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Post Traumatic Stress Disorder Symptoms in Emotionally Distressed Individuals Referred for a Depression Prevention Intervention: Relationship to Problem Solving Skills

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Abstract

Objectives—This study examined rates of syndromal and subthreshold Post Traumatic Stress Disorder (PTSD) and PTSD symptom scores in participants with symptoms of emotional distress, subsyndromal depression and a history of traumatic exposure. Participants had been referred for a study of an indicated depression prevention intervention using Problem-Solving Therapy in Primary Care. We hypothesized that higher severity of PTSD symptom scores would predict poorer problem solving skills. In addition, some reports have suggested that there are higher rates of PTSD in minority populations relative to Caucasians; thus we hypothesized that race would also predict problem solving skills in these individuals.

Methods—We examined rates of traumatic exposure, syndromal PTSD and subthreshold PTSD. In those exposed to trauma, we performed a multiple linear regression to examine the effects of PTSD symptoms, depression symptoms, race, age and gender on Social Problem Solving Skills.

Results—Of 244 participants, 64 (26.2%) reported a traumatic event; 6/234 (2.6%) had syndromal PTSD and 14/234 (6.0%) had subthreshold PTSD. Via regression analysis, higher PTSD symptom scores predicted poorer problem solving skills. In addition, racial status (Caucasian vs. African American) predicted problem solving skills; Caucasians exhibited lower levels of problem solving skills.

Conclusions—Individuals presenting with subsyndromal depressive symptoms may also have a history of traumatic exposure, subthreshold PTSD and syndromal PTSD. Thus, screening these individuals for PTSD symptoms is important and may inform clinical management decisions, since problem solving skills are lower in those with PTSD symptoms (even after adjusting for race, age, gender and depressive symptoms).

Keywords

Post Traumatic Stress Disorder; Depression; Prevention; Problem Solving Skills; race; Problem Solving Therapy; African American; Caucasian

Introduction

Post Traumatic Stress Disorder (PTSD) is prevalent and associated with psychiatric comorbidity (Kessler et al., 2005) and impairment (Schnurr et al 2000) and increased use of both medical and psychiatric services (Walker et al., 2003). In individuals 65 years of age,

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rates of PTSD in primary care clinics have been reported to be approximately 6.3% (Freuh et al 2007). Thus, assessment for PTSD is important (Kulka et al 1990).

Syndromal PTSD appears to represent the upper tail-end of a stress-response continuum (Ruscio et al., 2002). The concept of partial or subthreshold PTSD has emerged from these observations and has been shown to have significant clinical consequences. Studies of subthreshold PTSD (Grubaugh et al 2005) are associated with intermediate levels of psychosocial impairment and health related quality of life relative to individuals without PTSD and those with full syndromal PTSD.

Subsyndromal depressive disorders are common in primary care settings (Ross et al 2008; Oslin et al 2006) and generally include various disorders such as dysthymia, minor depression, adjustment disorder with depression, and mixed anxiety depression. Although no single approach to defining subjects with 'less than Major Depression' has been universally accepted (Lyness et al 2007), understanding this spectrum is important since already symptomatic individuals with subsyndromal depression are at high risk for developing Major Depression and PTSD (Lyness et al 2008; Ross et al 2008). How much subsyndromal depression is due to PTSD symptoms is not clear.

We initially examined individuals with symptoms of emotional distress referred from primary care and community clinics. They were referred to participate in a randomized trial of indicated depression prevention using problem-solving therapy in primary care. (The trial is described in Sriwattanakomen et al., 2008, 2010 and Kasckow et al 2010). As a treatment, Problem Solving Therapy focuses on improving problem solving skills and depressive symptoms. The ability of depressed individuals to use important components of Problem Solving Therapy (such as setting goals, generating alternative solutions, decision making and solution implementation) is what accounts for improvements in depression (Alexopoulos et al, 2003).

Depressive symptoms are negatively associated with problem solving skills (Kasckow et al 2010) and individuals with symptoms of PTSD also have deficient problem solving skills (Nezu and Carneville, 1989; Sutherland and Bryant, 2008). Finding that PTSD symptom scores predict poorer Social Problem Solving Skills in individuals presenting with emotional distress and a history of traumatic exposure would suggest that Problem Solving Therapy may be an effective treatment or preventive intervention for this population. This is important from a public health perspective since effective interventions are needed to reduce rates of new onset of recurrent affective and anxiety disorders in individuals with subsyndromal depressive symptoms.

