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Original article

## Using Prenatal Advocates to Implement a Psychosocial Education Intervention for Posttraumatic Stress Disorder during Pregnancy: Feasibility, Care Engagement, and Predelivery Behavioral Outcomes

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### A B S T R A C T

**Background:** Pregnant women with posttraumatic stress disorder (PTSD) engage in more high-risk behavior and use less prenatal care. Although treating depression in pregnancy is becoming widespread, options for addressing PTSD are few. This study was designed to test the feasibility of implementing a manualized psychosocial PTSD intervention, Seeking Safety, delivered by prenatal advocates.

**Methods:** All women entering prenatal care at two federally qualified health centers were screened for current symptoms of PTSD. One site was selected randomly to have prenatal care advocates deliver eight Seeking Safety topics for women that indicated clinical or subclinical PTSD symptoms. Baseline and predelivery interviews were conducted and collected background characteristics and assessed PTSD severity and coping skills. Medical records were collected to document care visits. Documentation of participation rates, fidelity to the treatment, and qualitative feedback from advocates and participants was collected.

**Results:** More than one-half (57.3%) of the intervention women received all Seeking Safety sessions and fidelity ratings of the session showed acceptable quality. Using an intent-to-treat analysis, intervention women participated in significantly more prenatal care visits ( $M = 11.7$  versus  $8.9$ ;  $p < .001$ ), and had a significantly higher rate of achieving adequate prenatal care (72.4% vs. 42.9%;  $p < .001$ ). Although not significant when accounting for baseline differences, intervention women also reduced negative coping skills but not PTSD symptoms.

**Conclusions:** Using prenatal care advocates to deliver Seeking Safety sessions to women screening positive for PTSD symptoms at entry to prenatal care is a promising intervention that seems to increase prenatal care participation and may reduce negative coping strategies.

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There is increasing interest in the effects of posttraumatic stress disorder (PTSD) on pregnancy outcomes. Researchers have found that women with PTSD are more likely to engage in high-risk behaviors (such as having multiple sexual partners, and abuse of tobacco, alcohol, or drugs), may use less prenatal care, gain more weight in pregnancy, and have lower birthweight babies, and more preterm births, ectopic pregnancies, miscarriages, and hyperemesis (Lopez, Konrath, & Seng, 2011; Morland et al., 2007; Morland, Leskin, Block, Campbell, & Friedman, 2008; Rosen, Seng, Toland, & Mallinger, 2007; Seng et al., 2001; Seng, Low, Sperlich, Ronis, & Liberzon, 2011; Yonkers et al., 2014).

At the time of this study, PTSD was diagnosed by symptoms of intrusive thoughts, avoidant behavior, arousal, and numbing that affect daily functioning after the experience of a traumatic event that induces intense fear, helplessness, and horror, with actual or threatened significant injury or death to self or others (American Psychiatric Association, 2000). Events can include being a victim of physical or sexual abuse as a child or adult, unexpected loss of loved ones, witnessing violence, or experiencing an accident, natural disaster, or war. Reported rates of PTSD in pregnancy vary widely, from 3% to 16%, with up to 23% more women reporting subclinical symptoms (Kim, Harrison, Godecker, & Muzyka, 2014; Morland et al., 2007; Seng, Low, Sperlich, Ronis, & Liberzon, 2009; Seng et al., 2010).

Despite these rates, only one recent study has been published that describes an intervention specifically for PTSD in pregnancy (Rowe, Sperlich, Cameron, & Seng, 2014). The present study was a quasi-experimental feasibility study, comparing women in two prenatal care settings who screened positive for PTSD. One group received prenatal care and a manualized intervention (Seeking Safety; Najavits, 2002) that had not been used in this population before, and the other group received usual prenatal care at a different health center. Specifically we assessed the 1) feasibility of implementation including participation rates and fidelity, 2) patient engagement in prenatal care, 3) improvement in PTSD symptoms and coping strategies, and 4) benefits and challenges of the intervention from the perspectives of both participants and prenatal staff.

## Method

### Screening and Identification

The study was conducted in two federally qualified community health centers in a Northeast city from fall 2012 to fall 2014, with data collection completed in 2015. Both health centers had a prenatal care team consisting of paraprofessional prenatal advocates, nurse midwives, and physicians. Prenatal advocates provided education and support to all women to supplement nurse/physician prenatal care visits and conducted such activities as teaching about nutrition, exercise and healthy behavior during pregnancy, providing childbirth education (e.g., phases of pregnancy, physical and mental health aspects of pregnancy, managing labor and delivery), and helping women obtain benefits and services such as health insurance, transportation, housing, legal assistance, nutrition services, and refugee support. As part of routine prenatal care, all women were screened for domestic violence, smoking, substance use, and depression, with the prenatal care teams providing referrals to behavioral health and other services if these needs were identified. During the study period, women were also given a brief four-question PTSD screen (Primary Care PTSD Screen; Prins et al., 2003).

