

Posttraumatic Stress Disorder in Female Veterans

Association With Self-reported Health Problems and Functional Impairment

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Background: The purpose of this report is to identify self-reported health problems and functional impairment associated with screening positive for posttraumatic stress disorder (PTSD) in women seen for care at a Department of Veterans Affairs (VA) medical center.

Methods: A survey was mailed to all women (N=1935) who received care at the VA Puget Sound Health Care System between October 1996 and January 1998. The survey inquired about health history and habits. It included the PTSD Checklist–Civilian Version (PCL-C) and validated screening measures for other psychiatric disorders. The veteran's version of the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36-V) was included to assess health-related quality of life.

Results: Of the 1259 eligible women who completed the survey, 266 women (21%) screened positive for current PTSD (PCL-C score \geq 50). In age-adjusted bivariate analy-

ses, women who screened positive for PTSD reported more psychiatric problems, substance abuse, and lifetime exposure to domestic violence. They were significantly more likely to endorse physical health problems including obesity, smoking, irritable bowel syndrome, fibromyalgia, chronic pelvic pain, polycystic ovary disease, asthma, cervical cancer, and stroke. In fully adjusted multivariate models, a PCL-C score of 50 or greater was independently associated with scoring in the lowest quartile on SF-36-V subscales and composite scales.

Conclusions: Symptoms of PTSD are common in women treated at VA facilities. In addition, PTSD is associated with self-reported mental and physical health problems and poor health-related quality of life in these patients. These findings have implications for the design of VA primary care services for the growing population of female veterans.

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RECENT EPIDEMIOLOGIC studies estimate the lifetime prevalence of posttraumatic stress disorder (PTSD) in US community samples to be approximately 7% to 9%.¹⁻³ Women are nearly twice as likely as men to suffer from PTSD, with lifetime prevalence rates ranging between 10.4% and 13.0%.^{1,4-6} Furthermore, the risk of developing PTSD following a traumatic experience is twice as high in women compared with men (13%-20% vs 6%-8%),^{1,2} and the course of PTSD is more chronic in women than in men.⁵ In both sexes, assaultive violence is more likely than other traumatic events to result in PTSD.^{1,5}

Comorbidity between PTSD and other psychiatric illness has been well documented.^{1,7} However, the physical health consequences of trauma and PTSD have only recently been explored. Both childhood and adult trauma exposure are associated with increased medical mor-

bidity and mortality,^{8,9} including fibromyalgia, irritable bowel syndrome, and coronary artery disease.⁸⁻¹³ Trauma-exposed individuals are also more likely to engage in at-risk health behaviors,^{8,14-16} and are more likely to self-report physical symptoms and functional impairment.^{14,17-19}

Studies in veteran and nonveteran populations have suggested that PTSD may mediate some of the deleterious effects of trauma on health.^{9,20-22} Independent associations between PTSD and health care utilization have been described.^{22,23} Consequently, screening for PTSD symptoms in nonpsychiatric clinical settings has received growing attention.²⁴

Female veterans are a growing, understudied, and highly trauma-exposed group. Women comprised 20% of new military recruits in 1998 and the percentage of women veterans is projected to increase to over 10% by 2010.²⁵ In a national survey completed by 3632 female Veterans Affairs (VA) patients, 23% reported being

sexually assaulted during military duty.¹⁶ A national sample of 537 women veterans reported that 48% of women experienced assaultive violence during the course of their military service: 18.4% reported physical assault, 13% reported rape, and 16.5% reported both.²⁶ Over half of the women who had been raped in the military reported being raped at least twice. These numbers are higher than observed in community samples of women, in which 9% to 13% of women surveyed report a lifetime history of rape and 10% report a lifetime history of physical assault.²⁴ Veteran women also experience significant duty-related trauma as part of their military service (eg, war-zone exposure).²⁷ Furthermore, many women in the military have suffered significant premilitary trauma that may predispose them to the development of PTSD following a subsequent traumatic exposure.²⁸ Given these facts, one may expect that prevalence of PTSD will be relatively high among female veterans. It follows that any negative health effects associated with PTSD would thus have a particularly strong impact on their health.