Various factors such as race and gender have been suggested to affect PTSD rates (Kulka et al 1990; Beals et al 2002; Reuf et al 2000; Reyes et al 2009). With regards to race, it has been demonstrated that there are racial differences in the way individuals cope with psychologic trauma (Ahrens et al 2010). We questioned whether racial related differences in coping strategies could account for disparities in outcomes related to PTSD symptom scores. Thus, we initially hypothesized that in those individuals presenting with emotional distress and a history of traumatic exposure, that higher severity of PTSD symptom scores would predict poorer Problem Solving Skills. In addition, we hypothesized that race would also predict Problem Solving Skills.

Methods

All participants were subjects in an ongoing NIH sponsored trial to determine the ability of Problem Solving Therapy in Primary Care vs. a dietary education control to prevent or delay episodes of major depression in individuals with subsyndromal depression, as described

previously (Kasckow et al 2010; Sriwattanakomen et al 2008 and 2010). “Prevention of Depression in Older African Americans,” aims to explore whether race could moderate Problem Solving Therapy’s hypothesized depression preventive efficacy. The analysis presented here used pre-intervention data acquired during the period 8/24/06 until 10/1/2010.

Letters were sent out to individuals at community and primary care clinics in the Pittsburgh metropolitan area inviting them to participate in the study. If interested individuals called a research team member, they would then be screened with the Centers for Epidemiological Studies–Depression scale (CES-D scale; Radloff et al 1977) under the authority of a University of Pittsburgh IRB approved ‘Waiver of Informed Consent’ and ‘Waiver of Documentation of Informed Consent. Participants 50 years of age with 11 scores on the CES-D scale were then asked to come in to consider signing informed consent. Out of 6001 letters sent out, there were 249 individuals who signed the consent.

Potential participants were excluded from the study if they were using antidepressant medication or had concurrent mental health treatment. Also excluded were those who endorsed an episode of major depression or alcohol/substance abuse within the past 12 months, a lifetime history of bipolar disorder or other psychotic disorder, or a diagnosis of a neurodegenerative disorder such as dementia. Past or present anxiety disorders did not preclude participation.

We assessed whether individuals had experienced a traumatic event sometime in their lifetime. This was obtained during administration of the Structured Clinical Interview for DSM-IV Axis I disorders (SCID; American Psychiatric Association, 2000). A traumatic event was defined as exposure to 1) actual or threatened death or serious injury, 2) a threat to one's physical integrity; 3) witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or 4) learning about an unexpected or violent death, serious harm, threat of death or injury experienced by a family member or other close associate. The diagnosis of PTSD depends on the presence of intense fear, helplessness, or horror in response to the event (American Psychiatric Association, 2000).

We then determined rates of syndromal PTSD, based on DSM IV criteria, and rates of subthreshold PTSD based on the criteria of Blanchard et al (1994). The ‘Blanchard et al’ criteria differs from the DSM IV criteria for syndromal PTSD in that either criteria C (i.e., symptoms of persistent avoidance) or D (i.e., persistent symptoms of increased arousal), but not both, are required for making the diagnosis.

Demographic information and clinical assessments included the 17 item Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960; UPMC Psychiatry Late Life Center intraclass correlation for inter-rater reliability = 0.98; study based Cronbach’s alpha = 0.50). For assessing medical comorbidity, we assessed participants with the Cumulative Illness Rating Scale – Geriatrics (Miller et al 1992). In participants who reported a history of trauma, the civilian version of the PTSD Checklist (PCL-C) was used to assess PTSD symptoms (Weathers and Ford, 1996; study based Cronbach’s alpha = 0.83). We assessed problem solving skills using the Social Problem Solving Inventory (SPSI; D’Zurilla and Nezu, 1986; study Cronbach’s alpha = 0.88). The SPSI is a 25-item multidimensional, self-report measure with two major scales which rate problem-solving orientation and problem-solving skills; these skills are addressed and improved through teaching individuals the process of Problem Solving Therapy. Specifically the skills assessed include problem definition and formulation, generation of alternative solutions, decision-making, and solution implementation/verification Items. The SPSI scores reflect individuals’ positive problem

orientation, negative problem orientation, rational problem solving, impulsivity/carelessness style and avoidance style.

