Feasibility and Acceptability of Screening for Adverse Childhood Experiences in Prenatal Care

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Abstract

Introduction: Adverse childhood experiences (ACEs) are common among pregnant women and contribute to increased risk for negative perinatal outcomes, yet few clinicians screen prenatal patients for ACEs. The purpose of this study was to evaluate the feasibility and acceptability of screening for ACEs in standard prenatal care.

Methods: We evaluated a 4-month pilot (March 2016–June 2016) to screen pregnant women (at ~14–23 weeks of gestation) for ACEs and resiliency in two Kaiser Permanente Northern California medical centers ($N=480$). We examined the acceptability of the screening to patients through telephone surveys ($N=210$) and to clinicians through surveys and focus groups ($N=26$).

Results: Most eligible patients (78%) were screened. Patients who received the screening were significantly more likely to be non-Hispanic White, Asian, or of “Other” or “Unknown” race/ethnicity than African American or Hispanic race/ethnicity ($p=0.02$). Among those screened, 88% completed the questionnaires; 54% reported 0 ACEs, 28% reported 1–2 ACEs, and 18% reported ≥ 3 ACEs. Most patients were somewhat or very comfortable completing the questionnaires (91%) and discussing ACEs with their clinician (93%), and strongly or somewhat strongly agreed that clinicians should ask their prenatal patients about ACEs (85%). Clinicians reported significant pre- to postpilot increases in comfort discussing ACEs, providing education, and offering resources ($ps < 0.01$). Clinicians’ willingness to screen for ACEs was contingent on adequate training, streamlined workflows, inclusion of resilience screening, and availability of mental health, parenting, and social work resources.

Conclusion: ACEs screening as part of standard prenatal care is feasible and generally acceptable to patients. Women’s health clinicians are willing to screen patients for ACEs when appropriately trained and adequate behavioral health referral resources are available.

Keywords: adverse childhood experiences, screening, healthcare, pregnancy, resilience

Introduction

ADVERSE CHILDHOOD EXPERIENCES (ACEs), including physical, sexual, or emotional abuse, neglect, parental loss, and family dysfunction such as mental illness, substance abuse, or witnessing domestic violence, are alarmingly common, with ~60% of adults having one or more ACEs.¹ ACEs are robust predictors of long-term psychological and physical health consequences and increased healthcare utilization in adulthood.² During pregnancy, ACEs predict a variety of difficulties, including mental health problems, discomfort and health complaints, excessive weight gain,

obstetric problems, and more frequent contacts with the healthcare system.^{3–6} Further, during the early postpartum period, ACEs are associated with difficulties breastfeeding³ and adverse infant outcomes, including insecure attachment and poor socioemotional functioning.^{7,8}

Screening pregnant women for ACEs as part of standard prenatal care may offer an important opportunity to prevent associated prenatal and postpartum risks, and promote long-term health for women and their children. As frequent visits are part of routine prenatal care, obstetricians are ideally positioned to break the transgenerational cycle of ACEs⁹ by letting patients know that ACEs can significantly affect their

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health, conveying that they are not alone, and connecting them with helpful resources.¹⁰ However, few clinicians screen patients for ACEs,¹¹ and data are needed to evaluate the perceived benefits and harms of ACEs screening among pregnant women and clinicians and the factors that facilitate or impede ACEs screening in prenatal care.

The objective of this study was to evaluate the feasibility and acceptability (to patients and clinicians) of adopting screening for ACEs as part of standard prenatal care, in two medical centers at Kaiser Permanente Northern California (KPNC).

Methods

KPNC is a nonprofit, integrated healthcare delivery system providing comprehensive health services to over 4 million members, and covering >40% of the region's commercially insured population.¹² KPNC has >500 obstetric physicians and nurse practitioners and >100 certified nurse-midwives. Medical assistants support clinicians for office clinical care. Over 40,000 pregnancies occur annually across 15 medical centers. Patients are racially and socioeconomically diverse and representative of the northern California population.¹³

From March 1, 2016 to June 30, 2016, a pilot program to screen women for ACEs and resilience as part of standard prenatal care was implemented in two KPNC medical centers. Physicians ($N=18$), nurse practitioners ($N=3$), and certified nurse midwives ($N=5$) at both sites received 2 hour-long trainings in preparation for the screening implementation. The trainings had four components: (1) education about ACEs and resilience and their associations with health outcomes; (2) education on providing patients with trauma-informed care; (3) review of the patient resource handout; and (4) information on workflow changes and protocols for reviewing the questionnaires and connecting patients with resources. Medical assistants received a 1-hour training that included education about ACEs and resilience and an overview of workflow changes.

