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The Relationship between Post-Traumatic Stress Symptoms and Physical Health in a Survey of U.S. Iraq and Afghanistan Era Veterans

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Abstract

Objective—While a large body of literature has linked posttraumatic stress disorder (PTSD) with poor physical health among older veterans, less is known regarding the association between PTSD and health among relatively younger cohorts of veterans. The current study examined the association between PTSD and self-reported health among a sample of veterans who served in the recent conflicts in Iraq and Afghanistan.

Method—Veterans ($N=1,030$) who served in the wars in Iraq and Afghanistan completed measures of PTSD symptom severity and self-rated health between September 2009 and February 2010. Analyses examined the association between PTSD symptoms and health outcomes.

Results—In analyses adjusted for age, gender, race, and combat exposure, PTSD symptom severity was positively related to the number of health conditions and health symptoms reported ($p < 0.001$). Additionally, in analyses adjusted for age, gender, race, combat exposure, number of health conditions, and number of health symptoms, PTSD symptom severity was associated with increased likelihood of rating one's health as poor or fair and increased likelihood of reporting that one's physical health limits participation in activities ($p < 0.001$).

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Conflict of interest

All of the authors declare that they have no conflicts of interest.

Conclusion—These findings suggest that, consistent with previous research, PTSD symptom severity has a broad negative effect on physical health among Iraq and Afghanistan era veterans. Health promotion among veterans with PTSD may help attenuate risk of physical health consequences.

Keywords

PTSD; physical health; veterans; OEF/OIF

Introduction

While prevalence estimates vary, approximately 23% of military personnel who served in the wars in Afghanistan and Iraq (i.e., Operation Enduring Freedom [OEF] and/or Operation Iraqi Freedom [OIF]) meet criteria for posttraumatic stress disorder (PTSD).¹ PTSD has been associated with increased self-reported health symptoms, objectively measured medical morbidity, and increased health service utilization.^{2 and 3} Although the majority of research examining PTSD and health has been conducted in older veteran samples,^{2, 4, and 5} there is some evidence that PTSD may be related to health concerns even among relatively younger veterans returning from Iraq and Afghanistan. Among OEF/OIF veterans presenting to a VA primary care clinic, PTSD symptoms were significantly negatively correlated with all eight subscales on a measure of health-related quality of life.⁶ Similarly, OEF/OIF Army members one year post-deployment who screened positive for PTSD were more likely to report multiple physical health symptoms (e.g., stomach pain, fainting spells, chest pain), to visit sick call two or more times, and to miss two or more work days than those who screened negative for PTSD.⁷ These results are consistent with studies of veterans who served in the first Gulf War where veterans who screened positive for PTSD endorsed significantly more physical health symptoms and more medical conditions than those who did not screen positive.⁸ Both the number of physical health symptoms and number of medical conditions were significantly correlated with the severity of PTSD symptoms.^{8 and 9}

Schnurr & Green³ have proposed a model in which multiple factors account for the relationship between trauma, PTSD, and poorer physical health. These factors are thought to include attentional biases related to somatic symptoms (e.g., increased focus on somatic symptoms), changes in psychological functioning, alterations in biological functioning (e.g., brain functioning, immune system functioning), health risk behaviors (e.g., substance use, reduced self-care), and illness behaviors (e.g., utilization of healthcare). These factors are thought to be interactive and cumulative, resulting in an overall negative impact on health through increased allostatic load, or burden due to physiological regulation of arousal and hyperactivity, as well as associated neurobiological, psychological and behavioral changes.³

The purpose of the present study was to extend previous research on the relationship between PTSD symptom severity and physical health in older veterans by examining this relationship in OEF/OIF veterans. In particular, we sought to examine whether the negative effect of PTSD symptom severity is specific to certain types of health conditions and symptoms.⁸ We hypothesized: (1) PTSD symptom severity would be associated with a decreased likelihood of rating one's health positively; (2) PTSD symptom severity would be

associated with an increased likelihood of reporting that one's physical health limits activities; and (3) PTSD symptom severity would be positively associated with both the number of health conditions and number of health symptoms reported. We also explored the relationship between PTSD symptom severity and specific categories of health conditions and symptoms.

