

# Subthreshold PTSD in Primary Care Prevalence, Psychiatric Disorders, Healthcare Use, and Functional Status

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**Abstract:** The purpose of this study is to determine the prevalence of subthreshold posttraumatic stress disorder (PTSD) and its association with specific traumas, other psychiatric diagnoses, healthcare use, and functional status among 669 veterans in four VA Medical Centers. A cross-sectional, epidemiological design incorporating self-report measures, structured interviews, and chart reviews was used to obtain relevant information for analyses. Comparisons across three trauma-exposed groups (PTSD, subthreshold PTSD, no PTSD) revealed that veterans in the subthreshold PTSD group did not use mental health services more often than those in the no PTSD group despite the presence of additional mental health diagnoses and worse functional status. These data indicate that clinicians may be overlooking a subset of individuals suffering from subsyndromal PTSD, suggesting the need to detect and serve these individuals better within healthcare settings.

**Key Words:** PTSD, subthreshold PTSD, partial PTSD, trauma, service use.

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There is little doubt that the clinical syndrome of posttraumatic stress disorder (PTSD) is highly prevalent (Kessler et al., 1995), is associated with extensive psychiatric comorbidity (Keane and Wolfe, 1990; Kessler et al., 1995), is linked with impairment across a number of psychosocial domains (Frueh et al., 2001), and often results in the increased use of

medical and psychiatric services (Walker et al., 2003). Recent data from taxometric analyses, however, indicate that PTSD is a dimensional construct that may represent the upper end of a stress-response continuum rather than a discrete pathological syndrome (Ruscio et al., 2002). These data have emerged from a larger body of scientific literature and clinical practice suggesting that most individuals experience at least some of the symptoms of PTSD following a traumatic event (e.g., American Psychiatric Association, 1994; Rothbaum et al., 1992; Steinglass and Gerrity, 1990), and that distinctions between normal and pathological states are somewhat arbitrary and have fluctuated over time (Young, 2004). These issues raise concerns regarding the clinical significance of partial or subthreshold PTSD, of which little is currently known.

Definitions of subthreshold PTSD vary, but it is generally defined as meaningful PTSD symptoms that do not meet full DSM-IV diagnostic criteria for the disorder (American Psychiatric Association, 1994). To meet criteria for full PTSD, an individual must endorse a significant traumatic event and report at least one re-experiencing symptom, three avoidance symptoms, and two arousal symptoms for the disorder (in addition to functional impairment and at least a 1-month duration). In contrast, one of the most common definitions of subthreshold PTSD requires that an individual endorse one re-experiencing symptom and either three avoidance or two arousal symptoms while endorsing significant distress and impairment (Blanchard et al., 1994).

Using the criteria of Blanchard et al. (1994) or similar criteria, extant data suggest that the lifetime prevalence of subthreshold PTSD ranges from 9.0% among psychiatric outpatients (Franklin et al., 2002) to as high as 22.5% and 21.2% among male and female Vietnam veterans, respectively (Weiss et al., 1992). Studies examining current prevalence rates of subthreshold PTSD have yielded rates of 3.7% in a community sample (Stein et al., 1997), 11.1% in a survey sample (Zhang et al., 2004), and 7.0% among treatment-seeking psychiatric patients (Zlotnick et al., 2002). Current prevalence rates from trauma-specific samples are even higher, ranging from 20.0% to 44.0% following an automobile accident (Blanchard et al., 1994), the Bijlmermeer airplane disaster in the Nether-

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lands (Carlier and Gersons, 1995), and political imprisonment (Schutzwohl and Maercker, 1999).

A few studies have found that subthreshold PTSD is associated with other Axis I psychiatric disorders such as depression and panic disorder (Zhang et al., 2004; Zlotnick et al., 2002), and generalized anxiety disorder, agoraphobia, social phobia, and obsessive compulsive disorder (Zhang et al., 2004). Although subthreshold PTSD appears to be linked with other psychiatric diagnoses, the relationship among these comorbid associations, subthreshold symptoms, and functioning is unclear. Studies have typically found a linear relationship between subthreshold PTSD and indices of functioning, with participants with full diagnoses reporting the most impairment, followed by a subthreshold group, and then a nonsymptomatic traumatized group (Schutzwohl and Maercker, 1999; Stein et al., 1997; Zhang et al., 2004). However, the strength of these findings is dampened because the authors failed to account for the role of comorbid diagnoses in their analyses. One study did control for this effect and found that patients with full PTSD did not differ from those with partial PTSD on indices of social and work functioning (Zlotnick et al., 2002). Due to the limited data on this topic and the methodological confines of previous studies, the question of whether subthreshold PTSD alone adversely impacts functioning is unresolved.