All English-speaking patients aged ≥ 18 who completed a second or third prenatal visit between 16 and 23 weeks of gestation at the two site's clinics during the study period were eligible ($N=480$). Each site selected the prenatal visit that worked best with their workflow (Site A, 19–23 weeks; Site B, 14–19 weeks).

Patients were identified by the medical assistant (Site A) or department manager (Site B) during prenatal visit registration (Site A) or patient rooming (Site B). Patients received an introductory letter and the questionnaires, which they completed in the exam room. The clinician reviewed the questionnaires with patients and gave them a site-specific two-page resource list that included both KPNC and external resources, including support groups, parenting classes, and health education. Referral to behavioral health and psychiatry was also an option. Completed questionnaires were stored in locked cabinets and the data were entered on site. This study was approved by the Kaiser Foundation Research Institute Institutional Review Board.

Study measures

An introductory letter was modified from Community Care of North Carolina.¹⁴ Eight ACE exposures before age 18 were assessed using modified questions from the 11-item

Behavioral Risk Factor Surveillance System Questionnaire,¹⁵ shortened for easier self-administration in a clinic, to be appropriate for prenatal patients, and to be consistent with an ACEs measure that was developed for a regional KPNC questionnaire. Response options were yes or no; possible ACE scores ranged from 0 to 8, and were categorized (0, 1–2, ≥ 3) (Appendix 1).

Because the negative effects of ACEs can be mitigated by protective factors in adulthood that strengthen coping skills,¹⁶ ACE screening assessed patients' current resilience. The 10-item Connor-Davidson Resilience scale (CD-RISC 10) measured resilience. It is a widely used validated measure of past-month resilience (*e.g.*, ability to adapt to change, bounce back after hardship, handle unpleasant or painful feelings), used in previous studies of prenatal patients.¹⁷ Items are scored from 0 to 4 and total scores range from 0 to 40.^{18,19}

Women who completed the ACEs screening received invitation letters in the mail explaining the project with a toll-free number to contact project staff to decline participation. Trained interviewers called patients ~2 weeks later, obtained verbal consent, and completed the 7–10 minute interview. Interviews occurred between April and August 2016; patients were not compensated for their time.

At the start of the 2-hour clinician training, clinicians received an eight-item survey to evaluate their knowledge of ACEs and to assess their attitudes and perceived barriers toward ACEs screening. The survey was given again at the conclusion of the pilot, at the start of the clinician focus groups (see paragraph below). Answers were on a Likert scale from 1 (low) to 5 (high).

At the pilot's conclusion, the study's first and senior authors consented participants and led 1-hour semi-structured focus groups at each site. They examined factors that facilitated or impeded screening implementation, assessed clinician willingness to continue screening patients for ACEs, and explored the resource issues and organizational capacity for maintaining the intervention. Participation was optional and clinicians were not compensated. Discussions were recorded and transcribed.

Patient demographics, including age, race/ethnicity, neighborhood median income, living situation, and insurance type, were extracted from electronic health records.

Analyses

Analyses were conducted using SAS 9.3 (SAS Institute, Inc., Cary, NC, 2012). We calculated clinician screening rates (*i.e.*, the percentage of the total number of eligible women who received the screening during the pilot period). Women who received the ACEs screening outside of the qualifying gestational age range were excluded from this analysis ($n=30$) because they could not be counted in the denominator. We also calculated the percentage of patients who completed the ACEs screening among all patients who received the questionnaire ($N=405$), and examined demographic correlates of completion.

Patient demographics, by screening completion and facility, were compared using chi-square tests for categorical variables, and nonparametric Kruskal–Wallis tests for continuous variables.

