Posttraumatic Stress Disorder, Health Problems, and Depression Among African American Women in Residential Substance Use Treatment

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Abstract

Background: Rates of posttraumatic stress disorder (PTSD) are high among women seeking treatment for substance use disorders (SUDs). Minority women, in particular, experience high rates of trauma and may be less likely to disclose trauma history. This article identifies items from pre-existing screening measures that can be used across settings to sensitively but noninvasively identify women with likely PTSD.

Method: For a sample of 104 African American women in residential SUD treatment who provided informed consent as a part of a larger randomized clinical trial, the prevalence of trauma and PTSD, as well as the relationships between trauma, health, depression, and distress, was examined. Measures included Posttraumatic Stress Diagnostic Scale (PDS), Center for Epidemiologic Studies-Depression Scale (CES-D), Pennebaker Inventory of Limbic Languidness (PILL), and Brief Symptom Inventory (BSI). Additional analyses were undertaken to determine if a subset of noninvasive items could serve to identify the presence of a probable PTSD diagnosis.

Results: Most women (94.2%) reported at least one lifetime trauma, with over half (51.0%) meeting DSM-IV criteria for PTSD. Women with greater trauma symptom severity reported more health problems and higher levels of depression and distress. Five BSI items and one CES-D item were significantly associated with a probable PTSD diagnosis with a sensitivity of 88.7%, a specificity of 66.7%, a positive predictive value of 73.4%, a negative predictive value of 85.0%, and an accuracy of 77.9%.

Conclusion: Findings affirm that African American women with SUDs present for residential treatment with comorbid psychiatric and emotional conditions that warrant assessment and treatment. Results highlight potential benefits of brief screening with routine measures and coordinated access to ancillary psychiatric and medical services, in conjunction with substance treatment, such as in residential or primary care.

Introduction

ACCUMULATING RESEARCH HIGHLIGHTS overwhelming rates of interpersonal trauma in the lives of women with substance use disorders (SUDs). Up to 80% of women needing SUD treatment report lifetime histories of physical and/or sexual assault,¹ and many endorse posttraumatic stress disorder (PTSD) symptoms.²⁻⁴ In SUD treatment settings, studies reveal rates ranging from 55% to 99% of women reporting at least one lifetime traumatic event (*e.g.*, partner violence, sexual assault, and serious accident).^{5,6} Given the prevalence of trauma among women seeking treatment for SUDs, it is not

surprising that women have been identified as a group requiring specialized attention for co-occurring SUD and PTSD.⁷ Less is published around noninvasive screening questions that could be helpful in detecting the presence of a possible PTSD diagnosis for women who present for treatment and also carry an SUD diagnosis. This article aims to alert general medical practitioners to some of the common identifiers and comorbidities seen among women with SUDs, while highlighting items from assessment measures that tend to show positive responses for women at-risk for co-occurring PTSD.

While SUDs are associated with a wide range of physical and mental health detriments, PTSD confers an even greater

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risk and detriment.⁸ Studies conducted on co-occurring (lifetime) trauma and addiction consistently reveal poorer health and increased disability, more severe clinical profiles, and poorer treatment adherence for women with SUDs who have experienced trauma compared to those without traumatic experiences or PTSD.⁹ Increased trauma exposure has been linked to disproportionate physical health burdens, including chronic physical symptoms, poorer health perceptions, and higher rates of neurological and cardiovascular problems (*e.g.*, heart failure, and stroke).^{8,10,11} Furthermore, women with SUDs and co-occurring PTSD are more likely, than those without PTSD, to be diagnosed with a mood disorder, to report higher rates of depressive symptoms, and to have attempted suicide.¹² Due to the greater likelihood of women presenting to general medical settings before they present for SUD treatment, primary care providers may have increased access to earlier screening.¹³

Literature suggests that racial minority women with SUDs are especially vulnerable to the effects of trauma due to more limited social and economic resources.^{14–16} Childhood interpersonal and sexual trauma among racial minority women is high (51% and 49%, respectively).¹⁷ Black women, in particular, may be more likely than white women to experience childhood maltreatment and domestic violence, and to develop PTSD symptoms following trauma exposure.¹⁸ In clinical interviews within maternity clinics across three health systems in the Midwestern United States, nulliparous African American pregnant women reported greater exposure to traumatic events and more symptoms of PTSD than non-African American pregnant women, and were more inclined to report substance use compared to non-African American pregnant women. African American women were also three times more likely to meet criteria for PTSD than the comparison group.¹⁹ Despite the apparent need for trauma treatment among African American women, PTSD remains under-diagnosed and undertreated within the African American community.^{20,21}