The purpose of this study was to describe the prevalence of clinically significant PTSD symptoms among female VA patients as reflected by screening positive for this disorder on a PTSD symptom checklist. In addition, we evaluated the relationship between PTSD symptoms and health status. We hypothesized that women who screened positive for PTSD would have high screening rates of depression, panic disorder, and substance abuse. We also hypothesized that the women who screened positive for PTSD would have more self-reported medical problems and lower health-related quality of life than those not screening positive for PTSD. Finally, we hypothesized that the association between PTSD and poor health-related quality of life would persist even after controlling for comorbid medical and psychiatric conditions.

METHODS

PATIENT POPULATION

Female veterans who received care between October 1, 1996, and January 1, 1998, at VA Puget Sound (N=1935) were mailed a Women's Health Survey in 1998 as part of a larger cross-sectional survey of women seen for outpatient care. The survey protocol has been described elsewhere.²⁹ Women were excluded if they had no postal address in our region or indicated that they were too ill or disabled to participate. The Women's Health Survey asked about medical history, health behaviors, psychiatric symptoms, health status, demographic characteristics, and patient satisfaction. To keep the survey succinct and thus increase the response rate, we attempted to use brief, validated screening measures to evaluate health behaviors and risks. We used this mailed, self-report survey to obtain data on a large, representative population of female VA patients. This report is based on cross-sectional analyses of responses to the mailed survey. Administrative data from the Veteran's Health Information Systems and Technology Architecture (VISTA) database were used for the analysis of nonresponse bias. The University of Washington institutional review board approved the study.

PTSD SCREENING

Symptoms of PTSD were assessed using the PTSD Checklist–Civilian Version (PCL-C).³⁰ This 17-item self-administered ques-

tionnaire is based on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* diagnostic criteria B, C, and D for PTSD. These criteria relate to the 3 different PTSD symptom clusters: reexperiencing, numbing/avoidance, and hyperarousal.³¹ Respondents are asked to rate past month symptoms of PTSD on a 1 to 5 scale. Summing all responses generates a total score ranging from 17 to 85. The PCL-C does not assess trauma exposure.

The PCL was initially developed and validated in male Vietnam combat veterans. In that population, the optimal diagnostic threshold was a score of 50 or higher (sensitivity, 0.82; specificity, 0.84).³⁰ This scale has been used in mixed gender civilian samples of motor vehicle accident and rape victims, parents of pediatric cancer patients, and breast cancer survivors.^{32–35} In civilian samples, a cut point of 50 or higher demonstrates lower sensitivities, from 0.60 to 0.78, with specificities ranging from 0.89 to 0.99. In this report we elected to use the more specific veteran-derived diagnostic cutpoint (≥ 50) as a positive screen for PTSD. Respondents with only one missing item on the PCL-C (n=53) had the missing item imputed by assigning the average value of the responses to other questions within that symptom cluster (reexperiencing, hyperarousal, or numbing/avoidance). All PCL-C responses with more than one missing item were not included in the analysis.

OTHER PSYCHIATRIC DISORDERS

Other psychiatric disorders were assessed with the Patient History Questionnaire, a validated primary care screening questionnaire,³⁶ that screens for major depressive disorder, panic disorder, and eating disorders consistent with diagnostic criteria in *DSM-IV*.³¹

Somatoform syndromes cannot be definitively diagnosed without a detailed clinical history to rule out underlying medical explanations for multiple somatic complaints. However, the Patient History Questionnaire contains a series of questions to screen for a high level of somatic distress. Patients are presented with a list of 13 common physical symptoms (eg, stomach pain, back pain, joint pain, headaches, dizziness, fainting spells) and are asked whether they were “not bothered at all,” “bothered a little,” or “bothered a lot” by each symptom. Patients who indicated that they were “bothered a lot” in the past month by 4 or more of these physical symptoms were considered to screen positive for somatization.

ALCOHOL-RELATED PROBLEMS

The prevalence and associated features of hazardous alcohol use were a primary focus of this survey as described elsewhere.²⁹ For this report we used the 5-item TWEAK screening questionnaire to measure drinking-related problems. A standardized, evidence-based review suggests that this is the most sensitive brief screening test for female at-risk drinkers.³⁷ TWEAK asks about *tolerance*, others *worrying* about the patient's drinking, morning drinking (*eye-opener*), *amnesia* after drinking (blackouts), and *kutting-down* on drinking. The tolerance and worrying items are each scored 2 points for a positive response; all other questions are scored 1 point for a positive response. Based on previous validation studies, we used a score of 2 or more on the TWEAK as a positive screening test for problem drinking.³⁸ The TWEAK has a sensitivity of 0.79 and specificity of 0.83 for detecting an average consumption of 2 or more drinks per day.³⁸

DRUG ABUSE

To assess drug abuse, we included a modified version of a previously validated 2-item drug screen that asked, “Have you ever used drugs more than you meant to?” and “Have you ever felt

that you wanted to or needed to cut down on your drug use?" When used to assess both alcohol and drug use, these questions had a sensitivity and specificity of 0.81.³⁹ Response options were "no," "yes but not in the last year," or "yes, in the last year."³⁹ Patients who answered yes to both questions were considered to have screened positive for lifetime drug abuse.

OTHER HEALTH RISKS

If patients reported smoking cigarettes within the past year, they were considered past-year smokers. To evaluate high-risk sexual practices, the survey asked about the number of male sexual partners in the past year; a score of 2 or more was considered to represent increased risk. The survey also included a previously reported screening question, "At any time, has a partner ever hit, kicked or otherwise physically hurt you?" to measure the presence or absence of lifetime exposure to domestic violence.⁴⁰

HEALTH-RELATED QUALITY OF LIFE

Health-related quality of life (HRQOL) was assessed using the veteran's version of the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36-V), scored according to published protocols.^{41,42} The veteran's version of this instrument includes improvements to the original "role limitation" questions to allow for 5-point ordinal choices rather than simple yes/no responses.⁴² The 36 items were coded into 8 subscales, standardized from 1 to 100, that reflect physical and mental domains of functioning. Lower scores indicate poor functioning. Additionally, standardized physical and mental composite summary scores were calculated.

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

The Women's Health Survey inquired about demographic and clinical characteristics and preventive health screening. Respondents were also asked whether they had ever experienced life-threatening medical problems (cancer, myocardial infarction, stroke), gynecologic conditions (breast cancer, cervical cancer, chronic pelvic pain, premenstrual syndrome, breast pain), or other commonly reported conditions (eg, hypertension, diabetes, fibromyalgia, irritable bowel syndrome, osteoporosis).

STATISTICAL METHODS

Analyses were conducted for 1206 women who returned questionnaires with at least 16 of the 17 PCL-C items completed. Demographic characteristics of the participants and nonparticipants were compared using χ^2 and *t* tests for categorical and continuous variables, respectively. Demographic characteristics of women who screened positive or negative for PTSD were compared using the χ^2 and independent-sample *t* tests. The association between screening positive for PTSD and reporting health risks, other psychiatric disorders, and medical problems was assessed using logistic regression to compute age-adjusted odds ratios with 95% confidence intervals.

Mean SF-36-V subscale and composite scores in women who screened positive or negative for PTSD were compared using the independent-sample *t* test. To determine the independent association between PTSD and HRQOL, a secondary analysis was conducted to evaluate the association between screening positive for PTSD and being in the lowest quartile for each SF-36-V subscale. First, all demographic characteristics, health risks, other psychiatric disorders, and self-reported medical problems were included in the model to identify significant associations with the dependent variable (lowest quartile SF-36-V

scores). With the exception of the PTSD screening status, all statistically significant ($P < .05$) predictors of the dependent variable were then allowed to enter into the model using the stepwise entry method. PTSD screening status was entered last into the model to test its incremental effect on the association between PTSD status and the SF-36-V subscale. This process was repeated for each SF-36-V subscale. Only individuals with valid survey responses for all covariates were included in each model, resulting in variably reduced sample sizes. All analyses were performed using SPSS statistical software.⁴³

RESULTS

CHARACTERISTICS OF RESPONDENTS

Of the 1935 women surveyed, 1259 (65%) returned a completed survey. Of these, 1206 women (62% of eligible patients, 95.8% of respondents) completed at least 16 of the 17 items on the PCL-C and were included in analyses. The mean \pm SD age was 45.9 ± 15.9 years. Sixty-one percent ($n = 742$) had been married at some time in their lives, 72% were white ($n = 864$), and 84.2% ($n = 1008$) had at least some college education.

Of the 1206 PCL-C respondents, 266 (22%) screened positive for past-month PTSD (PCL-C score ≥ 50). Demographic variables associated with PTSD are presented in **Table 1**. Women screening positive for PTSD were younger and more likely to be separated or divorced than women screening negative for PTSD.

HEALTH RISKS, PSYCHIATRIC DISORDERS, AND SELF-REPORTED MEDICAL PROBLEMS ASSOCIATED WITH PTSD

Table 2 and **Table 3** present the age-adjusted odds of self-reported health conditions given positive PTSD screening status. Controlling for age, women screening positive for PTSD were more likely to screen positive for many health risks including substance use problems, smoking, multiple sexual partners, and history of domestic violence. Women who screened positive for PTSD also endorsed higher levels of somatic distress and were more likely to screen positive for depression, eating disorders, and panic disorder. They reported higher rates of medical conditions including obesity, fibromyalgia, irritable bowel syndrome, emphysema, and sexually transmitted disease.

RELATIONSHIP BETWEEN PTSD AND HRQOL

Mean scores (1 SD) on SF-36-V subscales in the study population were as follows: physical functioning, 59.9 (30); role-physical, 60.5 (33); bodily pain, 48.2 (26); general health, 54 (25); role-emotional, 69.9 (32); mental health, 63.3 (24); vitality, 41.0 (26); social functioning, 60.5 (33); physical composite, 39.4 (11); and mental composite, 43.0 (15). Women screening positive for PTSD had significantly lower mean SF-36-V scores on all 8 subscales and on both composite scales (**Figure**). Logistic regression analyses (**Table 4**) of the subset of women who gave valid responses on all covariates ($n = 758-782$) indicated that screening positive for PTSD was associated with poor HRQOL even after controlling for demographic and health

Table 1. Demographic Variables Associated With Posttraumatic Stress Disorder (PTSD) Symptoms*

Variable	Total (N = 1206)	PTSD Screen Negative (n = 940)	PTSD Screen Positive (n = 266)	P Value
Age, mean ± SD, y	46 ± 15	47 ± 15	42 ± 11	<.001
Age category, y				
<35	274 (23)	217 (23)	57 (21)	<.001
35-49	560 (46)	402 (43)	158 (59)	
≥50	372 (31)	321 (34)	51 (19)	
Race				
Black	160 (13)	122 (14)	38 (15)	.07
White	880 (73)	696 (77)	184 (71)	
Other	123 (10)	86 (10)	37 (14)	
Education				
No college	151 (13)	126 (14)	25 (10)	.08
Some college	589 (49)	443 (49)	146 (56)	
College graduate	425 (35)	336 (37)	89 (34)	
Marital status				
Never married	196 (16)	152 (17)	44 (17)	.005
Married or widowed	581 (48)	473 (52)	108 (42)	
Separated/divorced	390 (32)	283 (31)	107 (42)	

*Data are number (percentage) of women unless otherwise indicated.

Table 2. Health Risks and Psychiatric Disorders Associated With Posttraumatic Stress Disorder (PTSD) Symptoms

Health Risks	No. (%) of Women		Odds Ratio (95% CI)*
	PTSD Screen Negative (n = 940)	PTSD Screen Positive (n = 266)	
Problem drinking screen positive	181/902 (20.1)	79/253 (31.2)	1.68 (1.22-2.30)
Drug problem screen positive	57/900 (6.3)	51/253 (20.2)	3.56 (2.36-5.37)
Past year smoking positive	210/916 (22.9)	102/258 (39.5)	2.04 (1.52-2.75)
Victim of domestic violence (lifetime)	293/875 (33.5)	139/240 (57.9)	2.58 (1.92-3.46)
Multiple sexual partners past year	64/921 (7.1)	35/260 (13.5)	1.85 (1.19-2.89)
Psychiatric disorders			
Somatization screen positive	148/940 (15.7)	134/266 (50.4)	5.16 (3.82-6.96)
Panic disorder screen positive	37/926 (4.0)	124/263 (47.1)	21.4 (14.1-32.4)
Eating disorder screen positive	60/940 (6.4)	66/266 (24.8)	5.00 (3.37-7.38)
Major depression screen positive	73/940 (7.8)	166/266 (62.4)	18.9 (13.4-26.8)

*Odds ratio and 95% confidence interval (CI) are age adjusted.

variables, including depression and the other mental health screening tests listed in Tables 1 and 2.

COMMENT

To our knowledge, this is the first report to document the results of PTSD screening in a general sample of female VA patients. It reveals a high prevalence of current PTSD symptoms in these patients. The past-month PTSD screening prevalence rate was 21% among the 1259 survey respondents (22% of the 1206 PCL-C completers). Previous studies using interviews instead of self-report questionnaires have reported prevalence rates of 2.3% to 7.3% in women in nonclinical community samples.^{1,44,45} However, our prevalence rate approximates the 20% screening prevalence rate in male veteran outpatients.⁴⁶ The data are consistent with our a priori hypotheses that screening positive for PTSD is associated with a range of self-reported health problems and functional impairments among female VA patients. The data presented here extend previous findings by showing that, in a substan-

tial subset of female veteran patients, PTSD symptoms are associated with self-reported psychiatric and physical problems as well as with poor HRQOL in physical and mental domains.

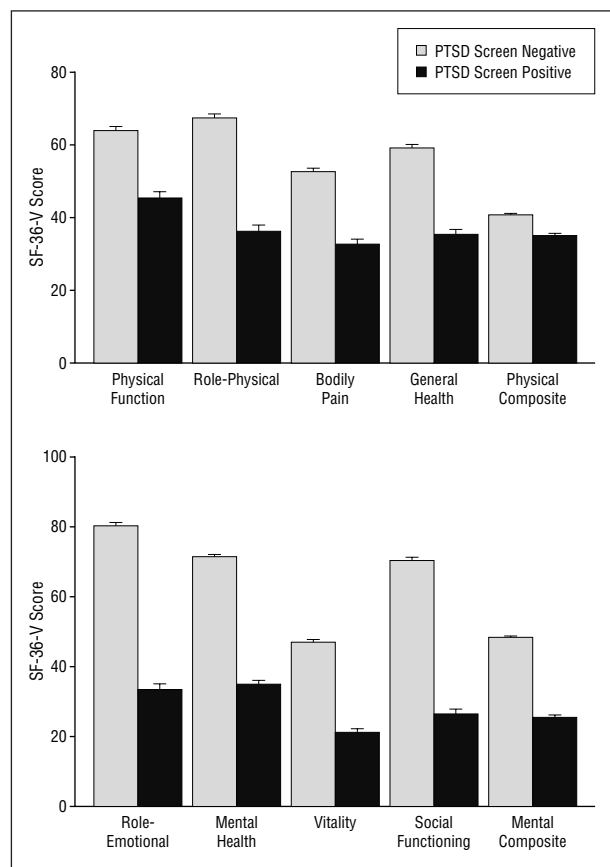
This study supports previously reported associations between PTSD, poor physical health, and negative health perceptions in both male and female veteran and nonveteran samples.^{23,24,47-52} This survey was administered in a single VA health care system. Although the survey response rate of 65% was consistent with mailed surveys to other clinical populations⁵³ and higher than reported in mailed surveys to other VA patients,⁴² results cannot necessarily be generalized to all female veterans or to nonveteran female patients. However, other investigators have also reported significant functional disability among the women seen for care in VA facilities. Female VA outpatients surveyed in the Boston (Mass) area as part of the VA Women's Health Project reported poor HRQOL relative to both male VA outpatients and nonveteran women.⁵⁴ In comparison, the respondents in our sample were younger (mean age, 45.9 vs 52.6 years) and

Table 3. Self-reported Medical Problems Associated With Posttraumatic Stress Disorder (PTSD) Symptoms

Problem	No. (%) of Women		Odds Ratio (95% CI)*
	PTSD Screen Negative (n = 940)	PTSD Screen Positive (n = 266)	
Fibromyalgia	72/899 (8.0)	49/255 (19.2)	3.00 (1.98-4.45)
Stroke	28/905 (3.1)	13/256 (5.1)	2.87 (1.36-6.04)
Irritable bowel syndrome	164/914 (17.9)	94/254 (37.0)	2.82 (2.06-3.85)
Chronic pelvic pain	131/909 (14.4)	84/251 (33.5)	2.75 (2.00-3.81)
Premenstrual syndrome	223/908 (24.6)	125/256 (48.8)	2.65 (1.98-3.55)
Polycystic ovary disease	53/905 (5.9)	35/253 (13.8)	2.54 (1.60-4.01)
Cervical cancer	35/916 (3.8)	18/257 (7.0)	1.96 (1.08-3.55)
Emphysema	95/891 (10.7)	35/253 (13.8)	1.88 (1.21-2.92)
Obesity†	332/940 (35.3)	125/266 (47.0)	1.78 (1.34-2.35)
Myocardial infarction or coronary artery disease	46/907 (5.1)	12/256 (4.7)	1.76 (0.86-3.60)
Sexually transmitted diseases (lifetime)	169/911 (18.6)	80/262 (30.5)	1.68 (1.22-2.32)
Asthma	153/885 (17.3)	62/254 (24.4)	1.64 (1.17-2.31)
Hysterectomy	302/913 (33.1)	90/260 (34.6)	1.53 (1.12-2.09)
Diabetes	70/915 (7.7)	23/257 (8.9)	1.51 (0.90-2.52)
Hypertension	269/924 (29.1)	73/261 (28.0)	1.24 (0.90-1.71)

*Odds ratio and 95% confidence interval (CI) are age adjusted.

†Defined as body mass index (calculated as weight in kilograms divided by square of height in meters) >30.



Mean (SE) Medical Outcomes Study 36-Item Short-Form Health Survey, veteran's version (SF-36-V), subscale scores in women screening negative or positive for posttraumatic stress disorder (PTSD). $P < .001$ for PTSD screen negative vs PTSD screen positive on all subscales.

better educated (84% attending college vs 65%). Nonetheless, the overall mean SF-36-V subscale scores were still extremely similar between these 2 geographically distinct groups of women, indicating that the association

Table 4. Odds of Reporting Lowest Quartile SF-36-V Scores Among Women Screening Positive for Posttraumatic Stress Disorder

SF-36-V Subscale (n)*	Odds Ratio (95% CI)
Physical function index (782)	1.73 (1.00-3.02)
Role functioning: physical (769)	2.36 (1.39-4.01)
Bodily pain (782)	2.11 (1.26-3.54)
General health perceptions (775)	3.45 (2.05-5.78)
Role functioning: emotional (778)	7.28 (4.22-12.56)
Mental health index (778)	5.42 (3.19-9.22)
Vitality (778)	1.44 (0.86-2.41)
Social functioning (779)	3.62 (2.15-6.09)
Physical Composite Score (758)	1.77 (1.14-2.74)
Mental Composite Score (758)	8.64 (4.80-15.57)

Abbreviations: CI, confidence interval; SF-36-V, veteran's version of the Medical Outcomes Survey 36-Item Short-Form Health Survey.

*n indicates the number of women who had valid survey responses to all tested covariates.

between PTSD and poor HRQOL may be generalizable to other groups of female VA patients.

The observed association between PTSD symptoms and obesity in our report is unique and worrisome. Although associations between obesity and criminal victimization and/or childhood abuse have been reported by other investigators,^{35,36} the relationship between PTSD and obesity has not been specifically described. Given the potential impact of obesity on the long-term health of female veterans, this association deserves further investigation.

There are several important limitations. Study results were based on a self-administered cross-sectional survey, thus precluding causal interpretations. Patients who have PTSD may be more likely to engage in risky behaviors such as smoking and excessive alcohol use, which contribute to deterioration in health. Neurochemical or hormonal changes associated with PTSD could also lead to adverse health effects. Depression is often asso-

ciated with PTSD and is known to adversely affect physical health and health outcomes. Patients who suffer from PTSD tend to isolate themselves from social situations and support, potentially contributing to poorer health. In addition, medications used to manage PTSD may have health-related side effects. Finally, it is possible that women with poorer health are more likely to report PTSD symptoms, and thus these findings reflect reporting bias. Alternatively, self-report screening measures may not accurately estimate the health effects of smoking, substance abuse, and sexual practices, or medical conditions. Although we conservatively estimated the independent effects of PTSD symptoms on HRQOL by statistically controlling for the associations with major depression, panic disorder, eating disorders, somatization, and substance abuse, unmeasured confounding variables could have existed. For instance, childhood abuse could be associated both with adult PTSD symptoms and with adverse health outcomes.

Another limitation of this study is that the PTSD screening measure, the PCL-C, does not assess trauma exposure. Thus, the trauma-related PTSD symptoms endorsed by respondents may refer to experiences that do not meet the *DSM-IV* "criteria A" definition of trauma.³¹ However, epidemiologic studies indicate that 68% to 89% of women in community samples endorse a qualifying lifetime traumatic experience.^{2,4,57} Furthermore, structured clinical interviews recently conducted on a randomly recruited sample of 303 female VA Puget Sound Health Care System outpatients indicate that 83% had experienced a lifetime traumatic event that met *DSM-IV* PTSD criteria A, and 77% reported a lifetime history of sexual or physical assault.⁵⁸ Thus, while we cannot verify that survey respondents who screened positive for PTSD met all diagnostic criteria for trauma, the interview data suggest that lifetime exposure to the types of trauma most likely to cause PTSD is extremely common in this population. Moreover, we used a cutpoint score of 50 on the PCL-C to maximize the specificity of our PTSD screening.

To summarize, symptoms of PTSD in female VA patients are associated with physical and mental illness and significant functional impairment. This association persists after controlling for important confounders, including depression. The potential impact of PTSD on health care delivery for women served in VA settings is therefore substantial. Other investigators have reported that female VA patients appear to underuse mental health services,⁵⁹ and that PTSD in these women is underdiagnosed.⁶⁰ Thus, primary care providers may need to become increasingly aware of the association between PTSD and poor health. More efficient screening instruments are needed to detect PTSD symptoms in primary care settings. Longitudinal studies are needed to further determine whether a causal relationship exists between PTSD symptoms and health status.

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