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Trauma-Responsive Care in a Pediatric Setting: Feasibility and Acceptability of Adverse Childhood Experiences (ACEs) Screening

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Abstract

Adverse childhood experiences (ACEs) have demonstrable negative effects on long-term physical and mental health. Low income and ethnic minority communities face significant disparities in exposure to ACEs. Pediatric settings offer an opportune context to identify and address ACEs, with the potential to reduce barriers in access to resources and services. The current study examined the feasibility and acceptability of screening infants and their parents for ACEs at a community medical clinic. Feasibility data indicated that 151 (92%) of the 164 unique patients that presented for well-child visits for infants (4- to 12-months) across a 13-month period were screened for infant and parent ACEs. Of these 151 patients, 47% met eligibility (infants with 1+ ACEs, parents with 2+ ACEs) deemed intermediate risk, and indicated referral to prevention services. The majority of referred families (77%) accepted prevention services, including appointments with bilingual and bicultural wellness navigators who provided a cultural bridge and access to resources that could address patients' social determinants of health. Qualitative interviews with providers expand upon screening acceptability. Implications for integrated behavioral health, ACEs screening, and trauma-responsive prevention in a pediatric setting are discussed.

Keywords

adverse childhood experiences (ACEs); pediatric; screening; trauma-responsive; integrated behavioral health; prevention

Over the past twenty years, a wide body of literature has linked trauma exposure during childhood to more than 40 different negative outcomes across physical and mental health conditions, health risk behaviors, and academic and vocational achievement (Centers for

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Research Involving Human Participants: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent: Informed consent was obtained from all participants included in the study.

Disease Control and Prevention, 2016; Felitti et al., 1998). Adverse childhood experiences (ACEs) are measured and scored as the number of adversities that an individual experienced prior to the age of eighteen from a list which typically includes physical and emotional abuse and neglect, household challenges such as family member incarceration, substance abuse, or mental illness, and stressors in the community environment such as violence, poverty, and discrimination (Ellis & Dietz, 2017). The extensive amount of research linking ACEs and poor long-term outcomes, combined with existing knowledge that almost 60% of the United States' population has at least one ACE, highlights childhood adversity as a pressing public health issue with a costly burden of disease (Centers for Disease Control and Prevention, 2016).

Disparities are significant for low socioeconomic, ethnic/racial minority communities, who experience a heightened risk for exposure to ACEs (Cronholm et al., 2015; Ellis & Dietz, 2017; Liu, Kia-Keating, & Nylund-Gibson, 2018; Merrick, Ford, Ports, & Guinn, 2018; Wade et al., 2016). Specifically, Latinx populations, the fastest growing ethnic minority group in the United States, consistently face disparities in access to and quality of healthcare as well as health outcomes (Lopez, Bergren, & Painter, 2008). Latinx youth report higher rates of ACEs compared to their White counterparts (Liu et al., 2018). Research-to-date in this area has disproportionately been conducted with more homogenous populations, thus, ensuring that screening for ACEs and follow-up services are feasible and acceptable to this population is critical, especially in medical settings that receive a majority of low income and Latinx patients. The current study examines feasibility and acceptability of screening infants and their parents for ACEs at a community medical clinic, serving primarily Latinx and other low income patients, and providing integrated behavioral health care at one of four neighborhood locations.

Trauma-Responsive Care and Attention to Adverse Childhood Experiences

In general, there is a dose-response relationship between ACEs and outcomes; in other words, as an individual's ACEs "score" (total number of ACEs on a checklist) increases, so does their health risk. For example, among adults reporting on ten childhood adversities, a score of one ACE is associated with a 1.3 times increase in likelihood of experiencing depression, while a score of four is associated with a 2.4 times increase (Chapman et al., 2004). Similarly, scores of three or four ACEs are respectively associated with 1.6 times and 1.7 times increased risk of ischemic heart disease (Dong et al., 2004).

As empirical studies of the relationships between ACEs and longitudinal health and mental health outcomes have proliferated, there is a growing sense of urgency for feasible, scalable, and empirically-supported trauma responsive ways to conduct ACEs screenings and address ACEs in pediatric settings (Biglan, Van Ryzin, & Hawkins, 2017). These settings can track child development from infancy to adolescence, and are well-placed to provide both preventive care and interventions at multiple stages of the life-cycle. Utilizing a trauma-informed, ecobiological framework to promote the screening and treatment of children and families impacted by ACEs has been heralded as a standard of medical care (i.e., American Academy of Pediatrics, 2014; Cohen, Kelleher & Mannarino, 2008). However, the vast majority of pediatric practices have yet to adopt the practice of universally screening for

ACEs. Some of the identified barriers include billing, concerns about time restrictions, and reluctance to gather information until an empirically-supported treatment response that is deemed efficient and effective in a pediatric setting, is readily available (Biglan et al., 2017; Finkelhor, 2018).

