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Prevalence and Correlates of PTSD in First Episode Psychosis: Findings from the RAISE-ETP Study

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Abstract

Post-traumatic stress disorder (PTSD) in young individuals is associated with an increased risk to develop psychosis or mania, and both trauma and PTSD rates are elevated in people with schizophrenia and other severe mental illnesses. However, less research has examined PTSD in people who have recently developed a first episode of psychosis (FEP). The present study is a secondary analysis of the baseline data collected for the NIMH Recovery After an Initial Schizophrenia Episode-Early Treatment Program (RAISE-ETP) study to examine the rates of trauma and PTSD, and to explore the demographic and clinical correlates of PTSD in a representative sample of 404 persons with a FEP. Approximately 80% of the study sample reported experiencing at least one traumatic event during their lives, with females more likely to report childhood sexual abuse and spousal abuse than males. A total of 20 participants (5.0%) met criteria for a lifetime diagnosis of PTSD, while another 15 participants (3.7%) met subthreshold diagnostic criteria for PTSD. Significant correlations were found between lifetime PTSD and the Calgary Depression Scale, the Mental Health Recovery Scale, the Stigma Scale, and duration of untreated psychosis, with higher scores on each variable associated with a diagnosis of PTSD. The association between PTSD and more severe depression, as well as lower perceptions of personal recovery, suggest that PTSD may be an important target for treatment programs for persons recovering from a FEP.

Keywords

schizophrenia; First Episode psychosis; PTSD; trauma

A diagnosis of post-traumatic stress disorder (PTSD) in adolescents or young adults is associated with an increased risk for developing psychosis or mania (Okkels et al., 2017), and both trauma and PTSD rates are elevated in people with schizophrenia and other severe mental illnesses (Achim et al., 2011; Grubaugh et al., 2011). The demographic correlates of trauma among persons with severe mental illnesses largely mirror those in the general population, with African Americans and Caucasians experiencing trauma at approximately the same rate (Cusack, Frueh, & Brady, 2004), and Latinx experiencing more severe symptoms relating to trauma (Lu et al., 2013). Males and females have not been shown to

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differ in trauma exposure (Kilcommons & Morrison, 2005; Mueser et al., 1998), with the exception of higher rates of sexual abuse and assault in women (Lu et al., 2013; Mueser, Salyers, & Rosenberg et al., 2004).

Although numerous studies have documented the increased rates of trauma and PTSD comorbidity in schizophrenia, less research has evaluated the prevalence of PTSD in people recovering from a first episode of psychosis (FEP). Based on a cohort of 426 clients with FEP, Neria et al. (2002) reported a rate of trauma exposure of 68.5%, with 26.5% (14.3% of the entire sample) of those exposed meeting criteria for PTSD. Given this high percentage of trauma exposure, additional research is needed on the prevalence of PTSD in the FEP population. The purpose of the present study was to examine the rates of trauma and PTSD in a large, representative sample of persons with FEP who were participating in a multi-site study, and to explore the demographic and clinical correlates of PTSD.

This study is a secondary analysis of the baseline data collected for the NIMH Recovery After an Initial Schizophrenia Episode-Early Treatment Program (RAISE-ETP) study, which evaluated a coordinated specialty care intervention (Heinssen, Goldstein, & Azrin, 2014) designed to be implemented within the context of the U.S. health care system (Kane et al., 2015, 2016; Mueser et al., 2015). We hypothesized that participants would have elevated PTSD rates (compared to the general population), and that PTSD diagnosis would be associated with worse symptoms and psychosocial functioning.

Method

Participants and Sites

The sample included 404 persons with FEP who were participating in the RAISE-ETP, a cluster randomized control trial conducted at 34 sites from 21 states across the U.S., with sites randomized to provide either coordinated specialty care (the NAVIGATE program) or usual community care. Demographic characteristics can be found in Table 1.

Site eligibility included experience treating people with schizophrenia, interest in offering early intervention services for FEP, sufficient staff to implement the experimental intervention, and ability to recruit an adequate number of participants. Academic centers or sites with existing FEP programs were excluded.

Participant inclusion criteria for the study were: age between 16 and 40; currently experiencing a FEP; no more than six months prior cumulative use of antipsychotic medication; diagnosis of schizophreniform disorder, schizophrenia, schizoaffective disorder, brief psychotic episode, or psychosis NOS. Exclusion criteria were: diagnoses of substance-induced psychosis, psychosis due to general medication condition or affective psychosis; clinically significant head trauma; or other serious medical conditions. All participants spoke English. Written informed consent was obtained from participants age 18 or over; individuals younger than age 18 provided assent, while their parents or guardians provided consent for participation. The study was approved by the institutional review boards of the participating sites and the NIMH Data and Safety Monitoring Board oversaw all study practices.

Measures

Trained interviewers conducted all diagnostic and symptom assessments using two-way live video conferencing, which has been shown to be a reliable approach (Zarate et al., 1997).

PTSD and trauma exposure.—The Structured Clinical Interview for Axis I DSM-IV disorders (SCID-IV; First et al., 1994), a commonly used semi-structured diagnostic interview, was used to assess current and lifetime PTSD diagnosis at study entry, as well as duration of untreated psychosis. The SCID-IV has been shown to have high inter-rater reliability (Lobbestael, Leurgans, & Arntz, 2011). The SCID was administered by blinded, central raters with regular inter-rater reliability checks. Prior to completing the PTSD module of the SCID, participants were asked to indicate whether they had experienced any of 14 different types of traumatic events (e.g., “Have you been robbed or been present during a robbery where the robber(s) used or displayed a weapon?”) and at what age, using an abbreviated version of the Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000; Mueser et al., 2015). The most upsetting event endorsed on TLEQ was used as the index traumatic event in the SCID-IV. The participant was then asked to indicate whether they experienced the event as “posing serious physical harm of threat of harm to oneself or others” and whether it caused “severe fear or helplessness” in order to evaluate whether DSM-IV PTSD A1 and A2 diagnostic criteria were met (American Psychiatric Association, 2000). For traumatic events that met these criteria, the remaining PTSD symptoms were rated for lifetime diagnosis, using a three-level scale: absent, sub-threshold, and threshold (meets criteria).

The Positive and Negative Syndrome Scale.—Symptoms were assessed using the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opfer, 1987), with subscales based on the Wallwork et al. (2012) factor structure. The PANSS is a widely used 30-item instrument with strong psychometric characteristics, including good inter-rater reliability and concurrent validity when compared with other symptom measures (Peralta & Cuesta, 1994).

The Calgary Depression Scale for Schizophrenia.—Depression ratings were obtained with the Calgary Depression Scale for Schizophrenia (Addington Addington, Maticka-Tyndale, 1993). It consists of nine items rated on a 4-point Likert scale, and has shown high internal reliability and strong inter-rater reliability (Addington et al., 1993). In the present sample the internal reliability of the measure was moderately strong ($\alpha = .722$).

The Mental Health Recovery Measure.—Fifteen of the 30 items on the Mental Health Recovery Measure (MHRM; Young & Bullock, 2005) were used to obtain self-reported ratings of general recovery, such as “feeling that things are improving.” Each item on the MHRM is rated on a 7-point Likert scale, ranging from “strongly disagree” to “strongly agree,” with higher scores pertaining to greater perceived recovery. The MHRM has been shown to be associated with measures of subjective well-being (Oliveira-Maia et al., 2016) and distress (Bullock et al., 2009), and has good psychometric properties, including internal reliability, test-rest reliability, and convergent validity (Bullock et al., 2009; Chang et al., 2013). The fifteen items had high internal reliability in this sample ($\alpha = .921$).

The Stigma Scale.—Six items were drawn from the Stigma Scale (King et al., 2007) to evaluate experienced mental health stigma. The Stigma Scale is a 28-item self-report measure assessing the experiences of prejudice and discrimination related to mental illness (King et al., 2007). The six items selected from the Stigma Scale had moderately strong internal reliability in this sample (α = .722).

Quality of Life Scale.—The Quality of Life Scale (QLS; Heinrichs, Hanlon, & Carpenter, 1984) was used to assess psychosocial functioning. The QLS is a 21-item scale that is scored based on a semi-structured interview consisting of four subscales (interpersonal relations, intrapsychic foundations, instrumental functioning, and common objects and activities), and a total score. The QLS has been widely used to measure psychosocial functioning and quality of life in schizophrenia and FEP (Ratheesh et al., 2017; Rocca et al., 2017).

Statistical Analyses—The prevalence of exposure to different types of traumatic events in the overall sample was first compared between male and female participants by computing χ^2 tests. The prevalence of PTSD in the overall sample was then computed using the three-level SCID rating of lifetime PTSD diagnosis: absent, sub-threshold, and threshold.

Demographic, clinical, and psychosocial correlates of PTSD, based on the three-level SCID rating, were examined by computing Pearson correlations and between groups *t*-tests. Because duration of untreated psychosis was highly skewed, the median (74 weeks) was used to categorize participants into low vs. high duration of untreated psychosis (Kane et al., 2016). Last, a multiple regression analysis was conducted including those variables that were significantly related to PTSD in the univariate tests in order to identify which variables were uniquely predictive of PTSD. IBM SPSS (version 25) package to complete all statistical analyses.