Statistical Analysis

We generated descriptive group measures (means, standard deviations and %, n) to characterize the entire study group. Measures included demographic and clinical variables as well as rates of traumatic exposure, subthreshold PTSD and syndromal PTSD. Prior to all analyses, we examined data for normality and used transformations where necessary. We performed multiple linear regression analysis in the subgroup of participants with a history of traumatic exposure. We tested whether SPSI scores could be predicted by PTSD symptom scores and race while controlling for age, gender and depressive symptoms. We controlled for age given the potential cognitive changes known to occur with increasing age. In addition, we included depressive symptom scores given that depressive symptoms have been reported to be negatively associated with problem solving skills (Kasckow et al 2010); gender was also included. All tests were considered significant at $p < 0.05$ (2-tailed).

Results

Demographic and clinical characteristics of our study group are displayed in Table 1. Out of 244 participants, 64 (26.2%) reported a traumatic event; 6/234 (2.6%) had syndromal PTSD and 14/234 (6.0%) had subthreshold PTSD. We classified the traumatic events into 2 categories. The first category was “Being injured seriously or coming close to getting killed” ($n = 31$). This included being exposed to fire ($n = 3$), a natural disaster ($n = 2$), physical assault ($n = 6$), a serious accident ($n = 8$), sexual assault ($n = 9$) or war ($n = 3$). The second category was “Witnessing someone else getting seriously injured or killed” ($n = 33$). Of the individuals who reported a history of trauma, the CES-D scores ranged from 11–41.

Results of the multiple linear regressions are shown in Table 2. Age, gender and depressive symptoms were not significant predictors of problem solving skills. However, post traumatic stress disorder symptom scores negatively predicted problem solving skills. In addition, racial status (i.e., Caucasian vs. African American) also predicted problem solving skills such that Caucasians exhibited lower levels of problem solving skills relative to African Americans.

Discussion

We previously reported with an interim analysis of our sample ($n = 215$; Sriwattanakomen, et al 2010) that almost a third of participants with symptoms of emotional distress who consented to participate in the present study of depression prevention endorsed one or more anxiety related disorder. Of the 244 participants, 64 (26.2%) experienced a traumatic event; 6 (2.6%) had syndromal PTSD and 14 (6.0%) had subthreshold PTSD. Thus, approximately one in four of our participants had been exposed to a traumatic event and one in 12 of the total sample had either syndromal PTSD or subthreshold PTSD. Identifying emotional distress with CES-D screening covers a broad spectrum of anxiety and depressive symptoms. This underscores the importance of screening emotionally distressed individuals for anxiety disorders in addition to depressive disorders. Our findings specifically suggest that it is important to consider screening these individuals for a history of traumatic exposure and for subthreshold PTSD and syndromal PTSD.

A cross-sectional, epidemiological study of primary care veterans by Freuh et al (2007; $n = 745$) determined that of those 65 years ($n = 318$), 6.3% had syndromal PTSD, while in the middle-aged group (45–64 years of age) rates of PTSD were significantly higher, 18.6%. In a younger adult group (age = 18–44 years), the rate was 13.3% ($n = 60$). PTSD severity

scores followed a similar pattern; those in the 45–64 group had the highest scores and those in the 65 and older group had the lowest scores. No statistically significant group differences emerged with regard to lifetime trauma exposure. We are not aware of any studies which have examined age related patterns in prevalence rates of subthreshold PTSD. Also, it is not known whether the relationship between PTSD symptom scores and Social Problem Solving Skills differ with age.

The absolute percentages of trauma and PTSD observable in our sample are lower than that present in primary care clinics (Freuh et al, 2007). However, our group of participants represent a unique subsample of subsyndromally depressed individuals who are seeking treatment and who prefer psychosocial treatment. When one takes into account the large numbers of individuals age 50 years who present to primary care settings, this sample of subsyndromally depressed individuals still represents a significant number of individuals with traumatic exposure. Thus, our findings have important public health implications.