We used descriptive statistics to describe patient ACEs and resilience scores and phone survey responses. We tested whether survey responses differed by ACEs category using

TABLE 1. ADVERSE CHILDHOOD EXPERIENCE SCREENING AND COMPLETION RATES, BY FACILITY

Study site	English-speaking women with a prenatal visit within gestational age range	Women screened for ACEs within gestational age range ^a	Screening rate (95% CI)	Total women screened for ACEs	Women who completed ACEs screening	Completion rate (95% CI)
Study Site A	151	97	64.2% (56.3%–71.4%)	107	91	85.0% (77.1%–90.6%)
Study Site B	329	278	84.5% (80.2%–88.0%)	298	264	88.6% (84.5%–91.7%)
Total	480	375	78.1% (74.2%–81.6%)	405	355	87.7% (84.1%–90.5%)

^aThirty women screened who did not have a visit during a designated gestational age range. These women were excluded when determining the screening rate so that all women in the numerator were also counted in the denominator, which was restricted by gestational age.

ACE, adverse childhood experience; CI, confidence interval.

chi-square tests and Fisher's exact tests. Median resilience by ACEs category was compared using a Kruskal–Wallis test.

We calculated mean clinician survey responses before and after the pilot and evaluated whether mean changes were significant using nonparametric Wilcoxon signed rank tests.

The study authors each read focus group transcripts to identify key recurring themes, discussed and grouped themes into final categories, and selected key quotes for each theme.

Results

Of the 480 eligible women, 375 (78%) were screened. An additional 30 women were screened outside of the designated gestational age range. Patients who received the screening were significantly more likely to be non-Hispanic White, Asian, or of “Other” or “Unknown” race/ethnicity than African American or Hispanic race/ethnicity ($p=0.02$). Among all women who were offered the screening questionnaire, 88% completed the screening. Rates varied by medical center (Table 1). Patients not completing the questionnaire did not differ on demographics from those completing it, except that noncompleters were significantly more likely to be of “Other” or “Unknown” race/ethnicity ($p=0.03$) (Table 2).

Overall, the median and mean ACEs scores were 0 (interquartile range [IQR], 0–1) and 1 (standard deviation=1.6), respectively; 54% reported 0 ACEs, 28% reported 1–2 ACEs, and 18% reported ≥ 3 ACEs. Compared to Study Site A, patients at Site B were more likely to be White, to live with the baby's father, and had higher neighborhood income ($ps < 0.001$); however, ACEs did not differ by Site (data not shown). The median resilience score was 34 (IQR: 29–37) and scores were higher among those with 0 ACEs (median=35, IQR: 29–38) and 1–2 ACEs (median=34, IQR: 30–37) than those with ≥ 3 ACEs (median=32, IQR: 28–35) ($p=0.02$).

Patient phone surveys

Of the 355 women who completed the ACEs screening questionnaire, 59% participated in the telephone survey, 12% declined to participate, and 29% could not be reached. ACEs score and demographics were not associated with survey participation (data not shown). Of the 94% who recalled completing the ACEs questionnaire, 91% were very or somewhat comfortable completing it and 56% reported that their clinician reviewed it with them (Table 3). Among those who discussed

ACEs with their clinician (37%), 62% said their clinician asked them whether ACEs have affected their health, 54% said their clinician provided education about how ACEs can affect parenting and health, and 64% reported receiving referrals/resources. Most patients (93%) were very or somewhat comfortable discussing ACEs with their clinician, and 96% reported that their clinician listened to them carefully.

TABLE 2. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PATIENTS, BY COMPLETION OF ADVERSE CHILDHOOD EXPERIENCES SCREENING

Characteristic	Completed ACEs screening				p ^a
	Yes (n = 355)		No (n = 50)		
	n	%	n	%	
Facility					
Site A	91	85.0	16	15.0	0.34
Site B	264	88.6	34	11.4	
Age					
Median, IQR	30	8.0	31	5.0	0.98
Race/ethnicity					
White	147	88.0	20	12.0	0.03
Asian/Pacific Islander	48	88.9	6	11.1	
Hispanic	92	87.6	13	12.4	
Black	58	92.1	5	7.9	
Other/unknown	10	62.5	6	37.5	
Neighborhood median income					
<\$40k	29	80.6	7	19.4	0.21
\$40k to <\$80k	123	85.4	21	14.6	
\$80k to <\$110k	157	91.3	15	8.7	
≥\$110k	44	88.0	6	12.0	
Living situation					
Other/unknown	25	80.6	6	19.4	0.43
Family	31	86.1	5	13.9	
With baby's father	299	88.5	39	11.5	
Insurance type					
Commercial	282	87.9	39	12.1	0.29
Medicaid	48	92.3	4	7.7	
Exchange	17	77.3	5	22.7	
No coverage	8	80.0	2	20.0	

^aChi-square except for age, which uses a Kruskal–Wallis test, boldface indicates statistical significance ($p < 0.05$).