### Study Design and Enrollment

Women who scored 2 or above on the Primary Care PTSD Screen were eligible to enroll if they were 18 years old, initiated prenatal care before 27 weeks gestation, and spoke English, Spanish, Vietnamese, or Portuguese. Eligible women were asked by the clinic coordinator at each site if they would be willing to meet with a study interviewer to learn about the study. The interviewer was not a member of the health center staff and was blind to the study questions. She was bilingual/bicultural and conducted interviews in either English or Spanish in a borrowed

office at the health centers. (Telephonic translation services were used for interviews in other languages.) She described the study (completion of study interviews, collection of medical records, and for the intervention site, the opportunity to participate in the Seeking Safety sessions), and completed informed consent. Women who agreed received a \$20 gift card to a local store for each completed interview, and if needed, bus or taxi fare and reimbursement for babysitting.

One center was chosen randomly to implement the intervention integrated with usual prenatal care, whereas the other site continued usual prenatal care only, which included assignment to and delivery of prenatal advocate visits and services, routine prenatal care visits, and referral to on-site mental health services if a woman screened positive for depression or PTSD. A sample size of 60 per group was calculated to reach 80% power to detect an effect size (ES) difference of 0.25 on the PTSD symptom outcome, chosen based on a prior non-experimental trial of Seeking Safety (Gatz et al., 2007). The Institutional Review Board of the University of Massachusetts Medical School approved the study.

### Intervention Description

Seeking Safety (Najavits, 2002) is a manualized psychosocial education program designed to improve coping skills among individuals with PTSD and comorbid substance abuse. It uses cognitive-behavioral theory as its underlying change mechanism, focusing on solutions to present problems, with a major emphasis on safety, and explicitly does not focus on exploring past trauma or psychoanalytic work, cited as reasons paraprofessionals can be trained to use the intervention (Najavits, 2002). Safety is an umbrella concept that encompasses developing healthy behaviors like exercise and nutrition, controlling symptoms of PTSD such as dissociation, reducing drug/alcohol use, and addressing difficult interpersonal relationships. It has been implemented and evaluated in a wide variety of formats and settings, and with different numbers of sessions and session leaders, for example, mental health professionals as well as case managers and peer counselors (Brown et al., 2007; Desai, Harpaz-Rotem, Najavits, & Rosenheck, 2008; Hien et al., 2009; Najavits, 2002; Najavits, Gallop & Weiss, 2006; Najavits & Hien, 2013).

Najavits and Hien (2013), in a review of PTSD interventions, found that Seeking Safety was the most evaluated PTSD intervention, and that it outperformed controls on PTSD symptom improvement. There is evidence that providing as few as six sessions can impact outcomes (Ghee, Bolling, & Johnson, 2009; Najavits, Weiss, Shaw, & Muenz, 1998). The current study is the first reported using Seeking Safety in prenatal care, and was developed in conjunction with the author (Najavits, 2002).

Seeking Safety includes 25 topics addressing case management and basic safety needs as well as cognitive, interpersonal, and behavioral coping strategies. For this study, eight topics were chosen to be delivered to women between their prenatal intake and 1 month before their due date (Table 1), with the follow-up interview immediately after completion of the sessions. We used both the English and Spanish materials for Seeking Safety provided by Guildford Press (Najavits, 2002) and translated some of the participant handouts into Vietnamese and Portuguese with permission. Validity of the translated materials was ensured by using certified translators.

Four prenatal advocates were trained to deliver the sessions at the prenatal clinic in addition to their routine prenatal

**Table 1**  
Seeking Safety Topic Sessions and Completion of Sessions

Topic Title	Content	Percent (n) Receiving Topic
Introduction to seeking safety and case management	Explaining Seeking Safety sessions as part of prenatal care visits, and review of current service needs (e.g., insurance, employment, housing, transportation, food, dental, mental health services etc.).	96% (72)
Safety	Identify any unsafe behavior (like self-harm or use of drugs) and how it relates to PTSD; Review an extensive list of safe coping skills and identify a few the woman may want to use.	96% (72)
Taking Good Care of Yourself	Self-care versus self-neglect and completion of a check list of self-care items and discussion of ways the woman can do more self-care.	95% (71)
PTSD: Taking Back Your Power	Definition of PTSD and understanding symptoms and what problems it can cause (e.g., self-esteem, physical well-being, relationships, etc.)	89% (67)
Detaching from Emotional Pain: Grounding	Mental, physical and soothing exercises to reduce emotional pain caused by PTSD and coaching women to use an approach that is helpful to them after teaching them various techniques.	91% (68)
Setting Boundaries in Relationships	Defining how too much closeness or too much distance in relationships can be harmful and how to identify when this is happening and what can be done to get out of destructive relationships and promote positive engagement.	75% (56)
Respecting Your Time	Women asked to do a calendar of tasks and identify if they are using their time constructively to accomplish positive coping including self-care, and getting to required prenatal and community service appointments. How lack of constructive use of time can relate to PTSD symptoms	75% (56)
Healing from Anger	Exploring constructive and destructive anger and how anger is a necessary step in recovering from PTSD and related substance use.	68% (51)

