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Screening for Adverse Childhood Experiences: Literature Review and Practice Implications



Christina Rariden, Lee SmithBattle, Jee Hye Yoo, Nancy Cibulka, Deborah Loman

A B S T R A C T

Keywords:

adverse childhood events
adverse childhood experiences
adverse childhood experience acceptability
adverse childhood experience feasibility
adverse childhood experience screening
literature review

Adverse childhood experiences (ACEs) are linked with negatively impacting child and adult health outcomes. Clinicians are integral in identifying childhood adversities and offering supportive measures to minimize negative effects. This systematic literature review included 13 ACE studies that examined the acceptability, feasibility, and implementation of ACE screenings from the perspectives of clinicians and patients. The findings of this review can assist clinicians in considering the appropriateness of ACE screenings for their patients and the ethical and practical issues that must be addressed for effective screening implementation.

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Adverse childhood experiences (ACEs) are linked with a negative impact on childhood development and an increased risk of chronic disease in adults.^{1,2} The 1998 Adverse Childhood Experiences Study by Felitti et al¹ was landmark research connecting childhood adversities to increased health conditions in adulthood including chronic disease, mental health concerns, and substance misuse. The relationship between ACEs and chronic illnesses is dose related; more adverse experience exposure increases the risk of many adult and pediatric health conditions including diabetes, cardiovascular disease, cancer, poor sleep, depression, risk taking, and premature death.^{3–6}

Purpose

This systematic literature review was conducted to examine the acceptability, feasibility, and implementation of ACE screenings from the perspectives of clinicians and patients. The findings of this review can assist clinicians in considering the appropriateness of ACE screenings for their patients and the ethical and practical issues that must be addressed for effective screening implementation.

Background

The original research paved the way for expanding the research of health implications from ACEs for adult and child health. Children who have experienced high ACEs are more likely to have chronic health conditions and mental health problems including immune dysfunction, poor sleep, depression, anger, and aggression.^{2,7} Children exposed to chronic stress can experience not only

psychological impairment but also epigenetic impacts on their developing bodies.⁸ Infants born to mothers with 4 or more ACEs had a 5-fold increased risk of poor physical and emotional health by the age of 18 months.⁹ The more ACEs a child has been exposed to increases the risk of missed school days, behavioral problems, and below average academic performance. Educational researchers have explored assessing a child's ACE risk as a useful strategy in planning for at-risk students.¹⁰

The original ACE scale provided a solid foundational tool to assess the effects of childhood adversities and included 10 items on emotional abuse, physical abuse, sexual assault, emotional neglect, physical neglect, maternal violence, substance abuse within the household, household mental illness, parental separation, and an incarcerated household member.¹ The original ACE tool was used with a largely middle class, educated, and employed sample of adults.¹ The tool has since been revised to capture child adversities that reflect growing up in disadvantaged families and communities or that occur in other settings like schools.^{11,12}

Documentation of the high prevalence of ACEs in the United States offers justification for screening programs and interventions to mitigate ACEs. Identifying childhood adversities and using supportive interventions can reduce subsequent negative effects such as increased educational and behavioral issues during childhood and chronic illness and lower productivity in adults.¹³ The 2016 National Survey of Children's Health used an expanded ACE screening tool and found that 45% of all children living in the US have experienced at least 1 childhood adversity.¹⁴ Ten percent of children are in high-risk categories, having experienced 3 or more ACEs. The 2 most commonly reported ACEs in all states were low socioeconomic status and the