IQR, interquartile range.

TABLE 3. PHONE SURVEY RESPONSES AMONG PATIENTS WHO COMPLETED THE ADVERSE CHILDHOOD EXPERIENCES SCREENING, BY ADVERSE CHILDHOOD EXPERIENCE SCORE (N=210)

Question	Responses	Overall %	0 ACEs %	1–2 ACEs %	0 vs. 1–2 p ^a	3+ ACEs	0 vs. 3+ p ^a
1. During your most recent prenatal visit, did you complete a questionnaire that asked about things that might have happened in your family when you were a child, such as divorce, abuse, domestic violence, or mental illness?	Yes No Not sure	93.7 3.9 2.4	93.2 4.9 1.9	93.2 1.7 5.1	0.33	95.5 4.5 0.0	0.64
2. How comfortable were you answering the questions?	Very comfortable Somewhat comfortable Somewhat uncomfortable Very uncomfortable	62.6 28.7 8.2 0.5	76.3 16.5 7.2 0.0	60.0 34.6 5.5 0.0	0.04^b	34.9 48.8 14.0 2.3	<0.001
3. Did your healthcare clinician:							
a. Review the questionnaire with you?	Yes No Not sure	55.8 30.2 14.1	48.0 37.8 14.3	69.0 17.2 13.8	0.02 ^b	55.8 30.2 14.0	0.66 ^b
b. Ask about or talk with you about things that happened when you were a child?	Yes No Not sure	36.5 59.1 4.3	26.0 71.2 2.9	47.4 47.5 5.1	0.009	46.7 46.7 6.7	0.01
c. Ask you whether you think that your childhood experiences have affected your health?	Yes No Not sure	62.4 24.7 12.9	66.7 26.7 6.7	67.7 22.6 9.7	1.00	50.0 25.0 25.0	0.18
d. Listen carefully to you?	Yes No Not sure	96.4 2.4 1.2	100 0.0 0.0	96.7 3.3 0.0	1.00	91.7 4.2 4.2	0.19
e. Provide education about how childhood experiences can impact health and parenting?	Yes No Not sure	54.1 30.6 15.3	50.0 40.0 10.0	67.7 22.6 9.7	0.35	41.7 29.2 29.2	0.19 ^b
f. Provide you with referrals/resources that help people heal from childhood experiences?	Yes No	63.6 36.1	58.6 41.4	70.0 30.0	0.36 ^b	62.5 37.5	0.77 ^b
4. How comfortable was it for you to talk about these childhood experiences with your clinician?	Very comfortable Somewhat comfortable Somewhat uncomfortable Very uncomfortable	59.5 33.3 6.0 1.2	73.3 26.7 0.0 0.0	73.3 23.3 3.3 0.0	1.00	25.0 54.2 16.7 4.2	<0.001
5. Did the conversation with your clinician about your childhood experiences:							
a. Change your relationship with your clinician?	Yes No	10.6 89.4	6.7 93.3	12.9 87.1	0.67	12.5 87.5	0.65
b. Increase your trust in your clinician?	Yes No	53.0 47.0	50.0 50.0	58.1 41.9	0.43 ^b	50.0 50.0	1.00 ^b
c. Make you feel like your clinician knows you better?	Yes No	74.7 25.3	66.7 33.3	80.7 19.4	0.21 ^b	77.3 22.7	0.40 ^b
d. Have a negative impact on your relationship with your clinician?	Yes No	4.7 95.4	0.0 100.0	6.5 93.6	0.49	8.3 91.7	0.19

(continued)

TABLE 3. (CONTINUED)