Results

Trauma and PTSD rates

A total of 320 (79.2%) participants reported one or more traumatic event on the abbreviated TLEQ, with 85 of 111 (76.6%) females reporting at least one traumatic event and 237 of 293 (80.8%) males reporting at least one event. The differences between male and female participants in rates of exposure to the different traumatic events, the ages at which different traumatic events were experienced, and rates of multiple exposures to traumatic events are provided in Table 2. There were no significant differences between males and females in the age that any of the traumatic events were experienced. However, women were significantly more likely to experience childhood sexual abuse than men (26.1% vs. 16.4% respectively), $\chi^2(1) = 4.26$, $N = 404$, $p = .039$, as well as spousal abuse (26.1% vs. 17.1%), $\chi^2(1) = 4.31$, $N = 404$, $p = .038$. No other gender differences in exposure to traumatic events were significant.

A total of 20 of the 404 participants (5.0%) meet SCID criteria for lifetime PTSD, with another 15 participants (3.7%) meeting the SCID subthreshold criteria for PTSD. Among the 320 participants who reported at least one traumatic event, 6.2% (N= 20) met criteria for lifetime diagnosis of PTSD and 4.7% (N= 15) met subthreshold criteria for PTSD.

Associations between PTSD, Demographic Characteristics, and Clinical Variables

PTSD was not significantly related to any demographic characteristics, including gender, race, marital status, education level, work or school status, or psychiatric diagnosis. Significant correlations were found between PTSD and the Calgary Depression Scale, the Mental Health Recovery Scale, and the Stigma Scale, with higher scores on depression and stigma and lower scores on recovery associated with PTSD. No significant correlations were found between PTSD and any of the PANSS or QLS subscales. These correlations are presented in Table 3.

Duration of untreated psychosis was significantly associated with lifetime PTSD ($t(385) = -2.59$, $p = .010$), with higher PTSD scores related to a longer duration of untreated psychosis.

The overall model of the multiple regression analysis predicting PTSD (including the Calgary Depression Scale, the Stigma Scale, the Mental Health Recovery Measure and duration of untreated psychosis) was entered into one step, and was significant ($R^2 = .055$, $F(4, 376) = 5.468$, $p < .001$). Depression on the Calgary Depression Scale ($\beta = .165$, $p = .003$) and duration of untreated psychosis ($\beta = .103$, $p = .043$) were significant unique predictors of PTSD.

Discussion

Almost 80% of this study sample of 404 persons with an FEP at 34 sites in the U.S. reported experiencing at least one traumatic event during their lives. This rate is nearly identical to the 83% rate of trauma exposure in a sample of 786 people enrolled in the Early Psychosis Prevention and Intervention Center in Melbourne, Australia (Conus et al., 2010), and only slightly higher than the 68.5% rate of trauma in the North Suffolk, New York FEP study of 426 persons (Neria et al., 2002). The cumulative rate of exposure to different types of traumatic events was also high, with about one-fifth of the sample reporting one traumatic event, the same reporting five or more events, and over 55% reporting two or more different types of traumatic events. These rates of cumulative trauma are consistent with those reported by Neria et al. (2002) for their FEP sample, and much higher than rates reported in the general population (Breslau, Davis, Andreski, & Peterson, 1991; Kessler et al., 1995), suggesting the current sample is broadly representative of the FEP population at initiation of treatment.

Gender differences observed in exposure to different types of traumatic events were also consistent with previous FEP research. Women were more likely to report childhood sexual abuse than men (Conus et al., 2010; Neria et al., 2002), although some studies with smaller sample sizes have not reported gender differences (Ramsay et al., 2013; Üçok & Bikmaz, 2007). These findings are broadly consistent with research showing higher rates of childhood sexual abuse in women than men with severe mental illness (Cusack et al., 2004; Goodman et al., 2001) and in general population (Kessler et al., 1995) samples. Previous research on FEP has not reported the gender difference in rates of spousal abuse found in the present sample, although the findings are consistent with the higher rates of domestic violence in women than men in the general population (Melton & Sillito, 2012).

While the rates of trauma in this sample were relatively high, the prevalence of PTSD was lower than in studies of individuals with longer-term severe mental illnesses (Grubaugh et al., 2011), with only 5% of this sample meeting criteria for a lifetime diagnosis of PTSD (or 6.2% of trauma-exposed participants). This rate is slightly higher than the 3.8% prevalence of PTSD reported by Conus et al. (2010) in their large FEP sample, although the methods for assessing PTSD in that study are unclear. In contrast to this study and Conus et al. (2010), Neria et al. (2002) reported a PTSD rate of 14.3% (or 26.5% of trauma-exposed participants) in their FEP sample. Two potential methodological differences may account for the higher rate of PTSD reported by Neria et al. than in the present study. First, Neria et al. tapped multiple sources of information to determine the PTSD diagnosis (e.g., clinicians, significant others, medical records), whereas the present study relied solely on participant self-reports during the SCÎD interview, which could have led to an under-detection of PTSD symptoms. Second, Neria et al. conducted their assessment 24 months after the initial stabilization of acute psychiatric symptoms, whereas in the present study PTSD was assessed at entry into an FEP treatment study, relatively soon after first receiving treatment for their psychosis, It is possible that the salience of post-traumatic reactions (including PTSD symptoms) related to the experience of psychotic symptoms, coercive treatments, or being labeled with a mental illness in this recently diagnosed and treated FEP sample (Mueser et al., 2010; Tarrier et al., 2007) could have overshadowed the longer-term effects of earlier life traumas and associated PTSD symptoms.

Among the clinical correlates explored, depression on the Calgary Depression Scale was highly correlated with PTSD, which is consistent with the broad research literature in which depression is the most common comorbid disorder with PTSD in the general population (Rodriguez & Anderson, 2017), as well as among persons with severe mental illness (Mueser et al., 2004; Resnick, Bond, & Mueser, 2003). However, this association has not been previously reported in an FEP sample with PTSD.

PTSD was not correlated with psychosocial functioning measured on the Quality of Life Scale. There is some evidence that PTSD is associated with worse psychosocial functioning and negative symptoms in samples of persons with longer-term severe mental illness (Mueser et al., 2004; Mueser et al., 2004), but this association has not been reported on in FEP samples, It is possible that the higher symptom severity and more impaired functioning at entry into FEP treatment services in this study resulted in a baseline measure of psychosocial functioning that was not stable and reflective of individuals' longer-term community functioning.

While PTSD was not related to other clinical measures, it was related to lower ratings on the Mental Health Recovery Measure (Young & Bullock, 2005). Previous research on this measure in persons with severe mental illness has shown that high scores are related to higher life satisfaction and lower depression (Armstrong et al., 2014). The clinical and subjective recovery correlates of PTSD in the present sample of FEP clients suggest that PTSD may contribute to a range of negative emotional experiences, including a sense of hopelessness about the future (Tarrier et al., 2007). PTSD has been linked to several negative self-cognitions such as, "f am inadequate" and "f am weak," as measured on the Posttraumatic Cognitions inventory (Foa et al., 1999), and it is possible that these sorts of

cognitions were active within this study sample, thus contributing to their lower perceived sense of personal recovery.

PTSD was also related to higher levels of perceived social stigma, as well as a longer duration of untreated psychosis. People with significant trauma exposure and PTSD often perceive themselves to be “damaged goods” (Pernicano, 2014). The social stigma associated with traumatic experiences, compounded by anxiety related to PTSD, may have resulted in individuals avoiding seeking mental health services, leading to a longer duration of untreated psychosis. Perceptions of social stigma have been linked to a delay in seeking treatment for PTSD (Mittal et al., 2016) and other disorders (Corrigan, Druss, & Perlick, 2014).

The potential importance of PTSD to duration of untreated psychosis is underscored by the results of the multiple regression analysis. Among the different clinical and subjective variables correlated with PTSD that were included in the multiple regression, depression and duration of untreated psychosis were the only unique predictors of PTSD. Considering that PTSD diagnosis has been found to predict subsequent diagnosis of schizophrenia-spectrum disorder (Okkels et al., 2017), these findings suggest that more timely recognition of PTSD could reduce duration of untreated psychosis, and potentially even the onset of psychosis.

In addition, the present findings have other potential implications for the treatment of persons recovering from an FEP. Depression is a common clinical feature in FEP that is associated with more severe symptoms (Malla et al., 2002), worse psychosocial functioning (Chang et al., 2015) and quality of life (Uzenoff et al., 2010), and increased risk of suicide (McGinty, Sayeed Haque, & Upthegrove, 2018). The association between PTSD and more severe depression, as well as lower perceptions of personal recovery, suggests that PTSD may be an important target for treatment programs for FEP. One small randomized controlled trial reported that a cognitive behavioral intervention following the onset of an FEP reduced post-traumatic symptoms but not depression six months later, although PTSD was not formally measured (Jackson et al., 2009). The treatment of post-traumatic reactions related to the experience of psychosis or other traumatic life events is integrated into the comprehensive Individual Resiliency Training intervention within the NAVIGATE program for FEP (Meyer-Kalos et al., 2015; Mueser et al., 2015), although an evaluation of its effects on PTSD has not been conducted. More research is needed to understand the role of targeted PTSD treatment in people recovering from an FEP.