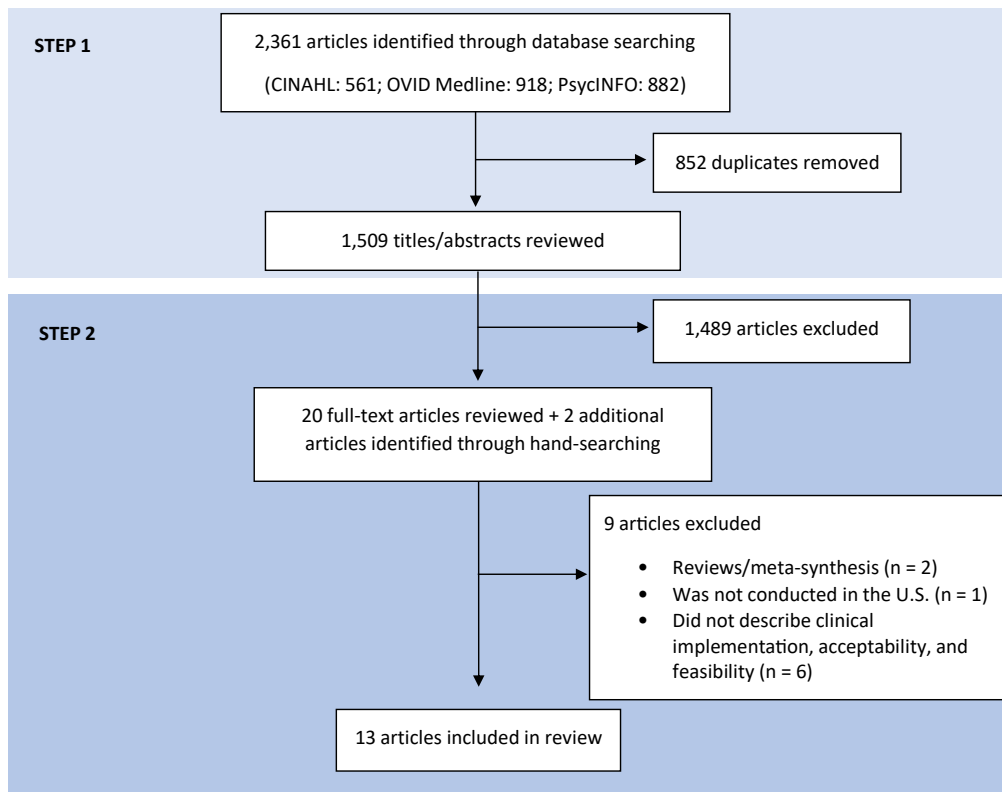


Figure. Literature review process.

separation of parents. Despite growing recognition, only 4% of pediatricians actively screened for ACEs.¹⁵ One third or fewer adults at primary care sites are screened for ACEs in primary care encounters.¹⁶

The addition of another screening to tight schedules is a notable concern, but other issues include patient acceptability, clinician qualifications and training, limited reimbursement, the lack of interventions for patients exposed to ACEs, the lack of agreement regarding which ACE tool to include, and system-level requirements to assure smooth processing.^{17,18}

Methods

Search Strategies and Study Selection

For the literature search, we used a 2-step process. In the first step, we performed a broad literature search of 3 databases (Cumulative Index of Nursing and Allied Health Literature, Ovid MEDLINE, and PsycINFO) with the assistance of a medical librarian using the following keywords: (Adverse Childhood Experience OR Adverse Childhood Experiences) AND (Tool* OR Instrument* OR Questionnaire* OR Inventor* OR Screen* OR Survey* OR measure*). Publication dates were limited from January 2012 to October 2019. Studies were included if they were written in English and conducted in the US. In the second step, we narrowed down the scope of the search results to include only studies that pertained to clinical implementation, acceptability, and/or feasibility of screening for ACE. Studies that reviewed the literature on ACE or synthesized findings from multiple studies were excluded.

The first step of database searching yielded 2,361 studies; 1,509 studies remained after removing duplicates. In the second step, we removed irrelevant studies based on the review of titles and abstracts and retained 20 studies that focused on screening for ACE.

We additionally identified 2 studies through hand searching. Two researchers reviewed the full texts of the 22 studies, and 13 studies met the criteria (Figure). The studies included in this review are listed in the Table.

