







## SYSTEMATIC REVIEW

# Screening for adverse childhood experiences in antenatal care settings: A scoping review

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**Background:** Adverse childhood experiences (ACEs) are associated with many health problems in women during pregnancy, including depression/anxiety, gestational diabetes and adverse birth outcomes. However, unlike other health risk factors, screening for ACEs has not been widely implemented in antenatal care settings.

**Aims:** The aim of the scoping review was to explore the challenges in screening for ACEs in antenatal care settings and to provide the lessons learnt and evidence that guide the practice of ACE screening for both healthcare providers and pregnant women.

**Methods:** A five-stage process for conducting the scoping review was utilised. Searches of four key databases (PubMed, PsycINFO, CINAHL and SCOPUS) and reference lists from relevant studies were conducted.

**Results:** Seven publications met the inclusion criteria. Challenges identified for healthcare providers in screening for ACEs include lack of knowledge and confidence in ACE tool and shortage of time and resources to undertake screening. Impediments for pregnant women include concerns about privacy. However, there were examples of effective practice for ACE screening in antenatal care settings that could apply widely.

**Conclusion:** Addressing impediments to ACE screening is critical in implementing trauma-informed practices that can identify women at risk of adverse health outcomes during pregnancy. A study on screening for ACEs in antenatal care in both public and private settings is needed to examine its feasibility and acceptability in the Australian context before being included in the National Perinatal Data Collection.

**KEYWORDS**

adverse childhood experiences, antenatal care, pregnant women, scoping review, screening.

## INTRODUCTION

Adverse childhood experiences (ACEs) are commonly defined as psychosocial stressors and traumatic events such as abuse, neglect and household dysfunction experienced by an individual before age 18 years. ACEs are major public health issues because of their high prevalence and associated long-lasting negative health and well-being consequences.<sup>1</sup> For example, in Australia, nearly two in three children are exposed to at least one ACE.<sup>2</sup> Since the landmark ACE study by Felitti and colleagues reporting a significant association between ACEs and poor physical and mental health outcomes throughout life,<sup>3</sup> research has expanded to additional populations providing consistent evidence of the associations between ACEs and pregnancy intentions<sup>4,5</sup>; ACEs and adverse pregnancy outcomes such as hypertensive disorders of pregnancy and pre-term birth<sup>6,7</sup>; and ACEs and mental and substance use disorders, cardiovascular disease and early mortality.<sup>8,9</sup>

Pregnancy is an optimal time to identify existing health risks in women and provide interventions that may prevent future health problems for women, children and their families.<sup>10</sup> With regular contact between women and their healthcare professionals during pregnancy, there is an opportunity to establish a trusting relationship which facilitates improved healthcare over subsequent years.<sup>11</sup> This relationship may provide the safety for disclosure of sensitive topics and health problems women might otherwise not feel comfortable to explore. Pregnancy is also a natural time for addressing health risk behaviours.<sup>9,12</sup>

During pregnancy, ACEs are associated with many difficulties, including mental health problems, discomfort and health complaints, excessive weight gain, adverse obstetric outcomes and more frequent contacts with the healthcare system.<sup>13-15</sup> In addition, during the early postpartum period, ACEs are associated with difficulties in breastfeeding<sup>16</sup> and adverse infant outcomes, including insecure attachment and poor infant socioemotional functioning.<sup>17-20</sup> Given the associations between ACEs and adverse health outcomes during the antenatal and postpartum periods, identifying ACEs during pregnancy has been highlighted as critical to healthcare.<sup>21</sup> Such screening provides an opportunity to prevent associated antenatal and postpartum risks and promote long-term health for women and their children.<sup>8,20</sup> Nevertheless, screening for ACEs among pregnant women has not been widely implemented.

In Australia, the National Perinatal Data Collection (NPDC) is a national population-based cross-sectional collection of data on pregnancy and childbirth in Australia. The data are based on births reported to the perinatal data collection in each state and territory.<sup>22</sup> Midwives and other birth attendants, using information obtained from mothers and from hospitals or other records, complete notification forms for each birth. The NPDC does not collect data on ACEs.

The aim of this review is to explore the challenges perceived or experienced by healthcare providers and/or pregnant women in

screening for ACEs in antenatal care settings. This is to inform the feasibility and acceptability of ACE screening during healthcare visits in the antenatal period and may provide guidance to the issue of ACE screening as part of ongoing perinatal data collection in Australia.