Abbreviation: PTSD, posttraumatic stress disorder.

education and advocacy sessions. The advocates were all bilingual/bicultural and came from Vietnam, Brazil, Ghana, and Puerto Rico. They had extensive prenatal care training, and from 5 to 20 years of experience as community health workers. One was trained in her home country as a nurse/midwife, one had an associates degree, and two had bachelors degrees. None had formal training in addressing mental health issues before the study.

An initial 10 hours of training was provided by a Treatment Innovations Inc. trainer that covered background about PTSD and trauma, and the structure of the Seeking Safety sessions (available: [www.treatment-innovations.org/training.html](http://www.treatment-innovations.org/training.html)). Subsequently, two study team members became certified as Seeking Safety supervisors. They then took over ongoing training and supervision of intervention implementation.

#### Intervention Fidelity Monitoring

Weekly supervision meetings, which included the two certified supervisors as well as the nurse midwife clinical supervisor of the advocates, were used to monitor caseload, sessions completed, and adherence. The advocates also completed and submitted a detailed checklist following the topic format in the manual for each session delivered. Finally, advocates were required to submit an audio tape or complete an observed session twice a year for the study supervisors to rate fidelity.

#### Measures

##### Screening for PTSD

The Primary Care PTSD Screen asks yes/no questions about four symptoms experienced in the last month related to any prior traumatic event (Prins, et al., 2003). The symptoms are 1) intrusion (having nightmares or intrusive thoughts), 2) avoidance (trying to avoid thinking about the events[s] or avoiding situations that serve as reminders), 3) arousal (being on guard, easily startled), and 4) numbing (feeling numb or detached from

others, activities, etc.). Individuals scoring 0 or 1 are not considered symptomatic of PTSD, whereas those who answer yes to 2 of the items (sensitivity = 0.91 and specificity = 0.72) are considered to have subthreshold levels of symptoms, and individuals meet clinical criteria for the disorder if they answer yes to 3 or 4 of the symptoms (sensitivity = 0.78 for 3 items and 0.54 for 4 items; specificity = 0.87 for 3 items and 0.93 for 4 items).

##### Baseline characteristics

Data on demographics, health, past trauma, pregnancy, and birth experiences were collected at the baseline interview using standardized questions drawn from other published patient surveys and previous work of the authors.

##### Baseline assessment of smoking and problem alcohol and drug use

Participants were asked if they currently smoked cigarettes, and if so, how many per day. The Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) and the Drug Abuse Screening Test (DAST-10) were used to assess problematic substance use in the last year and are commonly used as screens in primary health care. The AUDIT-C assesses level of alcohol use with three questions (score range 0–12) to identify frequency and volume, with a cutoff score of 4 or more indicating misuse. It has adequate sensitivity (0.73) and specificity (0.91) in women (Bradley et al., 2007). The DAST-10 asks 10 yes/no questions to assess drug abuse/dependence. The measure has strong validity and overall predictive accuracy of 70%, with an alpha of 0.90. A cutoff score of three or more positive items identifies problematic drug use (Yudko, Lozhkina, & Fouts, 2007).

##### Baseline depression

The Edinburgh Prenatal/Postpartum Depression Scale (Cox, Holden, & Sagovsky, 1987), which is the mostly widely used depression screen in prenatal care, was used. This is a 10-item measure with a 4-point Likert scale; higher scores indicate more symptoms. Internal reliability (0.87) and sensitivity (86%)

and specificity (78%) are acceptable. Scores above 12 are considered strong indication of major depression. Alpha reliability for our sample was 0.83.

#### *Fidelity and participation*

The audiotaped or observed sessions were rated by the certified supervisors using a 21-item Seeking Safety Adherence Scale, Long Version with six summary scores: format (4 items each rated for adherence and helpfulness), content (8 items each rated for adherence and helpfulness), process (8 items about general clinical skills), and a one-item overall summary score (available: [www.treatment-innovations.org/assessment.html](http://www.treatment-innovations.org/assessment.html)). Items are rated from 0 (not done/harmful) to 3 (done thoroughly/extremely helpful). Participation rates were documented on a case flow sheet completed by the advocate to indicate when each session was delivered.