As an additional index of functioning, a few studies have examined the relationship between health service use and subthreshold symptoms. Subthreshold symptoms have been linked with an increased likelihood of seeking mental health services (Stein et al., 1997) and in the number of healthcare visits endorsed (Zhang et al., 2004). Although informative, these studies are limited by their reliance on service use for physical health problems (Zhang et al., 2004) or on retrospective reports of use that lend themselves to error (Stein et al., 1997; Zhang et al., 2004). At this point, more data are needed to make definitive conclusions about the relationship between healthcare use and subthreshold PTSD.

The purpose of this article is to expand our knowledge regarding the current prevalence of subthreshold PTSD and its association with specific traumas, other psychiatric disorders, medical and mental health service use, and both mental and physical functional status among veterans seen in VA Medical Center primary care clinics. We examined differences across a wide range of relevant variables using a PTSD, subthreshold PTSD, and no PTSD group among a sample of primary care patients, which provides a general sample of trauma survivors, rather than a potentially truncated sample consisting only of trauma-specific or psychiatric patients.

## METHODS

### Study Design

Data were part of a larger cross-sectional study conducted on a random sample of veterans at four VA Medical Centers (Charleston and Columbia, SC; Tuscaloosa and Birmingham, AL; see Magruder et al., *In press*). Study participants were randomly selected from a master list of patients during the fiscal year 1999 at each of the VA primary care sites. Consenting participants were provided with a semi-

structured clinic assessment and within 2 months were administered a structured telephone interview by masters-level clinicians trained and supervised by a licensed clinical psychologist (B. C. F.). Study measures were read aloud to all participants because many were unable to read them due to vision problems or insufficient literacy skills. Additionally, using available medical charts, we conducted a 12-month retrospective review of each participant's VA treatment. Initial exclusionary criteria included the presence of dementia-related symptoms and being age 80 or older. After providing a complete description of the study to the participants, written informed consent was obtained. This study was conducted with full approval from relevant Institutional Review Boards.

### Participants

A total of 1198 randomly identified veterans (known to be alive) were approached for study participation. Of this sample, 885 veterans (73.9%) provided an informed consent to participate during the clinic interview. As a result of missing follow-up phone interview data, our sample was reduced to 733 veterans. Because failing to endorse a trauma resulted in missing follow-up data on primary instruments, the final sample was further reduced to 669 veterans. The characteristics of this sample are reported in the Results section.

### Clinic Interview Measures

#### Demographic Information

Participants were asked about sociodemographic information including age, marital status, living arrangement, and employment status.

#### The Short-Form Health Survey

The Short-Form Health Survey (SF-36; Ware and Sherbourne, 1992) is a 36-item self-report measure of several health domains that yields two composite scores reflecting global physical and mental health functioning. For all scales, higher scores reflect greater health and functioning or functional status. In the present study, the two items comprising the bodily pain domain were not included in the physical health composite score because they were assessed using an incorrect response range. The SF-36 has been shown to be a valid and reliable instrument for use with veteran populations (Richardson et al., 2002).

#### Telephone Interview

Contact information of patients who completed the clinic interview was sent to the Charleston VA Medical Center, where clinicians (master's level and above) telephoned them to administer a series of structured interviews.

The Trauma Assessment for Adults-Self Report Version (TAA; Resnick, 1996) assesses the lifetime incidence of trauma (both military and nonmilitary) and has been widely used to screen community and medical populations for trauma history (Kilpatrick et al., 2000; Resnick, 1996). This survey provided data to categorize patients as either meeting or failing to meet DSM-IV PTSD criterion A (American Psychiatric Association, 1994).

The Clinician Administered PTSD Scale (CAPS; Blake et al., 1990) was administered to those participants who endorsed a trauma on the TAA. The CAPS is a structured clinical interview that measures the intensity and frequency of the 17 DSM-IV PTSD symptoms (American Psychiatric Association, 1994). The CAPS is considered the gold standard for assessing PTSD diagnoses with excellent psychometric properties and diagnostic utility (Weathers et al., 2001). In the present study, the CAPS was used to obtain current PTSD diagnoses.

The Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998) is a brief structured interview that assesses the criteria for DSM-IV Axis I diagnoses (e.g., anxiety, mood, and substance abuse disorders) and the presence or absence of suicidality risk (Lecrubier et al., 1997; Sheehan et al., 1998). The MINI exhibits similar sensitivity and specificity to more time-intensive structured psychiatric interviews (e.g., SCID; Lecrubier et al., 1997; Sheehan et al., 1998). For the present study, the MINI was used to obtain current psychiatric diagnoses.

### Chart Review

Trained, experienced chart reviewers examined electronic medical records for the 12 mo preceding study initiation for each consenting patient. Research personnel who conducted chart reviews were blind to the diagnostic status of participants. The information recorded included medical and psychological diagnoses and conditions, along with VA health care service use in the past year.

### Assignment of PTSD Diagnostic Category (PTSD or Subthreshold PTSD)

The assignment of PTSD diagnoses was based on the results of structured phone interviews. The algorithm for assigning PTSD diagnoses was as follows. Corresponding with DSM-IV criteria, participants were designated as having PTSD if they met criterion A on the Trauma Assessment for Adults, and criteria B, C, and D on the CAPS, and the duration of all CAPS symptoms was greater than 1 month; the presence of symptoms was based on the frequency  $\geq 1$ /intensity  $\geq 2$  CAPS scoring rule (Blake et al., 1990; Weathers et al., 1999). For subthreshold PTSD, the algorithm was based on the definition by Blanchard et al. (1994), which requires that an individual endorse the criterion A and criterion B symptom clusters and meet diagnostic criteria for either the criterion C or criterion D symptom cluster, while endorsing significant distress and impairment.

### Overview of Analytic Strategies

Analyses were first conducted on the demographic variables to detect differences between the full PTSD (PTSD), subthreshold PTSD (S-PTSD), and no PTSD (no-PTSD) groups on these variables.  $\chi^2$  analyses were used to examine differences across the three groups on categorical demographic variables (i.e., race, gender, relationship status, and employment status), and an ANOVA was used to examine differences across groups by age.

Posttraumatic stress disorder diagnostic group differences in trauma exposure were examined using logistic re-

gression analyses for dichotomous outcomes (i.e., presence or absence of a particular trauma) and an age-adjusted ANCOVA for total number of traumas endorsed.

To examine the extent to which PTSD diagnosis contributes to service use, age-adjusted logistic regressions were used, with service use<sup>1</sup> entered as the dependent variable and age and PTSD diagnosis group entered as independent variables. For primary care visits, an age-adjusted ANCOVA was used, with service use entered as the dependent variable and PTSD diagnostic group entered as the independent variable.

Age-adjusted logistic regressions were used to examine the extent to which PTSD diagnosis predicts the presence of other psychiatric diagnoses (i.e., major depression, dysthymia, panic disorder, agoraphobia, generalized anxiety disorder, suicidal risk, social anxiety, and substance abuse/dependence). Associated diagnoses were entered as the dependent variable with age and PTSD diagnosis group entered as independent variables. Using General Linear Models procedure (equivalent to ANCOVA), differences between PTSD diagnostic groups and functional status on the two composite scores (physical health and mental health) of the SF-36 were examined with age and the presence (yes or no) of an additional psychiatric diagnosis serving as covariates. Health functioning scores were entered as the dependent variable and PTSD diagnostic status was entered as the independent variable, with age and the presence of a comorbid disorder serving as covariates.

Post hoc comparisons of means between diagnostic groups for continuous variables were conducted following significant ANOVAs using the Tukey multiple comparison procedure. Individual pairwise comparisons between the diagnostic groups for categorical variables were conducted using a series of two by two  $\chi^2$  analyses with a Bonferroni correction applied to individual *p* values.

