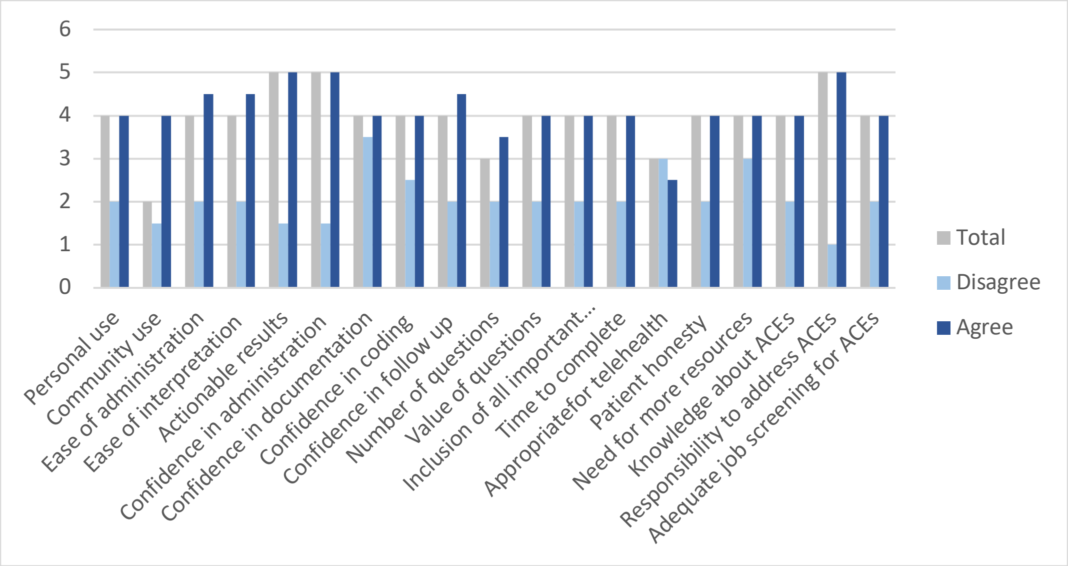


Note: Knowledge represents responses to statement 17 and *Responsibility* represents responses to statement 18.

Participant responses for the remainder of the statements, about use and content of BLIS, followed a clear pattern when participants were grouped according to whether or not they felt confident in their knowledge about ACEs and their impact on long-term health and wellbeing. Figure 4 shows the median responses between people who agreed to the statements about ACEs, those who did not, and the total population. Group A (n = 8) consisted of participants who agreed and Group B (n = 2) consisted of respondents who disagreed to the statement.

Figure 4

Comparative Median Response to Individual Statements 1-19 Between Group A, Group B and the Total Population



Note: Median responses for Group A (light blue) appear to be higher than median responses for group B (grey). Group A responses align more closely to the total population.

As demonstrated in Figure 3, median responses for Group B were lower for 18 out of the 19 statements. The greatest difference between the groups was item 18 “It is my job to screen for and intervene with ACEs,” where group A had a median of five and group B had a median of one. The smallest difference was with items 7 and 14, “I feel confident knowing how to document BLIS findings,” and “The current format for the BLIS is appropriate for telehealth visits,” where respondents had a difference of less than one. Item 14 was the only statement in which Group B had a higher median response than group A.

The qualitative content analysis involved analyzing the five open-ended survey questions: What are some barriers to using the BLIS (response rate 100%); What are some benefits to using the BLIS (response rate 100%); If the BLIS could be modified, what would you like to see change (response rate 80%) What other screening questionnaires, if any, are you using instead of the BLIS (response rate 80%); and Any other thoughts or comments regarding the BLIS and screening for ACEs at SBHCs (response rate 40%)? While the Likert-items required responses, the open-ended questions were not mandatory for completion of the survey. This could account for the discrepancies between response rate for the qualitative and quantitative data.

The most common barrier identified was time, specifically "tak[ing] too long to fill out," "not enough time to address results" and not being able to incorporate it into a problem focused visit. The most common benefits identified were patient honesty and identification of issues that kids would otherwise be reluctant to share. Figures 5 and 6 graphically illustrate these findings with magnitude and amplitude of the words correlating with frequency.

Figure 5

Frequency Analysis: Barriers to Using the BLIS

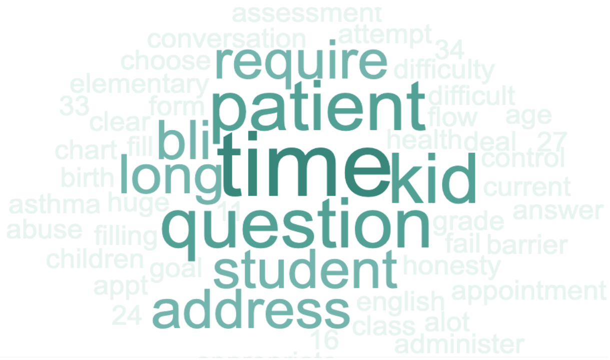


Figure 6

Frequency Analysis: Benefits to Using the BLIS

Not all respondents provided recommendations for changes. The most common recommendations included converting the BLIS into electronic format and incorporating it into Epic. Table 4 lists themes and responses to the five open-ended questions in descending order of frequency.

Table 4

Table Showing Responses to Free-Response Questions

Barriers (1)	Benefits (2)	Changes (3)	Other tools (4)	Additional Thoughts (4)
Time	Identifies issues that patients would be reluctant to bring up	E-format	PHQ-9	A standard across SBHCs is needed for follow up on positive answers
Only appropriate for teens/older children	Allows for patient honesty	Incorporate into Epic	GAD-7	Elementary team does not have a tool to use
Not useful for students with low English literacy/Special Education	Identifies areas for follow-up, support, intervention	Easier to document		Resources are needed to refer students to when ACEs and other positives are identified
Wording of questions	Opens up conversation and makes it clear where to focus the visit	Statement about mandatory reporting and confidentiality		
Patient honesty	comprehensive	More guidance regarding follow-up on positive responses		
Uncertainty regarding charting	Follows national guidelines	Shorter		
If a parent is in the room	Effective	Include missing ACEs		
Mandatory reporting		Reword questions 11, 16, 23, 24, 27, 33 and 34		

Discussion

Key Findings

Results from this study provide evidence to support the project aims and objectives. The purpose of the project was to evaluate and optimize the use of the BLIS at NCH SBHCs. The specific aims were to identify the current barriers to screening for ACEs and other determinants of health (1); assess the feasibility and acceptability of using the BLIS to screen for ACEs at SBHCs (2), make recommendations for adaptation of the BLIS to improve utility and acceptability for providers (3), create an accompanying toolkit (4), and ultimately improve the ability of providers to identify and address ACEs in clinical practice (5)

The data suggests a strong association exists between knowledge about ACEs and perception of responsibility to screen for and address ACEs. As previously mentioned, 20% of respondents did not think it was their responsibility to screen for and address ACEs. This is less than the current research which indicates that only one third of NPs think it is their responsibility to screen for ACEs (Kalmakis & Chandler, 2017). This indicates that 20% of respondents are not in accord with the underlying research which positions screening for ACEs and other precipitants of toxic stress directly within the responsibility of pediatric care providers. As previously depicted in figure 2, the respondents who did not think it was their responsibility to screen for and address ACEs were the only respondents who reported not feeling confident in their knowledge about ACEs. While this data does not imply causality, the results are significant because they illustrate a clear relationship between knowledge and responsibility, which can perhaps explain why only 60% of respondents reported using the BLIS 100% of the time. Furthermore, these findings align with the literature identifying lack of knowledge about ACEs as a barrier to screening for ACEs in primary care (Gillespie, 2019).