#### *Engagement in care*

The total number of prenatal care visits, advocate visits, and mental health visits between intake and delivery were collected from electronic medical records for both groups. The Adequacy of Prenatal Care Utilization Index, for determining adequacy of prenatal care compared with recommended prenatal visits, was used to score whether participants received inadequate or limited prenatal care versus adequate or adequate plus care (Kotelchuck, 1994). It combines date of initiation of care with total number of prenatal visits based on gestational age at delivery. This is the most widely used U.S. metric for calculating prenatal care adequacy, and is used in the U.S. Government Office of Disease Prevention and Health Promotion, Healthy People 2020 goals (available: [www.healthypeople.gov/node/4834/data\\_details](http://www.healthypeople.gov/node/4834/data_details)). It has strong clinical validity, particularly in accounting for visits after the initiation of prenatal care (Anderson & Kotelchuck, 1996).

#### *Coping skills assessment*

The Brief Coping Questionnaire (Carver, 1997), which consists of 28 items rated for frequency of use (1 [not at all] to 4 [a lot]), was used to assess coping strategies. It includes 14 two-item subscales describing different coping mechanisms (e.g., venting, distraction, planning, reframing, religion, support, denial, and substance use) with an average  $\alpha$  of 0.63. For data reduction purposes and to increase internal reliability, a factor analysis was conducted yielding a positive coping factor consisting of 13 items ( $\alpha = 0.82$ ) and a negative coping factor consisting of seven items ( $\alpha = 0.74$ ), which were used for analysis. A mean frequency of use across items was calculated for each subscale (range, 1–4). Higher positive coping scores meant more often using such skills as reframing, seeking advice, emotional support, and spirituality. Higher negative coping scores meant using more self-blame, giving up, or alcohol or drugs.

#### *PTSD severity*

Participants completed the Posttraumatic Stress Scale (Foa, Riggs, Dancu, & Rothbaum, 1993), assessing the severity of 17 symptoms of PTSD in the last month. Symptoms are rated on a scale from 0 (not at all) to 3 (almost always). Symptoms are matched to diagnostic criteria from the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, including numbing/avoidance, hyperarousal, and re-experiencing. Internal reliability is good (0.91 for total symptom severity), as is positive (100%) and negative predictive validity (82%). For this study, the total severity score was used ( $\alpha = 0.89$  at baseline).

#### *Focus group/interview feedback from participants*

Three focus groups of intervention participants were conducted after completion of participation. Structured questions were used to solicit feedback on the acceptability of the intervention, the benefits and challenges, or any negative consequences. A few individual interviews were targeted to individuals who the study interviewer knew were not as positive about the intervention, to be sure to obtain a range of feedback. The focus groups/interviews were recorded, translated in the case of Spanish recordings, and three study staff used both process notes and the tapes to independently identify themes, resolve disagreements, and determine the main themes.

#### *Focus group feedback from advocates*

Approximately 1 year into the intervention and again at the end of the study, a focus group was conducted with the prenatal advocates about the challenges and benefits of their training, the implementation of the sessions, and their views of participant outcomes. Process notes were recorded by three study staff, themes identified, discussed, and agreement reached on main themes from advocates.

#### *Analysis*

Initial descriptive statistics and baseline group differences ( $t$ -tests or  $\chi^2$ ) were calculated. We used qualitative coding processes to document focus group and interview themes. We evaluated mental health outcomes (PTSD severity and positive and negative coping skills) using repeated measures analysis of variance and calculated ES using Cohen's  $d$  on change scores, and on group differences in care visits. We also reexamined the frequency of visits and mental health outcomes using only participants who completed the full number of sessions compared with both those who received fewer sessions, and to the usual care group. Finally, we explored multivariate regression analysis for care visits, and mental health outcomes, controlling for respective baseline scores and baseline demographic differences (U.S. born, English language, abortion history, negative coping, smoking, and age). All analyses were conducted using SPSS Version 22 or 23 (IBM Corp., ND).

## **Results**

### *Screening Results*

A total of 1,362 women entered prenatal care at the two sites during the study period, and 92% ( $n = 1,259$ ) completed PTSD screening. Of the women who endorsed two or more items ( $n = 208$  or 17% of those screened), 34 did not meet eligibility criteria, and 25 declined study participation. Women who declined were significantly more often White than of other ethnicities ( $p = .02$ ).

### *Participant Characteristics*

Participants included 149 women (Table 2), 89 in the intervention and 60 in the usual care condition. They were mostly unmarried, unemployed, Hispanic, and a significant portion had less than a high school education. A large portion (67.8%) also had chronic health conditions that would require additional prenatal monitoring. Intervention women were slightly younger, more often born in the U.S. and spoke English, more often had a prior abortion, were more likely to be smokers, and had

**Table 2**  
Demographic Characteristics of Enrolled Participants by Condition\*

Characteristic	Total Sample (n = 149) <sup>†</sup>	Intervention (n = 89) <sup>†</sup>	Control (n = 60) <sup>†</sup>	Pt or $\chi^2$
Age (y), mean (SD)	27.1 (6.1)	26.3 (5.3)	28.4 (7.0)	.051
Race/ethnicity				.92
Non-Hispanic Black/ African American	21 (14.1)	13 (14.6)	8 (13.3)	
Hispanic	99 (66.4)	57 (64.0)	42 (70.0)	
Non-Hispanic White	19 (12.8)	13 (14.6)	6 (10.0)	
Other (Asian, biracial, or other)	12 (8.0)	6 (6.7)	4 (6.7)	
Language				<b>.02</b>
English	92 (61.7)	63 (70.8)	29 (48.3)	
Spanish	48 (32.2)	24 (27.0)	24 (40.0)	
Portuguese	6 (4.0)	1 (1.1)	5 (8.3)	
Other	3 (2.0)	1 (1.1)	2 (3.3)	
Born in United States or Puerto Rico	80 (53.7)	59 (66.3)	21 (35.0)	<b>&lt;.001</b>
Currently dealing with immigration issues	22 (14.8)	10 (11.2)	12 (20.0)	.16
Education				.63
Less than high school	62 (41.6)	34 (38.2)	28 (46.7)	
High school diploma or GED	43 (28.9)	28 (31.5)	15 (25.0)	
Some college or trade school	35 (23.5)	23 (25.8)	12 (20.0)	
College degree	7 (4.7)	3 (3.4)	4 (6.7)	
Master's degree	2 (1.3)	1 (1.1)	1 (1.7)	
Marital status				.42
Married	27 (18.1)	16 (18.0)	11 (18.3)	
Separated	6 (4.0)	2 (2.2)	4 (6.7)	
Divorced	4 (2.7)	2 (2.2)	2 (3.3)	
Never married	92 (61.7)	54 (60.7)	38 (63.3)	
Living with partner	20 (13.4)	15 (16.9)	11 (11.0)	
No. of children, mean (SD)	1.6 (1.7)	1.6 (1.8)	1.6 (1.4)	1.0
No. employed	51 (34.2)	30 (33.7)	21 (35.0)	1.0
Monthly income (missing = 22), mean (SD)	\$762 (\$660)	\$694 (\$602)	\$840 (\$850)	.29
Any chronic health problem	101 (67.8)	63 (70.8)	38 (63.3)	.22
Pregnancy and birth experiences				
No. of pregnancies (including current), mean (SD)	3.5 (2.4)	3.6 (2.6)	3.4 (2.0)	.69
No. of primigravidas	28 (18.8)	18 (20.2)	10 (16.7)	.67
Gestation at first OB visit (wk), mean (SD); missing = 1)	7.6 (4.7)	7.5 (5.0)	7.6 (4.3)	.91
Ever had an abortion (missing = 6)	35 (23.5)	26 (30.6)	9 (15.5)	<b>.048</b>
Any prior pregnancy/ birth problems (of n = 121 who had prior pregnancies)	87 (71.9)	48 (67.6)	39 (78.0)	.23
Miscarriage (missing = 6)	62 (41.6)	34 (40.0)	28 (48.3)	.39
Stillbirth	5 (4.1)	2 (2.8)	3 (6.0)	.65
Premature birth (missing = 10)	23 (20.7)	13 (20.3)	10 (21.3)	1.0
Low birth weight (missing = 16)	19 (18.1)	11 (18.0)	8 (18.2)	1.0
Mental health and substance use				
Mean PTSD severity score (SD)	22.4 (11.6)	23.1 (11.9)	21.4 (11.3)	.40
Mean depression score (SD)	13.3 (5.9)	13.8 (6.0)	12.6 (6.0)	.25
Mean positive coping (SD)	2.6 (.64)	2.6 (.66)	2.6 (.61)	.98
Mean negative coping (SD)	2.1 (.68)	2.2 (.71)	2.0 (.62)	<b>.02</b>

(continued on next page)

**Table 2** (continued)

Characteristic	Total Sample (n = 149) <sup>†</sup>	Intervention (n = 89) <sup>†</sup>	Control (n = 60) <sup>†</sup>	Pt or $\chi^2$
Current smoker	27 (18.1)	23 (25.8)	4 (6.7)	<b>&lt;.01</b>
Mean no. of cigarettes/d (SD)	5.4 (3.3)	5.7 (3.5)	2.8 (1.7)	.11
Risky drinking last year	4 (2.7)	2 (2.2)	2 (3.3)	.68
Above cutoff for drug use problems last year	10 (6.7)	8 (9.0)	2 (2.2)	.15

Abbreviations: OB, obstetrician; PTSD, posttraumatic stress disorder; SD, standard deviation.

Note: Bold values &lt;.05 are statistically significant.

\* Values are number (percentage) unless otherwise indicated.

† Unless otherwise indicated.

significantly more negative coping strategies than did usual care participants. As expected, only a few participants reported alcohol or drug use problems. Finally, both groups experienced a large number of traumatic events both before and after childhood, including substantial rates of physical assault and sexual abuse (Table 3).

#### Fidelity and Participation

Eight observed or audio taped sessions were scored for fidelity, and all achieved an overall rating of 2.0 (reaching criteria for adequate fidelity). Format adherence and helpfulness, and the process subscales also each achieved a mean of 2.0, whereas ratings for adherence and helpfulness of content were both slightly weaker ( $M = 1.8$  for each). Seventy-six women participated in one or more Seeking Safety sessions (Table 1). Thirteen women did not receive any sessions due to refusing sessions ( $n = 8$ ), early miscarriage ( $n = 2$ ), leaving the area ( $n = 1$ ), language barrier ( $n = 1$ ), or being transferred to a high-risk prenatal program ( $n = 1$ ). The nonparticipants tended to be White and older. The majority of participants received all planned sessions ( $n = 51, 57.3\%$ ), and 80.9% received at least one-half the sessions. Lack of completion of sessions was as a result of both scheduling difficulties (e.g., babysitting, transportation, work, and other medical appointments) and to participant interest/motivation.

#### Engagement in Care

Table 4 indicates the total number of advocate, mental health, and prenatal care visits as well as the adequacy of prenatal care utilization index. Intervention participants had about the same rate of mental health visits, but significantly more advocate and prenatal care visits, and a significantly higher proportion received adequate or adequate plus prenatal care. The ES for differences in prenatal care and prenatal advocate visits were in the moderate to large range. In addition, intervention remained a significant predictor of an increased number of prenatal care and prenatal advocate visits in multiple regression models controlling for baseline group differences, although still not predictive for mental health visits. Further, when examining visit outcomes for the intervention group receiving the full eight sessions, ES increased sizably compared with both women receiving fewer sessions and the usual care group. Within the intervention group, women receiving all eight sessions attended significantly more prenatal care visits ( $ES = 0.94; p \leq .001$ ), more prenatal advocate visits ( $ES = 1.16; p < .001$ ), and more mental health visits ( $ES = 0.59; p < .01$ ). Compared with the usual care group,

**Table 3**  
Participant Trauma Background Reported at Baseline

Trauma Total and Type <sup>a</sup>	Total Sample (n = 149)	Intervention (n = 89)	Control (n = 60)	Pt or $\chi^2$
Total no. of different types of trauma experienced, mean (SD)	3.9 (2.1)	3.9 (2.1)	3.8 (2.0)	.74
Total trauma experienced before age 18, mean (SD)	2.6 (2.0)	2.7 (2.0)	2.4 (2.0)	.28
Experienced physical violence by a family member or someone known	99 (66.4)	60 (67.4)	39 (65.0)	.86
Traumatic loss of family member or close friend	88 (59.1)	54 (60.7)	34 (56.7)	.73
Witnessed someone being killed, seriously injured, or sexually or physically assaulted	71 (47.7)	41 (46.1)	30 (50.0)	.74
Sexual assault by a family member or someone known	68 (45.6)	41 (46.1)	27 (45.0)	1.0
Serious disaster (e.g., fire, explosion, tornado, earthquake, hurricane, or flood)	54 (36.2)	32 (36.0)	22 (36.7)	1.0
Physical violence by someone not known	42 (28.2)	28 (31.5)	14 (23.3)	.35
Life-threatening accident or illness	43 (28.9)	29 (32.6)	14 (23.3)	.27
Difficult prior pregnancy or birth	48 (32.2)	28 (31.5)	20 (33.3)	.86
Sexual assault by someone unknown	40 (26.8)	24 (27.0)	16 (26.7)	1.0
Death of one of your children	17 (11.4)	8 (9.0)	9 (15.0)	.30

Abbreviation: SD, standard deviation.

<sup>a</sup> Values are number (percentage) unless otherwise indicated.

the ES were even stronger for prenatal care visits (ES = 1.05;  $p < .001$ ) and prenatal advocate visits (ES = 2.06;  $p \leq .001$ ), but were not significant for mental health visits (ES = 0.29).