Results

Of the 13 studies included in this review, 5 were conducted in pediatric settings, 3 in adult primary care, 2 in perinatal settings, 2 in patients' homes, and 1 in an academic setting. Of the 4 studies that included clients who did not speak English, 2 offered interpreters, and 2 offered materials provided in English and Spanish. One study focused on clinicians' perspectives on conducting ACE screenings, 5 sought the perspectives of patients or parents of patients who were screened for ACEs, and 7 studies collected data from patients and clinicians. The total number of participants across studies included 458 clinicians and 5,997 patients or parents of patients. Of the 7 studies that queried clinicians about the feasibility and acceptability of performing ACE screenings, 1 queried clinicians without performing ACE screening; the remaining 6 studies asked clinicians for their views after seeing patients who had been screened. Study designs were observational (n = 7), mixed methods (n = 3), descriptive (n = 2), and qualitative (n = 1). Eleven studies collected survey data, and 2 interviewed patients and/or clinicians. Finally, 12 of the 13 studies focused on the acceptability of ACE screening from the perspectives of patients or clinicians; 9 studies addressed feasibility.

Acceptability of ACE Screening

It is well-documented that high ACEs impact overall health, yet, to date, ACE screenings have not widely been incorporated in routine primary care over possible concerns of patient discomfort.

Table
Adverse Childhood Experience (ACE) Literature Review Summary

Authors	Method	Sample Size and Target Population	Study Population Setting	Socioeconomic Status of Patient Population	Who Provided ACE Screening	Data Collection Methodology	ACE Version Used	Findings
Bright et al ²⁸ (2015)	Observational study	210 pediatricians	Urban pediatric office serving racially diverse clients	Low-income children	Pediatricians	Confidential survey	Expanded ACE	Clinicians serving low-income families underestimate prevalence of ACEs and note barriers to screening and desired additional support to manage positive screens.
Conn et al ⁷ (2018)	Qualitative study	15 parents	Urban pediatric office serving racially diverse clients	Not listed	Doctoral-level professional	Semistructured interview	Original ACE	Parents favored ACE screening to help flag needed services and looked to pediatrician for guidance on change.
Flanagan et al ²¹ (2018)	Mixed-methods study	375 patients 26 clinicians (18 physicians, 3 nurse practitioners, 5 nurse midwives)	Urban and rural pediatric offices serving racially diverse clients	Diverse	Medical assistant offered parent questionnaire; clinicians reviewed with parents. Trained interviewers conducted follow-up phone calls to parents.	Telephone survey for parents Clinicians assessed via survey and focus groups	8 ACE exposures assessed in a shortened Behavioral Risk Factor Surveillance System Questionnaire Expanded ACE	ACE screening feasible and acceptable to prenatal patients. Clinicians' willingness to screen contingent upon referral resource availability.
Gillespie & Folger ¹² (2017)	Mixed-methods study	1,308 parents 19 clinicians (pediatricians and nurse practitioner)	Urban pediatric offices serving racially diverse clients	Diverse	Office staff offered parent questionnaire; clinicians reviewed with parents.	Survey for parents Clinicians assessed via qualitative feedback Tool translated to Spanish by in-house translator	Expanded ACE	Parents preferred to disclose ACE using aggregate levels. Private outpatient pediatric office group found it feasible to screen for ACE.
Glowa et al ²⁰ (2016)	Observational study	111 adult patients 7 primary practice clinicians	Rural primary care; race not included in study	Not reported	Nursing staff offered parent questionnaire; clinicians reviewed with parents.	Questionnaire for patients Questionnaire for clinicians immediately after visit with patient	Original ACE	Feasible to incorporate ACE screening during routine primary care. Screening identifies social determinants of health. Managing ACE risks can be part of primary care interventions.
Goldstein et al ²⁰ (2017)	Observational study (cross-sectional)	152 adult patients	Suburban and rural primary care serving racially diverse clients	Low income	Principal investigator	Questionnaire	Original ACE	Primary care patients found ACE screening an acceptable part of their care. Screening helps identify patients who may benefit from psychosocial services.
Johnson et al ²³ (2017)	Observational study	110 adult patients	Urban home visits serving racially diverse clients	Low income	Nursing staff or social worker offered parent questionnaire.	Questionnaire Interpreter present to translate document for non-English-speaking parents.	Original ACE	Assessing parental ACEs was feasible and acceptable during home visits.
Kalmakis et al ¹⁶ (2018)	Observational study	71 adult patients 2 nurse practitioner students	Rural primary care, 95% racially homogenous	Not reported	NP students conducted interviews with patients and completed postinterview assessment.	Questionnaires	Original ACE	Screening for ACE is feasible in primary care. ACE training can prepare nurse practitioners to effectively screen.
Kia-Keating et al ²⁵ (2019)	Mixed-methods study	151 adult patients 9 clinicians (3 pediatricians, 3 medical assistants, 2 wellness navigators, 1 social worker)	Pediatric care at community medical center serving racially diverse clients	Low-income	Medical assistant offered parent questionnaire; clinicians reviewed with parents.	Questionnaires Interpreter present to translate document for non-English-speaking parents. Clinicians assessed via qualitative semistructured interview	Original ACE	Organizational leadership committed to becoming trauma responsive, and all office staff received ACE training. Families identifying ACEs accepted prevention strategies from the integrated behavioral health services.