## MATERIALS AND METHODS

### Data sources and searches

We conducted this review in accordance with Arksey and O'Malley's methodological framework for scoping reviews.<sup>23</sup> The framework consisted of five stages: (i) identifying the research questions; (ii) identifying relevant studies; (iii) selecting studies; (iv) charting the data; and (v) collating, summarising and reporting the results. In addition, we followed the guidelines for conducting and publishing scoping reviews by Tricco *et al.*'s<sup>24</sup> Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews.

### Stage 1: identify the research questions

This review aimed to address the following key research questions (KQs). (i) What are the barriers to healthcare providers conducting screening for ACEs in antenatal care settings? (KQ1) (ii) What factors prevent pregnant women disclosing their ACE history to healthcare providers? (KQ2) and (iii) What are the most effective practices for conducting ACE screening in antenatal care settings? (KQ3).

### Stage 2: identifying relevant studies

As ACE screening is relevant to multiple disciplines, the following bibliographic databases were searched: PubMed represented biomedical literature, PsycINFO psychological literature, CINAHL nursing and allied health profession literature and SCOPUS social science and health science literature. Relevant documents from the grey literature which involved using search engine Google Scholar and hand searches for website of organisations relevant to the research topic were included.

The search strategy was initially guided by the KQs focusing on the barriers for both healthcare providers and pregnant women regarding screening for ACEs in antenatal care settings. Also, the search was based upon previous studies on screening for ACEs in clinical settings.<sup>21,25</sup> The search of relevant literature was developed with the help of an experienced librarian along with input from other co-authors. The research strategy included key words related to ACEs, pregnant women and screening in clinical settings combined with the Boolean operators AND/OR. Key terms included ('adverse childhood experiences' OR 'childhood adversities' OR 'childhood abuse' OR 'childhood maltreatment' OR 'child trauma' OR 'adverse childhood events' OR 'childhood sexual abuse' OR 'childhood physical abuse' OR 'childhood emotional

abuse' OR 'childhood sexual abuse' OR 'childhood physical neglect' OR 'childhood emotional neglect' OR 'childhood mental abuse' OR 'childhood trauma' OR 'childhood violence' OR 'witness domestic violence' OR 'childhood hardship' OR 'childhood suffering' OR 'childhood stress') AND ('pregnant women' OR 'pregnancy expectant' OR 'mothers' OR 'expectant mother' OR 'expectant women' OR 'antenatal' OR 'perinatal' OR 'prenatal OR pregnancy') AND ('Mass Screening') OR ('screen') OR ('enquiring'). Searches were carried out in June 2021 and did not impose time limits to include many relevant studies as possible.

### Stage 3: selecting studies

We developed six eligibility inclusion criteria: (i) the objective of studies was to (a) examine screening or routine enquiry for ACEs or childhood trauma/hardship/stress in antenatal care settings and (b) explore barriers associated with screening for ACEs from either service providers (eg, midwife, obstetrician, general practitioner (GP) and other primary healthcare workers) or pregnant women; (ii) studies have outcomes related to ACE screening in antenatal care settings such as structure, process and feasibility of screening and acceptability of both healthcare providers and pregnant women; (iii) peer-reviewed scientific publications; (iv) qualitative, quantitative or mixed methods designed studies; (v) publications in English language; and (vi) article available in full text.

Two reviewers (authors 1 and 3) screened the title and abstract of all articles for inclusion criteria, developed initially as broadly as possible and then refined using an iterative review process. The detailed inclusion and exclusion criteria are presented in [Table 1](#). Full-text studies were retrieved and reviewed independently by three team members (authors 1, 3 and 4) based on eligibility criteria. Discussion between the three reviewers ensued until consensus was reached or the fourth reviewer's opinion was sought. These studies were examined in detail for subsequent analysis and interpretation. [Figure 1](#) provides a flow chart of the literature search process. Quality assessment of individual studies was not performed in this scoping review as the aim was to provide a more complete overview of factors against ACE screening in antenatal care settings rather than finding the best consistent evidence across studies.<sup>23,26</sup>

### Stage 4: charting the data

The author team extracted the characteristics of the studies with the following details: sources (authors, year, title), study location, study sample, study aims, methodology, healthcare settings, study classification and main findings.