Upon initial quantitative evaluation, there appeared to be homogeneity among participant responses. However, knowledge about ACEs emerged to be a determining factor for the remainder of the survey, with patterns encompassing responses about both use/utility and content of the BLIS. Providers who reported being confident in their knowledge and understanding of ACEs were not only more likely to use the BLIS in practice, but also generally found the tool easier to use (administer, document and code for), and were more likely to use results to guide subsequent patient care. These results indicate that knowledge about ACEs is not only associated with perceived responsibility to address ACEs, but also with usage, utility, and satisfaction with the BLIS. Statements regarding the content of the BLIS followed a similar pattern. Group A reported that all the questions were of value and that the BLIS included all the questions they felt were important, took the appropriate amount of time to complete and did an adequate job of screening for ACEs. Group B on the other hand disagreed with those statements. These results indicate that given a provider feels comfortable in their knowledge about ACEs, screening for ACEs and other determinants of health using the BLIS is both feasible, acceptable, produces actionable results, and is arguably a necessary component of appropriate patient care. Furthermore, these results provide compelling evidence that aligns with the current recommendation in the literature to provider more training on the importance of identifying ACEs in pediatric practices (Kerker et al., 2016). For visual representation of these patterns, see figure 4.

The qualitative data analysis proved to be particularly valuable in addressing the project aims. As previously mentioned, the most common barrier identified was time, including time required to complete, time required address pertinent positives, time “taken away from already short visits,” and the appropriate time to administer the BLIS. This aligns with the current research on barriers to screening for ACEs in primary care, which identifies perceived lack of time as the primary barrier to screening for ACEs in practice (Bright, Alford et al., 2015; Szilagyi, 2016; Thompson et al., 2021). Despite these findings, numerous feasibility studies looking at screening for ACEs in primary care did not find time to be a barrier (Gillespie, 2019).

While the literature cited discomfort in asking difficult questions and fear of re-traumatization as barriers to screening for ACEs, that was not a finding of this study (Campbell 2020; Szilagyi, 2016). In contrast to this research, NCH providers identified “opening up difficult conversation” and “identifying issues the patient would be reluctant to bring up” as a major benefit to using the BLIS. These findings indicate that screening using a tool such as the BLIS could help overcome these barriers mentioned in the literature.

The most common change requested by providers was to make an electronic version of the BLIS and to incorporate it into Epic. This is supported by the current literature which indicates that using a pre-visit, EHR-based screener is feasible, efficient, and yields potentially actionable responses (Thompson et al., 2021). Providers requested the creation of a standardized approach for follow up on pertinent positives and resources to refer students to when issues are identified. This data aligns with literature indicating that providers need more guidance about interventions for high ACE scores (Keeshin et al., 2020). Having available resources for intervention is a critical component of optimal screening. These findings provide evidence to support the fourth aim of the study, which was to create an accompanying toolkit with resources for intervention and care. As part of the initiative, ACEs Aware has a resource page that includes free resources for providers on ACEs screening and clinical response. Resources are organized by type, topic, or organization and providers can use the advanced search tool to find a specific tool. NCH SBHC providers will be directed to use the ACEs Aware resource page, which is continually updated when new resources are identified.

Recommendations

Objective two included recommendations to adapt the BLIS to improve utility and acceptability for providers. The following recommendations below support objective two and provide solutions to some of the commonly identified barriers.

Recommendation 1

Increased provider education about ACEs. Results from the quantitative analysis indicate that 20% of participants do not feel confident in their knowledge about ACEs. While this is substantially less than a report from American Academy of Pediatrics (2016) stating that 76% of pediatricians do not know about ACEs, it is not enough. Knowledge about ACEs was a determining factor for the rest of the survey including usage of the BLIS and perceived responsibility to screen for and address ACEs. This clearly suggests that providers need more training about the epigenetics of toxic stress. This aligns with the ACEs Aware initiative in California, which requires providers to attest to completing a core ACE training in order to received payment for ACE screening (State of California Department of Health Care Services [DHCS], 2020).

Recommendation 2

Create an electronic version of the BLIS. It appears that regardless of self-rated knowledge about ACEs, all the participants agreed that the current format of the BLIS is not appropriate for telehealth visits. This response aligns with the qualitative analysis where participants suggested making an electronic format. Creating an electronic version would not only help with telehealth usage, but would also address numerous barriers identified by the participants including the time it takes to complete, uncertainty about when to administer, and the difficulty of having a parent present with the student. By allowing students to complete the BLIS in their own time, an e-version would also allow for more time to address pertinent results.

Recommendation 3

Incorporate the electronic format of the BLIS into Epic. This would not only allow for a secure platform for the information, eliminating the barrier of confidentiality, but it could also improve ease of documentation and create more consistency among providers. This is supported by the current literature which indicates that using a pre-visit, EHR-based screener is feasible, efficient, and yields potentially actionable responses (Thompson et al., 2021).

Recommendation 4

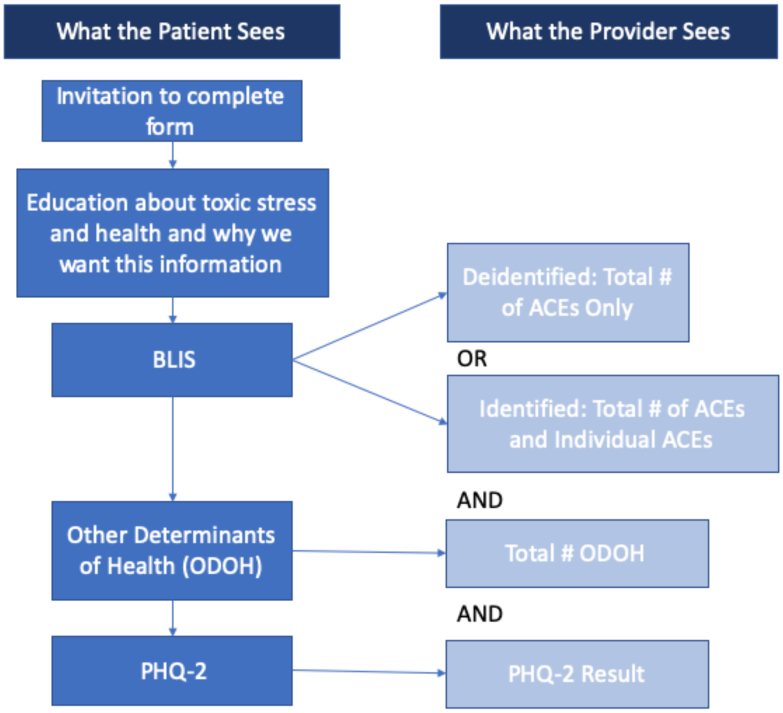
Shorten the BLIS to no more than 25 questions by adapting it to only include the Pediatric ACEs Screening and Related Life-events Screener (PEARLS) and the two-question Patient Health Questionnaire (PHQ-2). The PEARLS screener includes the 10 original ACEs as well as nine questions addressing other determinants of health. The tool is currently being used as part of the ACEs Aware initiative and has psychometric validity. The PHQ-2 has been validated for adolescents, and inclusion of the tool is supported by the U.S. Preventative Services Task Force's recommendation for clinicians to routinely screen adolescents for major depressive disorder using the PHQ-2 starting at age 12 (Klein et al., 2020). These recommendations align with the observation in the literature that completion rate and quality of questionnaire responses is negatively correlated with questionnaire length (Revilla & Ochoa, 2017). Additionally, shortening the questionnaire to 25 questions could reduce the barrier of time, which was the most frequently reported barrier. The majority of providers thought all the questions on the BLIS were valuable. Limiting the number of the questions on the survey does not mean that the other questions of the BLIS are not valuable or should not be asked. The other questions are essential components of adolescent visits and are supported by the AAP in the form of the HEADSS assessment or the Strengths, School, Home, Activities, Drugs/Substance Use, Emotions/Eating, Sexuality, Safety (SSHADESS) assessments (AAP, 2014b; Klein et al., 2020). Rather than being performed in the form of a checklist, the AAP recommends that these questions should take the form of a discussions and should be tailored to each person's personal context, including any adverse childhood or marginalization experiences (AAP, 2014b; Klein et al., 2020; Santelli et al., 2019). Using the SSHADESS mnemonic to guide the conversation allows the provider to focus on strengths while assessing risk and helps promote resiliency by identifying buffers and/or previous examples of overcoming adversity (Ginsburg & Kinsman, 2014).