Question	Responses	Overall %	0	1–2	0	3+	0
			ACEs %	ACEs %	vs. 1–2 p ^a	ACEs	vs. 3+ p ^a
6. Before your most recent prenatal visit, had you ever been asked by a healthcare professional about things that happened to you as a child, such as divorce, abuse, domestic violence, or mental illness?	Yes No	29.2 70.8	25.5 74.5	41.8 58.2	0.05	22.2 77.8	0.89
7. How much do you agree or disagree with the following statement?:							
a. “Clinicians taking care of prenatal patients should ask their patients about things that might have happened to them when they were children”	Strongly agree Somewhat agree Not sure Somewhat disagree Strongly disagree	50.5 34.5 9.2 4.4 1.5	45.6 36.9 11.7 2.9 2.9	60.3 27.6 6.9 5.2 0.0	0.26	48.9 37.8 6.7 6.7 0.0	0.61
b. “Childhood experiences, such as abuse, exposure to domestic violence, and mental illness in a family member, can have long-lasting health consequences”	Strongly agree Somewhat agree Not sure Somewhat disagree Strongly disagree	65.8 25.7 3.5 4.0 1.0	65.4 24.8 4.0 4.0 2.0	66.7 26.3 5.3 1.8 0.0	0.87	65.9 27.3 0.0 6.8 0.0	0.65
8. In general how satisfied are you with the efforts of Kaiser Permanente clinicians and staff, in responding to this issue?	Very satisfied Satisfied Not sure Unsatisfied Very unsatisfied	49.3 32.2 15.1 2.9 0.5	52.0 31.4 15.7 1.0 0.0	53.5 31.0 10.3 5.2 0.0	0.36	37.8 35.6 20.0 4.4 2.2	0.16
9. Would you like info for yourself or a friend about resources for getting help in dealing with things you experienced as a child?	Yes No Not sure	10.8 88.2 1.0	2.0 97.0 1.0	17.2 82.8 0.0	<0.001	22.7 75.0 2.3	<0.001

One hundred five patients had 0 ACEs, 59 patients had 1–2 ACEs, and 45 patients had 3+ ACEs. Questions 2 and 3a were only asked of patients who responded “yes” to question 1 ($n=198$). Questions 3c–5d were only asked of patients who responded “yes” or “not sure” to question 3b ($N=85$).

^ap-Values calculated using Fisher’s exact test unless otherwise specified, boldface indicates statistical significance ($p<0.05$).

^bChi-square test.

Most patients reported the screening was the first time they had been asked by a healthcare professional about ACEs (71%), and 11% reported that the conversation changed their relationship with their clinician, 53% that it increased their trust in their clinician, 75% that it made them feel like their clinician knew them better, and 95% that it had no negative impact on their relationship with their clinician. Most patients strongly or somewhat strongly agreed that clinicians should ask prenatal patients about ACEs (85%), that ACEs can have long-lasting health consequences (92%), and that they are very satisfied or satisfied with how KPNC clinicians are responding to ACEs (82%).

Comfort in completing the questionnaire was lower among those with 1–2 ACEs ($p=0.04$) and ≥ 3 ACEs ($p<0.001$) versus 0 ACEs. Relative to those with 0 ACEs, patients with ≥ 1 (vs. 0) ACEs were more likely to report that their clinician discussed ACEs with them ($p<0.05$), and patients with ≥ 3 ACEs reported lower comfort with these conversations ($p<0.001$). Patients with 1–2 ACEs, but not ≥ 3 ACEs, were more likely than those with 0 ACEs to report that their clinician reviewed the questionnaire ($p=0.02$) and to report that a

healthcare provider had asked them about ACEs in the past ($p=0.05$). Finally, patients with ≥ 1 ACEs were more interested in ACEs resources versus those with 0 ACEs ($p<0.001$).

While satisfaction with clinician and staff efforts in responding to ACEs did not differ significantly by ACEs, interviewer free-text comments indicated that 1 per 105 patients interviewed who had 0 ACEs and 3 per 104 patients interviewed who had ≥ 1 ACEs voiced dissatisfaction due to lack of clinician empathy, time to fully discuss, or useful resources (results not shown).

Clinician surveys and focus groups

Before the pilot, clinicians reported moderate knowledge, ability, and concerns around ACEs screening (2 or 3 out of 5, on average) (Table 4). After the pilot, clinician confidence and knowledge increased (change in means ranged from 0.9 to 2.0; ps 0.002 to <0.001). Concerns that screening would take too much time decreased (mean change = -0.7 , $p=0.02$), while concerns that the screening may be too upsetting were low initially (2 out of 5) and did not change (mean change = 0.0 , $p=0.78$).