### Stage 5: collating, summarising and reporting the results

In this stage, key researchers (authors 1, 3 and 4) read each selected article to gain a shared understanding of the data set

**TABLE 1** Inclusion and exclusion criteria

#### Inclusion criteria

- The aim of the studies was to (i) examine screening/routine enquiry for ACEs and/or childhood trauma/hardship/stress in antenatal care settings/antenatal period and (ii) explore barriers associated with screening for ACEs and/or childhood trauma/hardship/stress from either service providers (eg, GP, nurse, primary healthcare worker) or pregnant women and/or their husbands
- Studies have outcomes related to ACE screening in antenatal care settings such as structure, process, feasibility and acceptability of both healthcare providers and pregnant women
- Peer-reviewed scientific publications
- Qualitative, quantitative design or mixed method
- Articles published in English
- Articles available in full text

#### Exclusion criteria

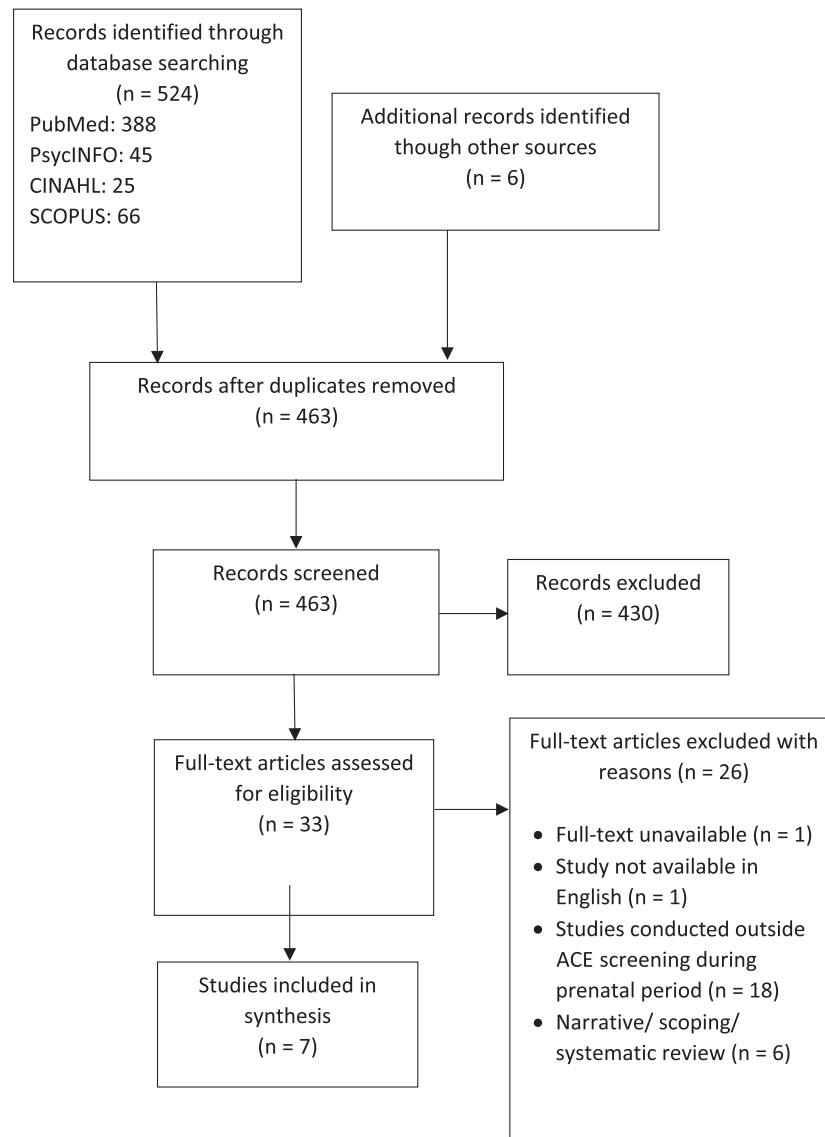
- Studies conducted outside the area of screening/routine enquiry for ACEs and/or childhood trauma/hardship/stress
- Studies screening/routine enquiry for ACEs and/or childhood trauma/hardship/stress but not related to antenatal care settings/antenatal period
- Studies assessing ACEs on adults or children rather than pregnant women
- Systematic review, narrative review, scope review, non-systematic review or primary research
- Studies not available in English
- Paper's full text not available

ACEs, adverse childhood experiences; GP, general practitioner.

and identify themes and sub-themes addressing the research questions. The key researchers consulted with a senior researcher (author 7) to ensure all relevant content was covered and included in key emergent themes. Based upon the themes, author 1 developed Nodes in NVivo to facilitate the research team to store and improve coding and organise the themes being generated. Authors 1 and 4 reviewed the coded themes for accuracy. NVivo 12 Plus was used at this stage to store the selected papers and code relevant text in a transparent and easily searchable way. Data extracted from these papers were synthesised narratively. The interdisciplinary research team reviewed and agreed on the main findings.