Recommendation 5

Incorporate confidentiality statement and offer identified and de-identified options. One of the concerns identified in this study included mandated reporting responsibilities. While the BLIS includes a statement about mandatory reporting, some of the respondents requested expanding the statement to provide more transparency for students. This recommendation goes beyond extending the statement, and recommends the development of a "de-identified" option, where a student reports a total number of ACEs and does not identify which specific ACEs have experienced. A de-identified version is currently being used as part of the ACEs Aware initiative, and preliminary findings indicate that a de-identified version is effective and less likely to elicit a strong emotional reaction for patients (DHCS, 2020). While students may not be comfortable talking about the specifics at the time of screening, completing the de-identified version establishes a baseline for care and offers the opportunity for the provider to establish rapport and come back to at future visits.

Figure 7

Suggested Pathway for E-Format



Recommendation 6

Parent version for elementary students and translated versions in the most common languages spoken by families in the area. Participants reported concerns related to the high reading level required to complete the BLIS, making it not suitable to use with English language learners, early middle schoolers, or special education students. According to the Centers for Medicare and Medicaid Cervices Center for Clinical Standards and Quality (2015), the PHQ and ACEs screeners were created at the sixth grade reading level. Rather than adjusting the language used in the tool, creating a version for a parent to fill out would help alleviate the barrier of the high reading level required without undermining the validity of the tool. Furthermore, a parent version would address the concern of a lack of screening tool for the elementary school population.

Conclusion

Childhood trauma is a public health crisis. In light of the documented negative long-term health and well-being outcomes associated with ACEs and the availability of evidence-based treatment approaches, early identification and intervention for children who have experienced trauma is essential (Gordon et al., 2020). Widespread screening for ACEs and other contributors to toxic stress is the first step in achieving this goal. This project adds to the body of literature surrounding screening for ACEs and toxic stress in primary care. It is the first project in the field to look at the BLIS through the lens of ACEs and to specifically assess screening for ACEs at SBHCs. This project indicates that the BLIS is an acceptable tool to screen for ACEs and other determinants of health at SBHCs. Furthermore, the findings demonstrate that screening using the BLIS yields actionable results that have the potential to improve patient care by identifying issues a patient would be reluctant to bring up, opening up conversation, and identifying areas for follow-up, support, and intervention.

This project has a number of limitations. While this study yielded 100% participation, it had a sample size of only 10. Although the study used census sampling and participants worked at schools with diverse patient populations and distinct access to resources, the small sample-size limits the generalizability of the results. This study was also conducted at an organization already using a screening tool, and thus the results indicating feasibility and acceptability of screening for ACEs at SBHCs using the BLIS may not hold true for an organization not already using the BLIS. Furthermore, it is indiscernible whether the benefits identified in the project are a result of *screening for ACEs* or from the other screening tools included in the BLIS. While the original study intended to include patient perceptions, the pandemic was an unforeseen barrier that prevented this from occurring. The lack of patient perceptions of the BLIS is a substantial limitation and needs to be included in future studies. The primary lesson learned over the course of this study was to not assume that all providers have sufficient knowledge about ACEs to understand the importance of screening or to feel comfortable screening and intervening when ACEs are identified.

While screening is critical for prevention and identification of at risk populations, it is only the first step in addressing adversity in childhood. Study findings highlight the importance of providing training about the epigenetics of toxic stress to providers who work with pediatric and adolescent populations, and indicate that providers need additional knowledge about interventions and increased access to community resources. Complimentary action that addresses the full spectrum of prevention is needed to appropriately address adversity in childhood (Ashton et al., 2020). This includes advocating for and enacting policies that prevent child maltreatment and promote healthy functioning, early detection and intervention for at-risk children, additional research about evidence-based interventions, and more resources for people who have already been impacted by ACEs. Until all three levels of prevention are addressed, ACEs will remain a considerable health care problem.

While evidence points towards universal ACEs screening in primary care, some health care providers are not convinced (Campbell, 2020; Finkelhor, 2018). Given the recognized long- and short-term consequences of ACEs, it would be a public health failure not to take action (Dube, 2018). The pioneer of ACEs research once said "what happens in childhood – like a child's footprint in wet cement – commonly lasts throughout life. Time does not heal; time conceals" (Felitti, 2009, p.132). It is time to act. Evaluating the BLIS through the lens of ACEs is a critical step in meeting the needs of the community. Results from this study provide the foundation for future research regarding screening for ACEs at SBHCs and have the potential to impact healthcare practices, prevent toxic stress physiology and improve the health outcomes for children impacted by childhood trauma.

References

Afifi, T., Enns, M., Cox, B., Asmundson, G., Stein, M., & Sareen, J. (2008). Population attributable fractions of psychiatric disorders and suicide ideation and attempts associated with adverse childhood experiences. *American Journal of Public Health*, *98*(5), 946-952. https://doi.org/10.2105/AJPH.2007.120253

American Academy of Family Physicians. (2019). *Adverse Childhood Experiences*. Retrieved from https://www.aafp.org/about/policies/all/adverse-childhood-experiences.html

American Academy of Pediatrics (2014a). *Addressing adverse childhood experiences and other types of trauma in the primary care setting*. Retrieved from https://www.aap.org/en-us/Documents/ttb_addressing_aces.pdf

American Academy of Pediatrics (2014b). Reaching teens strength-based communication strategies to build resilience and support healthy adolescent development.