TABLE 4. CHANGES IN CLINICIAN KNOWLEDGE, ABILITY, AND CONCERNS AROUND ADVERSE CHILDHOOD EXPERIENCES SCREENING, PRE- TO POSTPILOT

How would you rate your:	Mean prescore	SD	Mean Δ	SD	p ^a
1. Knowledge about the impact of ACEs on patient health	3.0	1.0	1.1	1.1	<0.001
2. Ability to sensitively ask about ACEs with your patients	2.6	1.1	1.4	1.2	<0.001
3. Ability to educate patients about the potential impact of ACEs on health	2.4	0.9	1.5	0.8	<0.001
4. Ability to educate patient about the potential impact of ACEs on parenting	2.4	0.9	1.4	0.9	<0.001
5. Ability to create a safe clinical environment sensitive to needs of patients with ACEs	3.1	1.1	0.9	1.3	0.002
6. Knowledge about resources and referral options to provide to patients with ACEs	1.9	1.0	2.0	1.2	<0.001
7. Concerns that addressing ACEs screening responses will be too time consuming	2.7	1.2	-0.7	1.4	0.02
8. Concerns that an ACEs screen in a prenatal appointment will be too upsetting for patients	2.2	1.1	0.0	1.0	0.78

Answers were on a Likert scale from 1 (low) to 5 (high).

^ap-Values determined using a nonparametric Wilcoxon signed rank test, boldface indicates statistical significance ($p < 0.05$). SD, standard deviation.

The following four themes were identified from the clinician focus groups:

(1) Value: Clinicians valued ACEs screening as part of prenatal care, felt that it was easier to do than they initially expected, and their comfort increased over time. Several alluded to the lack of training in trauma-informed care and ACEs in medical school, and emphasized the importance of the pilot project's education about the potential lifelong consequences of ACEs and their relevance to prenatal health, variation in susceptibility to adversity, and training in how to sensitively talk to patients about ACEs.

"Most of the time (the) screen is negative and it's really easy. But when you find that person, you're so glad you did."

"I just felt more attentive. In the past, I would have been like, 'Okay, that's just another fact.' But now it was like, 'No... in addition to all your other high risks, this is another high risk for you for the future of parenting.' I felt much more motivated to help her get to the parenting class."

(2) Resilience screening: Clinicians appreciated the pairing of the ACE screening with the resilience screening. Many used the resilience screening to get a better sense of how the patient was currently coping and to frame the ACEs conversation. Some wanted additional guidance about how to respond to different combinations of low and high ACE and resilience scores.

"I think it would have been very difficult to have ACEs without the resiliency score, because then you wouldn't have known what their coping mechanisms and coping ability would be and then the resource to tie into it. It just sort of closed the loop."

"I'm thinking, too...we can't change the trauma – the trauma is done. But the resilience piece ...the coping piece is the piece that we can work on."

(3) Workflow: Clinicians identified that training for and implementation of a standardized office workflow are critical for the successful prenatal office ACEs screening. Many felt that an automated system for flagging patients, and processes for collecting and recording ACE data electronically would improve the workflow. Further, buy in from medical assistants and

an enthusiastic clinician champion were identified as important factors that contributed to the success of ACEs screening implementation. There was agreement that screening for ACEs later in pregnancy allowed for greater rapport and trust.

"...You had more of a rapport with patientsDoing it [ACEs screening] a little bit later in pregnancy ...– there's more of a trust going on."

(4) Resources: Clinician support for ACEs screening was contingent on having the resource handout and strong linkages with behavioral health and psychiatry. An onsite social worker was identified as an important desired resource to help with counseling, triage, and referral to community resources for social needs and parenting skills. Obstetrician to behavioral health clinician consultation was available, but some voiced lack of confidence that patients would follow through and concerns about whether there were adequate mental health resources. Clinicians agreed that the screening should not be rolled out in other medical offices until they were confident that resources or identified referrals were securely in place.

"... there's a big gap from handing out a piece of paper, and really receiving useful care."

"...I think it would have been difficult to do without the resource sheet...Having that resource sheet, I think, was really vital to be able to say, 'You know, these are the things that can help you...' And I always encouraged everyone to keep the sheet in case issues or things came up in the future."

Discussion

Our findings demonstrate the acceptability and feasibility of screening for ACEs as part of standard prenatal care. Clinician screening rates were high (78%) and tools that automatically flag patients for ACEs screening would enhance screening rates further. Nearly 90% of patients completed the screening, and for many expectant mothers, this was their first opportunity to discuss their exposure to ACEs with a healthcare provider. Notably, sharing information about ACEs with a healthcare provider was acceptable and comfortable for most

patients, and in some cases, it strengthened the patient-provider relationship by fostering trust or feelings of closeness.