## RESULTS

The review covering dates up to and including June 2021 across four databases yielded 530 studies. We removed duplicates and reviewed titles and abstracts of the remaining 463 unique studies. We retained 33 studies for full-text review. An additional 26 studies were excluded at this point as they did not satisfy the inclusion criteria. Finally, seven studies were included regardless of study quality to assure an exhaustive review (see details in [Fig. 1](#)). The eligible studies were published between 2009 and



**FIGURE 1** PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram.

2021, of which six were published from 2018 to 2021, with only one paper from Australia published in 2009. All were conducted in healthcare services in high-income countries: the USA ( $n = 5$ ), the UK ( $n = 1$ ) and Australia ( $n = 1$ ). Three studies applied a mixed methods design,<sup>20,27,28</sup> two used quantitative methods<sup>29,30</sup> and two used qualitative methods.<sup>8,31</sup>

Three studies examined mainly the challenges that prevent pregnant women from disclosing their ACEs<sup>27-29</sup>; three studies explored impediments to screening for ACEs in antenatal care settings,<sup>8,30,31</sup> and one study identified barriers experienced by healthcare providers and pregnant women in screening for ACEs.<sup>20</sup> Flanagan and colleagues<sup>20</sup> also identified the feasibility and acceptability of screening for ACEs in antenatal care. The description of study characteristics is presented in [Table 2](#).

Extracted data from this review are narratively summarised and organised into key questions. [Table 3](#) presents the main findings based on the developed themes and sub-themes. The key

questions were related to the barriers in screening for ACEs from both healthcare providers' and pregnant women's perspectives and the effective practice to conduct ACE screening among pregnant women in antenatal care settings.

### Key question 1: what are healthcare providers' barriers in screening for ACEs?

The barriers that healthcare providers face when conducting ACE screening can be categorised into four main groups: (i) limited knowledge on ACEs and lack of confidence and skills to communicate regarding sensitive topics<sup>8,20,30</sup>; (ii) lack of standard tools for ACE screening, resources for referral and supporting system for both pregnant women and healthcare providers<sup>8,20,30</sup>; (iii) mental health and well-being of healthcare providers when they conducted screening for ACEs, typically among healthcare providers who are experiencing psychosocial adversity resulting

TABLE 2 Description of study characteristics

Authors, year, title	Location	Study sample	Study aims	Methods	Healthcare settings	Study classification	Main findings
Mortimore <i>et al.</i> <sup>27</sup> Identifying adverse childhood experiences in maternity services	UK	44 women and their partners	(i) Introduce in maternity services a screening tool for women and their partners at booking. (ii) Identify ACEs in families using maternity service and provide support to build parental resilience	Original research paper applied a mixed method	Maternity clinic	Original research paper	The ACE screening tools, bespoke tool kit, significantly identified more ACEs than previous antenatal booking questions and was acceptable by women, their partners and professionals. Identification and discussion of ACEs enabled appropriate support to be offered
Wekermann. <sup>8</sup> Maternal adverse childhood experience screening in prenatal care: knowledge, practices and barriers of women's healthcare providers	USA	8 healthcare providers	Explore the current practice, knowledge and barriers of maternal ACE screening in antenatal care among healthcare providers	Original research using qualitative method	Antenatal care setting	Original research	Several sub-themes regarding knowledge, practice and barriers of maternal ACE screening in antenatal care were discovered. These themes can be listed as culture, mental health stigma, privacy, lack of guidance and knowledge related to ACE screening and lack of support from professional organisations
Sells. <sup>28</sup> Adverse childhood experiences in pregnancy: screening, identification and referral	USA	311 pregnant and postpartum women	Develop plans of screening, identification and referral for ACEs among women living in rural areas	Original research using mixed method	Community Health Department	Original research	Screening and identifying ACEs in pregnant and postpartum women can assist recovery of ACEs and decrease the chance of intergenerational ACE transmission
Nguyen <i>et al.</i> <sup>29</sup> Assessing adverse childhood experiences during pregnancy: evidence of a best practice	USA	600 pregnant women	Quantify the prevalence of ACEs among a diverse urban pregnant woman	Original research applying quantitative method	Women's health clinic	Original research	ACE survey is more likely to be completed by pregnant women in outpatient examination rooms, and the prevalence of ACEs is high in a diverse urban cohort
Flanagan <i>et al.</i> <sup>20</sup> Feasibility and acceptability of screening for adverse childhood experiences in prenatal care	USA	16 healthcare providers and 480 pregnant women	Evaluate the feasibility and acceptability of screening for ACEs	Original research applying mixed methods	Antenatal care setting	Original research	ACE screening in routine antenatal care is acceptable and worthwhile to most patients. Women's health clinicians are willing to implement ACE screening when appropriately trained and adequate behavioural health referral resources are available