Anda, R., Brown, D., Dube, S., Bremner, J., Felitti, V., & Giles, W. (2008). Adverse childhood experiences and chronic obstructive pulmonary disease in adults. *American Journal of Preventive Medicine*, *34*(5), 396-403. https://doi.org/10.1016/j.amepre.2008.02.002

Anda, R., Butchart, A., Felitti, V., & Brown, D. (2010). Building a framework for global surveillance of the public health implications of adverse childhood experiences. *American Journal of Preventive Medicine*, *39*(1), 93-98. https://doi.org/10.1016/j.amepre.2010.03.015

Anda, R., Tietjen, G., Schulman, E., Felitti, V., & Croft, J. (2010). Adverse childhood experiences and frequent headaches in adults. *Headache, 50*(9), 1473-1481. https://doi.org/10.1111/j.1526-4610.2010.01756.x

Ashton, K., Schroder-Back, P., Clemens, T., Dyakova, M., Stielke, A., & Bellis, M. A. (2020). The social value of investing in public health across the life course: A systematic scoping review. *BMC Public Health, 20*(1), 597-7. https://doi.org/10.1186/s12889-020-08685-7

Bellis, M. A., Ashton, K., Hughes, K., Ford, K. J., Bishop, J., & Paranjothy, S. (2016). *Adverse childhood experiences and their impact on health-harming behaviours in the Welsh adult population*. Public Health Wales NHS Trust. https://doi.org/10.13140/RG.2.1.4719.1122

Bellis, M. A., Hardcastle, K., Ford, K., Hughes, K., Ashton, K., Quigg, Z., & Butler, N. (2017). Does continuous trusted adult support in childhood impart life-course resilience against adverse childhood experiences – A retrospective study on adult health-harming behaviours and mental well-being. *BMC Psychiatry, 17*(1), 110-z. https://doi.org/10.1186/s12888-017-1260-z

Bellis, M. A., Hughes, K., Ford, K., Hardcastle, K. A., Sharp, C. A., Wood, S., Homolova, L., & Davies, A. (2018). Adverse childhood experiences and sources of childhood resilience: A retrospective study of their combined relationships with child health and educational attendance. *BMC Public Health, 18*(1), 792-8. https://doi.org/10.1186/s12889-018-5699-8

Bethell, C. D., Carle, A., Hudziak, J., Gombojav, N., Powers, K., Wade, R., & Braveman, P. (2017). Methods to assess adverse childhood experiences of children and families: Toward approaches to promote child well-being in policy and practice. *Academic Pediatrics*, *17*(7), S51-S69. https://doi.org/10.1016/j.acap.2017.04.161

Bodendorfer, V., Koball, A. M., Rasmussen, C., Klevan, J., Ramirez, L., & Olson-Dorff, D. (2020). Implementation of the adverse childhood experiences conversation in primary care. *Family Practice, 37*(3), 355-359. https://doi.org/10.1093/fampra/cmz065

Boynton-Jarrett, R., & Harville, E. W. (2012). A prospective study of childhood social hardships and age at menarche. *Annals of Epidemiology, 22*(10), 731-737. https://doi.org/10.1016/j.annepidem.2012.08.005

Bradley, B., Davis, T. A., Wingo, A. P., Mercer, K. B., & Ressler, K. J. (2013). Family environment and adult resilience: contributions of positive parenting and the oxytocin receptor gene. *European Journal of Psychotraumatology*, *4*(1), 21659. https://doi.org/10.3402/ejpt.v4i0.21659

Bright, M. A., Alford, S. M., Hinojosa, M. S., Knapp, C., & Fernandez-Baca, D. E. (2015). Adverse childhood experiences and dental health in children and adolescents. *Community Dentistry and Oral Epidemiology, 43*(3), 193-199. https://doi.org/10.1111/cdoe.12137

Bright, M. A., Knapp, C., Hinojosa, M. S., Alford, S., & Bonner, B. (2016). The comorbidity of physical, mental, and developmental conditions associated with childhood adversity: A population based study. *Maternal and Child Health Journal, 20*(4), 843-853. https://doi.org/10.1007/s10995-015-1915-7

Bright, M. A., & Thompson, L. A. (2018). Association of adverse childhood experiences with co-occurring health conditions in early childhood. *Journal of Developmental and Behavioral Pediatrics : JDBP, 39*(1), 37-45. https://doi.org/10.1097/DBP.0000000000000514

Brown, N. M., Brown, S. N., Briggs, R. D., Germán, M., Belamarich, P. F., & Oyeku, S. O. (2017). Associations between adverse childhood experiences and ADHD diagnosis and severity. *Academic pediatrics*, *17*(4), 349-355. https://doi.org/10.1016/j.acap.2016.08.013

Bryant, C., & VanGraafeiland, B. (2020). Screening for adverse childhood experiences in primary care: A quality improvement project. *Journal of Pediatric Health Care, 34*(2), 122-127. https://doi.org/10.1016/j.pedhc.2019.09.001

Bucci, M., Marques, S. S., Oh, D., & Harris, N. B. (2016). Toxic stress in children and adolescents. *Advances in Pediatrics, 63*(1), 403-428. https://doi.org/10.1016/j.yapd.2016.04.002

Burke Harris, N., Hellman, J. L., Scott, B. G., Weems, C. F., & Carrion, V. G. (2011). The impact of adverse childhood experiences on an urban pediatric population. *Child Abuse & Neglect*, *35*(6), 408-413. https://doi.org/10.1016/j.chiabu.2011.02.006.

Burke Harris, N., Silverio Marques, S., Oh, D., Bucci, M., & Cloutier, M. (2017). Prevent, screen, heal: Collective action to fight the toxic effects of early life adversity. *Academic Pediatrics, 17*(7S), S14-S15. https://doi.org/10.1016/j.acap.2016.11.015

Campbell, T. L. (2020). Screening for adverse childhood experiences (ACEs) in primary care: A cautionary note. *JAMA: The Journal of the American Medical Association, 323*(23), 2379-2380. https://doi.org/10.1001/jama.2020.4365

Chandler, G. E., Kalmakis, K. A., Chiodo, L., & Helling, J. (2020). The efficacy of a resilience intervention among diverse, at-risk, college athletes: A mixed-methods study. *Journal of the American Psychiatric Nurses Association, 26*(3), 269-281. https://doi.org/10.1177/1078390319886923

Center on the Developing Child at Harvard University (2016). Building core capabilities for life: The science behind skills adults need to succeed in parenting and in the workplace. Retrieved from http://developingchild.har vard.edu/resources/building-core-capabilities-for-life.