Not surprisingly, patients with zero ACEs reported somewhat higher comfort in completing the questionnaire and discussing ACEs with a healthcare provider. Several patients reiterated the need for clinicians to pay attention, show empathy and caring and respect for privacy, and connect patients with useful resources. The majority agreed that clinicians taking care of prenatal patients should ask about ACEs. These findings are consistent with prior findings in primary care research suggesting that patients value being asked about their trauma history and view their clinicians as capable of helping them with problems associated with ACEs.²⁰⁻²³

Despite the overall positive findings, there were several important nuances to the results that need further investigation. First, screening rates were lowest among African American and Hispanic patients and additional research is needed to understand this gap in care. Second, women with race/ethnicity “Other” or “Unknown” were significantly less likely to complete the screening questionnaire. This may be a reflection of a greater cultural gap between patients and providers, greater perceived stigma, or lower levels of engagement among those ethnic minority patients with the healthcare system. It is also possible that women who chose not to share their race/ethnicity are more private and less likely to disclose personal information in general.

Finally, while 52% and 54% of women with 0 or 1–2 ACEs, respectively, reported being “very satisfied” with the efforts of KPNC clinicians and staff in responding to this issue, the corresponding rate for women with 3+ ACEs was 38%. This indicates that more work is needed to meet the often complex and multifaceted needs of women with higher exposure to ACEs.

The successful implementation of ACEs screening requires clinician and staff education about the health consequences of ACEs and training in how to sensitively ask about and respond to patient disclosure of ACEs. While integrating ACEs screening into prenatal care was somewhat uncomfortable for clinicians initially, they reported gains in knowledge of the impact of ACEs on health and improved ability and comfort addressing ACEs after the training and pilot implementation. Many felt that it was easier to do than they anticipated and they valued the opportunity to help mitigate the negative impact of ACEs by connecting women with extra resources to better manage pregnancy and parenthood.

Clinicians felt that including an assessment of patients’ current resilience contributed to more tailored discussions and provided the opportunity to reinforce the idea that while ACEs are risk factors, they do not absolutely determine an outcome for an individual, and that healing and recovery are always possible. It is important to note, however, that patients with ≥ 3 ACEs were less likely to report that their clinician reviewed the ACEs questionnaire with them, and less likely to report that a healthcare provider had asked them about ACEs in the past than those with 1–2 ACEs.

It may be that women with high ACEs have substantially different experiences with the healthcare system and there may be both patient and clinician factors that contribute to differences in care received. For example, patients with higher ACEs might avoid sensitive topics that lead clinicians to ask ACEs questions or they may have a greater number of competing medical demands that take up time in medical appointments. Conversely, clinicians may “profile” women whom they perceive to be at higher risk of ACEs and avoid

screening these patients due to their own discomfort, concerns that patients will get upset, or concerns that the healthcare system doesn’t have the capacity to adequately address the behavioral health needs of identified women. This is an important area for future investigation.

Clinicians identified that a standardized workflow is critical to the successful adoption and implementation of ACEs screening in prenatal care. As much as possible, ACEs screening and documentation protocols need to be integrated into existing workflows and the electronic health record. For example, tools that automatically flag patients for ACEs screening and allow for easy documentation of ACEs scores, would make screening more universal and intervention easier in clinical care. The pros and cons of adding patients’ ACE scores to the electronic health record, however, need to be carefully considered.

Finally, clinicians’ willingness to screen for ACEs was contingent on having available referral resources and linkages with behavioral medicine, psychiatry, and social work. As with other complex health concerns, primary care providers and patients benefit from referral resources that offer additional help and expertise.

Limitations

This pilot study had several limitations. It was conducted at two KPNC medical centers among English-speaking female prenatal adults and results may not be generalizable to other healthcare systems or the U.S. population. ACEs self-reported responses are subject to recall bias. However, retrospective reports of ACEs have shown good test-retest reliability in previous studies.²⁴ Our shortened assessment of ACEs did not include details on ACEs severity, timing, frequency or duration, or questions on neglect, and thus the prevalence of ACEs is somewhat lower in our sample than previously reported in the literature.²⁵ Further, our ACEs measure included the term “sexual abuse” and future studies should instead use descriptive questions that avoid emotion-laden words, such as abuse. Additional studies with validated expanded questionnaires that include neglect as well as additional adversities (e.g., living in foster care, bullying)²⁶ are needed.