Due to the high prevalence of trauma among substance using African American women, treatment providers in substance treatment settings are likely to encounter additional co-occurring health and mental health problems among their patients. Among inner-city African American women, Paranjape et al. found greater depressive symptoms among women who reported both high levels of intimate partner violence and alcohol problems.²² Likewise, a recent study of low-income pregnant African American women revealed significant positive correlations between lifetime trauma exposure and depressive symptoms, anxiety, and general life stress.²³

Treatment providers should also be mindful that women may not readily disclose traumas or instances of victimization during intake interviews.²⁴ Furthermore, African American women may be particularly guarded around reporting symptoms,²⁵ as African American individuals have reported mistrust of providers and described providers as insensitive and lacking cultural awareness.^{26,27} Thus, a negative view of providers could impede the disclosure, and subsequent treatment, of symptoms, particularly in the context of substance treatment.²⁴ In broader medical care settings, substance use frequently goes undetected, due to provider lack of knowledge, skills, confidence,^{28–30} and time.^{31–33} Notably, research has shown that delays in treatment may contribute to higher levels of addiction severity and more severe comorbidities among women than men by

the time they present for SUD treatment. Women are less likely than men to seek SUD specialty treatment due to unique barriers women face, including social stigma and labeling, childcare concerns, stereotypical ideas of clients of treatment, lack of awareness of treatment choices, time, and treatment costs.³⁴ Thus, women may be more likely to present to their primary care and/or OB/GYN providers³⁵ before seeking specialized SUD treatment.

Historically, there has been much debate regarding which problem to treat first: the PTSD or the SUD.³⁶ More recently, studies supporting concurrent treatment of SUDs and PTSD symptoms have been rising. For example, Seeking Safety and Integrated Cognitive Behavioral Therapy have been found to be effective in treating women with comorbid SUDs and PTSD.^{37–39} As integrated approaches are increasingly used to treat co-occurring PTSD and SUDs, more regular assessment procedures for PTSD among individuals presenting with SUDs are needed.³⁹

Of relevance to the current investigation, practitioners in primary care or OB/GYN settings do not routinely assess for SUD or trauma/PTSD, where it may be equally important to identify such problems.⁴⁰ Greater attention to implementation of routine screening is needed, with particular attention paid to African American and other minority women, so that intervention and referral to specialty care can be provided. For alcohol, brief screeners such as the TWEAK⁴¹ were developed specifically for pregnant women. For other drugs, tools like the CAGE^{42,43} have been studied in women, yet neither measure is used routinely in clinical practice. Similarly, it is important to identify practical ways to screen at-risk treatment seeking women who might potentially benefit from trauma-focused services. There are a number of screening instruments that are typically used in clinical settings to assess possible PTSD (*e.g.*, Primary Care PTSD Screen⁴⁴ and Short Screening Scale for PTSD⁴⁵). Nonetheless, these screeners use a subset of questions focused on trauma-specific symptoms, thereby operating under the assumption that information about trauma exposure would be straightforwardly disclosed. We believe it is important to offer alternative screening options that are less invasive and could serve to identify individuals who would benefit from further trauma assessment and subsequent treatment.

The present study examined rates of trauma and PTSD in a sample of African American women seeking residential treatment for SUDs. On the basis of the literature, we predicted the following: (1) African American women with SUDs would report high rates of trauma and (2) trauma symptom severity and/or PTSD would be associated with greater severity of physical and mental health problems. Therefore, the current study examined whether specific questions from larger assessments of mental health functioning could provide significant value in identifying a probable PTSD in a residential substance use treatment facility among African American women.