Centers for Disease Control and prevention. (2021). Violence Prevention. Retrieved from https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/index.html

Cohen, J. A., Kelleher, K. J., & Mannarino, A. P. (2008). Identifying, treating, and referring traumatized children: the role of pediatric providers. *Archives of Pediatrics & Adolescent Medicine*, *162*(5), 447-452. https://doi.org/0.1001/archpedi.162.5.447

Conn, A. M., Szilagyi, M. A., Jee, S. H., Manly, J. T., Briggs, R., & Szilagyi, P. G. (2018). Parental perspectives of screening for adverse childhood experiences in pediatric primary care. *Families, Systems & Health: The Journal of Collaborative Family Healthcare, 36*(1), 62-72. https://doi.org/10.1037/fsh0000311

Copeland, W. E., Shanahan, L., Hinesley, J., Chan, R. F., Aberg, K. A., Fairbank, J. A., van den Oord, E J C G, & Costello, E. J. (2018). Association of childhood trauma exposure with adult psychiatric disorders and functional outcomes. *JAMA Network Open, 1*(7), e184493. https://10.1001/jamanetworkopen.2018.4493

Crouch, E., Radcliff, E., Nelson, J., Strompolis, M., & Martin, A. (2018). The experience of adverse childhood experiences and dental care in childhood. *Community Dentistry and Oral Epidemiology*, *46*(5), 442-448. https://doi.org/10.1111/cdoe.12389

DiGangi, M. J., & Negriff, S. (2020). The implementation of screening for adverse childhood experiences in pediatric primary care. *The Journal of Pediatrics, 222*, 174-179.e2. https://doi.org/10.1016/j.jpeds.2020.03.057

Dube, S. R. (2018). Continuing conversations about adverse childhood experiences (ACEs) screening: A public health perspective. *Child Abuse & Neglect*, *85*, 180-184. https://doi.org/10.1016/j.chiabu.2018.03.007

Dube, S. R., Miller, J. B., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. *Pediatrics, 111*(3), 564-572. https://doi.org/10.1542/peds.111.3.564

Dube, S. R., Felitti, V. J., Dong, M., Giles, W. H., & Anda, R. F. (2003). The impact of adverse childhood experiences on health problems: Evidence from four birth cohorts dating back to 1900. *Preventive Medicine, 37*(3), 268-277. https://doi.org/ 10.1016/s0091-7435(03)00123-3

Duke, N. N., Pettingell, S. L., McMorris, B. J., & Borowsky, I. W. (2010). Adolescent violence perpetration: Associations with multiple types of adverse childhood experiences. *Pediatrics, 125*(4), 778. https://doi.org/10.1542/peds.2009-0597

Edwards, V. J., Holden, G. W., Felitti, V. J., & Anda, R. F. (2003). Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. *The American Journal of Psychiatry, 160*(8), 1453-1460. https://doi.org/10.1176/appi.ajp.160.8.1453

Felitti, V. J. (2009). Adverse childhood experiences and adult health. *Academic Pediatrics*, *9*(3), 131-132. https://doi.org/10.1016/j.acap.2009.03.001

Felitti, V. J., & Anda, R. F. (2014). The lifelong effects of adverse childhood experiences. *Chadwick's child maltreatment: Sexual abuse and psychological maltreatment*, *2*, 203-15. https://www.acesconnection.com/fileSendAction/fcType/0/fcOid/399727599841203732/filePointer/465603194268564968/fodoid/465603194268564964/ChadwickChapter10%20.pdf

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. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine, 14*(4), 245-258. https://doi.org/10.1016/s0749-3797(98)00017-8

Finkelhor, D. (2018). Screening for adverse childhood experiences (ACEs): Cautions and suggestions. *Child Abuse & Neglect*, *85*, 174-179. https://doi.org/10.1016/j.chiabu.2017.07.016

Flaherty, E. G., Thompson, R., Dubowitz, H., Harvey, E. M., English, D. J., Proctor, L. J., & Runyan, D. K. (2013). Adverse childhood experiences and child health in early adolescence. *JAMA Pediatrics, 167*(7), 622-629. https://doi.org/10.1001/jamapediatrics.2013.22

Flynn, A. B., Fothergill, K. E., Wilcox, H. C., Coleclough, E., Horwitz, R., Ruble, A., ... & Wissow, L. S. (2015). Primary care interventions to prevent or treat traumatic stress in childhood: A systematic review. *Academic Pediatrics*, *15*(5), 480-492. https://doi.org/10.1016/j.acap.2015.06.012

Ford, K., Hughes, K., Hardcastle, K., Di Lemma, L C G, Davies, A. R., Edwards, S., & Bellis, M. A. (2019). The evidence base for routine enquiry into adverse childhood experiences: A scoping review. *Child Abuse & Neglect, 91*, 131-146. https://doi.org/S0145-2134(19)30095-X

Forkey, H., & Conn, A. M. (2018). Childhood trauma management in primary care. *Advances in Pediatrics, 65*(1), 143-158. https://doi.org/S0065-3101(18)30005-7

Forster, M., Gower, A. L., McMorris, B. J., & Borowsky, I. W. (2020). Adverse childhood experiences and school-based victimization and perpetration. *Journal of Interpersonal Violence, 35*(3-4), 662-681. https://doi.org/10.1177/0886260517689885

Garner, A. S., Shonkoff, J. P., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., ... & Committee on early childhood, adoption, and dependent care. (2012). Early childhood adversity, toxic stress, and the role of the pediatrician: Translating developmental science into lifelong health. *Pediatrics*, *129*(1), e224-e231. https://doi.org/ 10.1542/peds.2011-2662

Gilgoff, R., Singh, L., Koita, K., Gentile, B., & Marques, S. S. (2020). Adverse childhood experiences, outcomes, and interventions. *Pediatric Clinics of North America, 67*(2), 259-273. https://doi.org/ 10.1016/j.pcl.2019.12.001

Gillespie, R. J. (2019). Screening for adverse childhood experiences in pediatric primary care: Pitfalls and possibilities. *Pediatric Annals, 48*(7), e257-e261. https://doi.org/10.3928/19382359-20190610-02

Giovanelli, A., Reynolds, A. J., Mondi, C. F., & Ou, S. R. (2016). Adverse childhood experiences and adult well-being in a low-income, urban cohort. *Pediatrics*, *137*(4). https://doi.org/10.1542/peds.2015-4016

Glowa, P. T., Olson, A. L., & Johnson, D. J. (2016). Screening for adverse childhood experiences in a family medicine setting: A feasibility study. *J Am Board Fam Med*, *29*(3), 303-307. https://doi.org/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*. https://doi.org/10.7812/TPP/16-055

Gordon, J., Nemeroff, C., & Felitti, V. (2020). Screening for adverse childhood experiences. *JAMA: The Journal of the American Medical Association, 324*(17), 1789. https://doi.org/10.1001/jama.2020.16449

Harris, N. B. (2014). How childhood trauma affects health across a lifetime. Retrieved from, https://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime/up-next?language=en

Harris, N. B. (2020). Screening for adverse childhood experiences. *Journal of the American Medical Association, 324*(17), 1788-1789. https://doi.org/10.1001/jama.2020.16452

Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. *The Lancet.Public Health, 2*(8), e356-e366. https://doi.org/S2468-2667(17)30118-4

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*(8), 457-465. https://doi.org/10.1002/2327-6924.12215

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*(1), 35-45. https://doi.org/10.1002/2327-6924.12378

Karlen, J., Ludvigsson, J., Hedmark, M., Faresjo, A., Theodorsson, E., & Faresjo, T. (2015). Early psychosocial exposures, hair cortisol levels, and disease risk. *Pediatrics, 135*(6), 1450. https://doi.org/10.1542/peds.2014-2561

Keeshin, B., Byrne, K., Thorn, B., & Shepard, L. (2020). Screening for trauma in pediatric primary care. *Current Psychiatry Reports*, *22*(11), 1-8. https://doi.org/ 10.1007/s11920-020-01183-y

Kerker, B. D., Storfer-Isser, A., Szilagyi, M., Stein, R. E., Garner, A. S., O'Connor, K. G., ... & Horwitz, S. M. (2016). Do pediatricians ask about adverse childhood experiences in pediatric primary care? A*cademic pediatrics*, *16*(2), 154-160. https://doi.org/10.1016/j.acap.2015.08.002

