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The evidence base for routine enquiry into adverse childhood experiences: A scoping review

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ABSTRACT

Background: Exposure to adverse childhood experiences (ACEs; e.g., maltreatment, household dysfunction) is associated with a multiplicity of negative outcomes throughout the life course. Consequently, increasing interest is being paid to the application of routine enquiry for ACEs to enable identification and direct interventions to mitigate their harms.

Objective: To explore the evidence base for retrospective routine enquiry in adults for ACEs, including feasibility and acceptability amongst practitioners, service user acceptability and outcomes from implementation.

Methods: A scoping review of the literature was conducted, drawing upon three databases (CINAHL, MEDLINE, PsycINFO) and manual searching and citation tracking. Searches included studies published from 1997 until end of April 2018 examining enquiry into ACEs, or the feasibility/acceptability of such enquiry across any setting. All included studies presented empirical findings, with studies focusing on screening for current adversities excluded.

Results: Searches retrieved 380 articles, of which 15 met the eligibility criteria. A narrative approach to synthesize the data was utilized. Four studies examined practitioner feasibility and/or acceptability of enquiry, three reported service user acceptability and six studies implemented routine ACE enquiry (not mutually exclusive categories). Further, eight studies explored current practice and practitioner attitudes towards ACE enquiry.

Conclusions: Limited literature was found providing evidence for outcomes from enquiry. No studies examined impacts on service user health or service utilization. Few studies explored feasibility or acceptability to inform the application of routine ACE enquiry. The implementation of routine ACE enquiry therefore needs careful consideration. Focus should remain on evaluating developing models of ACE enquiry to advance understanding of its impact.

1. Introduction

A global evidence base illustrates the impact of childhood experiences on child development and later life outcomes. Chronic stressors during childhood including experiencing maltreatment and exposure to household dysfunction (e.g., parental drug misuse or

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incarceration) have collectively been termed adverse childhood experiences (ACEs; Felitti et al., 1998). Exposure to chronic stress in childhood has been shown to have a detrimental effect on the immune system and neurological development (Danese & McEwen, 2012), impacting on how information is processed and processes for decision making, which in turn influence socialization and social interaction (Berens, Jensen, & Nelson, 2017). The life course impacts associated with ACEs include, but are not limited to, the adoption of health-harming behaviors (e.g., the misuse of alcohol), anti-social behavior (e.g., violence perpetration), and poor physical and mental health, including the earlier development of diseases, and increased use of health services (Bellis et al., 2017; Hughes et al., 2017; Melville, 2017). Furthermore, ACEs represent risks for the next generation, as their intergenerational transfer can occur when those who have experienced ACEs subsequently expose their own children to abuse, neglect or household stress (Larkin, Shields, & Anda, 2012). The abolition of all ACEs from society remains a long-term aspiration for policy makers, which is reliant on breaking these cycles.

Knowledge on, and awareness of, the extent of ACEs and their impact across the life course has rapidly increased over recent years, facilitated by a burgeoning international evidence base. A recent review found around half of adults in general population samples report at least one ACE and around 10% report four or more; with multiple ACEs consistently linked to harmful outcomes (Hughes et al., 2017). Studies find ACE prevalence levels in offender, homeless or psychiatric treatment samples, for example, to be substantially higher (Fox, Perez, Cass, Baglivio, & Epps, 2015; Larkin & Park, 2012; Levenson, 2016). As understanding of the importance of ACEs to health, social, educational and criminal justice priorities has grown, so has the drive to address ACEs in practice across multiple sectors. Thus, preventing and responding to ACEs has rapidly been prioritized in local and national policies (e.g., USA, American Academy of Pediatrics [AAP], 2012; UK, Welsh Government, 2017), with funding being channeled into data collection and research on ACEs (e.g., child welfare programs in Oklahoma State, USA; Centers for Disease Control & Prevention, 2018). Multi-agency efforts also increasingly focus on the development of trauma-informed services, which recognize the relationships between a history of trauma and current health or social problems (Pachter, Lieberman, Bloom, & Fein, 2017; Substance Abuse Mental Health Services Administration [SAMHSA], 2018). For example, in Wales (UK) evidence from national ACE surveys has driven the development of ACE-informed practice across health, social care, education and justice sectors. The Welsh Government prioritize support for families to reduce ACEs and the development of ACE-informed public services in their national strategy (Sethi et al., 2018; Welsh Government, 2017). Similar developments are occurring across the USA, for example in Philadelphia a multi-sector collaborative task force has created a community-based ACE framework. This includes an expansion of the research agenda and the identification of local needs for professional training, trauma and resilience interventions and community engagement (Pachter et al., 2017). While examples of such changes to policy and practice are beginning to emerge in the literature, evidence on their impact is still in its infancy. Capturing such changes in policy and practice and building evidence on their effectiveness are important areas for future research.

A key focus of responses to ACEs has been the consideration of widespread or universal screening or routine enquiry on ACEs in health and other settings (Dube, 2018; Waite, Gerrity, & Arango, 2010). Routine enquiry for ACEs seeks to move beyond professionals responding ad hoc to spontaneous disclosure of abuse. Instead, it enables the professional to proactively and sensitively enquire about past childhood experiences with all service users and tailor support accordingly. The identification of ACEs through routine enquiry was first proposed by Felitti (2004). Felitti (2004) suggested that enquiry as part of standard medical assessment held a therapeutic benefit, reporting a 35% reduction in visits to the doctor's office and an 11% reduction in visits to the Emergency Department for individuals screened. It has been argued that routine ACE enquiry across all populations, offers the opportunity to identify individuals who are at high-risk of developing poor health outcomes and can inform care and treatment options (Burke, Hellman, Scott, Weems, & Carrion, 2011; Glowa, Olson, & Johnson, 2016). Subsequently, some researchers have suggested that in healthcare settings, routine ACE enquiry during service user assessments/interactions should be widely implemented (Burke et al., 2011; Goldstein, Athale, Sciolla, & Catz, 2017; Lee, Coles, Lee, & Kulkarni, 2012; Waite et al., 2010; Weinreb et al., 2010). Such calls have increased in recent years despite a lack of clarity on the benefits and outcomes associated with enquiry (Finkelhor, 2017). Critically, the push and enthusiasm for responses to ACEs across multiple agencies has led to growing demand for, and implementation of, routine ACE enquiry ahead of evidence being available to understand its utility and benefits. The recent special edition in *Child Abuse & Neglect* highlights cautions expressed by some researchers over the implementation of widespread or universal ACE enquiry (Afifi, 2018). Alongside other researchers, Afifi (2018) highlights a need for: clarity on the value and impact of routine enquiry for childhood adversity across health settings, including any negative outcomes for both service users and service delivery; the identification of appropriate and effective responses and interventions to support individuals following an ACE disclosure in this context; and, agreement on what adversities should be covered by enquiry (Finkelhor, 2017, Bair-Merritt & Zuckerman, 2016; Dube, 2018; Edwards et al., 2001). Furthermore, researchers have indicated a need to explore service user acceptability of routine ACE enquiry to understand any potential therapeutic benefit, along with its impact on patient satisfaction, the patient-practitioner dialogue and short-and long-term service use (Dube, 2018; Hardcastle & Bellis, 2018).