Women not completing the ACEs questionnaire (12%) were not contacted for a phone interview, which may have affected phone survey results. Those who could not be reached (29%) or declined to participate (12%) in the telephone interviews may have had different experiences with the ACEs screening than those who participated, and results could be subject to respondent bias; however, respondents and nonrespondents did not differ significantly on ACE scores or demographic characteristics. Finally, while our focus groups were designed to be useful for clinical and operational leaders, we were unable to link specific comments with specific clinicians or provide data on the number of clinicians endorsing each theme, and standard methodology to analyze qualitative data were not used.

Conclusions

Our study demonstrates that it is possible to incorporate both ACEs and resilience screening efficiently into routine prenatal care in a real-world setting, and suggests that most patients and clinicians find this both acceptable and worthwhile. Training for and implementation of a standardized office workflow that can be easily integrated into standard care, inclusion of resilience screening, and linkages with

mental health resources were critically important factors that facilitated successful implementation.

Clinician follow-up for patients happens best when clinicians have a clear algorithm for what to do, that is updated frequently, and of which clinicians are reminded often. More consistent screening and follow-up is likely to happen over time as ACEs are reliably incorporated into routine prenatal care. The success of this feasibility study sets the stage for future research to investigate whether prenatal ACEs screening is associated with improved outcome for women and their families.

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Author Disclosure Statement

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(Appendix follows →)

Appendix 1

PLACE LABEL HERE

Women's Health Screening Questionnaire

To the women in our practice seeking prenatal care,

The family that each of us grows up in and our childhood experiences can affect our adult lives and our parenting. Most of us have some memories of our early life that are positive (such as people who cared about us, people who made us feel confident). There are also childhood experiences that are harmful to children and can continue to affect us as adults. In providing your maternity care, it is helpful for us to know specifically what you experienced while growing up. It helps us to better think about how to support you during your pregnancy and early years of parenting. For example, if you were sexually abused as a child, you may have unique concerns or fears about breastfeeding. If you grew up in a household where you did not have enough to eat, it may be harder for you to know how much your child should eat at any given age.

It is also important to know that childhood experiences are only *part* of a person's story. We know that resilience—the ability to “bounce back”—is just as important and that there are many ways to heal throughout your life.

Investigators at Kaiser Permanente's Division of Research and Women's Health leadership in Northern California are conducting a research study to better understand our patient's views of adverse childhood experiences (ACEs) and prenatal care. Underneath this paper is a questionnaire asking about your own ACEs and your strengths. Your decision to complete or not complete the questionnaire will have no effect on your health care or your membership. Your responses to the questionnaire will not become part of your medical record but your overall score may be recorded in your medical record. We will also take a look at how your answers to these questions relate to your health.

Thank you for sharing this information with us. Your personal information will be kept confidential. We will track overall information obtained in order to decide about additional services we might offer in our office. Completion of this questionnaire is completely optional.

Thanks

This introductory letter was modified from a version used by the Community Care of North Carolina. <https://www.communitycarenc.org/media/files/resilience-ace-screening.pdf>

MR# _____

Name _____

Date _____

Women's Health Screening Questionnaire

Thank you for completing this questionnaire. Your answers will help us provide you with excellent care.

Prior to your 18th birthday:	
Did a parent or adult in your home ever swear at you, insult you, or put you down?	1 ☐ Yes 0 ☐ No
Not including spanking, did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way?	1 ☐ Yes 0 ☐ No
Did you experience sexual abuse by an adult or person at least 5 years older?	1 ☐ Yes 0 ☐ No
Did you lose a parent through divorce, abandonment, death, or other reason?	1 ☐ Yes 0 ☐ No
Did your parents or adults in your home ever hit, punch, or beat each other up?	1 ☐ Yes 0 ☐ No
Did you live with anyone who was a problem drinker, alcoholic, or who used street drugs?	1 ☐ Yes 0 ☐ No
Did you have someone in your household who was depressed, mentally ill, or attempted suicide?	1 ☐ Yes 0 ☐ No
Did you have a member of your household who went to prison?	1 ☐ Yes 0 ☐ No
Total Yes responses _____	

Clinician Initial: