



Trauma exposure and stress-related disorders in a large, urban, predominantly African-American, female sample

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Abstract

The current study investigated the relationship between trauma exposure and psychopathology in a sample of predominately African-American women of low socioeconomic status (SES). Women ($N = 7430$) were recruited from medical clinics at two large public hospitals in Atlanta, GA, from 2005 to 2017. Women were assessed for sociodemographics, life-course trauma burden, posttraumatic stress disorder (PTSD), and major depressive disorder (MDD) utilizing self-report and structured clinical interview assessments. The effects of trauma exposure on current and lifetime PTSD and MDD were examined. Ninety-one percent of women reported trauma exposure, 83% reported a monthly household income of less than \$2000, and 41% reported a history of arrest. Regarding psychiatric diagnoses, 30.8% met the criteria for probable MDD, and 32.3% met the criteria for probable PTSD. History of childhood abuse and total lifetime trauma significantly increased PTSD and depressive symptoms with additional incremental trauma exposure. PTSD and depressive symptom scores (95% CI) increased from 5.5 (5.0–6.1) and 8.4 (7.9–9.0) in the no trauma group to 20.8 (20.1–21.5) and 20.4 (19.7–21.2), respectively, in those exposed to four or more types of trauma. These results show high rates of adult and childhood trauma exposure, PTSD, MDD, and an additive effect of lifetime trauma exposure on the development of PTSD and MDD in a sample of low SES African-American women. These findings bring light to the high psychiatric symptom burden in this population and call for increased availability of interventions to address symptoms as well as policies aimed at reducing trauma exposure across the lifespan.

Keywords Trauma · Child abuse · PTSD · Depression · Women

Highlights This primary research article describes rates of trauma exposure and prevalence of psychopathology in low socioeconomic urban environments with a focus investigating the relationship between trauma type social factors and psychopathology specifically in women ($N = 7430$)

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Introduction

Posttraumatic stress disorder (PTSD) is a common and often disabling psychiatric disorder. Approximately 61% of men and 51% of women in the USA report at least one lifetime trauma exposure, with women being more likely to develop PTSD following exposure (Breslau, 2009). The lifetime prevalence of PTSD is estimated at 10–11% for women and 5–6% for men in the USA (Breslau et al. 1998; Kessler et al.

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1995), with higher rates of PTSD reported among combat veterans (Hoge et al. 2004) and individuals living in areas of high violence (Alim et al. 2006). Comorbid psychiatric conditions associated with PTSD include depression, substance use disorder, and suicide (Bruce et al. 2001; Kartha et al. 2008). Additionally, PTSD confers increased risk for many medical illnesses, including cardio-metabolic disease (Bruce et al. 2001; Heppner et al. 2009). Individuals with PTSD have poorer adherence to treatment of co-occurring medical conditions (Heppner et al. 2009; Shemesh et al. 2001) and substance use disorders (Hien et al. 2000), contributing to the overall disability associated with PTSD (Kubzansky et al. 2007). The economic costs of PTSD are estimated at over 3 billion dollars annually in the USA (Kessler, 2000).

Studies of urban-living African Americans have shown estimates of trauma exposure ranging from 65 to 90% and lifetime PTSD rates reaching approximately 50%, far higher than the national average (Gillespie et al. 2009; Schwartz et al. 2005). Given these high rates of trauma exposure, the psychiatric and medical consequences of PTSD are especially relevant in this population (Golin et al. 2016). Comorbid psychiatric conditions occur at high rates in these populations; one sample of urban African Americans reported comorbid major depressive disorder (MDD) in 46% of those with lifetime PTSD (Alim et al. 2006). Because the rate of PTSD in urban, minority populations of low SES even exceed the 17–18% rate of lifetime PTSD reported in combat veterans (Hoge et al. 2004); increased investigation into factors contributing to the high rates of civilian trauma is needed (Hien et al. 2000). Previous studies have found that low-income individuals frequently experience multiple traumas over their lifetime, which increases susceptibility to PTSD compared to exposure to a single trauma (Breslau et al. 2004; Gillespie et al. 2009; Kessler, 2000). Additionally, exposure to interpersonal violence and sexual violence is high in urban settings, which increases risk for PTSD (Breslau et al. 2004; Gillespie et al. 2009; Kessler, 2000).

Trauma occurring in childhood is a significant risk factor for the development of adult PTSD and depression (Chapman et al. 2004; Gladstone et al. 2004), and is highly prevalent in low-income, urban populations (Breslau et al. 2004; Cross et al. 2017; Felitti et al. 1998). Childhood trauma exposure has been shown to increase risk for suicide attempts (Gladstone et al. 2004), substance use and obesity (Felitti et al. 1998), cardiovascular disease (Goodwin & Stein, 2004), cerebrovascular disease (Smith et al. 1998), diabetes mellitus (Goodwin & Stein, 2004; Trief et al. 2006), cancer (Brown et al. 2010), and autoimmune disorders (Goodwin & Stein, 2004). Because trauma, PTSD, and related psychiatric and medical illnesses present a great health burden on urban minority female populations (Breslau et al. 1998; Kessler et al. 1995), there is a need for increased understanding of PTSD risk in these populations as well as improved trauma prevention and treatment

strategies. In examining the risk for PTSD in an urban population in downtown Atlanta, GA, we have previously reported an 87.8% prevalence of trauma exposure in a sample of 1562 subjects (63.6% female, 36.4% male), and a 46.2% lifetime prevalence of PTSD and 36.7% lifetime prevalence of MDD in a subset of these subjects (Gillespie et al. 2009). In the present study, we describe the demographic characteristics, rates and types of trauma exposure, and prevalence of psychopathology within a sample of 7430 predominantly African-American (93.5%) women. In addition to describing a very large traumatized cohort, we expand upon our previous findings by further describing the relationship between trauma type, demographic and social factors, and psychopathology in urban women of low SES.

Methods

Sample, recruitment, and procedure

Participants were approached in the waiting rooms of medical clinics at two public hospitals in Atlanta, GA, from 2005 to 2017. The initial interview was conducted in the clinic waiting rooms and included questionnaires regarding demographics, trauma history, and psychiatric symptoms ($N=7430$) administered by trained interviewers. Study participants completing initial assessments were invited to participate in further assessments including a structured clinical interview, which occurred on average 1–2 weeks after the initial interview, though the time-frame between assessments was unrestricted ($N=1044$). Inclusion criteria included being a female between 18 and 65 years old, not actively psychotic, and able to give informed consent. Informed consent was approved by the appropriate Institutional Review Boards. Additional details about the recruitment and interviewer training process, clinical setting, and informed consent can be found in the Supplementary information 1.

Measures

Screening Instruments

Clinical Data Form. The CDF is a self-report measure of the participant's childhood family environment.

Modified PTSD Symptom Scale. The PSS is a psychometrically valid 17-item self-report scale assessing PTSD symptomatology over the prior 2 weeks (Falsetti, 1993). Subjects were scored as meeting diagnostic criteria for PTSD based on DSM-IV-TR diagnostic criteria applied to the PSS subscales.

Beck Depression Inventory, II. Depressed mood was assessed with the 21-item BDI (Beck et al. 1961), a commonly used continuous measure of level of depressive symptoms. Subjects were scored as meeting diagnostic criteria for current MDD if they scored an 18 or above.

Structured Clinical Interview Instruments

Clinician-Administered PTSD Scale The Clinician-Administered PTSD Scale (CAPS) is an interviewer-administered diagnostic instrument measuring PTSD (Blake et al. 1995). The CAPS was used to assess current PTSD throughout the study and to assess lifetime PTSD from 2005 to 2012.

Structured Clinical Interview for DSM-IV. The Structured Clinical Interview for DSM-IV (SCID-IV) is a validated interview assessment of DSM-IV Axis I disorders (First et al. 1995). For the present study, the SCID-IV was used to assess the presence or absence of current or lifetime MDD from 2005 through June 2012.

Mini International Neuropsychiatric Interview The Mini International Neuropsychiatric Interview (MINI) is a structured diagnostic interview assessment of DSM-IV Axis I disorders (Lecrubier et al. 1997). For the present study, the MINI was used to assess the presence or absence of current or lifetime MDD and lifetime PTSD from June 2012 to 2017 (See Supplementary information 2 for additional details about the measurement tools).

Statistical analyses

Descriptive statistics were calculated for participant demographic characteristics, legal history, substance use history, general psychiatric history, and types of trauma exposure as functions of MDD and PTSD diagnosis assessed by the BDI and PSS, respectively. A chi-square analysis was used to assess group differences of these variables based on MDD and PTSD diagnosis. A general linear model was used to analyze the individual and combined effects of child trauma and adult trauma on posttraumatic stress and depressive symptoms, measured by the PSS and BDI total scores, respectively. Descriptive statistics were also calculated for the lifetime and point prevalence of PTSD assessed by the CAPS or MINI and MDD diagnosis assessed by the SCID or MINI in the subset of subjects that underwent structured clinical interviews.

Results

The total sample consisted of 7430 women (mean age = 38.8, SD = 14.0 years). One-third (30.8%) of women met the criteria for probable current MDD based on the BDI, and 32.3% of women met the criteria for probable current PTSD based

on the PSS. The self-identified race was predominantly African-American (93.5%), and approximately one-fifth of the women reported either being pregnant or breastfeeding at the time of the study (21.8%). The overall SES was low with 83.2% of participants reporting an average monthly household income less than \$2000, 65.3% reporting unemployment at the time of initial interview, and 18.6% of subjects reporting receiving disability (see Table 1 for a full summary of demographic characteristics). We examined demographics as a function of probable MDD or PTSD diagnosis (based on the BDI and PSS, respectively; Table 1) and found significant differences in all categories, with the exception of perinatal status. A total of 60.3% of those with probable PTSD and 63.1% of those with probable MDD reported a monthly income below \$1000, compared to 51.9% and 50.6% of those without PTSD and MDD, respectively.

Self-reported history of legal problems, substance use, psychiatric hospitalizations, and attempted suicide in our overall sample and as a function of probable MDD or PTSD diagnosis is shown in Table 2. We found high rates of legal problems, with 41.8% of the sample reporting a history of arrest and an average age of first arrest at 24 ($N = 1865$). Regarding substance misuse, 17.4% of the participants reported a past substance use problem, although only 3.6% reported current substance use problems. We found high rates of psychiatric hospitalization and suicide attempts (14% and 15% respectively) in the overall sample. Subjects who met criteria for probable MDD and PTSD were significantly more likely to report a history of legal problems, substance misuse, and childhood exposure to parental substance use.

Trauma exposure was very high, with more than 90% of participants ($N = 5993$) reporting experiencing at least one criterion A trauma in their lifetime. Serious accident or injury was the most common traumatic event, reported by 44.8% of participants, followed by assault without a weapon by an intimate partner (37.5%). Prevalence of childhood abuse was also high in this sample, with 28.7% of participants reporting exposure to emotional abuse and 18.9% reporting exposure to physical abuse. Sexual contact prior to age 13 was reported by 28.3% of participants, 17.3% reported sexual assault between age 14 and 17, and 14.2% reported sexual assault at age 17 or older. Among the participants meeting the criteria for likely PTSD and MDD diagnoses, we observed significantly higher rates of all trauma types ($ps < 0.001$) except for military combat (Table 3).

A subset of participants ($N = 1044$) engaged in a structured clinical interview, which provided additional estimates of current and lifetime prevalence of PTSD and MDD. The point prevalence of PTSD assessed by the CAPS was 29.1%, and lifetime prevalence of PTSD assessed by the CAPS or MINI was 53.8%. The point prevalence of MDD assessed by the SCID or MINI was

Table 1 Sample demographics

Demographic	% of total sample ^a	% by MDD category ^b		% by PTSD category ^b	
		Yes (<i>N</i> = 1785)	No (<i>N</i> = 4016)	Yes (<i>N</i> = 1922)	No (<i>N</i> = 4022)
Age (<i>N</i> = 7421)**					
18–24	21.1	16.8	23.7	17.7	22.7
25–34	23.0	21.8	22.8	21.3	22.7
35–44	16.4	19.3	15.0	19.0	15.0
45–54	23.2	29.4	21.3	28.3	22.3
55–65	13.7	11.8	14.3	12.4	14.7
≥65+	2.6	0.9	2.9	1.2	2.7
Self-identified race/ethnicity (<i>N</i> = 7366)**					
African American	93.5	91.2	94.6	90.9	94.9
White	2.6	4.5	1.9	4.0	2.1
Hispanic or Latino	0.7	0.5	0.7	0.8	0.5
Asian	0.1	0.1	0	0	0.1
Mixed	1.9	2.5	1.5	3.1	1.3
Other	1.2	1.1	1.2	1.2	1.1
Education (<i>N</i> = 7275)**					
Did not complete 12th grade	20.6	25.4	18.3	23.1	19.6
High school graduate	35.2	32.6	36.4	30.3	37.1
Graduate equivalency diploma	4.8	6.1	4.3	6.4	4.1
Some college/technical school	23.9	22.7	24.5	25.6	23.3
Technical school graduate	5.0	4.9	5.0	5.6	4.8
College graduate	8.5	7.3	9.3	7.6	9.1
Graduate school	1.9	1.1	2.2	1.5	2.0
Marital status (<i>N</i> = 5918)**					
Single or never married	60.2	56.9	61.8	56.7	61.3
Married	10.9	8.6	11.8	9.4	11.4
Divorced	15.2	18.6	13.9	18.0	14.4
Separated	6.2	8.7	5.1	8.2	5.6
Widowed	4.6	4.0	4.8	4.8	4.5
Domestic partner	2.9	3.2	2.7	2.8	2.8
Perinatal status (<i>N</i> = 3202)					
Currently pregnant or breastfeeding	21.8%	20.9%	23.2%	20.9%	22.2%
Employment (<i>N</i> = 7268)**					
Currently unemployed	65.3	76.3	60.8	72.6	63.0
Disability (<i>N</i> = 7250)**					
Currently receiving disability	18.6	22.9	16.4	22.6	17.3
Household monthly income** US\$ (<i>N</i> = 7017)**					
0–249	18.4	25.2	15.4	23.2	16.4
250–499	9.5	9.7	9.2	8.0	9.7
500–999	26.9	28.3	26.0	29.1	25.7
1000–1999	28.4	24.6	30.5	26.8	29.7
≥2000	16.8	12.3	18.9	12.9	18.5

^aNote that for the entire sample, *N* = 7430; however, because some participants declined to answer some questions, the total *N* in each demographic category may vary, all % reported are valid percent

^bMDD and PTSD categories are defined as yes = BDI or PSS score above a designated clinically significant cutoff, respectively

** *p* < 0.001 for between-group differences (significant for both MDD and PTSD diagnoses)

Table 2 Legal, substance use, and psychiatric history of study participants

Historical characteristics	% Total sample (<i>N</i> = 7247) ^a	% by MDD category ^b		% by PTSD category ^b	
		Yes (<i>N</i> = 1773)	No (<i>N</i> = 3995)	Yes (<i>N</i> = 1904)	No (<i>N</i> = 4003)
Legal history					
Ever arrested** (<i>N</i> = 7120)	41.8	53.0	37.4	53.9	37.7
Ever been in jail** (<i>N</i> = 5138)	51.3	62.8	48.2	62.9	47.7
Ever been in prison** (<i>N</i> = 5124)	6	8.5	5.2	8.2	5.2
Violence charge** (<i>N</i> = 5042)	21.7	29.4	18.7	29.0	18.7
Weapons charge** (<i>N</i> = 5014)	8.8	12.3	7.3	12.1	7.3
Substance use history					
Past substance use** problem (<i>N</i> = 7221)	17.4	28.6	12.7	27.6	13.7
Current substance use** problem (<i>N</i> = 4643)	3.6	6.9	2.2	7.5	2.1
Psychiatric history					
Psychiatric hospitalization** (<i>N</i> = 7247)	14.0	26.1	8.9	23.3	10.2
Suicide attempt** (<i>N</i> = 7190)	15.0	30.1	8.3	26.9	10.1
Childhood environment					
Unstable home** (<i>N</i> = 4278)	12.1	22.1	8.0	23.6	7.3
Caregivers used alcohol in excess** (<i>N</i> = 4256)	30.2	42.6	24.8	41.2	26.1
Caregivers used drugs** (<i>N</i> = 4246)	15.8	21.9	13.4	24.0	12.8

^aNote that the *N* is listed for each sample. Because some participants declined to answer some questions or skipped follow-up questions, the total *N* is lower in some categories, all % reported are valid percent

^bMDD and PTSD categories are defined as yes = BDI or PSS score above a designated clinically significant cutoff, respectively, indicating likely diagnosis

***p* < 0.001 for between-group differences (significant for both probable MDD and PTSD diagnoses)

22.4% and lifetime prevalence of MDD was 49.9%; regarding comorbidity, 8.3% of the subjects met the criteria for current PTSD and MDD. Rates of lifetime PTSD and current and lifetime MDD did not differ across the different measurement tools that were used. The subset that underwent the structured clinical interview was somewhat more symptomatic than the overall group, with 37.7% meeting criteria for probable PTSD and 39.4% meeting criteria for probable MDD based on the DSM-IV-TR diagnostic criteria applied to the PSS and BDI scales.

We examined whether history and severity of child abuse exposure predicted adult PTSD and depressive symptoms (Table 4). We performed an analysis of variance test controlling for age with categorical child abuse level (none, 1 type—physical or sexual, 2 types—physical and sexual) as the independent variable and the PSS and BDI total scores as the dependent variables. We found a significant effect of the presence of child abuse on symptoms

(PSS: $F = 559.9$, $p < 0.001$; BDI: $F = 432.2$, $p < 0.001$). History of both physical and sexual abuse increased the mean PSS and BDI scores by twofold (Table 4).

We also examined whether history and severity of non-child abuse trauma exposure predicted adult PTSD and depressive symptomatology (Table 4). We conducted the same analysis described above with the categorical non-child abuse traumatic experience level as the independent variable and the PSS and BDI total scores as the dependent variables. This showed a significant non-child abuse trauma exposure effect on symptoms (PSS: $F = 436.8$, $p < 0.001$, BDI: $F = 248.5$, $p < 0.001$). In the group without non-child abuse trauma, the mean (95% CI) PSS score was 5.4 (4.9–5.9) and increased by nearly fourfold to 19.5 (18.9–20.1) in the group that experienced three or more types of non-child abuse trauma (Table 4). The BDI score (95% CI) increased more than twofold from 8.4 (7.8–8.9) in the no trauma group to 19.0 (18.4–19.6) in the severe trauma groups (Table 4).

Table 3 Percent of sample reporting lifetime exposure to traumatic experiences

Trauma type experienced	% of total sample (<i>N</i> =6595) ^a	% by MDD category ^b		% by PTSD category ^b	
		Yes (<i>N</i> =1755) ^a	No (<i>N</i> =3954) ^a	Yes (<i>N</i> =1890) ^a	No (<i>N</i> =3960) ^a
Any significant trauma**	91.2	97.8	88.5	99.1	90.7
Natural disaster**	22.6	25.4	20.7	29.6	19.4
Serious accident or injury**	44.8	54.8	39.8	57.6	40.1
Sudden life threatening illness**	21.8	27.6	18.5	30.4	18.1
Military combat	0.6	0.5	0.6	0.6	0.5
Attacked with knife, gun or other weapon by someone other than intimate partner**	20.9	30.2	16.6	30.9	16.6
Attacked with knife, gun or other weapon by intimate partner**	18.0	30.9	12.4	30.8	12.6
Attacked without a weapon by someone other than intimate partner**	19.3	24.2	16.6	27.4	15.6
Attacked without a weapon by intimate partner**	37.5	54.1	29.3	53.9	30.4
Witness of murder of friend or family member**	10.5	16.0	8.0	16.3	7.9
Sexual contact 17 years and older with physical force**	14.2	24.2	9.5	26.1	9.1
Sexual contact aged 14–17 years with physical force**	17.3	28.9	11.7	29.4	11.9
Sexual contact aged 13 years and younger**	28.3	42.4	21.7	43.7	21.8
Beaten as a child**	18.9	31.3	13.0	31.6	13.2
Emotional abuse as a child**	28.7	46.6	20.0	46.5	20.7
Witness violence between caregivers as child**	32.0	43.1	26.5	43.5	27.4

^aNote that the *N* is listed for each group; however, because some participants declined to answer some questions, the total *N* in each category may vary slightly, all % reported are valid percent

^bMDD and PTSD categories are defined as yes = BDI or PSS score above a designated clinically significant cutoff, respectively, indicating likely diagnosis

***p* < 0.001 for between-group differences (significant for both probable MDD and PTSD diagnoses)

We examined the interaction of non-child abuse trauma and child abuse trauma as predictors of adult PTSD (Table 5) and depressive symptoms (Table 5) using a general linear model. For PSS total scores, we observed significant main effects of the 2 terms (non-child abuse trauma $F=103.9$, $p<0.001$; child abuse trauma $F=131.5$, $p<0.001$) but no significant interaction

($F=0.85$, $p>0.05$). For BDI total scores, we observed significant main effects of the two terms (non-child abuse trauma $F=59.5$, $p<0.001$; child abuse trauma $F=98.6$, $p<0.001$) but no significant interaction ($F=1.3$, $p>0.05$). Each additional level of child and non-child trauma exposure was associated with an increase in both PTSD and depression symptom severity (Table 5).

Table 4 (A) Effects of child abuse trauma exposure and posttraumatic stress and depressive symptoms. (B) Effects of non-child abuse trauma exposure and posttraumatic stress and depressive symptoms

	<i>N</i>	Mean PSS score	95% confidence intervals	<i>N</i>	Mean BDI score	95% confidence intervals
(A) Level of child abuse trauma						
No child abuse	4817	9.7	9.4–10.0	4846	11.4	11.1–11.7
1 type of child abuse	1929	16.8	16.3–17.4	1851	17.8	17.3–18.4
2 types of child abuse	693	22.7	21.7–23.7	669	22.6	21.6–23.7
(B) Level of non-child abuse trauma						
None	933	5.4	4.9–5.9	1049	8.4	7.8–8.9
1 type	1349	8.4	7.9–8.9	1403	10.9	10.3–11.4
2 types	2529	13.1	12.6–13.5	2578	14.6	14.1–15.0
≥ 3 types	1840	19.5	18.9–20.1	1865	19.0	18.4–19.6

Table 5 (A) Interaction of child abuse trauma and non-child abuse trauma exposure on posttraumatic stress symptoms. (B) Interaction of child abuse trauma and non-child abuse trauma exposure on depressive symptoms

	Child abuse None	Child abuse 1 Type	Child abuse 2 Types
(A) PTSD symptoms (PSS), mean \pm SE			
Non-child abuse trauma			
None	4.7 \pm 0.27	9.5 \pm 0.73	12.8 \pm 1.89
1 type	7.1 \pm 0.29	12.6 \pm 0.59	16.2 \pm 1.43
2 types	10.8 \pm 0.27	16.1 \pm 0.41	21.2 \pm .80
\geq 3 types	16.1 \pm 0.43	20.6 \pm 0.47	24.5 \pm 0.63
(B) Beck Depression Inventory (BDI), mean \pm SE			
Non-child abuse trauma			
None	7.9 \pm 0.33	11.6 \pm 1.20	10.6 \pm 3.3
1 type	9.6 \pm 0.30	14.9 \pm 0.76	17.0 \pm 2.0
2 types	12.6 \pm 0.25	17.2 \pm 0.46	21.6 \pm 0.99
\geq 3 types	15.3 \pm 0.35	20.5 \pm 0.48	24.2 \pm 0.69

Discussion

The present study examined the demographic characteristics, rates and types of trauma exposure, and prevalence of PTSD and MDD within a predominantly African-American population of women of low SES. We found high rates of childhood abuse, adult trauma exposure, depression, and PTSD in our sample, consistent with the findings of our previous study (Gillespie et al. 2009). We also found that history of child abuse, interpersonal trauma, history of arrest and incarceration, substance use, and poverty were associated with more significant psychopathology.

Rates of trauma exposure were far higher in our sample (91%) compared to national averages (around 70%) (Breslau, 2009). Our sample also exceeded the national rate of lifetime PTSD (54% compared with 6–8%) (Pietrzak et al. 2011). Rates seen in our study are consistent with other low-income minority populations (Alim et al. 2006; Breslau, 2009). These findings demonstrate significant differences in trauma exposure and PTSD among different populations in the USA, with high rates found across a number of at-risk urban settings.

Furthermore, rates of child abuse, sexual trauma, and intimate partner violence were high in our sample and more than twice as high in those with PTSD or MDD. Rates of non-interpersonal trauma (natural disaster, serious illness) were also high, but only slightly higher in those with PTSD or MDD. These findings are consistent with other studies that have found that interpersonal trauma confers greater risk for psychopathology than non-interpersonal trauma (Breslau et al. 1998). Thus, the high frequency of interpersonal trauma likely contributes to the increased rates of lifetime PTSD in our sample.

History of child abuse was associated with increased PTSD and MDD severity and a greater impact was observed if both physical and sexual abuse occurred. Even greater increases in PTSD and MDD severity were seen if subjects experienced multiple trauma types throughout their life course, spanning from childhood to adulthood. Exposure to multiple types of trauma at different ages is termed “complex trauma,” and our findings extend the results of previous studies which found that complex trauma confers greater risk for psychopathology than single events (Karam et al. 2014). Along with other reports (Brown et al. 2010; Chapman et al. 2004; Gladstone et al. 2004; Goodwin & Stein, 2004; Morton, 2017), our findings suggest that childhood trauma increases vulnerability to adverse experiences later in life. This increased vulnerability may contribute to worse health outcomes (Heppner et al. 2009; Powers et al. 2016) and lower academic and economic achievement (Morton, 2017) seen in survivors of childhood trauma. Childhood trauma perpetuates a cycle of poverty, exposure to violence, and vulnerability to victimization that increases risk for medical and psychiatric illness in adulthood and decreases opportunities for economic mobility (Breslau et al. 2004; Felitti et al. 1998).

This population has a particularly high rate of poverty, unemployment, prior arrest, and lack of high school completion, and these social determinants of health all contribute to the high PTSD and MDD symptom burden. Systemic racism, in addition to poverty, may play a role in the high rates of arrest and incarceration in this population (Jäggi et al. 2016). Both racial discrimination and incarceration have been shown to worsen PTSD symptoms, and the presence of active PTSD or other psychiatric symptoms further decreases social and economic opportunities (Hudson, 2005; Jäggi et al. 2016; Mekawi et al. 2021). The resulting poverty leads to housing instability, food insecurity, inconsistent medical care, greater exposure to neighborhood violence, susceptibility to arrest, and limited opportunities to escape a violent or unsafe environment, thus interfering with trauma recovery (Cerdeja et al. 2015; Collins et al. 2010; Steenkamp et al. 2017). Future studies should further investigate the role of race, discrimination, poverty, and incarceration on trauma exposure and PTSD symptoms.

The current study has several limitations. First, participants were recruited from public hospital clinic waiting rooms rather than being randomly sampled from the community and may consequently generalize only to similar settings. Second, study data was acquired retrospectively and cross-sectionally, using subject self-report, which is subject to recall and reporting bias. For example, substance use among this population may be underreported due to stigma and the threat of legal and societal repercussions that may accompany disclosure of substance use to persons of authority, especially among women of color (Kip et al. 2002). Third, the subset of subjects who underwent structured clinical interviews showed a somewhat higher symptom burden, likely due to the use of self-selection. Nonetheless, structured clinical

interview data support our findings of high symptom burden among this population. Fourth, the structured clinical interview assessment tools used for lifetime PTSD and current/lifetime MDD were switched partway through the study. Our measures demonstrate ample internal validity (Blake et al. 1995; Sheehan et al. 1997), and we did not identify significant differences in the rates of lifetime and current/lifetime MDD across the measures in our sample. Fifth, this study included only self-identified female subjects, limiting generalizability to men and non-binary people. However, this focus on exclusively female subjects is important given that higher rates of PTSD and MDD have been reported in women. Lastly, the population of this study is not representative of the USA as a whole, and is not necessarily generalizable to other regions of the USA or countries.

Our findings document the high prevalence of childhood abuse, adult trauma exposure, PTSD, and MDD in a sample of urban, minority women of low SES. In addition, our data support a positive association of cumulative lifetime trauma exposure with prevalence of PTSD and MDD. Socioeconomic factors which increase the likelihood of exposure to neighborhood violence, vulnerability to arrest and incarceration, and limit options to escape a violent or unsafe living situation were also associated with adverse outcomes in the current study, suggesting that social determinates of health (i.e., financial security, safe and stable housing, education, access to health care, systemic racism, and inequality in the criminal justice system) are important targets for intervention to reduce the adverse sequelae of trauma exposure. Promising examples include interventions involving increased crime prevention combined with improved access to psychiatric care (Cerde et al. 2015), placement of domestic-violence advocates in primary care clinics (Coker et al. 2012), and wraparound programs for children exposed to family violence (Crusto et al. 2008). Efforts may be most effective if focused on addressing socioeconomic factors that increase risk for traumatization, reducing childhood trauma, and providing early access to psychiatric treatment following trauma to reduce the symptom burden, thereby increasing opportunity for recovery.

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Data availability The data supporting the findings of this study are available here: <https://osf.io/fer4h/>

Declarations

Conflict of interest The authors declare no competing interests.

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