## RESULTS

### Preliminary Analyses

Comparisons on sociodemographic variables were made between the final sample ( $N = 669$ ) and excluded participants (those that could not be reached for follow-up interviews;  $N = 138$ ). The only significant differences were a higher rate of individuals living with someone (compared with living alone) in the final (71.0%) compared with the excluded (56.3%) sample ( $\chi^2[1,804] = 11.26; p < .01$ ), and older veterans ( $61.21 \pm 11.79$ ) being more likely to complete the follow-up interview than younger veterans ( $58.85 \pm 13.20; F[1,802] = 4.36; p < .05$ ). To examine the interrater reliability of PTSD diagnoses (using the CAPS), interviews were conducted by speakerphone for a random 8% ( $N = 54$ ) of the sample. Raters were 100% concordant on PTSD diagnoses.

### Sample Characteristics

The average age ( $\pm SD$ ) of the final sample ( $N = 669$ ) was 61.42 ( $\pm 11.74$ ) years, with nearly 43.1% age 65 years or older (range, 25.50–81.12 years); 93.4% of the sample was male; 65.1% was Caucasian; 22.1% had less than a high school education, 28.1% had a high school degree, and 49.8%

had at least some college (modal education level was some college or technical school); 71.0% were currently living with someone; and 32.4% were working.

### Demographic Analyses

Three by two  $\chi^2$  analyses were used to examine the PTSD, S-PTSD, and no-PTSD groups across categorical demographic variables (e.g., race, sex, education, relationship status, employment status). For gender, the Fisher exact test was calculated for three two by two tables (male/female vs. PTSD/S-PTSD; S-PTSD/no-PTSD; and PTSD/no-PTSD, respectively) because the two by three design had three cells with an expected count less than five. No significant differences emerged between any of the categorical variables and group status. For the one continuous variable, age, an ANOVA was used and significant group differences emerged ( $F[2,664] = 6.93$ ;  $p < .01$ ). Post hoc analyses revealed that the no-PTSD group was older than the PTSD group, with average ages of 62.16 ( $\pm 11.68$ ) and 57.23 ( $\pm 10.84$ ), respectively.

### Prevalence of Trauma and Full and Subthreshold PTSD

With regard to PTSD prevalence,<sup>2</sup> 11.7% of the sample met full diagnostic criteria for current PTSD, 4.6% met criteria for subthreshold PTSD, and 75.0% had experienced a trauma but did not endorse enough symptoms to warrant inclusion in the previous diagnostic categories. When looking at trauma exposure across diagnostic groups, there were significant differences in the prevalence of reporting combat or war zone exposure and in the mean number of traumas endorsed (Table 1). Specifically, the PTSD group endorsed more combat exposure than the S-PTSD group, followed by the no-PTSD group. Both the PTSD and S-PTSD groups

endorsed a higher mean number of traumas than the no-PTSD group.

### Group Differences in Healthcare Utilization

When comparing the three diagnostic groups by healthcare use, veterans in the S-PTSD group were less likely to endorse a general mental health (GMH) visit than veterans in the PTSD group (Table 2).

### Group Differences in Associated Diagnoses

When comparing the S-PTSD group to the PTSD group, veterans in the S-PTSD group were less likely to have an additional diagnosis of major depression, dysthymia, panic disorder, agoraphobia, generalized anxiety disorder, or suicidality risk (Table 3). However, when comparing the S-PTSD group to the no-PTSD group, the S-PTSD group was more likely to have an additional diagnosis of major depression, panic disorder, agoraphobia, generalized anxiety disorder, and suicidality risk than the no-PTSD group. There were no significant differences in the likelihood of having a substance abuse/dependence or social anxiety diagnosis between the S-PTSD and the PTSD and no-PTSD groups.

### Group Differences in Health Functioning

Significant group differences were found on both the mental health and the physical health composite scores of the SF-36 after adjusting for age and the presence of a comorbid disorder. Post hoc comparisons across the three diagnostic groups revealed that veterans in the no-PTSD group endorsed better physical health functioning than those in the PTSD group, but not the S-PTSD group (Table 4). With regard to mental health functioning, veterans in the no-PTSD group endorsed the highest functioning scores, followed by the S-PTSD group and then the PTSD group (Table 4).

**TABLE 1.** Comparison of Lifetime Traumas Endorsed for the PTSD, S-PTSD, and No-PTSD Groups

| Lifetime Trauma                     | PTSD<br>%                     | S-PTSD<br>%                               | No-PTSD<br>%                               | OR (95% CI) <sup>a</sup>  | <i>p</i>         |
|-------------------------------------|-------------------------------|---|--|---|------------------|
| Combat exposure <sup>b</sup>        | 86.0                          | 71.9                                      | 50.1                                       | .32 (.12, .91) <sup>c</sup><br>3.06 (1.33, 7.07) <sup>d</sup>       | 0.03<br>0.01     |
| Adult sexual assault <sup>c</sup>   | 1.2                           | 9.4                                       | 2.5  | 10.85 (1.02, 115.81) <sup>c</sup><br>3.52 (.87, 14.26) <sup>d</sup> | 0.05<br>0.08     |
| Child sexual abuse <sup>c</sup>     | 8.6                           | 6.3                                       | 6.8  | .78 (.15, 4.02) <sup>c</sup><br>.85 (.19, 3.75) <sup>d</sup>        | 0.77<br>0.83     |
| Physical assault <sup>b</sup>       | 32.6                          | 28.1                                      | 24.9                                       | .94 (.37, 2.35) <sup>c</sup><br>1.11 (.49, 2.52) <sup>d</sup>       | 0.89<br>0.80     |
| Mean number of traumas <sup>f</sup> | <b>M (SD)</b><br>3.73 (1.80)* | <b>M (SD)</b><br>3.50 (2.33) <sup>†</sup> | <b>M (SD)</b><br>2.69 (1.52)* <sup>†</sup> | <b>F (df)</b><br>15.41 (2,661)                                      | <b>p</b><br>0.00 |

<sup>a</sup>Scores from logistic regression with age and diagnostic status as independent variables.

<sup>b</sup>For combat exposure and physical assault, PTSD  $N = 86$ , S-PTSD  $N = 32$ , no-PTSD  $N$ 's = 547 and 544, respectively.

<sup>c</sup>Age-adjusted odds ratio of endorsing given item for S-PTSD group vs. PTSD group.

<sup>d</sup>Age-adjusted odds ratio of endorsing given item for S-PTSD group vs. no-PTSD group.

<sup>e</sup>For adult sexual assault and child sexual abuse, PTSD  $N$ 's = 82 and 81, respectively, S-PTSD  $N = 32$ , and no-PTSD  $N$ 's = 509 and 515, respectively.  $N$ 's ranged significantly for adult sexual assault and child sexual abuse items because participants were given the option of not answering these items. All trauma history data was obtained from the Trauma Assessment for Adults—Self Report Version.

<sup>f</sup>Mean number of traumas derived from ANCOVA with diagnostic group as the independent variable and age as the covariate. Means on each line with matching subscripts were significantly different from each other in pairwise comparisons. For mean number of traumas, PTSD  $N = 86$ , S-PTSD  $N = 32$ , no-PTSD  $N = 547$ .

**TABLE 2.** Comparison of Service Use for the PTSD, S-PTSD, and No-PTSD Groups

| Service Use               | PTSD<br>(N = 86) | S-PTSD<br>(N = 34) | No-PTSD<br>(N = 547) | OR (95% CI) <sup>a</sup>                                     | p            |
|---------------------------|------------------|--------------------|----------------------|--|--------------|
|                           | %                | %                  | %                    |  |              |
| GMH                       | 47.7             | 14.7               | 10.4                 | .19 (.07, .56) <sup>b</sup><br>1.33 (.48, 3.67) <sup>c</sup> | 0.00<br>0.58 |
| PTSD                      | 12.8             | 0.0                | 0.5                  | —<br>—   | 0.77<br>0.86 |
| SATC                      | 4.7              | 0.0                | 1.1                  | —<br>—   | 0.80<br>0.83 |
|                           | <b>M (SD)</b>    | <b>M (SD)</b>      | <b>M (SD)</b>        | <b>F (df)</b>  | <b>p</b>     |
| Primary care <sup>d</sup> | 3.66 (1.97)      | 3.29 (1.62)        | 3.50 (2.01)          | .61 (2, 663)   | 0.54         |

<sup>a</sup>For GMH, PTSD, and SATC visits, scores from logistic regression with age and diagnostic group as independent variables. Service use is indicated by the percentage of patients endorsing at least one visit to that particular clinic in the past year.

<sup>b</sup>Age-adjusted odds ratio of endorsing given item for S-PTSD vs. PTSD group.

<sup>c</sup>Age-adjusted odds ratio of endorsing given item for S-PTSD vs. no-PTSD group.

<sup>d</sup>Primary care visits are represented by mean number of visits in the past year using ANCOVA with diagnostic group as the independent variable and age as the covariate.

**TABLE 3.** Comparison of Associated Diagnoses for the PTSD, S-PTSD and No-PTSD Groups

| Associated Diagnoses <sup>a</sup> | PTSD<br>(N = 86) | S-PTSD<br>(N = 34) | No-PTSD<br>(N = 545) | OR (95% CI) <sup>b</sup>                                       | p            |
|-----------------------------------|------------------|--------------------|----------------------|--|--------------|
|                                   | %                | %                  | %                    |  |              |
| Depression                        | 68.6             | 38.2               | 8.6                  | .30 (.13, .70) <sup>c</sup><br>6.47 (2.97, 14.10) <sup>d</sup> | 0.01<br>0.00 |
| Dysthymia                         | 59.3             | 14.7               | 6.8                  | 12 (.04, .35) <sup>c</sup><br>2.25 (.82, 6.20) <sup>d</sup>    | 0.00<br>0.12 |
| Panic disorder                    | 40.7             | 11.8               | 2.6                  | .20 (.07, .63) <sup>c</sup><br>4.77 (1.47, 15.50) <sup>d</sup> | 0.01<br>0.01 |
| Agoraphobia                       | 34.9             | 11.8               | 2.4                  | .26 (.08, .82) <sup>c</sup><br>5.06 (1.53, 16.70) <sup>d</sup> | 0.02<br>0.01 |
| Generalized anxiety disorder      | 44.2             | 20.6               | 7.7                  | .34 (.13, .89) <sup>c</sup><br>2.92 (1.18, 7.22) <sup>d</sup>  | 0.03<br>0.02 |
| Suicidality risk                  | 51.2             | 23.5               | 3.1                  | .30 (.12, .73) <sup>c</sup><br>9.51 (3.76, 24.10) <sup>d</sup> | 0.01<br>0.00 |
| Social anxiety                    | 22.1             | 0.0                | 1.3                  | —<br>—   | 0.64<br>0.77 |
| Substance abuse/dependence        | 10.5             | 2.9                | 2.7                  | .27 (.03, 2.27) <sup>c</sup><br>.94 (.12, 7.45) <sup>d</sup>   | 0.23<br>0.95 |

<sup>a</sup>All diagnoses based on the MINI.

<sup>b</sup>Scores from logistic regression with age and diagnostic group as independent variables.

<sup>c</sup>Age-adjusted odds ratio of endorsing given item for S-PTSD vs. PTSD group.

<sup>d</sup>Age-adjusted odds ratio of endorsing given item for S-PTSD vs. no-PTSD group.

**TABLE 4.** Comparison of SF-36 Composite Scores for the PTSD, S-PTSD, and No-PTSD Groups

| SF-36 Scales <sup>a</sup> | PTSD<br>N = 82 | S-PTSD<br>N = 33           | No-PTSD<br>N = 523          |                        |
|---------------------------|----------------|----------------------------|-----------------------------|------------------------|
|                           | M (SD)         | M (SD)                     | M (SD)                      | F(2, 631) <sup>b</sup> |
| Physical health           | 39.79 (19.64)* | 48.12 (22.02)              | 58.36 (21.40)*              | 6.51, p = 0.00         |
| Mental health             | 38.60 (21.65)* | 54.48 (26.73) <sup>†</sup> | 73.42 (20.09)* <sup>†</sup> | 20.12, p = 0.00        |

<sup>a</sup>Higher scores reflect better functioning.

<sup>b</sup>Scores from GLM procedure (ANCOVA) with diagnostic group as the independent variable and age and the presence of an additional psychiatric diagnosis as covariates. Means on each line with matching subscripts were significantly different from each other in pairwise comparisons.

## DISCUSSION

These data indicate that the prevalence of subthreshold PTSD is not trivial, and its association with other psychiatric disorders, medical and mental health service use, and functional status among veterans seen in VA primary care clinics is significant. Results revealed that 11.7% of the final sample of trauma-exposed veterans met full diagnostic criteria for current PTSD, 4.6% met criteria for current subthreshold PTSD, and the remainder (83.7%) did not evidence enough symptoms to warrant inclusion in the previous diagnostic categories. Our prevalence findings are similar to those of the study by Stein et al. (1997) using a community sample of 1002 randomly selected individuals, but lower than studies conducted with trauma-specific samples (e.g., Blanchard et al., 1994; Carlier and Gersons, 1995).

Prevalence rates across different traumas by PTSD diagnosis revealed that veterans with subthreshold PTSD were less likely than those with full PTSD and more likely than those with no PTSD to endorse combat exposure. Both the full and subthreshold groups endorsed a higher number of traumas than the no-PTSD group. Rates of other traumas were comparable across the three diagnostic groups. Differences across groups in combat exposure are likely an artifact of the present sample and the overall high rates of combat or war zone exposure, whereas the higher number of traumas endorsed by the symptomatic groups likely reflects the additive effects of stress and is consistent with previous findings (Zhang et al., 2004). In the present study, we were limited to the experience or absence of particular traumas across groups. More data are needed to investigate the differential impact of trauma exposure, specifically the role of event characteristics in the development of subthreshold versus full PTSD. These findings would help us better understand a dimensional approach to PTSD that emphasizes how the experience of a traumatic event alone does not determine symptom severity, but rather a combination of within and posttrauma factors (e.g., severity of exposure, social support; Ruscio et al., 2002).

With one exception, no significant differences emerged in the use of VA health services across diagnostic groups. The one exception was that veterans in the PTSD group were more likely to have had a general mental health visit in the past year than veterans in the subthreshold and no-PTSD groups. Despite a lack of statistical significance, it also should be noted that there was a clear trend for the PTSD group to use more PTSD services. Altogether, these findings suggest that those with subthreshold PTSD are not using additional VA services, despite the fact that those in the subthreshold PTSD group endorsed worse mental health functioning than those in the no-PTSD group, even after controlling for the presence of other psychiatric diagnoses. These results may reflect the actual need or desire for services among veterans in this group, or they may reflect a lack of awareness regarding the need for or availability of such services. These findings also may reflect provider issues of not referring patients for mental health services if they present with partial symptoms of PTSD but not the full disorder. Further research is needed to determine which is the case.

All of the limitations associated with cross-sectional survey research apply to the present study. In particular, the causal impact of subthreshold PTSD on veterans cannot be determined. Furthermore, an alternative conceptualization or definition of subthreshold PTSD may have yielded different results. However, we chose to use one of the more prominent definitions of subthreshold PTSD to compare our results better with those from other studies. Additionally, with the exception of primary care visits, our service use variables are restricted to yes or no dichotomous outcomes over a 12-month period of time. Information on the length of sessions attended and compliance with care, as well as whether or not patients wanted care for their symptoms, would better clarify the relationship between subthreshold PTSD and the need or desire for services.

## CONCLUSION

The present study is the first to examine the prevalence and clinical implications of subthreshold PTSD in a primary care sample of veterans. Further, it is the first to explore the meaningful relationship between subthreshold PTSD, trauma exposure, associated psychiatric diagnoses, healthcare use, and both physical and mental health functioning. These data suggest that clinicians and researchers may be overlooking a subset of individuals who are experiencing noteworthy trauma-related symptoms. Future studies are needed to determine better the treatment needs and response of individuals with subthreshold PTSD, as well as the trajectory of subthreshold symptoms. That is, do those with subthreshold PTSD suffer indefinitely from distressing yet clinically insufficient symptoms, or do subthreshold symptoms improve or worsen over time? Potentially, individuals with subthreshold PTSD could be included in clinical trials and compared with participants with full PTSD. Such comparisons may yield differences in clinical adherence and outcome that could be used to help us understand better the taxonomic nature of PTSD and provide appropriate care to a broader range of those with trauma-related difficulties.

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## END NOTES

<sup>1</sup>Due to a high number of “0” response values, all but the Primary Care service use variable (i.e., GMH, PTSD, and Substance Abuse Treatment Center [SATC] visits), were converted to “yes” or “no” dichotomous response categories. That is, veterans who endorsed at least one visit for a particular clinic in the 12 months preceding their assessment were assigned a “yes” value for that variable.

<sup>2</sup>Prevalence rates include the 64 out of 733 or 8.7% of veterans who did not endorse a traumatic event on the Trauma Assessment and were thus excluded from the final sample of 669.