Method

Participants

The sample consisted of 104 African American women admitted to a nonprofit gender-specific residential substance use treatment facility located in Virginia, from June 17, 2007, through November 06, 2008. Specific services at this facility

included individual and group counseling, motivational enhancement therapy groups, and case management for needs such as housing, transportation, and childcare. Participants provided informed consent as part of a larger randomized clinical trial (RCT) that examined expressive writing as an adjunct to substance abuse treatment.⁴⁶ Program admission records were screened to identify new admissions to residential care; all newly admitted women were approached within their first few days of treatment. Those who met inclusion criteria were invited to participate in a study that involved writing stories related to their life.⁴⁷ To be eligible for the RCT, participants had to (1) be ≥ 18 years old; (2) meet DSM-IV criteria for an SUD; and (3) have approval for 60 days of residential treatment from a third-party payer. Women were ineligible if they had (1) an acute psychiatric (*e.g.*, current suicidality) or cognitive disorder (*e.g.*, dementia) that would preclude them from informed consent or (2) literacy problems that prevented them from completing writing assignments.

Participants in the study had a mean age of 37.72 years ($SD = 7.66$) and, on average, less than a high school education ($M = 10.99$ years, $SD = 1.59$) (Table 1). The majority of the sample was currently unmarried (69.2%) and unemployed (82.7%). The most prevalent substance used was cocaine (88.5%), with over half of participants meeting criteria for more than one SUD (62.5%). Table 1 includes comparisons to the full sample ($N = 149$), which includes women of other ethnicities.

Measures

Trained research assistants (psychology graduate students) administered study assessments. Participants were assessed on-site by research interviewers, who read the instructions and items aloud and made sure that each participant understood what was being asked.

All study participants received a \$5 gift card for completing baseline assessments. Participants provided basic

demographic and personal information, and completed the following measures:

Substance use disorders. The Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID)⁴⁸ is a semistructured diagnostic interview for DSM-IV Axis I disorders. The present study focused only on the Alcohol and Drug Use Modules, which have demonstrated high inter-rater reliability and good validity for DSM-IV diagnoses of these disorders.⁴⁹ In keeping with the new DSM-5,⁵⁰ rather than considering substance abuse and dependence as separate disorders (all participants in this study met dependence criteria according to the DSM-IV-TR for substance[s] of use), this article investigates SUDs as a single disorder.

Trauma and PTSD. PTSD symptoms were measured using the Posttraumatic Stress Diagnostic Scale (PDS),⁵¹ which is a 49-item self-report measure that aids in PTSD diagnosis and symptom severity, assessing specific traumatic events and incorporating items parallel to DSM-IV criteria.⁵² The PDS was validated and found to have good agreement with the SCID in validation studies.⁵¹ This investigation identified a probable PTSD, as diagnoses were not based on a diagnostic interview such as the SCID. However, the PDS was completed with research assistants, who were trained to ensure that participants understood what was being asked. Participants were categorized as screening positive for PTSD if they met DSM-IV criteria as per the PDS. The PDS has high test-retest reliability ($r = 0.83$), high internal consistency ($\alpha = 0.92$), and high convergent validity.⁵³ Trauma symptom severity was defined as the summed scores for items focused on re-experiencing, arousal, and avoidance symptoms. At baseline, internal consistency for trauma symptom severity for this sample was $\alpha = 0.99$. Trauma symptom severity was defined as the sum of scores for all items.

TABLE 1. PARTICIPANT DEMOGRAPHIC CHARACTERISTICS ($N = 104$)

	PTSD % (n) or M (SD) N = 53	No PTSD % (n) or M (SD) N = 51	Total sample % (n) or M (SD) N = 104	RCT sample % (n) or M (SD) N = 149
Age (years)	37.91 (8.06)	37.53 (7.30)	37.72 (7.66)	36.23 (8.58)
Education (last grade completed)	11.25 (1.75)	10.73 (1.36)	10.99 (1.59)	11.24 (1.81)
Employment status				
Unemployed	88.7 (47)	76.5 (39)	82.7 (86)	80.5 (120)
Employed full/part time	11.3 (6)	23.5 (12)	17.3 (18)	16.8 (25)
Marital status				
Married	13.2 (7)	3.9 (2)	8.7 (9)	7.4 (11)
Never married/single/widowed	67.9 (36)	78.4 (40)	73.0 (76)	69.1 (100)
Divorced/separated	18.9 (10)	17.6 (9)	18.3 (19)	25.5 (38)
Substance diagnosis				
Alcohol use disorder	28.3 (15)	21.6 (11)	25.0 (26)	28.9 (43)
Cannabis use disorder	5.7 (3)	17.6 (9)	11.5 (12)	10.1 (15)
Cocaine use disorder	90.6 (48)	86.3 (44)	88.5 (92)	81.9 (122)
Opioid use disorder	49.1 (26)	47.1 (24)	48.1 (50)	45.0 (67)
SUD for more than one substance	64.1 (34)	60.8 (31)	62.5 (65)	57.0 (85)

No significant differences were detected.