TABLE 2 (Continued)

Authors, year, title	Location	Study sample	Study aims	Methods	Healthcare settings	Study classification	Main findings
Abbott-Egnor. <sup>30</sup> Child sexual abuse and prenatal care: understanding screening, modification and proper care	USA	50 healthcare providers	Explore the variation among healthcare providers regarding screening practices and modification to care and treatment for those who have a history of childhood sexual abuse	Original study applying quantitative method	Antenatal care setting	Original study	No significant difference in screening practices and modification to care, and treatment for those who have a history of childhood sexual abuse were found among different healthcare provider type and provider title
Mollart et al. <sup>31</sup> Midwives' emotional well-being: impact of conducting a structured antenatal psychological assessment	Australia	18 midwives	Explore midwives' emotional well-being, appeared to suffer when conducting ACE screening	Original research using focus group discussion	Antenatal clinic	Original research	ACE screening has a negative impact on ill-prepared and unsupported midwives, resulting in personal costs to their emotional well-being

ACEs, adverse childhood experiences.

from their childhood trauma<sup>27,30</sup>, and (iv) cultural competency in communicating and working with pregnant women from migrant backgrounds.<sup>8</sup>

### Key question 2: what barriers prevent pregnant women's disclosure of ACEs to healthcare providers?

Four papers directly explored barriers preventing pregnant women from disclosing their ACEs in antenatal care settings.<sup>20,27-29</sup> Wekenmann<sup>8</sup> also contributed information to address this question. Most studies reported women's concerns about privacy as a barrier to disclosure of ACEs to healthcare providers.<sup>8,20,29</sup> Less privacy not only makes women feel uncomfortable but also contributes to reluctance to engage in ACE screening.<sup>29</sup> Less privacy is also a barrier for healthcare workers who do not feel comfortable asking appropriate follow-up questions to explore further ACE exposure.<sup>8</sup> Language and cultural sensitivities were also barriers to communication between pregnant women and healthcare providers for questions about ACEs, particularly for migrant and refugee women.<sup>8</sup> Cultural sensitivities, in particular, might lead to discrimination and stigmatisation.<sup>8</sup>

### Key question 3: what are the best and most effective practices to conduct ACE screening in antenatal care settings?

Selected studies in this review provided the procedure to screen for ACE among pregnant women. The procedure started by identifying pregnant women during their antenatal visit registration. These women then received an introductory letter which explains procedures and the questionnaires which they completed in an examination room. In Nguyen et al.'s study,<sup>29</sup> pregnant women were offered a small incentive for completing the questionnaire. Healthcare providers reviewed the questionnaires with the women and provided them with a list of support services and external resources. Completed questionnaires were kept in locked cabinets for security.<sup>20,30</sup> A process map of ACE enquiries from first-time antenatal visit registration to postpartum was introduced in Mortimore and colleagues' study<sup>27</sup> where midwives worked with pregnant women to identify support needed, develop and individualise plan for women and families and include referral to existing services in clinic or to other agencies. The authors also suggested communication channels with pregnant women and GPs to facilitate sharing of ACE-based information relating to both women and their partners.<sup>27</sup>

## DISCUSSION

This scoping review was conducted to examine the impediments to screening for ACEs during healthcare visits in pregnancy and