One limitation of this study is the lack of follow-up evaluation of PTSD, therefore leaving unresolved questions about whether there was an under-detection of PTSD diagnosis at the initial assessment. Another limitation is that multiple statistical tests were conducted without corrections, thereby increasing the probability of type II errors. These limitations notwithstanding, the present study advances the field by reporting the results of a systematic assessment of trauma exposure and PTSD in a large representative sample of persons presenting for treatment with an FEP. This study found a significant association between PTSD and important outcomes, suggesting that trauma-focused treatment may be critical in those with co-occurring PTSD and an FEP.

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Table 1

Demographic Characteristics of Participants (N = 404)

Demographic	M	SD
Age	23.14	5.07
Weeks of untreated psychosis	193.52	262.20
	N	%
Male	293	72.5
Hispanic	73	18.1
Race		
American Indian or Alaska Native	21	5.2
White	218	54.0
Black or African American	152	37.6
Asian	12	3.0
Native Hawaiian or Other Pacific Islander	1	0.2
Currently or ever married	46	11.3
Education		
Some college or higher	125	31.0
Completed high school	133	33.0
Some high school	125	31.0
Some or completed grade school	20	5.0
Mother’s education		
Some or completed post graduate degree	26	6.4
Completed college	64	15.8
Some college	77	19.1
Completed high school	111	27.5
Some high school	38	9.4
Some or completed grade school	23	5.7
Currently employed	58	14.4
Currently enrolled in school	82	20.3
Diagnosis		
Schizophrenia	214	53.0
Schizoaffective	81	20.0
Schizophreniform	67	16.6
Brief psychotic disorder/NOS	42	10.4

Table 2

Traumatic Events Experienced and Age of Each Event for Male and Female Participants

	Male (N=293)			Age	Female (N=111)			Age	Gender[a]
Event Type	**No**	**Yes**	**%**	**M**	**No**	**Yes**	**%**	**M**	**χ^2**
Accident	252	36	12.5	17.1	95	12	11.2	21.4	0.12
Combat	283	6	2.1	14.0	107	0	0.0	0.0	2.26
Unexpected death of loved one	171	118	40.8	16.8	71	37	34.3	17.4	1.43
Robbery	234	54	18.8	17.4	90	18	16.7	17.1	0.23
Assault	217	72	24.9	16.6	89	19	17.6	17.9	2.39
Witnessing violence	230	59	20.4	16.5	92	14	13.2	17.1	2.67
Death threats	219	67	23.4	16.8	76	32	29.6	18.3	1.60
Physical punishment	219	67	23.4	9.1	89	19	17.6	9.9	1.56
Witnessing family violence	213	75	16.0	7.9	88	20	18.5	9.0	2.44
Spousal abuse	239	50	17.3	18.9	80	29	26.6	18.3	4.31*
Childhood sexual abuse	249	39	13.5	10.4	85	24	22.0	11.6	4.26*
Adult sexual abuse	270	18	6.3	18.6	97	10	9.3	21.4	1.14
Stalking	249	40	13.8	16.6	91	14	13.3	19.9	0.02
Other	252	31	11.0	14.1	95	7	6.9	15.3	1.41
Total Number of Events	N		%		N		%		
0 events	56		19.1		26		23.4		
1 event	60		20.5		25		22.5		
2 events	48		16.4		12		10.8		
3 events	36		12.3		15		13.5		
4 events	32		10.9		12		10.8		
5 or more events	61		20.8		21		18.9		

Note:

*Statistically significant at $p < .05$.

a. Chi-square test comparing prevalence of traumatic event between male and female participants ($df = 1$ for all tests).

Table 3

Correlations Between Lifetime PTSD Diagnosis and Clinical Measures (N = 404)

Clinical Measure	Lifetime PTSD	
	r	*p*
Calgary Depression Scale	.203	.001**
Mental Health Recovery Scale	−.129	.011*
Stigma Scale	.109	.033*
Quality of Life Scale Total Score	−.081	.112
Positive and Negative Syndrome Scale		
Positive factor	.071	.164
Negative factor	.023	.649
Disorganized factor	−.028	.585
Excited factor	.024	.644
Depressed factor	−.000	.994

Note:

* Statistically significant at $p < .05$.

** Statistically significant at $p < .01$