Kia-Keating, M., Barnett, M. L., Liu, S. R., Sims, G. M., & Ruth, A. B. (2019). Trauma-responsive care in a pediatric setting: Feasibility and acceptability of screening for adverse childhood experiences. *American Journal of Community Psychology*, *64*(3-4), 286-297. https://doi.org/10.1002/ajcp.12366

Klein, D. A., Paradise, S. L., & Landis, C. A. (2020). Screening and counseling adolescents and young adults: A framework for comprehensive care. *American Family Physician*, *101*(3), 147-158. https://pubmed.ncbi.nlm.nih.gov/32003959/

Koita, K., Long, D., Hessler, D., Benson, M., Daley, K., Bucci, M., Thakur, N., & Burke Harris, N. (2018). Development and implementation of a pediatric adverse childhood experiences (ACEs) and other determinants of health questionnaire in the pediatric medical home: A pilot study. *PloS One, 13*(12), e0208088. https://doi.org/10.1371/journal.pone.0208088

Marie-Mitchell, A., & Kostolansky, R. (2019). A systematic review of trials to improve child outcomes associated with adverse childhood experiences. *American Journal of Preventive Medicine, 56*(5), 756-764. https://doi.org/10.1016/j.amepre.2018.11.030

McDonald, M. K., Borntrager, C. F., & Rostad, W. (2014). Measuring trauma: Considerations for assessing complex and non-PTSD criterion a childhood trauma. *Journal of Trauma & Dissociation*, *15*(2), 184-203. https://doi.org/10.1080/15299732.2014.867577

Merrick, M. T., Ford, D. C., Ports, K. A., & Guinn, A. S. (2018). Prevalence of adverse childhood experiences from the 2011-2014 Behavioral Risk Factor Surveillance System in 23 states. *JAMA Pediatrics, 172*(11), 1038-1044. https://doi.org/10.1001/jamapediatrics.2018.2537

Moore, K. A., & Ramirez, A. N. (2016). Adverse childhood experience and adolescent well-being: Do protective factors matter? *Child Indicators Research*, *9*(2), 299-316. https://doi.org/10.1007/s12187-015-9324-4

Munoz, R. T., & Hanks, H. (2019). A structural model of adverse childhood experiences as antecedents of rumination leading to lower hope. *Journal of Interpersonal Violence*. https://doi.org/10.1177/0886260519868195

Munoz, R. T., Hanks, H., Brahm, N. C., Miller, C. R., McLeod, D., & Fox, M. D. (2019). Adverse childhood experiences and trust in the medical profession among young adults. *Journal of Health Care for the Poor and Underserved, 30*(1), 238-248. https://doi.org/10.1353/hpu.2019.0018

Muñoz-Hoyos, A., Molina-Carballo, A., Augustin-Morales, M., Contreras-Chova, F., Naranjo-Gómez, A., Justicia-Martínez, F., & Uberos, J. (2011). Psychosocial dwarfism: Psychopathological aspects and putative neuroendocrine markers. *Psychiatry Research*, *188*(1), 96-101. https://doi.org/10.1016/j.psychres.2010.10.004

Murphy, A., Steele, H., Steele, M., Allman, B., Kastner, T., & Dube, S. R. (2016). *The Clinical Adverse Childhood Experiences (ACEs) Questionnaire: Implications for trauma-*

informed behavioral healthcare. In R. D. Briggs (Ed.), *Integrated early childhood behavioral health in primary care: A guide to implementation and evaluation* (p. 7–16). Springer International Publishing. https://doi.org/10.1007/978-3-319-31815-8_2

National Academies of Sciences, Engineering, and Medicine (2019). Vibrant and healthy kids: Aligning science, practice, and policy to advance health equity.

Oh, D. L., Jerman, P., Purewal Boparai, S. K., Koita, K., Briner, S., Bucci, M., & Harris, N. B. (2018a). Review of tools for measuring exposure to adversity in children and adolescents. *Journal of Pediatric Health Care: Official Publication of National Association of Pediatric Nurse Associates & Practitioners, 32*(6), 564-583. https://doi.org/ 10.1016/j.pedhc.2018.04.021

Oh, D. L., Jerman, P., Silverio Marques, S., Koita, K., Purewal Boparai, S. K., Burke Harris, N., & Bucci, M. (2018b). Systematic review of pediatric health outcomes associated with childhood adversity. *BMC Pediatrics, 18*(1), 83-7. https://doi.org/10.1186/s12887-018-1037-7

Oral, R., Ramirez, M., Coohey, C., Nakada, S., Walz, A., Kuntz, A, Benoit, J., & Peek-Asa, C. (2016). Adverse childhood experiences and trauma informed care: the future of health care. *Pediatric Research*. *79*(1-2):227-33. https://doi.org/10.1038/pr.2015.197

Petruccelli, K., Davis, J., & Berman, T. (2019). Adverse childhood experiences and associated health outcomes: A systematic review and meta-analysis. *Child Abuse & Neglect, 97*, 104127. https://doi.org/10.1016/j.chiabu.2019.104127

Purewal Boparai, S. K., Au, V., Koita, K., Oh, D. L., Briner, S., Burke Harris, N., & Bucci, M. (2018). Ameliorating the biological impacts of childhood adversity: A review of intervention programs. *Child Abuse & Neglect, 81*, 82-105. https://doi.org/10.1016/j.chiabu.2018.04.014

Revilla, M., & Ochoa, C. (2017). Ideal and maximum length for a web survey. *International Journal of Market Research*, *59*(5). https://doi.org/10.2501/IJMR-2017-039

Rhee, T. G., Barry, L. C., Kuchel, G. A., Steffens, D. C., & Wilkinson, S. T. (2019). Associations of adverse childhood experiences with past-year DSM-5 psychiatric and substance use disorders in older adults. *Journal of the American Geriatrics Society, 67*(10), 2085-2093. https://doi.org/10.1111/jgs.16032

Robles, A., Gjelsvik, A., Hirway, P., Vivier, P. M., & High, P. (2019). Adverse childhood experiences and protective factors with school engagement. *Pediatrics, 144*(2), https://doi.org/10.1542/peds.2018-2945

Santelli, J. S., Klein, J. D., Song, X., Heitel, J., Grilo, S., Wang, M., ... & Catallozzi, M. (2019). Discussion of potentially sensitive topics with young people. *Pediatrics*, *143*(2). 1–11. https://doi.org/10.1542/peds.2018-1403

Schussler-Fiorenza Rose, S. M., Eslinger, J. G., Zimmerman, L., Scaccia, J., Lai, B. S., Lewis, C., & Alisic, E. (2016). Adverse childhood experiences, support, and the perception of ability to work in adults with disability. *PloS One, 11*(7), e0157726. https://doi.org/10.1371/journal.pone.0157726

Shonkoff, J. P., Garner, A. S., Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, & Section on Developmental and Behavioral Pediatrics (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, *129*(1), e232–e246. https://doi.org/10.1542/peds.2011-2663

Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. *Journal of the American Medical Association*, *301*(21), 2252-2259. https://doi.org/ 10.1001/jama.2009.754

Shonkoff, J. P., Slopen, N., & Williams, D. R. (2021). Early childhood adversity, toxic stress, and the impacts of racism on the foundations of health. *Annual Review of Public Health*, https://doi.org/10.1146/annurev-publhealth-090419-101940