PTSD, posttraumatic stress disorder; RCT, randomized clinical trial; SUD, substance use disorder.

TABLE 2. TRAUMA AND POSTTRAUMATIC STRESS DISORDER

	<i>PTSD</i> % (n) or M (SD) N = 53	<i>No PTSD</i> % (n) or M (SD) N = 51	<i>Total sample</i> % (n) or M (SD) N = 104
At least one traumatic event	100.0 (53) ^a	88.2 (45)	94.2 (98)
Two or more types of trauma	88.7 (47) ^b	70.6 (36)	79.8 (83)
Mean number of different types of traumatic events	3.94 (2.07) ^a	2.51 (1.80)	3.24 (2.06)
Trauma symptom severity	27.89 (10.06) ^a	9.88 (9.25)	19.06 (13.21)
Serious accident or fire	41.5 (22) ^a	13.7 (7)	27.9 (29)
Natural disaster	17.0 (9)	25.5 (13)	21.2 (22)
Nonsexual assault by someone you know	43.4 (23) ^b	21.6 (11)	32.7 (34)
Nonsexual assault by a stranger	41.5 (22) ^b	17.6 (9)	29.8 (31)
Sexual assault by a family member or someone you know	39.6 (21)	29.4 (15)	34.6 (36)
Sexual assault by a stranger	45.3 (24)	33.3 (17)	39.4 (41)
Military combat/war zone	1.9 (1)	0.0 (0)	1.0 (1)
Sexual contact when younger than 18 years old by someone >5 years older than you	45.3 (24)	27.5 (14)	36.5 (38)
Imprisonment	58.5 (31)	45.1 (23)	51.9 (54)
Torture	7.5 (4)	9.8 (5)	8.7 (9)
Life threatening illness	30.2 (16) ^b	13.7 (7)	22.1 (23)
Other traumatic event	22.6 (12)	13.7 (7)	18.3 (19)

^a $p < 0.005$.^b $p < 0.05$.

Depression. The Center for Epidemiological Studies-Depression Scale (CES-D)⁵⁴ is a 20-item self-report measure of depression and has high internal consistency in psychiatric settings ($\alpha = 0.90$).

Physical health symptoms and sensations. The Pennebaker Inventory of Limbic Languidness (PILL)⁵⁵ is a 54-item scale that assesses the frequency of common physical symptoms and sensations (e.g., headaches, congested nose, and coughing) using a 5-point Likert scale (1 = have never or almost never experienced the symptom to 5 = more than once every week). Cronbach's alphas for the PILL have ranged between 0.88 and 0.91, with 2-month test-retest reliabilities ranging between 0.79 and 0.83. PILL has a mean score of 112.7 ($SD = 24.7$).⁵⁵

Distress. The Brief Symptom Inventory (BSI)⁵⁶ is a 53-item abbreviated version of the Symptom Check List-90 (SCL-90). It assesses nine areas of distress (somatization; obsessive-compulsive; interpersonal sensitivity; depression; anxiety; hostility; phobic anxiety; paranoid ideation; and psychoticism). The BSI has high scale-by-scale correlations with the SCL-90, as well as high internal consistency (Cronbach's $\alpha = 0.71$ – 0.85), test-retest reliability ($r = 0.68$ – 0.91), and convergent, discriminant, and construct validity.⁵⁷

Statistical analyses

Statistical analyses were performed using Statistical Package for Social Sciences (SPSS) version 22.0. *t*-Tests for continuous measures and chi-squares for categorical variables were used to compare frequencies of trauma, trauma symptom severity, physical health problems, depression, and psychological distress among women with SUDs with and without a comorbid PTSD diagnosis. An additional *t*-test was run to compare severity of PTSD symptoms for women with and without clinically elevated depression.

Finally, stepwise logistic regression models were fit separately for each of the three measures (CES-D, PILL, and BSI). Variables that were significant at the 0.05 level on each of the three measures were combined in a final stepwise logistic regression model to create a prediction model for a current PTSD diagnosis.