### Coping Skills

Women in the intervention condition had higher baseline rates of negative coping skills and there was a significant interaction effect at follow-up. Intervention women decreased their negative coping skills significantly more than did usual care women ( $p \leq .05$ ), yielding a small ES (0.39), based on change score (Table 4). There was no difference between women who completed all sessions versus some sessions, but when comparing those who completed all sessions with usual care women, the ES for decreases in negative coping became larger (0.47). There were no differences between groups at baseline or follow-up in positive coping skills or when examining only the group who completed all sessions. In multivariate analyses, controlling for baseline differences in the groups, the intervention effect for decreases in negative coping disappeared, and no variables were found to be significant predictors of either positive or negative coping except the baseline value of each respective measure.

### PTSD Symptom Severity

There was a greater decrease in PTSD symptom severity scores at follow-up for intervention women but this did not reach significance. However, the ES for PTSD change (0.21), indicated a small effect favoring intervention (Table 4). There were no differences in PTSD symptoms between women who completed all sessions versus some sessions, but when compared with usual care women, the difference approached significance ( $p = .06$ ), and the ES increased to 0.34. In multivariate analyses, controlling for baseline differences in the groups, no variables were found to be significant predictors of PTSD severity except the baseline PTSD severity score.

### Advocate Feedback

Advocates reported learning important new information and skills (e.g., aspects of PTSD they were not aware of, skills for grounding and setting boundaries), and at the end of the study they felt confident in delivering the curriculum and empowered to help their patients in ways they did not before the study. They also reported seeing women more often and becoming closer to

**Table 4**  
Outcomes for Health Care Engagement and Mental Health

Variable	Total sample (n = 138) <sup>a</sup>	Intervention (n = 79)	Control (n = 59)	p Value	Effect Size (Cohen's d)
Mean no. prenatal care visits (SD)	10.5 (4.6)	11.7 (4.3)	8.9 (4.5)	<.001	.61
Reached adequate/adequate plus rate of prenatal care visits, n (%; n = 132)	79 (59.8)	55 (72.4)	24 (42.9)	<.001	N/A
Mean no. prenatal advocate visits (SD)	8.7 (7.0)	12.4 (7.0)	3.9 (2.9)	<.001	1.2
Mean no. mental health visits (SD)	1.5 (3.0)	1.6 (3.0)	1.2 (3.0)	.49	.13
Positive coping <sup>†</sup> (n = 126)					
Baseline	2.60 (.61)	2.59 (.61)	2.62 (.62)		
Follow-up	2.69 (.67)	2.68 (.68)	2.69 (.67)	.91 <sup>§</sup>	.01 <sup>  </sup>
Negative coping <sup>†</sup> (n = 126)					
Baseline	2.08 (.66)	2.20 (.70)	1.93 (.60)		
Follow-up	1.85 (.56)	1.86 (.55)	1.84 (.57)	<.05 <sup>§</sup>	.39 <sup>  </sup>
PTSD severity <sup>†</sup> (n = 126)					
Baseline	21.85 (11.08)	22.07 (11.16)	21.56 (11.08)		
Follow-up	16.06 (12.32)	15.24 (12.16)	17.11 (12.56)	.23 <sup>§</sup>	.21 <sup>  </sup>

Abbreviations: PTSD, posttraumatic stress disorder; SD, standard deviation.

<sup>a</sup> Includes only cases with both baseline and follow-up data.

<sup>†</sup> Sample size varied for this variable due to miscarriage or leaving care at the study site.

<sup>‡</sup> Sample size based on complete data on indicated variables for baseline to follow-up.

<sup>§</sup> Repeated Measures ANOVA interaction term, group  $\times$  time.

<sup>||</sup> Calculated on change scores.

them. However, they reported it was stressful and challenging to learn the intervention and to deliver it as required, in part because they did not view themselves as “therapists.” They were particularly stressed by being taped or observed delivering sessions, which required considerable effort to address in supervision. They also said that many of the materials were too long, academic, and at too high a conceptual and reading level for some participants.

#### *Participant Feedback*

Three focus groups were conducted, two in English and one in Spanish, totaling 13 women, and an additional five telephone interviews were conducted. Some women reported being concerned about the screening process, but almost all reported ending up feeling that it was helpful to acknowledge their PTSD, and some noted it was particularly comforting to have it addressed in a prenatal care program where everyone was female. Several mentioned they would have refused to go to a mental health appointment. Some were annoyed about the extra appointments, although most felt the sessions fit in well with their prenatal care visit schedule. Almost all mentioned learning some helpful coping skills, although about one-half reiterated the advocate view that it was difficult to read and understand the written materials. A few brought partners to sessions and indicated it helped them to communicate their needs better as well as to solicit support. Several women pointed out the intervention helped them to cope with a high-risk pregnancy. In contrast, a few did not feel the advocate was able to convey the sessions in a way that was helpful (e.g., it was like paperwork at school because of the handouts). However, even those who did not endorse personal benefits agreed it was a good program and should be offered to other women.