Screening and Prevention with Infants and Parents

Screening for ACEs during infancy provides a crucial window of opportunity for prevention, to reduce the chance for adversity exposure altogether, and to bolster protective factors that could mitigate negative sequelae when ACEs occur. As a sensitive period, infancy is replete with growth and vulnerability in development; notably, exposure to ACEs in infancy can impact important biological markers, such as DNA methylation that impact long-term mental health (Dunn et al., 2019). A child's first year is also a unique time when parents typically turn to pediatricians for frequent and regular guidance, making it an ideal setting for preventive interventions to promote protective factors (Mendelsohn et al., 2011).

In fact, evidence on preventive interventions for caregivers and infants that are offered within pediatric settings demonstrate positive outcomes to promote resilience and protective factors for caregivers and children (Mendelsohn et al., 2007; Mendelsohn et al., 2011). For example, when low-income, ethnically diverse mothers received an intervention to increase positive interactions with their infant during well-child visits, they reported lower stress levels, maternal depression, and improved parenting practices compared to mothers who received educational materials about development (Berkule et al., 2014; Cates et al., 2016; Mendelsohn et al., 2007). Children who received the intervention were more likely to have normal cognitive development, less likely to have developmental delays, and also experienced improved socio-emotional outcomes (Mendelsohn et al., 2007; Weisleder et al., 2016). In fact, interventions that aid parents in developing positive and appropriate coping and self-regulatory skills to pass down to their children (Luthar & Eisenberg, 2017) can increase their ability to provide their child with a warm, secure, and nurturing relationship, which is in turn associated with children's resilience to adversity (O'Dougherty Wright, Masten, & Narayan, 2013).

A growing body of research demonstrates that Parent ACE scores predict increased risk of child behavioral problems, hyperactivity, and emotional disturbances (e.g., Schickedanz, Halfon, Sastry, & Chung, 2018). Given evidence that parental ACEs significantly impact parenting skills and youth mental health outcomes, it could be beneficial to screen the caregiver and infant and provide interventions that foster resilience to the impact of ACEs, including promoting positive parent-child interactions (Folger et al., 2018; Mendelsohn et al., 2011; Racine et al., 2018; Schickedanz et al., 2018; Shonkoff et al., 2012; Woods-Jaeger et al., 2018). Furthermore, evidence suggests that providing integrated behavioral health services, in other words, offering coordinated behavioral and physical health care in one setting, may be an especially effective strategy to reduce mental health disparities as it can reduce barriers to care faced by traditionally marginalized populations (Miranda et al., 2003; Weersing et al., 2017).

Current Study

The current study fills a number of important gaps in the literature. First, there is a pressing need to establish standardized, empirically supported training and implementation of ACEs screenings in integrated behavioral health pediatric settings. Second, it is important to note that there is a building base of evidence confirming that both maternal and paternal ACE scores have a significant impact on youth outcomes, and may be just as important to screen and address (e.g., Folger et al., 2018; Racine et al., 2018; Schickedanz et al., 2018). Third, the Centers for Disease Control (CDC) has estimated that neglecting to prevent child maltreatment, which only represents a portion of the ACEs to consider, creates an economic burden of upwards of \$585 billion (Fang, Brown, Florence, & Mercy, 2012). Given this extreme cost, prevention efforts are not just warranted, they are critical.

Finally, how to best reduce barriers to service utilization among high poverty, ethnic minority populations remains critical to investigate, given the noted ACEs-related health disparities that exist (Liu et al., 2018). In fact, despite several large-scale initiatives and efforts to reduce them (Ellis & Dietz, 2017; Mehta, Lee, & Ylitalo, 2013), health disparities remain and it is evident that future ACEs research must consistently, jointly consider the additional systemic barriers and disparities faced by racial/ethnic minorities in the United States (Liu et al., 2018). Traditional research methods have historically disregarded the voices of target communities, instead of having communities participate and become empowered to address the disparities they face (Kia-Keating, Santacrose, Liu, & Adams, 2017). The current study utilizes community-based participatory research (CBPR) methods, providing an opportunity to work in collaboration with the community being served, and to jointly address health equity and the barriers and facilitators of ACEs screening and prevention (Israel, Eng, Shulz, & Parker, 2012; Kia-Keating, Santacrose, & Liu, 2017; Woods-Jaeger et al., 2018).

Thus, the current study contributes to the extant literature by examining the feasibility and acceptability of a parent and child ACEs screening delivered within safety-net medical clinics, predominately serving low-income, Latinx patients. This paper focuses on the implementation strategies put into place, and the feasibility and acceptability of ACEs screening, which are important early implementation outcomes (Proctor et al., 2011; Proctor, Powell, & McMillen, 2013). By focusing on implementation, the current study identifies important considerations for scaling up trauma-responsive screening within pediatric health care.