Results

Trauma and PTSD among residential SUD African American women

The majority of participants (94.2%) reported at least one lifetime trauma at baseline (Table 2). Over half ($n = 53$; 51.0%) of participants met DSM-IV criteria for current (past month) PTSD. Participants who reported at least one trauma ($n = 98$) had experienced a mean of 3.44 ($SD = 1.96$) different types of trauma (e.g., sexual assault, nonsexual assault, and serious accident). In addition, SUD participants with comorbid PTSD reported significantly more types of trauma ($M = 3.94$, $SD = 2.07$) than those without PTSD ($M = 2.51$, $SD = 1.80$; $t(102) = 3.76$, $p < 0.0005$).

As shown in Table 2, the most frequent traumatic event identified was imprisonment (51.9%), followed by sexual assault by a stranger (39.4%), while the most infrequent traumatic event reported was military combat/war zone (1.0%).

Physical symptoms/health problems and trauma and PTSD

The average total PILL score was 114.46 ($SD = 36.69$). Participants with greater trauma symptom severity, regardless of whether or not they met criteria for PTSD, reported more severe physical health problems as measured by the PILL at baseline, $r(104) = 0.388$, $p < 0.001$. Furthermore, those with a current PTSD diagnosis reported more severe physical health problems (Table 3) compared with those

TABLE 3. SYMPTOMS AND POSTTRAUMATIC STRESS DISORDER DIAGNOSIS ($N=104$)

Symptom dimension/construct	PTSD M (SD)	No PTSD M (SD)	Total sample M (SD)
PILL (physical symptoms)	125.39 (36.29) ^a	103.09 (33.84)	114.46 (36.69)
Depression severity	26.66 (10.86) ^a	18.79 (10.21)	22.80 (11.21)
Clinically elevated depression (CES-D >16)	86.8% ($n=46$) ^a	54.9% ($n=28$)	71.2% ($n=74$)
Brief symptom inventory			
Somatization	1.24 (0.86) ^b	0.72 (0.68)	0.99 (0.82)
Obsessive-compulsive	1.93 (1.14) ^b	1.22 (0.96)	1.58 (1.11)
Interpersonal sensitivity	1.45 (1.10) ^b	0.79 (0.75)	1.13 (1.00)
Depression	1.53 (1.05) ^a	0.84 (0.85)	1.19 (1.01)
Anxiety	1.40 (1.00) ^a	0.67 (0.79)	1.04 (0.97)
Hostility	1.08 (0.86) ^b	0.58 (0.52)	0.83 (0.76)
Phobic anxiety	1.12 (0.86) ^a	0.54 (0.65)	0.84 (0.81)
Paranoid ideation	1.73 (1.03) ^a	1.09 (0.73)	1.20 (0.97)
Psychoticism	1.59 (1.00) ^a	0.85 (0.81)	1.22 (0.98)
General severity index	1.47 (0.81) ^a	0.82 (0.60)	1.15 (0.78)

^a $p < 0.0005$.^b $p < 0.005$.

CES-D, Center for Epidemiological Studies-Depression Scale; PILL, Pennebaker Inventory of Limbic Languidness.

without PTSD ($M=125.39$ [$SD=36.29$] vs. $M=103.09$ [$SD=33.84$], respectively; $t(102)=3.24$, $p < 0.005$).

Trauma, PTSD, and depression

As shown in Table 3, almost three-fourths of all participants (71.2%) obtained clinically elevated CES-D scores at baseline (Cutoff ≥ 16), with an average score of 22.80 ($SD=11.21$). Regardless of PTSD diagnosis, participants with greater trauma symptom severity reported more severe depressive symptoms, as measured by CES-D scores at baseline, $r(104)=0.56$, $p < 0.01$. Analyses further revealed that those with PTSD reported significantly greater depression levels compared to those without PTSD ($M=26.66$ [$SD=10.86$] vs. $M=18.79$ [$SD=10.21$], respectively; $t(102)=3.81$, $p < 0.005$). In addition, participants with clinically elevated depression scores (CES-D ≥ 16) reported greater trauma symptom severity compared to participants without clinically elevated depression levels ($M=23.47$ [$SD=12.61$] vs. $M=8.17$ [$SD=6.83$], respectively; $t(102)=7.95$, $p < 0.0005$).