Material and Methods

Sampling Strategy, Participants, and Procedure

The measures for this paper were completed as part of a larger survey study designed to assess the needs and treatment preferences of returning veterans.^{10, 11 and 12} A random sample of 5,000 OEF/OIF veterans with a last known address in the VA Mid-Atlantic Region catchment area (i.e., North Carolina, most of Virginia, and the southeastern corner of West Virginia), was contacted and asked to take part in the OEF/OIF Veterans Health and Needs Study. Potential VA-eligible service members were identified in collaboration with the Defense Manpower Data Center based upon status of separation from active duty military service or return from deployment (National Guard or Reserves). To be eligible for the current study, veterans had to be eligible for VA healthcare and currently reside in the U.S. Of the 5,000 veterans identified, 72 (1.4%) were determined to be ineligible (e.g., deceased, deployed) and 924 (18.5%) surveys were undeliverable (returned to sender). Of the 4,004 surveys that were delivered, 1,161 surveys were completed and returned, resulting in a cooperation rate of 29.0% (response rate of 23.6%).¹³

Approvals for this project were obtained from both the Durham VA Medical Center Institutional Review Board and the VA Office of Management and Budget (OMB 2900-0728). The sample was identified through a data use agreement with the VA Environmental Epidemiology Service.

A modified Dillman procedure was utilized in which all participants received a 60-item survey package including an informed consent form, and if needed, a follow-up letter and duplicate survey.¹⁴ Surveys were returned to a survey management company and deidentified. All survey data were, therefore, anonymous to encourage participants to honestly report their experiences. No compensation was provided to participants in this study.

Measures

Demographic characteristics and military history—Participants completed multiple survey items assessing demographic characteristics, including age, gender, race, marital status, and employment status. Additionally, participants were asked multiple questions about their military careers, including their branch, component, rank, the number of times they were deployed, and whether they suffered an injury that has been deemed service-connected by VA.

Combat exposure—The Combat Experiences Scale¹⁵ was used to assess combat exposure. Participants indicated whether or not they had experienced 17 different combat

situations during their deployment(s). The total number of endorsed experienced was summed to result in total scores (i.e., combat sum) ranging from 0 to 17.

PTSD Symptom Severity—The PTSD Checklist (PCL)¹⁶ was administered to participants to assess the severity of PTSD symptoms in the month prior to completing the survey. The 17-items on the PCL correspond to the diagnostic criteria for PTSD in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR).¹⁷ Scores from the PCL have been shown to be reliable and valid in previous research.¹⁷ The total score on the PCL is the sum of all items and can range from 17 to 85; these scores were then standardized (i.e., z-scores were computed) for the purposes of analysis.

Depression—The Patient Health Questionnaire – 2 (PHQ-2)¹⁸ was used to screen for the presence of depression in the sample. Participants were asked to report how often they experienced depressed mood and anhedonia over the two weeks prior to completing the survey¹⁸ on a scale from 0 (*not at all*) to 3 (*nearly every day*). Participants with total scores of three or higher were considered to have screened positive for depression.¹⁸ and ¹⁹ Criterion and construct validity of scores from the PHQ-2 has been established.^{18, 19} and ²⁰

Self-reported health—Two items from the Medical Outcomes Study 12-item short-form (SF-12)²¹ were used to assess veterans' self-rated health and their self-rated limitations in moderate activities due to their health. Specifically, participants were asked to rate their general health as excellent, very good, good, fair, or poor; these responses were dichotomized such that ratings of excellent, very good, and good were combined in one category and ratings of fair and poor were combined to comprise the other category. Additionally, participants were asked whether their health limits them in moderate activities; answer choices were no, not limited at all; yes, limited a little; and yes, limited a lot. For the present analyses, response options were dichotomized as yes/no.

Health conditions—Participants were provided with a list of 17 physical health conditions (see Table 1) and asked to indicate whether a health care provider had ever diagnosed them with each condition. The total number of health conditions was computed by summing the number of endorsed items. Additionally, dichotomous (yes/no) variables were computed to indicate whether participants endorsed any health conditions in ten categories following the methods of Barrett et al.⁸

Health symptoms—Participants were also asked to rate the severity of 24 health symptoms (see Table 1) during the month prior to survey completion; rating options were none, mild, and severe. The total number of health symptoms was computed by summing the number of symptoms participants reported experiencing in the past month at either a mild or severe level. Dichotomous variables were computed to indicate whether participants endorsed any health symptoms in nine categories.