State of California Department of Health Care Services, Aces Aware (2020). *Screening for Provider Toolkit: Screening and response to the impact of ACEs and toxic stress*. Retrieved from https://www.acesaware.org/wp-content/uploads/2020/05/ACEs-Aware-Provider-Toolkit-5.21.20.pdf

Thakur, N., Hessler, D., Koita, K., Ye, M., Benson, M., Gilgoff, R., Bucci, M., Long, D., & Burke Harris, N. (2020). Pediatrics adverse childhood experiences and related life events screener (PEARLS) and health in a safety-net practice. *Child Abuse & Neglect, 108*, https://doi.org/10.4685. S0145-2134(20)30340-9

Thompson, L. A., Filipp, S. L., Mercado, R. E., & Gurka, M. J. (2021). Streamlining primary care screening for adverse childhood experiences. *Pediatric Research*, 1-3. https://doi.org/10.1038/s41390-020-01341-1

Traub, F., & Boynton-Jarrett, R. (2017). Modifiable resilience factors to childhood adversity for clinical pediatric practice. *Pediatrics*, *139*(5). https://doi.org/ 10.1542/peds.2016-2569.

Von Korff, M., Alonso, J., Ormel, J., Angermeyer, M., Bruffaerts, R., Fleiz, C., de Girolamo, G., Kessler, R. C., Kovess-Masfety, V., Posada-Villa, J., Scott, K. M., & Uda, H. (2009).

Childhood psychosocial stressors and adult onset arthritis: broad spectrum risk factors and allostatic load. *Pain, 143*(1-2), 76-83. https://doi.org/10.1016/j.pain.2009.01.034

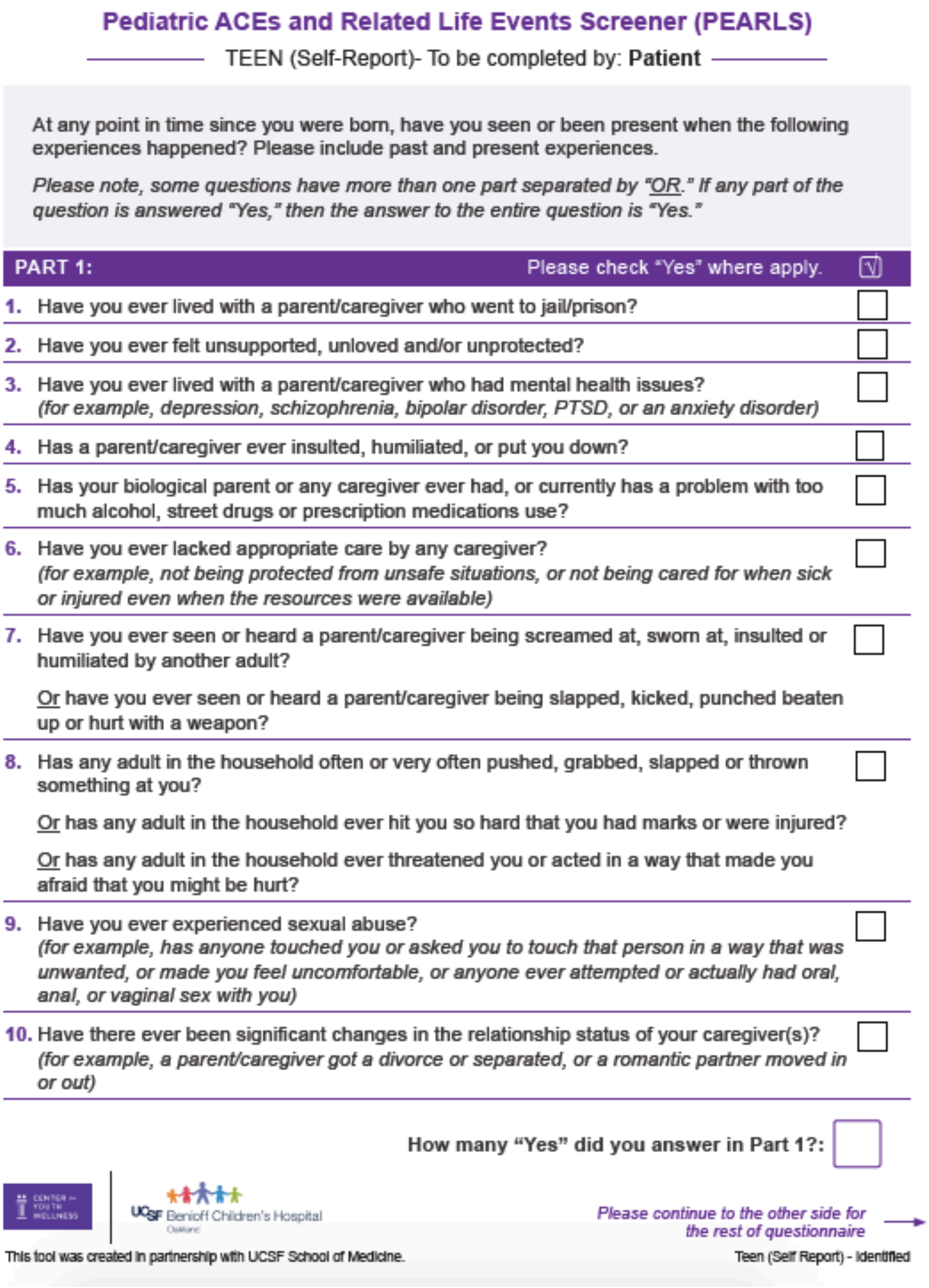
You, D. S., Albu, S., Lisenbardt, H., & Meagher, M. W. (2019). Cumulative childhood adversity as a risk factor for common chronic pain conditions in young adults. *Pain Medicine (Malden, Mass.), 20*(3), 486-494. https://doi.org/10.1093/pm/pny106

Appendix A

1. I use the Broad Level Integrated Screener (BLIS) 100% of the time
2. All NeighborCare Health Student Based Health Center (NCH SBHC) providers use the BLIS
3. The BLIS is easy to administer
4. Results from the BLIS are easy to interpret
5. Results from the BLIS help inform patient care
6. I feel confident administering the BLIS
7. I feel confident knowing how to document BLIS findings
8. I feel confident with knowing how to code for administering the BLIS
9. I feel confident in knowing how to create a follow-up plan for BLIS findings
10. The BLIS is the appropriate number of questions
11. All the questions on the BLIS are valuable
12. The BLIS includes all the questions I feel are important
13. The BLIS takes an appropriate amount of time to complete
14. The current format for the BLIS is appropriate for telehealth visits
15. Students are honest when they fill out the BLIS
16. I would appreciate more resources to help guide post-BLIS interventions
17. I feel confident in my knowledge about Adverse Childhood Experiences (ACEs) and their impact on long-term health and wellbeing
18. It is my job to screen for and intervene with ACEs
19. The BLIS does an adequate job of screening for ACEs

Appendix A. Likert-survey items

Appendix B



Pediatric ACEs and Related Life Events Screener (PEARLS)

TEEN (Self-Report)- To be completed by: **Patient**

At any point in time since you were born, have you seen or been present when the following experiences happened? Please include past and present experiences.