Trauma, PTSD, and BSI/levels of distress

As shown in Table 3, all nine primary BSI symptom domain scores were significantly higher among participants with a current PTSD diagnosis compared with those without PTSD, $p < 0.005$.

Covariates of PTSD using CES-D, PILL, and BSI symptoms

Stepwise logistic regression models were fit separately for each of the three measures (CES-D, PILL, and BSI). Three CES-D items (Table 4) were significantly associated with PTSD at the $p=0.05$ level of significance; CES-D-1 ("I was bothered by things that don't usually bother me"), CES-D-12 ("I was happy"), and CES-D-17 ("I had crying spells"). Four PILL items (Table 5) were significantly associated with PTSD at the $p=0.05$ level of significance; PILL-16 ("Racing heart"), PILL-19 ("Insomnia or difficulty sleeping"), PILL-

40 ("Headaches"), and PILL-47 ("Twitching of an eyelid"). Finally, six BSI items were significantly associated with PTSD at the $p=0.05$ level of significance; BSI-2 ("Faintness or dizziness"), BSI-8 ("Feeling afraid in open spaces or on the streets"), BSI-26 ("Having to check and double-check what I do"), BSI-27 ("Difficulty making decisions"), BSI-40 ("Having urges to beat, injure or harm someone"), and BSI-50 ("Feelings of worthlessness").

Final items in logistic regression model for PTSD

The 13 items for the three scales were then entered into a final stepwise logistic regression model and variables that were significant at the $p=0.05$ level were retained. As shown in Table 5, one item from the CES-D scale (CES-D-12) was retained, whereas five items from the BSI scale were retained (BSI-2, BSI-26, BSI-27, BSI-40, and BSI-50); no items from the PILL were retained in the final model. From this model, an equation was derived that could be applied to each individual as follows:

$$\text{Score} = 1.003 - 0.693 \times \text{CESD12} + 0.703 \times \text{BSI2} + 0.569 \times \text{BSI26} - 1.230 \times \text{BSI27} + 1.754 \times \text{BSI40} + 0.807 \times \text{BSI50}.$$

If an individual's score was greater than 0, they were screened positive for PTSD. This criterion was compared to the actual PTSD diagnosis and resulted in a sensitivity of 88.7%, a specificity of 66.7%, a positive predictive value of 73.4%, a negative predictive value of 85.0%, and an accuracy of 77.9%. The area under the curve for the empirical ROC curve for this model was 0.85 (95% confidence interval [0.80, 0.94]).

Discussion

Our findings stress the importance of screening for trauma and associated PTSD symptoms as African American women enter substance use treatment facilities. Findings also confirm previous literature that women with co-occurring SUD and trauma display increased medical symptoms, highlighting the importance of screening for these disorders when women present for general medical care. Specifically, the present

TABLE 4. CENTER FOR EPIDEMIOLOGICAL STUDIES-DEPRESSION SCALE, PENNEBAKER INVENTORY OF LIMBIC LAGUINDNESS AND BRIEF SYMPTOM INVENTORY ITEMS IN LOGISTIC REGRESSION MODEL FOR POSTTRAUMATIC STRESS DISORDER

<i>Term</i>	<i>Estimated coefficient</i>	<i>Std error</i>	<i>Chi-square</i>	<i>p</i>
CESD-D items—Significant for PTSD				
cesd1—I was bothered by things that don't usually bother me	0.47	0.24	3.79	0.05 ^a
cesd12—I was happy	−0.62	0.23	7.54	0.01 ^b
cesd17—I had crying spells	0.41	0.22	3.42	0.06
PILL items—Significant for PTSD				
pill16—Racing heart	0.38	0.18	4.59	0.03 ^a
pill19—Insomnia or difficulty sleeping	0.32	0.14	5.33	0.02 ^a
pill40—Headaches	0.32	0.16	4.12	0.04 ^a
pill47—Twitching of eyelid	−0.56	0.28	4.05	0.04 ^a
BSI items—Significant for PTSD				
bsi2—Faintness or dizziness	0.71	0.31	5.29	0.02 ^a
bsi8—Feeling afraid in open spaces or on the streets	0.46	0.23	3.98	0.05 ^a
bsi26—Having to check and double-check what I do	0.50	0.24	4.44	0.04 ^a
bsi27—Difficulty making decisions	−1.20	0.36	11.03	0.001 ^c
bsi40—Having urges to beat, injure, or harm someone	1.80	0.60	9.03	0.003 ^c
bsi50—Feelings of worthlessness	1.05	0.31	11.51	0.001 ^c

^a $p \leq 0.05$.