Method

Participants

Out of 164 unique well-child visits among 4- to 12-month old infants that took place across four community medical clinics (serving approximately 20,000 adult and pediatric patients per year), 151 (92%) infants and parents were both screened for ACEs. Infants were between the ages of 3 months and 11 months ($M = 5.77$, $SD = 1.98$), 50.3% were female, and 76.8% were Latinx (18.5% reported Other, and 4.6% left race/ethnicity blank). See Table 1 for demographics of the children eligible for screening at well-child visits ($n=164$). Cut-off

points for pediatricians to address the issue of toxic stress were guided by the Center for Youth Wellness, which recommends risk categories for ACEs screening, whereby a score of 1–3 ACEs falls into the “intermediate risk” category (Purewal et al., 2016). Thus, of those screened, 71 (47%) parent-infant dyads were screened as positive for concern if infants had one or more ACEs, and/or parents had two or more ACEs. A total of 55 (77% of identified group) parent-child dyads consented to prevention services following the screening; similarly to the total sample, 76.4% of these infants were Latinx and on average were 5.82 months old ($SD = 1.99$).

In order to examine acceptability of ACEs screening by pediatric staff, nine providers at the clinic participated in qualitative, semi-structured interviews asking about their receptivity, experience, and problems or benefits of the addition of ACEs screening to the pediatric clinic. Participants included three pediatricians, three medical assistants, two wellness navigators, and one licensed clinical social worker.

Procedures

All procedures for this study were approved by the Institutional Review Board at the University [masked for review]. A number of implementation strategies were put into place to prepare for and continuously support ACEs screening and prevention services within the clinics.

Partnership.—Both local and national collaborations contributed to the project implementation. At the local level, a phased and participatory effort to address health disparities related to exposure to ACEs helped to derive the prevention program in partnership with community members and local child- and family-serving agencies (Author citation). Specifically, CBPR and human-centered design (HCD), a problem-solving framework that offers tools for idea generation, prototyping, and testing social innovation programs, guided the strategies and phases of co-design (Author citation). In order to move to the current trial in a pediatric setting, a project team made up of academic-community-medical partners was developed, and a larger advisory board which included youth-serving agencies, funders, and other key stakeholders helped to inform the project from its outset.

In order to overcome barriers to service utilization highlighted by Latinx families and service providers, including cultural and linguistic concerns, stigma, and social determinants of health, all patients were provided with services from wellness navigators. Wellness navigators are often members of patients’ own communities, who provide cultural brokerage and a bridge to service access (Gottlieb et al., 2016; Oppenheim et al., 2016). Thus, wellness navigators played a central role on the team, as they had contact with every patient, and provided information, resources, and referrals to families related to meeting their immediate needs across domains.

The clinics’ organizational leaders were an integral part of planning and providing support for the implementation, which prioritized the efforts and propelled a systems-level commitment to advancing trauma responsive care. All staff members received training in ACEs and toxic stress, including front desk staff, as well as those providing direct medical care. Pediatric staff participants reflected both on their own personal experiences of ACEs

and their impact, in addition to building awareness about experiences of ACEs among the patients and families they served. Notably, training took place at each individual clinic prior to implementing screening, and included several key components: (1) providing educational materials for each staff member, (2) providing written “scripts” (see Table 2 for the specific scripts) on pocket cards for medical assistants and pediatricians, and (3) conducting role plays with each member of the care team to practice how to present the questionnaire, and ways to respond to ACE scores of the infant and parent within the context of the well-child visit. The team worked closely with Information Technology Staff to build templates within the electronic health record (EHR) to document the screening results, and referrals to wellness navigators and other services.

Finally, at the national level, the project team participated as a pilot site for the National Pediatric Practice Collaborative (NPPC) on Adverse Childhood Experiences, and the Substance Abuse and Mental Health Services Administration- Health Resources and Services Administration (SAMHSA-HRSA) Center for Integrated Health Solutions Innovation Community on Building Integration in Pediatric Care Communities.

Screening.—Parents and infants were screened for ACEs at well-child visits. Well-child visits occur regularly, with ten visits during the first three years of a child’s life, providing an opportune time to facilitate access to prevention and treatment. Each week, based on the target age group and type of visit, patients were identified who needed to receive an ACEs screening; this process occurred by running weekly reports using the electronic scheduling program prior to appointments. Medical assistants were trained to identify the need for screening as part of the pre-visit planning. When potential barriers to the implementation of the screening protocol were identified early in the process, solutions were developed which incorporated feedback from all members of the clinical care team in order to improve and refine the processes. Weekly meetings were held with the lead pediatrician, wellness navigator, behavioral specialist and researchers to allow for ongoing feedback about screening and project participation.