Marsicek et al ²⁶ (2019)	Descriptive study	1,206 parents 24 clinicians (medical residents and faculty)	Pediatric clinic serving racially diverse clients	Low income	Office staff offered parent questionnaire; clinicians reviewed with parents.	Questionnaire for patients Forms available in English and Spanish. Survey for clinicians	Original ACE with additional questions (Center for Youth Wellness tool)	Pediatric clinic can successfully screen for ACE. Office staff and clinician education lead increase in screenings. Resources were offered to support at-risk families.
Mersky et al ²² (2019)	Descriptive study (cross-sectional)	1,678 parents 161 home visitor providers	Home visiting program serving racially diverse clients	Low income	Not reported	Questionnaire for clients and providers	Original ACE	Most patients do not experience extreme discomfort when completing ACEs screening. During home visit assessment, patient discomfort minimized when assessor feels at ease.
Nguyen et al ²⁷ (2019)	Observational study	601 patients	Women's health clinic in American South, racially diverse	Low income	Investigator offered patient questionnaire.	Survey	Original ACE	Pregnant women preferred to receive ACE survey in outpatient examination room or during group session over waiting room.
Renjilian et al ²⁴ (2018)	Observational study (cohort)	219 students	High school students; race not reported	Not reported	Not reported	Survey	Original ACE	Adolescents accept modified ACE inventories that calculate a score rather than disclosure of specific adversity.

All the studies examined in this literature review found most patients willing to complete ACE screenings. Study settings included 3 outpatient primary care, 5 pediatric clinic settings, 2 prenatal settings, 2 home-based settings, and 1 high school-based group. Studies by Glowa et al,¹⁹ Kalmakis et al,¹⁶ and Goldstein et al²⁰ reported that patients in primary care settings find ACE screenings an acceptable component of their general health care visit. Conn et al⁷ addressed clinicians' concerns that ACE screenings may be perceived by parents as too invasive. However, study results revealed that parents were supportive of ACE screenings as a means of being identified for additional services and altering the course of intergenerational adversity patterns; parents also viewed the pediatric clinician as a guide for helping families address ACE exposure.⁷ Adult patients with or without trauma history also felt that it was acceptable to be assessed for past trauma and expected their clinician would be able to help them.²⁰ Adult patients in a study by Flanagan et al²¹ voiced acceptability, with over half of the respondents reporting that screening increased trust in their clinician, and 75% felt it helped their clinician know them better. Kalmakis et al¹⁶ noted the positive association between ACE scores, chronic health conditions, and clinic visits and recognized that time spent addressing ACEs has the potential to affect patients' overall care. Integrating ACE screenings with periodic physicals or chronic disease management was not only acceptable to patients but also helped clinicians explore social factors that influence health.¹⁹

The findings of 2 studies document patient acceptability of ACE screenings during home visits.^{22,23} Mersky et al²² and Johnson et al²³ studied families with young children or pregnant mothers during home visits conducted by public health staff including social workers and public health nurses. Over 80% of the 1,678 women assessed indicated they were not uncomfortable or minimally uncomfortable with finishing an ACE screen with the assessor.²² Home screening acceptability offers an additional ACE screening platform for young families.²³ Johnson et al²³ proposed early intervention and linkage to resources are critical for young families given the importance of parent-child relationships and child development.