^b $p < 0.01$.

^c $p < 0.005$.

BSI, Brief Symptom Inventory.

study found that comorbid PTSD and trauma-related symptomatology were associated with more severe psychiatric and physical health problems among African American women in residential SUD treatment. Nearly all (94.2%) African American women experienced at least one lifetime traumatic event severe enough to warrant a PTSD diagnosis and half (51.0%) met diagnostic criteria for current PTSD (past month). Moreover, and in line with our study hypothesis, African American women diagnosed with PTSD reported more physical health symptoms and significantly higher levels of psychological distress and depression than African American women without a comorbid PTSD diagnosis.

This study is novel in that it investigates identification of probable PTSD using screening items that could be sensitive enough to recognize women who might not otherwise be detected as high-risk for PTSD. Given that this population (minority women with SUDs) might not want to disclose trauma (possibly due to cultural barriers, guardedness, embarrassment, and/or provider mistrust, *etc.*),^{22,25–27,35} and is shown to have poorer outcomes, disproportionate physical health burdens, and greater rates of addiction severity,

compared to those without trauma or PTSD,⁹ it is important to find ways to identify women for further evaluation and referral. The study found that six items, taken from non-PTSD-specific symptom measures, when calculated together, are associated with a probable PTSD diagnosis with a sensitivity of 88.7%, a specificity of 66.7%, a positive predictive value of 73.4%, a negative predictive value of 85.0%, and an accuracy of 77.9%.

While epidemiological studies reveal that PTSD rates in the general United States population range from 1% to 9%⁵⁸ and lifetime PTSD prevalence among blacks to be around 8.7%,¹⁸ rates of current PTSD among women in substance treatment settings range from 30% to 59%,⁵ which is comparable to findings in the present study. Results revealed that, regardless of PTSD diagnostic status, African American women reported having experienced several different types of traumatic events. Further underscoring the high prevalence of trauma in this sample, we found that the number of different types of traumatic events was significantly greater for SUD women with a comorbid diagnosis of PTSD than those without PTSD.

TABLE 5. FINAL ITEMS IN LOGISTIC REGRESSION MODEL FOR POSTTRAUMATIC STRESS DISORDER

<i>Term</i>	<i>Estimate</i>	<i>Std error</i>	<i>Chi-square</i>	<i>p</i>
Intercept	0.51	0.77	0.44	0.51
cesd12—I was happy	−0.69	0.30	5.19	0.02 ^a
bsi2—Faintness or dizziness	0.70	0.31	5.08	0.02 ^a
bsi26—Having to check and double-check what I do	0.57	0.26	4.75	0.03 ^a
bsi27—Difficulty making decisions	−1.23	0.40	9.68	0.002 ^b
bsi40—Having urges to beat, injure, or harm someone	1.75	0.59	8.89	0.003 ^b
bsi50—Feelings of worthlessness	0.81	0.30	7.28	0.007 ^c

^a $p \leq 0.05$.

^b $p < 0.005$.

^c $p \leq 0.01$.

Specific types of trauma exposure reported for this sample were comparable to other samples of African American women in other settings (*e.g.*, primary care³⁵ and mental health clinic²¹). It should be emphasized that these analyses compared the number of different types of traumatic events and not the overall frequency with which participants experienced traumatic events. Therefore, it is feasible that women in this study experienced repeated traumatic events within the same type of trauma, which was not captured in our data. Our findings also reinforce the need for programs to concurrently assess and address both SUD and comorbid PTSD/trauma exposure, because interventions focused on only one of the two disorders may be inadequate and lead to poorer treatment outcomes.³⁹

The disproportionate physical health burdens among African American women with comorbid SUD and PTSD have important implications for treatment of this underserved population. Given that African American women, and low-income African American women, in particular, may not readily seek out or obtain health and mental health services and encounter a number of barriers to care access (*e.g.*, childcare responsibilities, fear, and shame),⁵⁹ treatment facilities should be prepared to offer appropriate medical referrals and ancillary services upon admission. With appropriate training and screening tools, general medical practitioners are optimally positioned to identify women who could benefit from further evaluation, whose need for PTSD treatment may otherwise go undetected.

Our study supports previous research showing that women with comorbid SUD and PTSD also experience greater levels of psychological distress across a host of domains compared to those without PTSD.^{5,12,60} Scores for all nine primary dimensions of the BSI as well as the General Symptom Severity Index were significantly higher in SUD women with comorbid PTSD compared to those without PTSD. These findings are congruent with existing literature showing more severe clinical profiles and interpersonal problems in dually diagnosed females compared to females with only one of the two disorders^{3,61,62} and call for improved assessment and treatment within this population.

Since depression is commonly comorbid with SUDs among women, we specifically examined depressive symptoms in SUD women, with and without PTSD. The present study found that nearly three-fourths of participants obtained clinically elevated depression scores. In our sample, African American women with comorbid PTSD reported significantly higher depression levels compared to those without PTSD. Furthermore, African American women with clinically elevated depression levels reported greater trauma symptom severity compared to those without clinically elevated depression. Despite the overwhelming presence of trauma exposure, previous research indicates that racial minority persons may not seek treatment for PTSD at the same rates as their white counterparts.¹⁸ Therefore, residential SUD treatment facilities could provide an entry point for the diagnosis and treatment of co-occurring disorders, such as PTSD and depression, among African American women. This underscores the value of our findings demonstrating the utility of six identified noninvasive questions from a lengthier comprehensive mental health assessment battery in detecting women who could benefit from further PTSD evaluation.

Limitations

Although our findings contribute to the current understanding and assessment of substance use and co-occurring trauma among African American women entering residential SUD treatment, several limitations of our research should be noted. First, the cross-sectional methodological approach of our research does not allow for conclusions about causality or directionality among co-occurring symptoms encountered by African American women with SUDs. Second, our study relied entirely on women's self-reports of symptoms and traumatic experiences such that experiences of trauma and various health and mental health symptoms may have been over or underreported. Also, PTSD was based on a self-report measure, and no diagnostic interview or clinical rating was used for PTSD or other diagnoses. Also, we did not explicitly examine alternative comorbid diagnoses (*e.g.*, major depressive disorder) that may overlap considerably with PTSD and/or SUD and may add additional predictive utility. Because items from the depression measure were used to answer the research question, it was not possible to control for overall depressive severity (sum of all depression items) in the same analysis. In addition, our sample sought to capture the specific symptom presentations and manifestation of symptoms among a sample of African American women entering residential SUD treatment and therefore may have limited generalizability to other racial and ethnic groups and treatment settings. Notwithstanding, as our participants represent an underserved population, this could also be viewed as a strength of the present study.

Future directions

Findings of this investigation highlight the tendency for African American women entering SUD treatment to experience a variety of co-occurring symptoms, including PTSD, subclinical trauma symptoms, depression, and health issues. Such symptoms may complicate the clinical presentation of these women, introducing challenges for both assessment and treatment in SUD clinical settings. As such, more research examining the interplay between trauma, substance use, and other comorbidities (*e.g.*, depression, medical conditions) is needed. For instance, studies investigating the presence of co-occurring symptoms among other racial and ethnic groups and across multiple treatment settings (*e.g.*, outpatient, inpatient/detoxification, primary care) would allow for a more full understanding of the distinct needs of racial minority populations seeking substance treatment so that comprehensive assessment procedures are implemented and effective treatment and prevention programs are developed. The current investigation indicates it may also be worthwhile to engage in further investigations of the specific symptoms of depression and distress that are more likely to be endorsed within differing subpopulations of racial minority women so that cultural differences in the manifestation of trauma can be better understood and incorporated into assessment procedures and treatment.

More generally, future research should examine the utility of the brief screening questions for identifying women who may benefit from further PTSD assessment across treatment settings (*e.g.*, outpatient SUD or primary care settings). Although within residential treatment facilities time may permit more thorough assessment, brief screening in outpatient

settings has potential to reach and identify a wider range of patients. It is important to have noninvasive screening items that could identify women who may otherwise be unwilling to endorse trauma. In particular, facilitating efficient identification of patients who may benefit from further evaluation, treatment, and follow-up is critical among underserved populations known to be hesitant to seek treatment for painful emotional symptoms.

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