Medical assistants introduced the screener as a questionnaire that asks about personal experiences to screen for health risks associated with stress. Parents were instructed not to indicate specific ACE items, but to simply report a total number experienced. Pediatricians then examined both parent and child ACEs total scores. If parents had two or more ACEs, or their child had one or more ACEs, pediatricians discussed the impact of toxic stress and asked parents if they wanted more information about interventions and other community resources.

All participants met with a wellness navigator to receive referrals and services to assist families connect to resources that could address their social determinants of health (e.g., food access, housing, transportation, insurance, and social services). A concurrent and ongoing randomized controlled trial research study, currently testing the wellness navigator services in comparison with behavioral health prevention provided in the clinic, covered content including psychoeducation on ACEs and toxic stress, child and brain development, resilience and protective factors, parent-child relationship building, and mindfulness (Author citation), and home-visit sessions, focused on child development, recognizing and

responding to infant's cues, and supporting the parent and child's affect regulation (Guastaferrero, Lutzker, Graham, Shanley, & Whitaker, 2012).

Measures

Adverse Childhood Experiences Questionnaire-child and parent versions.—

The ACEs Questionnaire contained ten items related to abuse, neglect, and household dysfunction, which were included in the original ACEs study (Felitti et al., 1998), and eight additional items related to adverse community experiences (e.g., discrimination, violence, natural disaster) during childhood. This questionnaire was adapted from the original Adverse Childhood Experiences Questionnaire developed by the Center for Youth Wellness (Purewal et al., 2016). We modified the questionnaire for adolescents, and created a comparable de-identified questionnaire for parents with the addition of a natural disaster item. Parents reported a total number of the items that they themselves had experienced before age 18, and a total number that their infant had experienced thus far. In accordance with the screening standards established for pediatric screening for ACEs by the Center for Youth Wellness, the screening items were only totaled and there was no indication of which of the specific ACEs items were positive (Purewal et al., 2016). The rationale for and potential benefits of a deidentified screener included (a) being able to effectively and efficiently assess ACEs in the context of a busy pediatric visit, (b) maintaining a primary focus on prevention and promotion of resilience, and (c) family and clinic staff preference for screening quickly while allowing an opportunity for families to determine the degree to which they want to disclose further details about adversities. During initial and subsequent encounters, patients could choose whether or not to have further conversations with their providers about exposure to specific adverse experiences and referrals to the appropriate agencies and resources.

Analyses

A simultaneous mixed-methods approach was used to measure the acceptability and feasibility of screening infants and parents for ACEs. Feasibility of screening was measured as the percentage of ACEs screenings that were completed out of the eligible infants who presented for their 4- to 12-month well-child visit. Acceptability was measured by the percentage of families meeting at least intermediate risk criteria related to ACEs, who agreed to receive prevention services. Qualitative interviews with medical staff, and providers helped to elaborate on quantitative findings regarding feasibility and acceptability (Palinkas et al., 2011).

Interviews were analyzed using rapid qualitative analysis, which is an ideal approach when information is needed to guide and improve the implementation process (Koenig et al., 2016). In this process, qualitative research team members used the interviews guides to develop a structured template. This template was used to synthesize concise summaries of interview responses, along with examples of rich responses to include as illustrative quotes. Responses were aggregated onto a cross-participant matrix. This matrix was analyzed by the research team to identify cross-cutting themes for all participants, along with identifying if unique themes related to specific stakeholder role (e.g., pediatrician, wellness navigator) emerged.

Results

Feasibility and Acceptability

Of the 164 unique patients that presented for their 4- to 12-month well-child visit, 92.1% ($n = 151$) of infants and parents were screened for ACEs, indicating high feasibility. Among the parents screened, their scores ranged from 0–13, with 60.9% scoring zero or one, 11.2% scoring two, 4.6% scoring three, and 23.2% scoring four or more. Parents reported on their child's ACEs since birth, and children's scores ranged from 0–5, with 81.4% scoring zero, 11.2% scoring one, 4.6% scoring two, 1.3% scoring three, and only one person scoring either four or five (.006% respectively). Qualitative analyses that expand on findings regarding screening feasibility and acceptability are described below.

Of infant-parent dyads that were screened, 47% met eligibility criteria to receive prevention services. The majority (77.4%; $n = 55$) of eligible parents consented to receive services. Among the rest, 14.1% declined participation (e.g., most common reasons were time constraints or already receiving other services), and 8.5% were not able to due to external circumstances such as relocating and no longer seeking services at the clinic.

Qualitative Analysis

Semi-structured interviews were multi-informant, among multiple types of practitioners. A set of consistent themes emerged across informants. Themes that were salient across participants included the benefits that they experienced due to the inclusion of ACEs screening in the clinic, and recommendations regarding timing, flow, and staff training.