#### **Discussion**

This study was designed to test the feasibility of using Seeking Safety in prenatal care and to document proximal outcomes among a population that would be considered higher risk for PTSD, but not necessarily for substance use problems. In terms of implementation adherence, despite the difficulties of scheduling Seeking Safety sessions in a busy prenatal care setting, more than one-half of the participants (57%) received all planned sessions, and more than 80% received at least one-half the sessions. Sessions were also delivered with overall adequate fidelity. However, advocates were not consistently able to deliver adequate adherence/helpfulness of topic content as they had limited prior background in mental health. This may contribute to why we did not find significant differences in PTSD symptom severity after treatment, although we did detect a small ES favoring the intervention, as well as a greater ES for those completing all sessions. This suggests not just session fidelity, but also participation in all planned sessions might yield stronger outcomes.

In contrast, there was some promising evidence about reduction in negative coping skills; although not significant in multivariate analyses, a moderate size ES was found for reducing negative coping for those women completing all sessions. We also found strong outcomes for receiving adequate prenatal care, with significant differences and a moderate to large ES found for increased prenatal care visits and advocate visits. The finding that significantly more intervention participants achieved

adequate prenatal care using a well-respected measure is particularly important because this is a higher risk sample (with a high rate of chronic health conditions such as anemia, asthma, diabetes, and hypertension) that would warrant even more frequent visits than the recommended standard of up to 16 visits for a full-term pregnancy with early initiation of prenatal care ([American College of Obstetricians and Gynecologists, 2012](#); [Dowswell, Duley, Gulmezoglu, Kahn-Neelofur, & Piaggio, 2015](#)). Although there is debate about optimal prenatal visits (available: [www.uptodate.com/contents/prenatal-care-secondand-third-trimesters](http://www.uptodate.com/contents/prenatal-care-secondand-third-trimesters); [Dowswell et al., 2015](#)), the number of visits received by the intervention group may still be low based on their risk profile, even though the comparison women received even fewer. Thus, delivery of Seeking Safety during pregnancy using prenatal care advocates in this study seems to have had more impact on improving health-related behaviors (e.g., engaging in more recommended health visits and potentially improving self-care by reducing negative coping skills) than reducing PTSD symptoms. Nevertheless, because lack of engagement in appropriate health care and self-care are frequently associated with PTSD, they are important outcomes.

There are some limitations to this study. Participants were not randomized and the resulting baseline differences indicating different levels of risk behavior between the groups, such as having more smokers in the intervention group, could have affected the strength of the findings. Sample size may also limit the strength of our findings because we found a slightly smaller ES for PTSD symptom improvement than estimated in study planning. Finally, the comparison women received a robust prenatal care program with assigned prenatal advocates and referrals to mental health services; therefore, the intervention may be more powerful in settings where women with PTSD otherwise have access to less intensive routine services.

#### **Implications for Practice and/or Policy**

Given the increasing attention to integration of mental and physical health in health care settings, and the high rates of PTSD in some high-risk prenatal care populations, providing a feasible intervention to help address the negative effects of PTSD on prenatal care engagement and potentially mental health outcomes is valuable. Because Seeking Safety is a psychoeducational intervention and has a track record of being delivered by both professional and paraprofessional staff ([Brown et al., 2007](#); [Hien et al., 2009](#)), it does not require a licensed mental health worker. This is important because many women are reluctant to be referred to mental health care, but based on feedback from our participants, seem comfortable addressing their symptoms and coping needs in the context of a prenatal care program. However, participants and advocates did report the sessions and materials as too “academic,” and consideration should be given in future studies to working with Treatment Innovations, Inc., to change the reading level and formatting of the educational handouts for a more diverse and less well-educated population. Further, the prenatal advocates were novices in addressing PTSD, and although they reported gaining many trauma-informed skills through delivering the intervention, a considerable level of supervision and ongoing training had to be provided to assure adequate fidelity. Other prenatal care settings considering adopting this intervention may want to use paraprofessionals with more of a background in mental health, or conversely,

mental health staff to deliver sessions. It also is important to assist women to attend the full number of planned sessions, because we detected a dose relationship with number of sessions completed.

## Conclusion

Implementing Seeking Safety sessions during prenatal care seems to show some promise for engaging women with PTSD symptoms in achieving higher rates of adequate prenatal care visits, as well as assisting them in decreasing negative, potentially harmful coping strategies. However, a more rigorous randomized trial with adequate power will be needed to provide more evidence for effects on PTSD and coping, and further testing is necessary to determine if treatment outcomes are similar whether the intervention is delivered by mental health professionals or by paraprofessionals.

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