Please note, some questions have more than one part separated by "OR." If any part of the question is answered "Yes," then the answer to the entire question is "Yes."

PART 1: Please check "Yes" where apply. ☑

1. Have you ever lived with a parent/caregiver who went to jail/prison?	☐
2. Have you ever felt unsupported, unloved and/or unprotected?	☐
3. Have you ever lived with a parent/caregiver who had mental health issues? *(for example, depression, schizophrenia, bipolar disorder, PTSD, or an anxiety disorder)*	☐
4. Has a parent/caregiver ever insulted, humiliated, or put you down?	☐
5. Has your biological parent or any caregiver ever had, or currently has a problem with too much alcohol, street drugs or prescription medications use?	☐
6. Have you ever lacked appropriate care by any caregiver? *(for example, not being protected from unsafe situations, or not being cared for when sick or injured even when the resources were available)*	☐
7. Have you ever seen or heard a parent/caregiver being screamed at, sworn at, insulted or humiliated by another adult? Or have you ever seen or heard a parent/caregiver being slapped, kicked, punched beaten up or hurt with a weapon?	☐
8. Has any adult in the household often or very often pushed, grabbed, slapped or thrown something at you? Or has any adult in the household ever hit you so hard that you had marks or were injured? Or has any adult in the household ever threatened you or acted in a way that made you afraid that you might be hurt?	☐
9. Have you ever experienced sexual abuse? *(for example, has anyone touched you or asked you to touch that person in a way that was unwanted, or made you feel uncomfortable, or anyone ever attempted or actually had oral, anal, or vaginal sex with you)*	☐
10. Have there ever been significant changes in the relationship status of your caregiver(s)? *(for example, a parent/caregiver got a divorce or separated, or a romantic partner moved in or out)*	☐

How many "Yes" did you answer in Part 1?: ☐

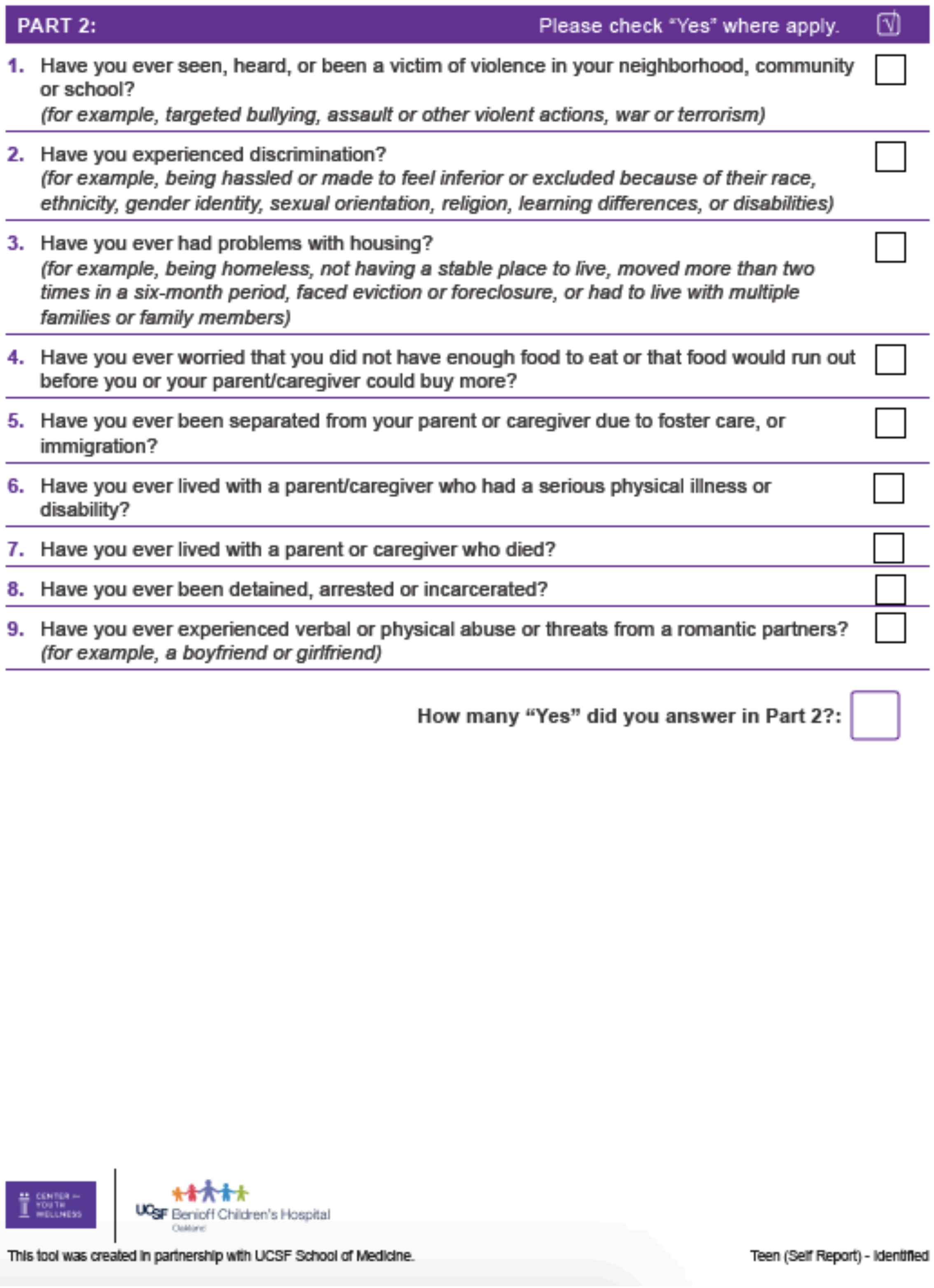
UCSF Benioff Children's Hospital

Please continue to the other side for the rest of questionnaire →

This tool was created in partnership with UCSF School of Medicine.

Teen (Self Report) - Identified

Appendix B1. PEARLS Part 1 (DHCS, 2019)



PART 2: Please check "Yes" where apply. ☑

1. Have you ever seen, heard, or been a victim of violence in your neighborhood, community or school? *(for example, targeted bullying, assault or other violent actions, war or terrorism)* ☐
2. Have you experienced discrimination? *(for example, being hassled or made to feel inferior or excluded because of their race, ethnicity, gender identity, sexual orientation, religion, learning differences, or disabilities)* ☐
3. Have you ever had problems with housing? *(for example, being homeless, not having a stable place to live, moved more than two times in a six-month period, faced eviction or foreclosure, or had to live with multiple families or family members)* ☐
4. Have you ever worried that you did not have enough food to eat or that food would run out before you or your parent/caregiver could buy more? ☐
5. Have you ever been separated from your parent or caregiver due to foster care, or immigration? ☐
6. Have you ever lived with a parent/caregiver who had a serious physical illness or disability? ☐
7. Have you ever lived with a parent or caregiver who died? ☐
8. Have you ever been detained, arrested or incarcerated? ☐
9. Have you ever experienced verbal or physical abuse or threats from a romantic partners? *(for example, a boyfriend or girlfriend)* ☐

How many "Yes" did you answer in Part 2?: ☐

UCSF Benioff Children's Hospital Oakland

This tool was created in partnership with UCSF School of Medicine.

Teen (Self Report) - Identified

Appendix B2. PEARLS Part 2 (DHCS, 2019).