Two studies proposed the use of aggregate-level reporting of ACEs to further enhance patient acceptability.^{12,24} In this approach, patients provide a summary score for different categories of ACE so that patients' disclosure of specific adversities is avoided. A higher degree of privacy is given without disclosing specific traumas. In 1 study, aggregate-level reporting yielded 11.2% ACEs in parents and was statistically significant compared with 8.1% with a specific item tool.¹² Although aggregate-level reporting may prove beneficial for planning broad-level interventions, this approach makes it difficult for clinicians to tailor interventions to individuals based on specific childhood experiences.

Feasibility of ACE Screening

The feasibility of successfully incorporating ACE screenings in health care settings is a notable concern. Nine studies in this literature review explicitly addressed this issue. Before initiating ACE screenings, clinician informants expressed the following concerns: insufficient time, uncertainty of how to discuss past trauma, distress for family, and clinicians' lack of confidence on the topic.¹² Clinicians acknowledge their own anxiety in asking families to discuss personal topics.²⁵ Flanagan et al²¹ found that clinicians reported ACE screenings easier than they anticipated, and their comfort rose with experience. Major disruptions were not noted in office flow or visits. One study did identify the time to complete screens as a postimplementation barrier.²⁶ High ACE scores only slightly increased the chance for a longer office visit, with only 3% of patients with ACE scores requiring extra time; visits that needed

additional time only extended the visit by less than 5 minutes in 91% of cases.¹⁹ This time consideration was echoed by Gillespie and Folger,¹² who reported that the average ACE conversation lasted 3 to 5 minutes.

Although perceived barriers were noted before the implementation of ACE screenings, 8 studies echoed similar themes addressing feasibility postimplementation.^{12,16,19–22,25,26} Clinicians perceived ACE screenings to help develop a deeper clinician–patient relationship, highlight the mind and body connection, and foster integrated care.²⁵ In the study by Gillespie and Folger,¹² clinicians felt ACE screenings fostered a trusting relationship, increased their empathy toward patients, and led to better communication. A clinician in that study noted that after screening for ACEs, 9 mothers who had been screened disclosed interpersonal violence during follow-up visits.

Implementation of ACE Screening

Several studies addressed the best location or timing for performing ACE screening. Completion of the ACE screens can be performed in a variety of settings including during a home visit, before or during an office visit, and even individually within group settings.^{16,21,23,24} Nguyen et al²⁷ specifically studied pregnant patients' preferred location for completing ACE screening. Women's willingness to complete ACE screening in office waiting rooms, private examination rooms, inpatient rooms, or a group visit space were compared. Outpatient examination rooms were the preferred location for self-administered ACE screenings by pregnant women.²⁷ In addition to setting considerations, Marsicek et al²⁶ discussed form fatigue that can occur when a family is asked to complete numerous forms before a visit. ACE screenings could be implemented during a visit that had few or no other screens scheduled. Kia-Keating et al²⁵ suggested giving the form to families before the pediatric clinician arrives to make use of the time spent waiting.

Addressing positive screens with appropriate interventions is essential. Flanagan et al²¹ identified clinicians' readiness to screen for ACE was dependent on access to resources, including multidisciplinary behavioral health support. Clinicians voiced screening should not be initiated until a smooth path to resources has been paved.²¹

The studies examined in this review support ACE screening; however, reservations were also stated. In 2015, Bright et al²⁸ noted a consensus for screening but contended pediatric clinicians may be unprepared to screen and manage positive reports. Clinicians in the study were not consistently screening for ACE because of inadequate time or resources to manage ACE matters. Efforts to screen must be followed by the implementation of interventions and resources for addressing high ACE findings. A community assessment of available resources should be available for clinicians to provide patients who screen positive for ACEs.²²

Research findings support the need for clinician and staff education to successfully incorporate ACE screenings. One effective implementation strategy was a 4-hour training on ACE health impacts and trauma-informed care; the sessions increased clinician comfort, knowledge, and screening confidence.¹⁶ Marsicek et al²⁶ trained clinicians and staff to improve screening rates and recognized the need for annual curriculum for medical students and staff and onboarding training of new staff when turnover occurs. Involving support staff in addition to clinicians is contributory to the successful implementation of an ACE screening program.²¹ Practice interviews and ACE screening simulations helped prepare staff and clinicians to ask questions and respond with sensitivity.^{16,25} Expanding ACE training beyond clinicians was affirmed

in the study by Kia-Keating et al²⁵; all staff participated in ACE training to foster embracing trauma-sensitive care as a core value.

An association is evident between clinician and patient discomfort during screening. Client discomfort may be lessened by ensuring that the clinician is comfortable discussing ACE issues.²² Clinician discomfort is evident to patients in verbal or nonverbal cues, which increases patients' discomfort in being screened.²² Patients are willing to discuss trauma exposure and believe their clinicians will be able to provide assistance in a sensitive manner.²⁰ Education and training on ACE screening can mitigate clinician discomfort, a sentiment echoed throughout the studies included in this review.

Four studies within this review included non–English-speaking patients and families.^{12,23,25,26} Two of the studies used an ACE tool translated to Spanish.^{12,26} One study conducted during home visits used an interpreter for any non–English-speaking patient.²³ A study conducted in a community medical center used bilingual wellness navigators to assist non–English-speaking families to complete ACE tools while attending pediatric well-child appointments.²⁵

Discussion

Although many clinicians voiced concerns that patients would find ACE screenings to be too invasive, the studies included in this review suggest that the majority of patients find the ACE screening to be acceptable.^{7,12,16,19,21,22} In fact, most patients felt the discussion of ACEs enhanced their relationship with their health care clinician. Clinicians also gained understanding of their patients' background and reported increased empathy.^{12,25} Another widely noted perceived barrier was the concern that adding another screening would be burdensome to practices.^{21,26} After starting ACE screenings, clinicians and staff found the inclusion of ACE screenings manageable without significant disruption to office flow.¹⁹ Clinical organizations should consider the ideal location and timing for offering ACE screenings in clinical settings. In some instances, support staff were able to initiate screenings while the patient waited to be seen.^{25,26} Most studies found even ACE screens with numerous positive items rarely added more than 5 minutes to a visit.^{12,19} Several studies noted screenings with high ACEs may require more time; however, the evident link between ACE scores and chronic health conditions suggests the time spent on ACEs as a potential positive health impact.^{12,16,19} Several authors highlight that the successful implementation of ACE screenings requires trauma-informed education of clinicians and support staff.^{21,25,26} Organizational leadership can promote and support a culture of trauma-sensitive care within clinical systems by addressing flow and a smooth referral process so that clinicians have a clear path for positive ACE screens.^{25,26} Of the 4 studies that used language-translated ACE tools or language interpreters, the studies did not address translation in the results or limitations.^{12,23,25,26} Integrated primary care and behavioral health clinics offer ease in linking medical and behavioral health prevention visits.²⁵ Bridging the identification of ACEs to supportive services puts caring into action.

Limitations

We attempted to review all available pertinent studies; however, relevant studies may have been missed. Because this literature review was limited to peer-reviewed journals, publication bias may exist. Of greater significance, the 13 studies in this review included fairly small samples and varied in methodology, clinical setting, and patient and clinician demographics. These variations limit our confidence in proposing recommendations for specific health care settings or groups of patients.

Implications for Practice

ACEs are relevant to pediatric and adult health outcomes.^{1,25} High ACEs contribute to the risk of developing chronic health conditions; identifying such experiences may assist clinicians in providing patient-centered holistic care.^{16,25} Helping individuals and families identify and prevent ACEs is part of a clinician's role as a change agent and supportive family resource.⁷ This review suggests that clinicians' discomfort and reluctance to screen for ACEs is reduced when they receive trauma-sensitive education.^{16,21,26} This review also provides evidence that implementing screening is possible in a variety of health care settings including pediatric care, prenatal care, adult primary care, home visits, and schools.^{7,16,21,23}

Screening acceptability among clinicians is evident; however, assessment and availability of follow-up resources for positive ACEs are essential. Clinician support of ACE screening has been conditional on having easy access to resources or referrals.²¹ If local resources are unavailable for additional support, clinicians may not be well suited to screen for or manage ACEs.²⁸ With screening comes the ethical responsibility to provide appropriate follow-up care. Clinicians should be properly equipped to offer supportive follow-up to address needs identified through ACE screening, including for patients of all economic and racial/ethnic backgrounds.²⁸ The assessment of resources should be inclusive of diversity and consider cost, locality, transportation options to services, and wait time before appointments.²⁸ Resource assessment may identify areas of unmet needs for positive ACE screens. Until unmet needs identified with ACE screens can be addressed or followed up with additional resources, some clinicians caring for low-income families do not feel well equipped to conduct ACE screens.²⁸ Organizational steps can promote and support ACE screenings by incorporation into workflow, streamlining referral processes, and integrating behavioral health.²¹ Clinicians have proposed onsite social work staff to fill the gap between identified needs and action to help counsel, triage, and share community resources.²¹ Clinicians have identified that having linkages with an interdisciplinary team, including behavioral health, psychiatry, and social work, enhances willingness to screen for ACE.²¹

Despite challenges associated with screening and subsequent follow-up, ACE screening can enhance patients' health care experiences. Flanagan et al.²¹ found that over half of patients reported that having a conversation about ACE increased trust in their clinician, and 75% reported it helped their clinician better know them. One clinician noted that after discussing ACE screening with patients, 9 women disclosed being victims of domestic violence.¹² Patients came to understand health care settings as a safe place to discuss forces that impact health.^{7,12,25} Kia-Keating et al.²⁵ found clinicians' initial uncertainty about ACE screening diminished as they quickly recognized the positive impact screening had on building rapport and increasing meaningful conversations. Clinicians have voiced concerns that discussing sensitive issues raised by ACE screening may cause intense distress for patients; however, most patients answered ACE questions without intense distress.^{19–22} Clinicians recognized that ACE screening highlighted the connection between physical and mental health, helping integrate health care.²⁵ Most importantly, patients are ready and willing to have conversations about what impacts their health, including ACEs.⁷

The original ACE screening tool was developed from a homogeneous demographic group. Subsequent screening questionnaires have been created to expand the scope of use and applicability.¹¹ It should be recognized that some ACE screens may not be generalizable to all groups, such as families migrating from other countries or single-parent families.

This systematic review was concluded before the coronavirus disease 2019 pandemic that caused massive shifts in everyday life across the world. The authors of this review feel compelled to mention the potential adverse effects that the pandemic may have on the lives of children and their families. Although current ACE screening tools do not specifically include questions on natural disasters or pandemic outbreaks, the implications and effects of such events will likely be evident and warrant exploration. The authors of this literature review encourage clinicians to consider the effects of an unprecedented health crisis on vulnerable families.

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Christina Rariden, DNP, FNP-BC, PMHNP-BC, is an assistant professor at Saint Louis University in St Louis, MO, and can be contacted at christina.rariden@slu.edu. Lee SmithBattle, PhD, RN, is a professor at Saint Louis University, Saint Louis, MO. Jee Hye Yoo, MSN, is a PhD candidate at Saint Louis University, Saint Louis, MO. Nancy Cibulka, PhD, FNP-BC, is an associate professor at Saint Louis University, Saint Louis, MO. Deborah Loman, PhD, CPNP, is an associate professor at Saint Louis University, Saint Louis, MO.

In compliance with national ethical guidelines, the authors report no relationships with business or industry that would pose a conflict of interest.