Statistical Analyses

All data were entered into SPSS, Version 21, for analysis. For participants missing three or fewer items on the PCL, the mean item rating for the symptom cluster of the missing item

was imputed. If a participant was missing more than three items, they were excluded from the analyses. Because the PHQ-2 only contains two items, imputation was not done for this measure, and participants missing responses to one or more PHQ-2 items were excluded from the analyses. After excluding participants due to missing data on the PCL and PHQ-2, the final sample size was 1,030. For the demographic and military variables included as covariates, multiple imputation with 10 iterations was used to impute missing data; all demographic and military variables in Table 2 were included in the imputation model. Results from the pooled data are reported in this manuscript. In order to evaluate possible non-response bias based on the continuum of resistance model,²² the demographic characteristics of participants who responded to the first survey invitation were compared to those who responded to the second mailing. Chi-square tests, independent samples Mann-Whitney U tests, and independent samples *t*-tests were used for these comparisons; the choice of statistical test depended on the nature of the variable (i.e., continuous vs. categorical) and the distribution of the variable.

In order to examine the relationship between PCL score and health, a series of regression analyses were run. Because almost all veterans reported some symptoms of PTSD (i.e., only 20.4% of participants obtained the minimum total score of 17), the PCL was treated as a continuous measure of PTSD symptom severity. Because the total number of health conditions and health symptoms were both positively skewed, zero-inflated distributions, negative binomial regressions were run. For dichotomous outcomes (i.e., self-reported health, limitations in activities, categories of health conditions, and categories of health symptoms), logistic regressions were run. Age, gender, race (White vs. non-White), combat sum, and depression screening (negative vs. positive) were entered as covariates in all regression equations. In the analyses examining self-rated health and whether health limits physical activities, the number of health conditions and number of health symptoms were also entered as covariates. Due to the number of analyses conducted, predictors were considered statistically significant if $p < 0.01$.

Currently, there is debate as to whether PTSD and depression following trauma are separate constructs. One concern is that there several symptoms of PTSD overlap with symptoms of depression.^{23, 24, and 25} While some studies have suggested that it is possible to differentiate between PTSD and depression symptoms,^{23 and 26} other studies have found evidence that PTSD symptoms and depression symptoms following a traumatic event are best conceptualized as a unitary construct, particularly when the two disorders co-occur.^{24 and 27} However, major depressive disorder has been linked to poor health and decreased functional status^{28, 29, and 30} and could account for the relationship between PTSD and health.^{31 and 32} For this reason, we chose to run the analyses both ways.

Results

Demographic characteristics and military history information for the 1,030 participants included in the analyses is presented in Table 2. A comparison of participants who responded to the first survey invitation (i.e., “early responders;” $n = 978$) and those who responded to the second mailing (i.e., “late responders;” $n = 183$) on demographic and outcome variables indicated that early and late responders did not differ on PTSD symptom

severity or number of combat situations experienced. The proportion of participants who screened positive for depression did not differ between early and late responders, and the proportion of participants with missing PCL data and missing PHQ-2 data did not differ between early and late responders. Similarly, there were no differences in the majority of demographic factors including race, the proportion of female participants, employment status, military branch, number of deployments, the proportion of veterans who had served in the Reserves/National Guard, the proportion of officers, and the proportion of participants who suffered a service-connected injury. Early responders were slightly older ($M_{age} = 39.25$) than late responders ($M_{age} = 37.62$; $t(1153) = 2.05$, $p = 0.04$), and early responders were more likely to be married or living as married (72.6%) than late responders (62.7%; $\chi^2(1) = 7.16$, $p = 0.007$).

Results of the negative binomial regressions examining the effect of PCL score on the number of health conditions reported and the number of health symptoms reported are presented in Table 3. These results indicate that PCL score is positively related to both number of health conditions and number of health symptoms endorsed. Age was also a significant positive predictor of both outcomes, and gender was a significant predictor of the number of health symptoms with females endorsing more health symptoms than males.