**TABLE 3** Summary of findings by key questions

Outcomes	Number of studies reporting outcome	Major findings	Minor findings
KQ1: Barriers associated with screening for ACEs – healthcare provider perspective	5	<p><i>Identified barriers:</i></p> <ul style="list-style-type: none"> <li>• Lack of time</li> <li>• <i>Lack of confidence and skills to explore sensitive topic</i></li> <li>• <i>Lack of training on ACEs</i></li> <li>• <i>Lack of referral and support resources</i></li> <li>• <i>Lack of tools and professional guidelines for screening</i></li> <li>• <i>Suffering mental health problems after screening for ACEs</i></li> <li>• <i>Not a good position if healthcare providers had ACE history</i></li> <li>• <i>Cultural competence (talking and working with migrant/pregnant women)</i></li> </ul>	<ul style="list-style-type: none"> <li>• Connection between midwife and pregnant women. The midwife seems equipped to conduct a screening</li> <li>• Healthcare providers happy to screen for ACEs due to their awareness of ACE consequences</li> </ul>
KQ2: Barriers associated with the disclosure of ACE screening – pregnant women's perspective	5	<p><i>Identified barriers:</i></p> <ul style="list-style-type: none"> <li>• Cultural norms (migrant and refugee women) including the discrimination and stigma against ACEs</li> <li>• <i>Language competency</i></li> <li>• <i>Privacy (eg, mothers, offspring, the appearance of partner involving domestic violence)</i></li> <li>• <i>Location/setting (eg, outpatient waiting room vs outpatient examination room)</i></li> <li>• <i>Rate of ACE history influences women's disclosure</i></li> <li>• <i>Lack of information on ACE conversation and warning before the booking</i></li> </ul>	<ul style="list-style-type: none"> <li>• No age difference in answering ACEs questions but inconsistent findings regarding race</li> </ul>
KQ3: What are the best and/or effective practices to conduct ACE screening in clinic settings?	4	<ul style="list-style-type: none"> <li>• Identify potential pregnant women during their antenatal visit registration</li> <li>• Provide introductory letter explaining the survey and procedure</li> <li>• Introduce/ask questions on ACEs</li> <li>• Checking with pregnant women about their responses</li> <li>• Referral to necessary supporting services</li> </ul>	<ul style="list-style-type: none"> <li>• Screening for ACEs involves minimal cost to provide substantial information on patients and their past experiences</li> </ul>
Other findings		<ul style="list-style-type: none"> <li>• Good time to screen for ACEs during pregnancy period to provide support and preventative care for pregnant women</li> <li>• Preparation and suitable strategy to approach pregnant women increase the feasibility and acceptability for ACE screening</li> <li>• Training how to screen for ACEs among healthcare providers increases the possibility of ACE screening</li> <li>• Knowing the demographical characteristics of pregnant women may help healthcare providers select a good strategy to screen for ACEs and provide support to those in need</li> </ul>	

ACEs, adverse childhood experiences; KQ, key research question.

provide guidance to the practice of ACE screening for both healthcare providers and pregnant women in antenatal care settings. We identified seven relevant publications relating to healthcare settings in high-income countries.

The results show healthcare providers perceive that they are not being trained to screen for ACEs in their undergraduate training program or in their professional training in clinical settings.<sup>20,30</sup> In addition, healthcare workers already have a high

demand on their time and limited capacity to incorporate novel practices without additional supports. These identified barriers are similar to those reported by healthcare providers in relation to ACE screening in general clinical settings.<sup>21,25</sup> Despite these concerns, healthcare providers realised the importance of asking about ACEs as it helped to raise issues that are otherwise unknown and unaddressed. Awareness of ACEs facilitates providers to support patients in new ways.<sup>21</sup> The implementation of

ACE screening in all Australian maternity care settings would be a significant undertaking. Appropriate educational resources, training and referral pathways would need to be established. Healthcare providers would need to be convinced of the value of such screening. Sufficient resources to address issues resulting from women disclosing an ACE history would be essential. A general increase in healthcare providers training in trauma-informed care would also be critical to appropriately respond to ACE screening outcomes. Further, there would need to be integration of supporting services with healthcare providers who are experiencing psychosocial adversity resulting from childhood trauma.<sup>8,25</sup>

For pregnant women, privacy was one of the most important concerns when deciding whether to disclose their history of ACEs. The privacy in ACE disclosure context relates to both the location (waiting room vs examination room)<sup>29</sup> and other persons (eg, spouse, other children) in the room.<sup>8</sup> Practical measures to ensure privacy are essential to screening for ACEs in women attending antenatal care. Another important facilitator to enable pregnant women's sharing their ACEs is cultural competence. This is particularly true for minority groups, including Indigenous Australians, immigrants and refugee women.<sup>8</sup> As screeners, healthcare providers should be aware of cultural sensitivities and prepare a supportive and culturally safe environment for disclosure. However, it is likely that in Australian maternity care settings, there is already significant capacity for this, given routine screening for depression and domestic violence, which also require privacy and cultural competency of healthcare providers.

Integrating screening for ACEs into antenatal care has been demonstrated to be feasible and acceptable for both healthcare providers and pregnant women in both public and private antenatal care settings.<sup>20</sup> Flanagan and colleagues<sup>20</sup> reported that clinicians found it easier to integrate ACE screening into antenatal care than they anticipated, and the screening enabled pregnant women to connect to extra resources that were needed to better support them through their pregnancy and to manage other health problems associated with ACE experiences. Moreover, many consequences are associated with ACEs during the perinatal and postpartum periods and the potential for intergenerational transmission of problems.<sup>13-15</sup> Identifying ACEs during pregnancy has been highlighted as an opportunity to identify and intervene early with later problems that may be associated with maternal ACEs. This in turn promotes long-term health for women and their children.<sup>8,20</sup> The screening for ACEs can itself be a therapeutic intervention that can help reduce traumatic shame that has roots in childhood adversity.<sup>25</sup>

Screening for ACEs among pregnant women has not been widely implemented in antenatal care, but piloting of ACE screening practice has shown it to be implementable and well received by women and healthcare providers in both public and private clinic settings in the USA and UK.<sup>20,27</sup> Australia currently uses the NPDC to collect data on maternal demographical characteristics, smoking and alcohol use, maternal body mass index, family

domestic violence, maternal mental health, information regarding pregnancy and birth conditions and information relating to baby. Information on family violence is included in the NPDC from 2015,<sup>32</sup> and depression/anxiety and intimate partner violence were assessed as part of antenatal screening during the pregnancy in Queensland using the Edinburgh Postnatal Depression Scale the same year.<sup>33</sup> It would be possible to integrate ACE information in the NPDC as these data are important for ACE surveillance and for clinical care and outcomes. The ACE data may contribute to exploring the association between ACE history and other maternal and perinatal outcomes. Further studies are needed on the feasibility, acceptability and implementation of screening for ACEs in Australian antenatal settings to include the collection of ACEs into the NPDC. There is a need to establish a minimum set of standard questions along with guidance and training on screening for ACEs. Critical to screening is the provision of support to those who need additional services. It is essential that healthcare providers connect pregnant women who have medical and psychosocial problems resulting from their history of ACEs to services that provide support through pregnancy.

Our scoping review has some limitations that need to be acknowledged. First, we included only English-language articles that may have resulted in relevant studies being missed. Second, as for most scoping reviews, quality assessment of individual studies was not performed; however, consistent conclusions drawn from the authors have been presented. Third, all selected papers are from high-income countries, and the findings may not be generalizable to other nations. Finally, we included selected complications of pregnancy like gestational diabetes, hypertensive disorders of pregnancy and pre-term birth as the outcomes of ACE exposure and did not distinguish between intended and unintended pregnancies. Further study of screening ACEs among women with unintended pregnancies is needed as the likelihood of adverse birth outcomes and other health and social complications may be heightened in this group. Despite these limitations, this review has allowed the exploration of impediments experienced by healthcare providers and women in screening for and disclosing ACEs that may be relevant to the Australian setting.

## CONCLUSION

ACEs are strongly associated with serious morbidity during pregnancy, in the peri- and postpartum periods and beyond. Unlike other risk factors and health problems such as intimate partner violence, mental illness and substance use which are routinely screened for in pregnancy, ACE screening has not been widely implemented in antenatal services. This review identified the challenges and impediments to ACE screening. Pilot trials of ACE screening are needed in Australian antenatal services. Any implementation of ACE screening should consider the barriers and challenges identified by healthcare providers and pregnant



women in this review. Such research is critical before the screening is included in the NPDC database.

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