Despite ACEs being common, it is not known how routinely they are enquired about across a range of services, including healthcare, or if this information is collected through other means. ACE measurement tools such as the short Centers for Disease Control and Prevention tool (Felitti et al., 1998) and ACE-IQ (Meinck et al., 2016; World Health Organization [WHO], 2012) have frequently been used in research contexts, yet were not developed for routine use in practice. Further, research has suggested that there is a lack of knowledge of ACEs amongst healthcare and other frontline professionals, who have reported a number of barriers to discussing trauma. These include a lack of practitioner confidence; concern about re-traumatizing; insufficient time to enquire; and a lack of resources or skills for follow-up support for those affected (Aponté, 2017; Bethell et al., 2017; Ford, Newbury, Meredith, Evans, & Roderick, 2017; Forstadt, Cooper, & Andrews, 2015; Kalmakis, Chandler, Roberts, & Leung, 2017; Kerker et al., 2016).

As recognized by Afifi (2018), routine ACE enquiry is a challenging issue requiring careful consideration. The aim of the review

presented here is to offer further insight on these issues. It sought to explore the evidence base for routine ACE enquiry with adults (i.e., retrospective enquiry) in any setting. It sought to answer the question, what is the evidence base on routine ACE enquiry regarding: 1) practitioner feasibility and acceptability; 2) adult service user acceptability; and 3) the implementation of enquiry and its outcomes for individuals (e.g., mental-wellbeing, harms such as re-traumatization) and organizations (e.g., service provision/use, workload). Unlike previous commentaries on the value of ACE routine enquiry (Dube, 2018; Finkelhor, 2017; Forstadt et al., 2015; Freeman, 2017; Melville, 2017; Soleimanpour, Geierstanger, & Brindis, 2017), or examples of enquiry amongst children (Meinck et al., 2016; Purewal, Marques, Koita, & Bucci, 2016), to our knowledge, this is the first review to examine the evidence base for routine ACE enquiry with adults. These findings will provide an overview of the application, benefits and challenges of routine ACE enquiry, which will inform practice and policy. The findings will also identify gaps which can be addressed through future research.

2. Methods

2.1. Search strategy and eligibility criteria

The study followed the Arksey and O'Malley Framework for scoping reviews (Arksey & O'Malley, 2005). A strategy was developed iteratively using search terms utilized in systematic reviews on ACEs (Hughes et al., 2017) and an examination of key words used within prominent ACE literature (for search strategy see Supplementary Material, Table S1). Search terms included enquiry and screening given that these are often used interchangeably in the literature, with a slight bias towards screening in the USA and enquiry in the UK. In this manuscript the term enquiry is used to include any activity to ask about ACEs on a routine basis. To reflect the interdisciplinary aims of the review, three databases (CINAHL, MEDLINE and PsycINFO) were searched for peer-reviewed studies published between 1st January 1997 and 30th April 2018. The first major studies on ACEs emerged in the late 1990s (Felitti et al., 1998) and therefore the possibility of peer review studies meeting the eligibility criteria published prior to this date was unlikely. No limit was set to the geographical context or language of research studies included in the search.

In addition, manual searches using the general search terms for ACEs and screening/enquiry were undertaken and reference lists of retrieved studies were explored to identify potential additional studies of relevance. Data were extracted using a data charting form in Microsoft Excel.

Articles were included for full text review if they reported original data regarding routine enquiry in adults, or the feasibility and/or acceptability of enquiry for at least one type of ACE (including sexual, emotional or physical abuse, physical or emotional neglect, and exposure to household stressors including living in a household affected by parental separation, domestic violence, alcohol or drug misuse, mental illness or incarceration) within any population (i.e., practitioner, service user). No limitations were applied on the setting for enquiry (e.g., healthcare), the method for enquiry (e.g., self-reported), or the tool used (e.g., questionnaire, semi-structured interview). Articles examining enquiry for adversity among children or which focused solely on understanding the prevalence of ACEs amongst specific groups (e.g., cancer patients; Mouton, Hargreaves, Liu, Fadeyi, & Blot, 2016) were excluded, as were articles which discussed the development or validation of screening tools.

2.2. Study selection and synthesis

Searches were conducted by the lead author in May 2018. 370 unique references were retrieved. Two reviewers independently reviewed the titles and abstracts of retrieved articles to determine eligibility for inclusion. A third reviewer was included to resolve disagreements on the inclusion of articles. An additional 11 articles were retrieved through a manual search of literature and examination of reference lists. Cohen's κ determined substantial agreement between reviewers at the title and abstract review stage, $\kappa = .752$, $p < 0.001$. After title and abstract review, 34 potentially relevant articles (8.9% of all identified articles) were retrieved and were subject to a second round of full-text assessment by the lead reviewer. Of these, 15 (3.9%) articles met the eligibility criteria and were included in data extraction (Fig. 1).

Two reviewers independently assessed included articles for quality using criteria based on the Downs and Black (1998) quality assessment checklist for quantitative studies and guidelines for the evaluation of quality and evidence in qualitative studies (Kennelly, 2011). This included questions related to the study's research design, sampling and data analysis. Studies received a point for each quality criterion that they met (see Supplementary Material, Table S2). The present paper presents an overview of all material reviewed. Due to the limited amount of studies identified and their heterogeneity, a quantitative synthesis of the findings was not possible. Instead, a narrative approach to synthesize the data was taken, summarizing key findings of included studies for the purpose of creating a guide to aid future research, policy, and practice on routine ACE enquiry. Studies were grouped according to their characteristics (e.g., service user acceptability) then a thematic descriptive account and evidence tables were produced.

3. Results

3.1. Overview of included studies (Table 1)

Table 1 presents an overview of all studies included in the review. Four studies examined practitioner views on feasibility (e.g., if enquiry can be completed) and/or acceptability (e.g., if enquiry is appropriate), three explored service user acceptability of routine enquiry. Six studies reported on outcomes from implementation of routine ACE enquiry, and eight measured the current practice of enquiry for at least one ACE; however, studies were not mutually exclusive to these categories. Twelve of the studies were published

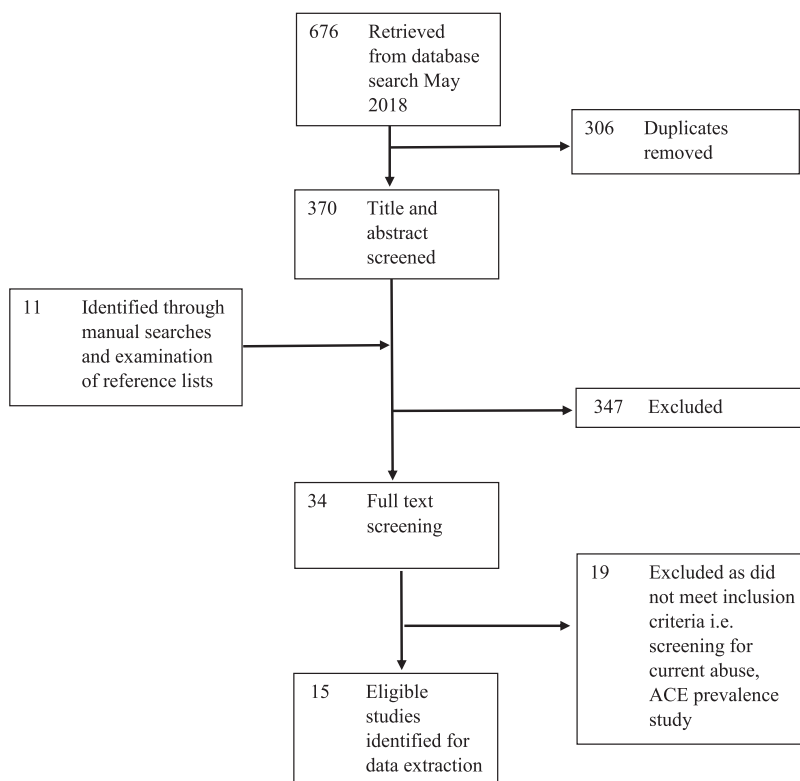


Fig. 1. PRISMA flow diagram of study selection.

since 2016 (date range 2001–2018) and the majority of studies used samples from the USA. All studies implementing routine ACE enquiry ($n = 6$) were conducted in the USA.

3.2. Evidence on practitioner feasibility and acceptability of routine enquiry (Table 2)

Four studies explored practitioner views of feasibility and/or acceptability of delivering routine ACE enquiry, all of which were located within a USA primary care or allied health setting (see Table 1). Across all studies, practitioner views were captured using a questionnaire; although method of delivery varied (e.g., online, mail).

Findings varied across studies, but in the majority, practitioners reported that they were comfortable conducting ACE enquiry, felt that enquiry was easier than anticipated, and perceived that patients had a high willingness to complete enquiry. Several of the other studies included in the review, reported service user acceptability indirectly through practitioner feedback. Of these, two studies highlighted that service users did not express distress or negative feedback as a result of the routine enquiry (Gillespie & Folger, 2017; Glowa et al., 2016), and other studies did not report negative feedback by practitioners.

When practitioner concerns were explored prior to enquiry, these primarily focused on time limitations and implications; a lack of confidence in enquiring; and not knowing how to respond to the disclosure of ACEs. Where explored post enquiry, the barriers of confidence and guidance on how to respond to the disclosure of ACEs remained across studies. However, practitioners in three studies reported that enquiry had minimal impact on the visit/appointment length, adding between 5–10 minutes onto appointment times (Flanagan et al., 2018; Glowa et al., 2016; Kalmakis, Shafer, Chandler, Aponte, & Roberts, 2018). Other studies did not discuss time impacts.

Reported outcomes for the practitioner included increased empathy and communication with service users. Practitioners reported that enquiry did not usually change the care in the visit, or the plan for follow up. However, none of the studies included in the review conducted long-term follow up to examine impacts of routine enquiry on future attendance, or service user and provider relationships.

3.3. Evidence on adult service user acceptability of routine enquiry for ACEs (Table 3)

Three studies used short surveys or interviews to explore service user (total $n = 377$) acceptability of retrospective routine ACE enquiry; summarized in Table 3. All of these studies were conducted in primary care settings in the USA (see Table 1).

Where described, the majority of service users (79%–91% across studies) reported that they were comfortable being asked about their childhood experiences, especially when routine enquiry was perceived to facilitate access to resources. Service users

Table 1
Characteristics of all studies included in review.

Citation	Country	Study classification	Study sample (setting for enquiry)	Study aim	Enquiry tool / ACEs included	Findings explored			
						Example of RE	Service user acceptability	ACE awareness or current practice	Practitioner feasibility or acceptability
Johnson et al., 2017	USA, Minnesota	Pilot	Parents (home)	Assess feasibility of parental ACE screening in the home setting	ACE-10	✓	x	x	x
Gillespie & Folger, 2017	USA, Oregon	Pilot	Parents & providers (Pediatric clinic)	Explore feasibility and provider acceptability of enquiry	ACE-10, ACE-14	✓	x	x	✓
Goldstein et al., 2017	USA, California	Cross-sectional	Patients (rural medical/health clinic)	Assess patient preferences for discussing ACE scores	ACE-10	✓	✓	x	x
Glowa et al., 2016	USA, New Hampshire	Pilot	Patients (rural medical/health clinic)	Explore provider acceptability and feasibility	ACE- 10	✓	x	x	✓
Flanagan et al., 2018	USA, California	Pilot	Pregnant women (Prenatal medical centers)	Explore feasibility and acceptability of ACE enquiry in standard prenatal care	Behavioral Risk Factor Surveillance System Questionnaire (8 ACEs)	✓	✓	✓	✓
Kalmakis et al., 2018	USA, Massachusetts	Pilot	Adults & NPs (rural medical/health clinic)	Examine feasibility of ACE screening in individuals with chronic health conditions	Adapted ACE-10 (19 ACEs)	✓	x	x	✓
Conn et al., 2017	USA, NS	Mixed-methods	Parents (urban pediatric clinic)	Assess service user acceptability of routine enquiry in a pediatric setting	ACE-10	x	✓	x	x
Richardson et al., 2001	UK, London	Cross-sectional	Health professionals	Describe attitudes and practice regard to routine questioning for historical DV and CSA	CSA, DV	x	x	✓	x
Weinreb et al., 2010	USA, Massachusetts	Cross-sectional	Family physicians	Describe practitioner practice and feasibility of enquiry for childhood sexual or physical abuse	Childhood sexual or physical abuse	x	x	✓	✓
Kalmakis et al., 2017	USA, Massachusetts	Mixed-methods	Nurse practitioners	Examine nurse practitioner practices, skills attitudes and perceived barriers to enquiry	CA	x	x	✓	✓
Tink, Tink, Turin, & Kelly, 2017	Canada, Alberta	Cross-sectional	Family medicine residents	Identify current practice, ACE knowledge, attitudes and personal ACE history	ACEs (Not specified)	x	x	✓	✓
Mansfield, Meehan, Forward, & Richardson-Clarke, 2017	Australia, Queensland	Mixed-methods	Mental health practitioners	Identify what influences practice in enquiring for CSA	CSA	x	x	✓	✓
Szilagyi et al., 2016	USA, national	Cross-sectional	Pediatricians	Examine pediatric practice in inquiring about parents' ACEs	8 ACEs ^a	x	x	✓	x
Kerker et al., 2016	USA, national	Cross-sectional	Pediatricians	Examine pediatric practice in inquiring about parents' ACEs	7 ACEs ^b	x	x	✓	x

(continued on next page)

Table 1 (continued)

Citation	Country	Study classification	Study sample (setting for enquiry)	Study aim	Enquiry tool / ACEs included	Findings explored			
						Example of RE	Service user acceptability	ACE awareness or current practice	Practitioner feasibility or acceptability
Lee et al., 2012	Australia, national	Cross-sectional	Mental health practitioners	Determine frequency in which practitioners encounter CA and their views on routine enquiry	CA	x	✓	x	x

^a Physical or sexual abuse, emotional abuse, physical or emotional neglect, domestic violence, parent mental illness, parent substance misuse, raised by one parent, incarceration and food scarcity.
^b Maternal depression, parental separation/divorce, physical or sexual abuse, hostile/rejecting parenting by mothers, domestic violence, parental alcohol/drug use, incarceration. NS = Not specified; RE = Routine enquiry; DV = Domestic violence; CSA = Child sexual abuse; CA = Child abuse; NPs = Nurse Practitioners.

Table 2
Summary of methods and findings for studies including practitioner acceptability and feasibility of ACE routine enquiry.

Citation	Provider type (N; response rate)	Method	Impact on structure / practice / time	Perceptions / reaction following enquiry	Usefulness of information learnt	Resource use with service user	Interpretations of service user acceptance	Perceived outcomes and changes to practice	Barriers and what needs to change for future
Gillespie & Folger, 2017	Pediatric clinicians (19; 61%)	Qualitative feedback (provided online), following enquiry with patients	Average enquiry lasted 3-5 min.	All reported enquiry was not as daunting as previously thought. Surprised by patient willingness to discuss difficult experiences	All reported information learnt was of use to clinical practice	Majority stated they had not needed the resources	Reported little resistance from parents in completing assessment tool and that parents seemed grateful at being asked	Increased empathy and communication, knew patients better. More trusting relationship and better understanding of forces that shape parenting. Two providers referred a patient to a mental health provider. One reported that since enquiry 9 mothers reported DV in subsequent visits	2 cited a lack of personal confidence as a barrier. Providers requested: further knowledge on positive parenting theory/applications and general TIC theory, and tips and strategies for addressing ACEs when reported
Glowa et al., 2016	Family clinicians (111 questionnaires by 7 clinicians; not reported)	Questionnaire, following enquiry with patients	Lengthened time of visit but in 90% added ≤ 5 min., none by ≥ 15 min.	100% reported enquiry did not interfere with visit	Provided new information	-	98% felt it was acceptable to the patient	Did not usually change the care in the visit, or the plan for follow up, and resulted in no new referrals	-
Flanagan et al., 2018	Clinicians (26; not reported)	Questionnaire pre- and post- pilot and semi-structured focus groups, following completion of the pilot	Identified a need for 'buy-in' from medical assistants; an enthusiastic clinician champion; an automated system to flag those who required enquiry; and for ACE data to be recorded electronically	Reported easier than expected and comfort increased over time. Appreciated enquiry being concurrent with a screen for resilience to understand how patient was coping	Valued as part of prenatal care	Support for screening was contingent on having a resource handout and psychiatry on site	-	-	Require further guidance on how to respond when ACEs reported. Agreed enquiry should not be rolled out until resources or referrals were securely in place
Kalmakis et al., 2018	SNPs (71 questionnaires; not reported)	5-item post-interview questionnaire	Average enquiry lasted 8.5 min. (range 3–20). Correlation between higher ACE scores and longer interviews	After 2 interviews, SNPs reported feeling very comfortable and very confident in their knowledge and ability to enquire	-	-	-	28% resulted in referrals to the clinic NP for follow-up care	-

TIC = Trauma-informed care; SNP = Student Nurse Practitioner; NP = Nurse Practitioner; DV = Domestic violence.

Table 3
Summary of studies examining service user acceptability of routine enquiry for ACEs.

Citation	Sample (N; response rate)	Method of delivery	Acceptability of enquiry	Comfort of discussion with provider	Perceptions of provider ability to enquire	Perception of provider ability to address ACE associated problems	Barriers / dissatisfaction
Goldstein et al., 2017	Patients (152; 83%)	Patients recruited in waiting room to complete an ACE questionnaire, PC-PTSD screen and a 5 item patient questionnaire (designed to assess comfort for screening/disclosing childhood trauma and perception of clinician ability to help with problems)	79% comfortable being asked about ACEs and 86% comfortable being screened for ACEs by their clinician	None reported but 70% comfortable having ACE questionnaires in medical records	70% perceived clinician would be comfortable in asking about ACEs	73% clinician would be comfortable addressing associated problems	–
Flanagan et al., 2018	Pregnant women (210; 59%)	Telephone interview (7-10 min.) Received opt out pre-mailer 2 weeks post enquiry	91% very or somewhat comfortable completing the ACE questionnaire	93% very or somewhat comfortable discussing ACEs	85% thought clinicians should ask patients about ACEs, 96% reported that their clinician listened to them carefully	82% very satisfied or satisfied with how clinicians are responding to ACEs	A small number voiced dissatisfaction due to lack of: empathy; time to discuss; or, useful resources
Conn et al., 2017	Parents (15; 100%)	Approached in waiting room by researchers and asked to complete a semi-structured interview, which was completed after attendance for child's visit	Parents supported ACE enquiry as a bridge to services. Perceived as beneficial in uncovering family needs/ facilitating access to resources and a strategy to start conversations about parenting	Reported comfort in knowing that they can refuse questions	Believed pediatric health professionals could help them break the cycle of adversity and that these were the right individuals to do the enquiry	Saw pediatricians as a change-agent who could support them to meet their parenting goals, and as a trusted resource for future support	Some concern for the re-traumatizing of individuals, some were less comfortable and felt it needed additional sensitivity

PC-PTSD = Primary care posttraumatic stress disorder screen.

Table 4
Summary of design and outcomes for implementation of routine enquiry for ACEs.

Citation	Sample (sample selection)	Inclusion criteria	N (response rate)	Sample demographics	Method of completion	Practitioner role	ACE prevalence		Outcomes of enquiry	
							Resources provided	≥ 1		≥ 4
Johnson et al., 2017	Parents (all eligible)	Low income or at-risk for child maltreatment; child aged < 1 year	EHS 20 (100%) OCPHS 90 (96%)	85% female 93% female	Self-report or complete with home visitor / intake nurse at home	Would discuss results if the service user requested - uptake not reported	Video and ACE explanation pamphlet	80%	45%	Teaching and referrals made in response to ACEs identified - uptake not reported On-going nurse available for discussion - uptake not reported
Gillespie & Folger, 2017	Parents (convenience sample)	Bringing their child to four month well-visit	2,283; 1,308 ^a , 975 ^b (not reported)	Not reported for full sample	Self-report in the waiting or exam room	Providers collected questionnaires during the well-visit; explored answers with parents (using suggested questions adapted from AAP resource) as part of visit and subsequent visits	-	47% ^a 48% ^b	8% ^a 11% ^b	156/921 requested resource support (some > 1 type); 68 = parenting classes; 56 = support groups; 38 = website information; 38 = twitter; 17 = home visitation; 14 = respite nursery, 1 = counselling None reported
Goldstein et al., 2017	Patients (convenience sample)	Aged 18+, English-speaking	152 (83%)	65% female; 29% aged 18-34, 7% aged 65+; 63% Latino	Self-report, administered orally to those unable to read	-	Behavioral health counsellors onsite if patient distressed	34%	42%	-
Glowa et al., 2016	Patients (convenience sample - 20 consecutive patients per clinician)	Aged 18+, non-acutely ill, presenting for annual physical/follow up of chronic illness	127; 111 in analysis (100%)	61% female; age range 19-87	Self-report in the waiting room	Clinicians viewed questionnaires during the office visit and issues detected on the ACE were discussed during the visit	-	62%	22%	Resulted in no new referrals. Reported to have changed care for 1 in 6 - no detail reported
Kalmakis et al., 2018	Patients (all eligible)	Aged 21+	71 (not reported)	69% female; age range 21-80; 100% White European	One-to-one interviews and questionnaires	Protocol to enquire and respond if ACEs referred to counselling, the clinic NP or community services	-	82%	53%	28% referred to NP for follow-up care - 39% declined; 12 no ACE history, 2 receiving counselling, 9 reported current relationships/social support Referrals to behavioral health, psychiatry and resource list however uptake not reported
Flanagan et al., 2018	Pregnant women (all eligible)	Aged 18+, English-speaking, completed 2nd/ 3rd prenatal visit	375 (78%)	100% female	Self-report in the exam room	Clinicians reviewed with patients	Site-specific resource list	46%	18% (3+)	-

^a Item level tool.

^b Aggregate level tool. EHS = Early head start; OCPHS = Olmsted County Public Health Services; AAP = American Academy of Pediatrics; NP = Nurse Practitioner.

predominantly reported that clinicians were the right people to enquire about ACEs, and indicated a high confidence in the ability of the provider to enquire and address associated problems. The only study to examine perceptions on data storage found a high proportion (70%) of participants were comfortable having their ACE data held in their medical records (Goldstein et al., 2017).

A number of barriers to enquiry were highlighted by service users. Flanagan et al. (2018) noted that a small proportion of service users reported dissatisfaction with routine enquiry due to lack of empathy of the practitioner, a lack of time to discuss results, or a lack of useful resources provided to them following enquiry. Further, Conn et al. (2017) identified concern amongst some service users for the re-traumatizing of individuals. Despite a general high level of reported comfort, some service users reported a need for additional sensitivity during enquiry.

3.4. Evidence on the implementation of routine ACE enquiry and its outcomes (Table 4)

Six studies had implemented routine ACE enquiry ($n = 6$); summarized in Table 4. The majority of studies were conducted in primary care across populations not defined as high-risk, except for one study targeting parents defined as low income or with children at-risk of maltreatment (Johnson et al., 2017). Samples varied in size from 8 to 2283 and were predominantly female, and parents of young children or expectant parents. Where reported (4 out of 6 studies), a high proportion of service users approached for routine enquiry agreed to participate (78%–100%).

Four studies utilized a 10-item ACE tool to enquire about ACEs (see also Table 1; Felitti et al., 1998), with one study using a modified 19-item version (Kalmakis et al., 2018) and one study using the 11-item Behavioral Risk Factor Surveillance System Questionnaire (Flanagan et al., 2018). Routine enquiry primarily utilized a self-completion method, with one study incorporating one-to-one interviews and questionnaires (Kalmakis et al., 2018). Input from practitioners during self-completion across studies was limited to support and assistance for those who were unable to read or who wished to complete the tool alongside the practitioner. Only one study outlined how ACE data were stored. Here, data were held in service user records, accessible for future visits, but not transmitted within service user records outside of the pediatric clinic (Gillespie & Folger, 2017).

Limited information was provided across studies on the action taken by practitioners following routine ACE enquiry. Where information was provided on referrals or voluntary requests for services (e.g., counselling, follow-up care, parenting classes or support groups; Flanagan et al., 2018; Gillespie & Folger, 2017; Johnson et al., 2017; Kalmakis et al., 2018) no detail was provided on the thresholds for referral. Furthermore, when enquiry reportedly resulted in a change to clinical care for service users with high ACE scores, no detail was provided on how care was altered (Glowa et al., 2016). No studies measured any impacts from enquiry in terms of changes in service use, uptake of resources or referrals, or future service user treatment. Flanagan et al. (2018) was also the only study to explore the impact of enquiry on the patient and provider relationship. In this study, 11% of service users reported that a conversation on ACEs had changed their relationship with the clinician; 53% of whom reported increased trust and 75% that they felt clinicians knew them better.

A further eight studies measured current practice of routine enquiry for one or more ACE types (Table 5). These studies were conducted within health settings across a range of upper income countries (Australia, 2; Canada, 1; UK, 1; USA, 4; Table 1). The frequency of enquiry across studies was low and dependent on the types of adversity enquired about, with one study indicating that 61% of practitioners did not ask most/all service users about any ACEs (Szilagyi et al., 2016). The studies also included practitioner perceptions on current barriers for enquiry and their responsibility to enquire. Practitioners generally held a belief that they should enquire about childhood adversity (summarized in Table 5). Only three studies explored practitioner awareness of ACEs, highlighting low levels of awareness amongst pediatricians and family medicine residents.

4. Discussion

ACE tools have been widely advocated for use in research to explore ACE prevalence and associated negative outcomes. Recent calls to implement widespread routine ACE enquiry have drawn discussion on this challenging issue, with ongoing debate about its desirability and effectiveness to support people who have experienced ACEs (Dube, 2018; Finkelhor, 2017). In response to requests to further the evidence base (Afifi, 2018), this review sought to explore the application of routine enquiry in practice across any setting, including practitioner feasibility and acceptability, service user acceptability, and evidence of the outcomes of implementation. To our knowledge, this review is the first to comprehensively examine the evidence for routine ACE enquiry. The review identified limited literature providing evidence for retrospective ACE enquiry amongst adults. While routine ACE enquiry is being implemented in some health settings to ascertain service users' past exposure, its purpose (e.g., the intention to inform care) is not always clearly defined. The findings of this review are important for furthering understanding of the value of routine enquiry and serve to highlight a number of areas that future research on this topic should consider.

4.1. The setting for routine enquiry

All studies exploring implementation of routine ACE enquiry identified in this review had been conducted in health services in the USA; predominantly in primary care settings and particularly pediatrics (i.e., targeting parents). It has been suggested that primary care services are uniquely positioned for universal routine ACE enquiry (Gillespie & Folger, 2017; Kalmakis et al., 2018; Kerker et al., 2016). However, studies are yet to examine routine enquiry in other primary care provisions such as pharmacies, or in other health settings. If routine ACE enquiry can raise awareness amongst health professionals, support the care of the individual and aid the implementation of effective interventions, this may contribute towards the long-term prevention of ACEs. While routine enquiry has

Table 5
Summary of included studies which examined current practice for retrospective enquiry of childhood adversity.

Citation	Provider type (N; response rate)	Method	Sampling	ACE awareness	Current practice	Perceptions on role to enquire	Confidence in ability to enquire	Current practice for referrals	Current barriers to practice	Current training
Richardson et al., 2001	Health professionals ^a (401; 57%)	Anonymous questionnaire	All working in study area	-	3% routinely enquired about DV/CSA	< 10% agreed that they should routinely enquire about CSA. Practice nurses less likely to think that routine enquiry for DV should take place	-	-	-	-
Weimreb et al., 2010	Family physicians (380; n = 313 in analysis; 46%)	Postal questionnaire	Cross-sectional survey of members of MAFP in 2007	-	< 1/3 usually/always enquired for childhood trauma; 25% rarely/never; > half reported discussing the abuse history in some detail with the patient	4 in 5 believed role includes screening for history of CA to a moderate or great extent	50% moderately/very confident; those with higher confidence were more likely to enquire	76% usually/always suggested a referral to mental health provider; 34% noted possibility of medication	89% not enough time to ask; 92% not enough time to evaluate or counsel; 66% competing primary care recommendations; 45% little I can do to help	Almost 40% identified no formal training
Kalmakis et al., 2017	NPs (238 questionnaires; n = 188 in analysis; 6 focus groups; 78%)	Online questionnaire; web-based focus groups	Convenience	-	34% reported usually/always enquired for a CA history; 66% reported rarely or never enquired; those who felt it was moderately/very useful to the patient were 10x more likely to enquire	Participants agreed that ACE enquiry should be part of routine primary care & available in patient health record	Those who usually/always screened had greater confidence; 52% not at all/somewhat confident. Most would wait for a disclosure	Of those who enquire, 92% usually/always suggest a mental health referral when history of trauma is reported	Insufficient time; lack of confidence; discomfort in enquiring about psychosocial issues; concern about re-traumatizing/offending patients; feeling little they can do to help; need a relationship with patient before enquiry	47% reported no education
Tink et al., 2017	Family medicine residents (112; 97%)	Questionnaire (paper)	All present on training day	1/3 correctly identified ACE prevalence	2% usually/always screened patients on the first visit. Female patients were more likely to be screened at subsequent visits than males	Almost 80% believed it was their role to enquire and was of benefit to the patient	65% not confident	-	Time to ask; time to counsel; competing primary care recommendations; uncertainty about when and how to screen; concerns about rapport with patients	55% received no formal training to enquire
Mansfield et al., 2017	Mental health practitioners (57; 92%)	Questionnaire distributed at team meetings	Not reported	-	-	-	-	-	Awareness of internal processes and protocols; available resources and referral pathways; need for additional training	Perceived need for additional training
Szilagy et al., 2016	Pediatricians (594; n = 302 in after national 85th	Questions ^b included in the national 85th	National random sample	13% vaguely familiar with ACE study,	61% did not ask most/all parents about any parental	79% disagreed that advice from pediatricians has	-	-	-	-

(continued on next page)

Table 5 (continued)

Citation	Provider type (N; response rate)	Method	Sampling	ACE awareness	Current practice	Perceptions on role to enquire	Confidence in ability to enquire	Current practice for referrals	Current barriers to practice	Current training
	ineligible removed; 37%)	Periodic Survey of the AAP (2012)		8% somewhat, 2% very	ACE, only 15% asked about 3 + ACEs. Respondents who agreed that advice from pediatricians influences positive parenting skills were significantly more likely to enquire about 3 + ACEs	little effect on influencing positive parenting; 81% disagreed that screening is beyond the scope of the pediatric medical home				
Kerker et al., 2016	Pediatricians (594; n = 302 in analysis after ineligible removed; 37%)	Questions ^b included in the national 85th Periodic Survey of the AAP (2012)	National random sample	13% vaguely familiar with ACE study, 8% somewhat, 2% very	32% reported that they did not usually ask about any ACEs, 4% reported usually enquiring about all 7 ACEs, 2% routinely used a screening tool	79% disagreed that advice from pediatricians has little effect on influencing positive parenting; 81% disagreed screening within the family are beyond the scope of the pediatric medical home	-	-	-	-
Lee et al., 2012	Primary care mental health practitioners (GPs, psychologists, social workers; 186; not reported)	Online questionnaire	Random/opportunistic sample, recruited through adverts	-	68% routinely screened women for histories of CA; 12% GPs, 78% psychologists and 73% other professionals 'agree' or 'strongly agree' that they routinely screen women with CA experiences	Differences between practitioner groups in levels of belief, confidence and comfort in screening and supporting. 28% GPs thought routine enquiry of CA should occur	GPs were significantly less likely to screen routinely and reported lower levels of confidence	-	-	> 55% noted they would benefit from further training

^a GPs, practice nurses, health visitors.

^b Questions included: beliefs about childhood stressors, their role in advising parents and current practice for enquiry. AAP = American Academy of Pediatrics; CA = Child abuse; CSA = Child sexual abuse; DV = Domestic violence; GPs = General Practitioners; MAPF = Massachusetts Academy of Family Physicians.

been successfully implemented for prospective ACEs in children (for example, the Safe Environment for Every Kid [SEEK] program [Dubowitz, Lane, Semiatin, & Magder, 2012]), future research could explore the evidence base for ACE enquiry during childhood. As the findings of this review have demonstrated, evidence of the impacts of retrospective routine enquiry into ACEs is yet to emerge.

With consideration also being given to routine ACE enquiry in non-health settings, for example, criminal justice services, research needs to explore the feasibility, acceptability and outcomes from ACE enquiry in such settings. Furthermore, study populations were largely female and expectant parents or parents of young children, thus transferability to other demographics or in non-family contexts is unclear. Critically, with all studies implementing routine ACE enquiry having been conducted in the USA, there is an urgent need for research on ACE enquiry in other countries. The transferability of current evidence to countries and systems, such as a state provided structure for example, the UK National Health Service, is unknown. Differences in norms, cultural traditions, system structures and access to care, all need to be considered as factors which may influence the process and outcomes of the application of routine enquiry in other countries.

4.2. Process for enquiry and service implications

The majority of examples identified within this review relied on participants self-completing an ACE tool when attending a regular appointment, but other options for enquiry (e.g., practitioners verbally enquiring) have not been explored in detail. The majority of studies reported here used the ACE-10 item scale, however this tool was originally developed for research purposes and thus its applicability for routine enquiry needs to be further explored across future studies. One study identified in this review indicated that ACE prevalence was higher when an aggregate-level response tool was used. This tool asked respondents to disclose the total number of ACEs they had experienced as opposed to an item-level tool specifying which ACEs they were exposed to (Gillespie & Folger, 2017). Discussion has already been paid to tools suitable to explore childhood maltreatment (Meinck et al., 2016) and although a wealth of research examines suitable tools for enquiry of current childhood maltreatment, their use in retrospective routine ACE enquiry needs to be further examined. Research should consider what ACEs routine enquiry should encompass (i.e., all ACEs, or one/two) or if enquiry should be at an individual or aggregate level. Research into screening for alcohol interventions has found that shorter tools are favored over longer measurements (Kaner et al., 2018).

Studies have yet to explore in detail when routine ACE enquiry is best placed to occur, or how enquiry may fit within existing service user pathways and other administration activities, such as registration. Although findings indicated that enquiry only added a short amount of time to appointments (Gillespie & Folger, 2017; Glowa et al., 2016; Kalmakis et al., 2018), for already overburdened public and private services, this may be a barrier to implementation which needs further exploration. All studies that examined practitioner feasibility reported that training or education provided to practitioners prior to implementation was essential in mitigating some of the barriers associated with enquiry (e.g., confidence to enquire). Future research should seek to explore resource implications, including level of organizational readiness required (e.g., staff training); the time implications of different methods of implementation; and the ease of incorporating routine enquiry into practice across a variety of settings.

4.3. Acceptability of enquiry

Evidence collated within this review indicates that, in general, service users were willing to complete enquiry. This is evidenced through largely high response rates and reported high levels of comfort, particularly when a disclosure was felt to influence future care received. However, evidence is limited with only three studies directly exploring service user acceptability (Conn et al., 2017; Flanagan et al., 2018; Goldstein et al., 2017), and other studies restricted to practitioner perceptions of patient acceptability. That said, practitioner reports were found to align with the service user feedback identified in this review.

4.4. Outcomes of enquiry

Critically, no studies reported outcomes for service user health or well-being, or service utilization as a result of enquiry. A scarcity of research explored whether ACE enquiry resulted in any harm/distress to participants. Outcomes provided across studies were commonly limited to vague statements such as “patients in this exploratory study did not express distress with answering the ACE questions” (Glowa et al., 2016, p. 306). The findings thus suggest that anecdotal reports outlining routine ACE enquiry as a form of intervention offering positive therapeutic benefits (Felitti, 2004) are not yet supported by published research. One study indicated that individuals who completed enquiry felt that this was a strategy to start conversations about parenting (Conn et al., 2017); however, no follow up on the impact on parenting beliefs and practice was provided as a result. Research therefore needs to further explore how acceptable service users find routine ACE enquiry, including: attitudes to enquiry and the method used (e.g., if questions are clear and understandable), an understanding of any outcomes associated with enquiry, and implications on future service use. Research should also explore the possible unintended harms of routine ACE enquiry, such as re-traumatization through in-depth research with service users.

The current review also found few studies which provided evidence of any impact from routine ACE enquiry on the service user/provider relationship. None of the studies identified utilized comparison groups to examine any evidence of a change in identification of ACEs compared to routine practice (e.g., acting on self-disclosure). Long-term impacts of enquiry on service user and provider relationships, service user health or well-being, future service use, referrals made as a result of enquiry, and any uptake of referrals or long-term implications for the intergenerational transmission of ACEs were not explored.

4.5. Response to the disclosure of ACEs and pathways beyond enquiry

No clarity was provided in studies identified in this review on how clinicians respond to the disclosure of ACEs, and very few studies reported a change in practice following the identification of ACEs. No research discussed with practitioners if enquiry had allowed them to further understand and explore with their service users their needs or symptoms. Thus, firm conclusions cannot be drawn on how routine ACE enquiry informs the care or support provided for individuals who reveal exposure to childhood trauma.

Studies should explore if routine ACE enquiry is associated with increased ACE understanding and if practitioner knowledge of service users' ACEs help them to structure support for that individual over and above the information they already collect and hold on the service user. Future research should also seek to further explore direct implications on practitioner empathy and understand how enquiry has enabled trauma-informed ways of working (i.e., taking a more holistic view of service users' needs).

Routine ACE enquiry may have the potential to identify higher-risk populations for targeted health care interventions. However, a hesitancy to enquire (Ford et al., 2017), and worries about how to respond or what referrals should be put in place when individuals report abuse (Lee et al., 2012; Richardson et al., 2001), have been identified amongst a range of professionals. As ACE identification increases, it is ethically important that individuals who have experienced trauma are responded to in an appropriate way, with apt and effective interventions available for those who require or request them. However, specific therapies to address ACEs are not clearly defined and little evidence has outlined available effective interventions, although this is increasingly being explored (Cameron, Carroll, & Hamilton, 2018; Chandler, Roberts, & Chiodo, 2015; Purewal Boparai et al., 2018). It is important to understand that although some individuals may require additional support, some individuals with high ACE scores may not require or desire intervention. This was evidenced in one study in this review, which reported that some patients refused referrals following enquiry (Kalmakis et al., 2018). Therefore, there may be a need for a wide range of interventions to complement enquiry, including basic brief interventions for example, motivational interviewing, as well as complex therapies. Future research should explore how receptive service users are to different types of intervention following the identification of exposure to ACEs (e.g., counselling for traumatic events); service user uptake of referrals to support; and critically the subsequent outcomes of such engagement in terms of health and other benefits.

There are dangers associated with any intervention becoming extensively implemented before its outcomes, both short- and long-term, are fully understood (Finkelhor, 2017). There is therefore a risk that if policy and practice moves faster than research evidence on ACE enquiry, rather than improving situations, unnecessary harm could be caused to individuals or already over-burdened systems. It is essential to understand service user and practitioner acceptability, identify best practices, and fully understand outcomes following ACE enquiry before its adoption is widely integrated into policy recommendations.

4.6. Strengths and limitations of the review

While the present review was conducted using systematic searching and data extraction methods employing clear inclusion criterion - a key strength of this review - there were a number of limitations. Firstly, the review was limited by a shortage of evidence, and potential publication bias. Secondly, included studies were limited to health settings, predominantly in the USA and did not contain diverse samples; caution is therefore required before generalizing current findings to other countries and non-health settings. Additionally, findings have been limited by the methodological heterogeneity and weakness (e.g., absence of control groups, observational and pilot studies) in the studies identified. Acknowledging these limitations, the review provides the first attempt to collate literature surrounding retrospective routine enquiry into ACEs, addressing a major gap in literature.

5. Conclusion

The importance of having a safe and nurturing childhood is recognized internationally (Sethi et al., 2013; United Nations, 2015) and research has highlighted the life course impacts of early childhood experiences. From the largely quantitative studies reviewed here, findings indicate that in general, service users who complete ACE enquiry hold positive views about being asked about their exposure to ACEs. Practitioners appear generally positive about enquiry, and there is some suggestion that enquiry improves service user and provider relationships. The small number of studies which explored the implementation of ACE enquiry provided no evidence to suggest increased demand on healthcare systems. Despite these findings, the evidence base on retrospective routine enquiry remains limited and omits vital areas which future work should address. Further research should include exploration of who enquiry should target (e.g., universal or those at high-risk of ACE exposure), and when and in what settings routine enquiry is appropriate. Research should also explore what tools may be most appropriate to use, what range of ACEs enquiry should encompass, and outcomes as a result of the enquiry for both service users (e.g., health, attitudes and engagement with service provision, uptake of referrals) and practitioners (e.g., knowledge, empathy, workload). The present review found limited literature to support the recommendation that routine enquiry be widely implemented beyond pilot studies. Where routine enquiry is initiated, it should be one component of a multi-faceted, trauma-informed response. However, in line with calls from Afifi (2018), any implementation of ACE routine enquiry or change to a trauma-informed practice needs to be evaluated so that outcomes and learning can be shared and widely understood.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.chiabu.2019.03.007>.

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