Recent studies have suggested that there are racial differences in the ways individuals cope with psychologic trauma (Ahrens et al 2010). Furthermore, some investigators have reported that PTSD prevalence rates are higher in African Americans and other minority populations relative to Caucasians (Beal et al 2002; Reuf et al 2000; Kulka et al 1990). Thus, in testing our second hypothesis, we wondered whether there would be racial differences in problem solving skills which could help explain these apparent disparities. Our regression analysis demonstrated that SPSI scores could be negatively predicted by PTSD symptoms scores and race while controlling for other factors (e.g., depressive symptoms, age and gender). However, our results which demonstrated that African Americans had higher SPSI scores were not consistent with our second hypothesis. Instead other factors may be responsible for the apparent disparities in prevalence rates; for instance, minority populations have been noted to have higher levels of trauma exposure as well as greater premilitary economic deprivation (Kulka et al 1990; Grubaugh et al 2006; 2008; Reuf et al 2000).

Our study was limited by sample size. In addition, the narrow range of depressive symptom scores of individuals with subsyndromal depression may have limited the interpretation of the regression results. Furthermore, our Cronbach's alpha score for the HRSD was low; indeed, previous reports have suggested that internal reliability with this scale is low in geriatric samples (Bagby et al 2004; Hammond et al 1988). This issue may also be exacerbated in samples which exhibit milder forms of depressive disorders.

There is some evidence that Problem Solving Therapy, when used as a component of a stepped care program, can indeed help reduce rates of anxiety and depressive disorders in similar populations as ours (van't Veer-Tazelaar et al 2011). Future studies will address whether Problem Solving Therapy can help emotionally distressed individuals with PTSD symptoms and also address whether the presence of coexisting anxiety disorders, including PTSD will moderate response to Problem Solving Therapy. A related question is whether the response to Problem Solving Therapy differs in those with syndromal PTSD vs subthreshold PTSD.

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Table I

Demographic and Clinical Characteristics

	Whole Group N=244
Age	65.5 (11.0)
%Male	28.7 (n=70)
Marital Status %Married/Co-habiting	46.0 (n=108)
%Divorced/separated	19.6 (n=46)
%Never Married	11.1 (n=26)
%Widowed	23.4 (n=55)
Education	14.5 (2.7) n=241
Employment %Employed	39.2 (n=92)
%Retired/unemployed	60.9 (n=143)
Living Status %Home with no supervision	91.9 (n=216)
%Other	8.1 (n=19)
Cumulative Illness Rating Scale – Geriatrics	7.8 (3.9) n=230
Hamilton Rating Scale	11.3 (3.7) n=233
Center for Epidemiologic Studies Depression	21.1 (7.8) n=222
Social Problem Solving Inventory	13.7 (2.5) n=206
History of psychologic trauma	26.2% n=26/244
Presence of Subthreshold Post Traumatic Stress Disorder	6.0% n=14/234
Presence of syndromal Post Traumatic Stress Disorder	2.3% n=6/234

Table 2

Regression Analysis Results

Variable	Parameter Estimate	Standard Error	t Value	Pvalue	Squared Semi-Partial Correlation	Cumulative R-Square
Intercept	20.02	2.55	7.84	<.001	.	0
Age	-0.03	0.03	-0.79	0.434	0.008	0.008
Gender (Male)	0.83	0.74	1.12	0.271	0.001	0.009
Depression Symptoms (HRSD)	-0.006	0.10	-0.06	0.949	0.043	0.052
Race Status (Caucasian)	-1.39	0.67	-2.07	0.045	0.060	0.112
PCL-C	-0.13	0.04	-3.04	0.004	0.167	0.279

* Model: $F(5,40)=3.08$, $p=0.019$

This multiple linear regression model has Social Problem Solving Skills as the dependent variable with the following potential predictors: age, gender (female=0/male=1), race (African American =0/Caucasian=1), and PTSD symptom scores. PTSD symptom scores and Race significantly predicted Social Problem Solving Skills.

Abbreviations: HRSD: 17 item Hamilton Rating Scale for Depression; PCL-C: Post Traumatic Stress Disorder Check List-Civilian version