Screening Benefits.—Providers and parents found ACEs screening acceptable and useful with particular perceived benefits that they enumerated including: (1) facilitating a deeper alliance between provider and patient, (2) helping to forge a clear connection between mental health and physical health, and (3) highlighting the importance of holistic, integrated care. Multiple providers acknowledged feeling anxious when they first began screening for ACEs, describing it as initially “nerve-racking” to ask families to disclose “touchy subjects” such as child abuse and incarceration. A pediatrician summed up: “*some [staff] feel still a little bit nervous asking the families to fill it out. Some are just a little bit shy about speaking up to people.*” In addition, initial hesitations came up around time pressure and responsibilities in the clinic; one pediatrician pointed out: *For some of [the medical staff], if they're working with other providers, there is a time pressure in a medical office. There's a sense that the clock is ticking, I need to get in, you know, get them ready, get them into the room.*” Likewise, providers highlighted families' ambivalence, such as around the purpose of screening, and concerns about mandated reporting. One medical provider explained: “*patients are kind of wary about answering these questions because they don't know that you're gonna know... they just feel 'Well I don't want a lot of people involved in this.'*” Notably, one medical provider did convey a general preference to have individual autonomy in the provision of patient care and fewer systems-level requirements such as screenings for any particular domains (including, but not limited to, ACEs). These particular concerns, however, were not raised by other participants.

Nonetheless, providers underscored that their ambivalence diminished quickly, and described growing evidence and recognition that screening was having a positive impact. For example, a pediatrician highlighted a number of benefits of screening: *“the screening itself, alone even, improves the quality of my understanding of the families experience. It opens a door to talking about some things the family might need but be afraid to ask or not realize that they can ask about it.”* A medical assistant expressed confidence about the screener as *“very enacting of patient confidentiality,”* as the de-identified screener ensured patients did not have to disclose more than they wanted to about their past trauma histories, and it also opened up the possibility of continued and more meaningful conversations with providers and referral to appropriate resources.

Relatedly, providers noted that screening helped to building and increase rapport between practitioners and families. A medical assistant reported *“[Screening] lets the provider have a more intimate relationship, you know kind of like with the patient allowing them to kind of just get to know each other in a better way and opening more doors in order to help them for health.”* A pediatrician provided a specific example, recounting a positive experience with a parent: *“[The mother] was so happy to see that we were talking about [ACEs] and she didn’t disclose this at first. I think maybe she came to me at the second or third visit, but she said, ‘I’m so happy to be having this conversation, because I feel like the system failed me.’ Those were her words. She said, ‘The system failed me, and I don’t want to do that with my children.’”* As a result, the pediatrician expressed the sense that fundamental changes related to underlying sources of negative health trajectories had the potential for being positively altered.

Participants also highlighted the benefit of better articulating the relationship between physical health and mental health and the importance of integrated health care as a function of engaging in ACEs screening. A medical provider described screening as helping patients connect their physical health difficulties with their life experiences and to better inform treatment:

“You know because many people are going through stress and they don’t know where that stress is coming from, but they feel it. So it’s kind of this unsaid thing and I feel like touching base on certain questions like [ACEs] brings up that thing. There have been encounters where people actually already have gotten the help, but they feel more comfortable to kind of speak on it like, ‘Yeah, I went through it. I talked to somebody.’ But for others it might just open a door that might’ve been closed forever because a lot of these people are like, ‘Wait I didn’t know this affects my blood pressure or it affects this or it affects why I’m feeling so down.’”

A wellness navigator summarized *“With every single mom, it’s like they’ve been waiting for this to happen. We haven’t had a single parent say they don’t want to be a part of this.”*

Recommendations: Timing, Flow, and Training.—Participants provided recommendations for improvement around issues of timing and flow, and a need for comprehensive training for medical staff. Although participants described feeling the ACEs screening and intervention process to be very valuable, they also acknowledged that it was *“another thing to do”* on top of lots of paperwork and tests already required at well-child

visits. They suggested that the “flow” of the process could be improved, to capitalize on times during the well-child visit when families are simply waiting, and may have an ideal moment to fit in an ACEs screening and referral. As one person explained,

We have families waiting here too long. [I think the] process can be modified and simplified. You know maybe patients can be checked in electronically instead of having to wait, writing their name down, wait to be called because then in those fifteen minutes a patient can probably already be in an exam room, already have seen the medical assistant, have already been screened, and then it buys time for when a behavioral health clinician then is called in to provide the service.

Interviewees also expressed a desire for more ongoing training for various reasons. For example, a provider suggested training to address the challenges of staff turnover, pointing out that “*new staff still [have] confusion about which questionnaires go at which month... it’s nothing that’s insurmountable. It just takes retraining and practice.*” Additionally, interviewees pointed to the sensitive nature of ACEs screening and referral requires staff to have “*more hands-on training.*” For example, a participant suggested that “*improvement would be training more of the medical assistants who are kind of like the middleman because staff is always changing and maybe some staff is not good at showing them how to introduce the form or present it, or some staff really just not being comfortable introducing the form.*” Other recommendations for further training focused on best practices for introducing and discussing ACEs with families, and preparations for linguistic and cultural issues that might arise.

Discussion

Adverse childhood experiences have been recognized as a public health emergency, given their longitudinal impact on health outcomes and morbidity (Dube, 2018). Moreover, the disparities related to ACEs are an urgent matter in order to address health equity for ethnic minority populations, who are often underrepresented and undertreated (Liu et al., 2018; McBride & Williams, 2013). Even though pediatric primary care settings have been identified as an ideal setting to screen for and address ACEs, a national survey of pediatricians found that only 4% ask about a range of ACEs and 32% do not routinely inquire about any ACEs (Kerker et al., 2016). Challenges with implementation are exacerbated by limited research on how to successfully integrate screening into pediatric care, and what programs are effective at preventing and treating exposure to ACEs (Dube, 2018; Finkelhor, 2018). As such, the present study offers an opportunity to examine which aspects of the implementation process acted as positive facilitators or barriers to the delivery of ACEs screening and prevention services in a pediatric setting. Findings related to the implementation process are essential to inform future scale-up efforts to improve trauma-responsive integrated behavioral healthcare in pediatric primary care.

Increasingly, the field of implementation science has recognized the importance of identifying and reporting implementation strategies used to promote the acceptability, uptake, and sustainment of practices within systems of care (Proctor et al., 2013). In this study, a wide range of implementation strategies were used, which supported ACEs screening and prevention programming at the system and provider levels. This project

evolved from a participatory, empowerment-based cross-sector partnership, taking place within an academic-community-medical collaboration, with support from youth-serving agencies, funders, and the healthcare system, in response to the community's recognition of the importance of identifying and addressing ACEs. Importantly, organizational leadership played a key role in supporting the ACEs screening and prevention efforts, with a commitment to making their entire healthcare system trauma-responsive. Increasingly, the role of organizational leadership has been recognized as necessary to successfully implement quality improvement guidelines or evidence-based practices (Aarons, Ehrhart, Farahnak, & Sklar, 2014). In line with recommendations from the American Academy of Pediatrics (2014), all staff received ACEs training to prioritize trauma-responsive care as a core component of the culture of the clinic, increasing recognition about the prevalence and impact of ACEs amongst staff and patients (Marsac et al., 2016).

A strength of the study was that implementation of screening took place within a system of primary care clinics with integrated behavioral health services. This co-location provides opportunities to schedule concurrent medical and behavioral health visits as part of the prevention intervention and to receive reimbursement for behavioral health services provided to children and their families. In addition, this integration of services allows for direct referral for families that need more intensive services.

Overall, the current study found high levels of feasibility and acceptability of ACEs screening and prevention services, implementing a process whereby almost all (92%) infant well child visits received an ACEs screening and a majority (77%) of eligible parents consented to receive prevention programming. Based on the demonstrated link between parent ACEs and child emotional and behavioral outcomes, it was determined that it was important to screen both infants and parents for ACEs, and provide prevention services regardless of which member of the dyad indicated positive for ACEs (Schickedanz et al., 2018). Close to half of the screened parent-infant dyads were found to screen in the intermediate risk level (i.e., infant had 1+ ACEs, parent had 2+ ACEs), the majority of whom were eligible for services due to the parent's ACEs score. However, 18.6% of infants in the study had already experienced at least one ACE, which is notable given that screening occurred within their first year of life. This finding highlights the opportunity that infant well-child visits in pediatric settings offer to promote resilience, prevent future ACEs, and potentially shift developmental trajectories.

Acceptability of ACEs screening was further investigated using qualitative interviews with a range of stakeholders, in order to take into account patient and provider attitudes which can bear heavily on successful implementation (Finkelhor, 2018; Kerker et al., 2016; Proctor et al., 2011). Although providers in our study identified initial ambivalence regarding ACEs screening, they noted how their attitudes shifted as they observed the positive impact that screening had on patient-provider relationships (Finkelhor, 2018). More broadly, providers expressed how the screenings improved the quality of care.

It is possible that, when first implementing ACEs screening in new pediatric settings, preemptively addressing providers' concerns regarding how patients will respond to being asked questions about adversity and highlighting the potential benefits may be useful to

reduce ambivalence and increase confidence. Implementation strategies deployed in the current study included the provision of scripts to medical providers to prepare for offering the screening, and conducting role-plays to rehearse conversations with patients about ACEs screenings and toxic stress. Key components to the acceptability and uptake of the screening include the screening instrument being offered by a trusted primary care provider and the provision of immediate education about the results. For providers, having a clear plan about how to respond to a positive screen enhanced the acceptability of the ACEs screening. Providers still identified that they would benefit from and desired additional and ongoing training and consultation, to improve skills of trained staff, prepare new staff members, and maintain a culture that prioritizes trauma-responsive care. These recommendations are consistent with findings that ongoing training and consultation is necessary to promote skill development, address implementation barriers, and prepare for the sustainability of interventions (Nadeem, Gleacher, & Beidas, 2013).

One of the primary concerns regarding ACEs screening has been uncertainty about what services to provide for a positive screen (Finkelhor, 2018). The current findings suggest that offering prevention services is acceptable to providers and families. Previous findings have likewise demonstrated high rates of enrollment and engagement when behavioral health services are provided within primary care (Kolko et al., 2014; Weersing et al., 2017). A unique contribution of this study was the inclusion of bilingual and bicultural wellness navigators who can provide a cultural bridge and connect patients to a wide assortment of resources that address social determinants of health (e.g., food access, housing). Wellness navigators and other community health workers have been identified as an important workforce to decrease disparities, as they are frequently trusted members of the community they serve, who can address stigma associated with behavioral health services (Barnett, Lau, Miranda, 2018; Gottlieb et al., 2016). Although evidence-based interventions for ACEs exposure have not been established, promoting positive parenting skills and parent-child relationships has been recommended as an important focus of intervention to promote resilience and protect against future neglect and maltreatment (American Academy of Pediatrics, 2014; Cates et al., 2016; Cohen et al., 2008). An important future step will be to empirically examine more specifically what types of prevention services are effective for infants and their families,

Limitations

The generalizability of the feasibility and acceptability data from the current study may be limited, given the unique local context, which included a small community, with leaders and pediatricians who championed the importance of trauma-responsive integrated behavioral healthcare. The ability to develop more trusting, intimate relationships with providers at smaller pediatric settings may have facilitated more buy-in from patients themselves, increasing the feasibility and acceptability of the ACEs screening and prevention interventions. In the current study, the sample size of medical providers interviewed was small, and the qualitative experiences of parents were not included; an important next step is to conduct in-depth interviews with more providers and parents in order to examine their phenomenological perspectives and recommendations in greater depth.

Future Directions

As researchers and practitioners continue to explore ways of addressing ACEs in primary care through trauma-informed, integrated care models, there are several areas of inquiry that should be prioritized. First, future research needs to focus on identifying integrated behavioral health strategies to provide ACEs screening and intervention across the developmental lifespan, as our study was limited to infants and their parents. To truly be scalable and feasible, ACEs screening and interventions need to be reimbursed as part of routine medical services, something that does not yet exist (Biglan et al., 2017). Therefore, it is important for researchers to focus on quantifying the fiscal savings conferred by ACEs prevention programming, in terms of reduced costs associated with improved long-term health outcomes. Notably, trauma interventions may not be appropriate for all clients (Finkelhor, 2018).

Prevention efforts may help to build resilience through promotive and protective factors with a particular emphasis on the parent-child relationship. Cost-effectiveness analyses are needed to identify if this investment in prevention leads to long-term societal savings, which could include healthcare expenditures given the impact of ACEs on health outcomes for children and adults (Felitti et al., 1998; Liu et al., 2018). Longitudinal research on the ongoing impact on mental health, physical health, and service utilization is vital to this effort. Additionally, public health advocates and health policy researchers and practitioners must push for health insurance policy change. New policies are beginning to support universal ACEs screenings in pediatric settings. For example, all pediatric patients under Medi-Cal in the state of California will receive ACEs screenings (reimbursed through legislative funding, Proposition 56, starting July 1, 2019) in an ongoing effort to assess for trauma exposure and provide early intervention to offset the financial burden associated with untreated trauma symptomology (Udesky, 2019). Missouri, New York, and Texas are states that are also advocating for universal ACEs screening legislation to reduce long-term negative health trajectories (Kramer, 2017). As efforts to engage in universal ACEs screening become a public mandate, it is critical to consider implementation strategies, and the utilization of methods for ACEs screenings that are culturally congruent, financially feasible, and accessible to both patients and practitioners alike.

This study focused on implementation processes to help support future scale-up by identifying facilitators and barriers to screening. Although providers and patients found screening to be feasible and acceptable, questions still remain about how to scale-up these local, community-grounded efforts. This study benefited from support of organizational leaders to advance trauma-responsive care within their healthcare system, both through training their entire staff on ACEs and by integrating procedures throughout the clinics to promote screening and prevention services (e.g., changing the EHR). Though the role of leadership is likely indispensable, it is not clear if future efforts need this level of system transformation as certain changes may not be widely feasible. Further areas of needed research include strategies for promoting community partnerships and buy-in. The setting of the current study—a relatively small, close-knit community—aided in forging cross-sector partnerships and garnering community support. However, a set of strategies for obtaining support, partnerships, and buy-in across various settings, including large urban areas, will be

important for creating successful large-scale ACEs screening and intervention programs. Growing evidence suggests benefits of integrating behavioral health into primary care settings to protect and promote developmental outcomes and resilience. Future research can focus more specifically on identifying the impact of different implementation strategies to promote the effective and efficient uptake of ACEs screening and prevention efforts in order to replicate and scale-up these successes in other systems of care.

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Table 1

Child Demographics (n=164)

	Infants
Infant Age	<i>M</i> = 5.77 months, <i>SD</i> = 1.98 <i>Range</i> = 3–11 months
Sex	50.3% Female 49.7% Male
Race/ethnicity	76.8% Latinx 18.5% other 4.6% not reported

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Table 2

Medical Assistant and Pediatrician Scripts in English and Spanish (adapted from “Center for Youth Wellness ACE-Q User Guide for Health Professionals” available at <https://centerforyouthwellness.org/aceq-pdf/>)

English	Spanish
<p>Medical Assistant <i>“We have some forms that we ask all of our patients to complete so that the doctor understands how your child is doing. The doctor will answer any questions you have about the forms, and I’m here if you need clarification on the instructions. One of the papers is called the “Adverse Childhood Experience Questionnaire”. This form asks some personal questions and screens for health risks due to exposure to stress. <u>If you could please, review the statements and write down the number of statements that apply to you (for the parent ACES screen) and those that apply to your child (for the child ACES screen), and not which ones.</u> When you have finished, return all of the forms to me. I will place everything in this folder and give it to the doctor before you and your child go in for your visit.”</i></p>	<p>Medical Assistant <i>“Tenemos algunos formularios que pedimos a todos nuestros pacientes que completen para que el médico entienda cómo está su hijo/a. El/ La doctor/a puede contestar cualquier pregunta que tenga sobre estos formularios, y yo estoy aquí por si necesita ayuda con las instrucciones. Uno de los formularios se llama “Las Experiencias Adversas de la Infancia”. Este formulario hace algunas preguntas personales para revisar riesgos en la salud debido a la exposición de estrés. <u>Si pudiera revisar las declaraciones y anotar el número de declaraciones que se aplican a usted (para el formulario ACES de los padres) y los que aplican para su hijo/a (para el formulario ACES de los hijos) y no anote cuáles.</u> Cuando haya terminado, me devuelve todos los formularios a mí. Colocaré todo en esta carpeta y se lo daré al médico antes de que usted y su hijo/a vean al doctor/a.”</i></p>
<p>Pediatrician: The Primary Care provider reviews the results of the ACES Screen with the family and counsels the parent. Based on the response (0 in child and or 0–1 in parent), the parent is counseled about the effects of Toxic Stress and told by the doctor. <i>“If in the future (Child’s name) experiences any of these issues, please let us know because Early Intervention can lead to better outcomes”</i> If Response 0–1 or more in the child and or 2 or more in the parent. <i>“We now understand that exposure to stressful or traumatic experiences like the ones listed here may increase the amount of stress hormones that a child’s body makes and this can increase their risk for health and developmental problems. We also understand that experiences that parents have had as children also affect how they respond to stressful situations and may affect how they respond to these experiences with their children. I would like to refer you to some services that could be helpful.”</i> Warm hand off to Wellness Navigator</p>	<p>Pediatrician: El Pediatría revisa los resultados del ACES con la familia y aconseja a los padres. <i>Si los padres responden (0 en el ACES del niño o y 0–1 en el ACES para padres), el padre es aconsejado sobre los efectos del estrés tóxico por el médico. Y el médico les dice a los padres.....</i> <i>“Si en el futuro (nombre del niño) sufre cualquiera de estas experiencias, por favor háganoslo saber ya que la intervención temprana puede conducir a mejores resultados en el bien estar de su hijo.”</i> Si los padres responden con 0–1 o más en el ACES del niño o y 2 o más en el ACES de los padres. El medico dice.... <i>“Ahora entendemos que la exposición a experiencias estresantes o traumáticas como las que usted indico aquí, pueden aumentar la cantidad de hormonas de estrés que el cuerpo de un niño produce. Y esto puede aumentar el riesgo de problemas en la salud y desarrollo de su hijo. También entendemos que las experiencias que los padres han tenido en su propia infancia también afectan cómo los padres responden a situaciones estresantes y pueden afectar cómo responden a las necesidades de sus hijos. Me gustaría referirte a algunos servicios que podrían ser útiles.”</i> Introducir a la coordinadora de salud</p>

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