Analyses examining the effect of PCL score on both self-reported health rating and self-reported limitation of activities due to health problems are presented in Table 4. These results indicate that PCL score was positively associated with the odds of rating one's health as poor or fair. For every one standard deviation increase in PCL score, participants were 2.76 times more likely to report poor or fair health rather than good, very good, or excellent health. Additionally, PCL score was associated with increased odds of reporting that one's health limits engagement in moderate activities ($OR = 2.33$). Both the number of reported health conditions and health symptoms were significant predictors in both models, with results indicating that participants who reported more health conditions and more health symptoms were more likely to rate their health as poor or fair (vs. good, very good, or excellent) and more likely to say that their physical health limits their activities. Females were less likely than males to report that their physical health limits their activities ($OR = 0.50$).

The adjusted odds ratios for the effect of PCL score on each category of health conditions and health symptoms are presented in Table 5. Results indicate that PCL score was positively related to the odds of endorsing at least one health condition in seven of the 10 categories assessed (i.e., endocrine disorders, nervous system or sensory organ disorders, circulatory system disorders, respiratory system disorders, digestive system diseases, musculoskeletal system disorders, and ill-defined conditions). For every one standard deviation increase in PCL score, participants were 1.26 to 2.14 times more likely to report having been diagnosed with a health condition in these categories (see Table 5). PCL score was also positively associated with the odds of endorsing at least one health symptom in all nine categories assessed. Specifically, the odds of endorsing at least one symptom in these categories increased 1.67 to 4.15 times for every one standard deviation increase in PCL score.

Discussion

The purpose of this study was to examine the relationship between PTSD symptom severity and physical health among a sample of OEF/OIF veterans. As hypothesized, the results indicate that after controlling for age, gender, race, and combat exposure, PTSD symptom severity was associated with greater numbers of both health conditions and health symptoms, increased likelihood of rating one's health as poor or fair, and increased likelihood of reporting moderate activities are limited by physical health. PTSD symptom severity was also positively related to odds of endorsing all categories of health symptoms and seven categories of health conditions. Age was also a significant predictor of the number of reported health conditions and health symptoms, with older veterans reporting more conditions and symptoms. Age did not predict self-reported health or health limiting activities when adjusting for health symptoms and conditions, which may suggest that the number of health conditions and health symptoms are more important factors than age in those relationships. Gender was related to the number of health symptoms endorsed, with females endorsing more health symptoms than males. Additionally, females were less likely to report that their health limits their activities after adjusting for the effects of age, combat exposure, health conditions, health symptoms, and PTSD symptom severity.

These results confirm and extend the relationship between PTSD and poor health in veterans of previous conflict eras,^{8 and 33} to those having served during the recent conflicts in Iraq and Afghanistan. Given that PTSD symptom severity was associated with increased likelihood of endorsing at least one symptom in all nine categories assessed and at least one condition in seven of the ten categories assessed, these results suggest that PTSD symptom severity has a broad negative effect on physical health. Specifically, these results support that PTSD sequelae to stressful events may induce multiple psychological, behavioral, and physiological processes which confer increased risk of poor physical outcomes.³ Consistent with this hypothesis, studies have consistently found that, along with higher engagement in health risk behaviors (e.g., smoking), individuals with PTSD demonstrate autonomic dysfunction, such as cardiovascular reactivity and sleep disruption, which has been linked to higher comorbidity and mortality.^{34 and 35} While it appears likely that multiple mechanisms are involved in the relationship between PTSD symptoms and physical health, continued research in this area, particularly in the identification of modifiable behavioral and biological mechanisms, is important to improve the physical health of these individuals.

While the primary analyses presented do not include the results of the depression screening as a covariate, additional analyses (included as footnotes in Tables 3 and 4 and in the last column in Table 5) were run with depression included as a covariate due to the debate about whether PTSD symptoms and depression symptoms following trauma are separate constructs (see Statistical Analyses section for further discussion of this issue). The results indicate that, in general, the effects of PTSD remain significant even when controlling for the results of the PHQ-2 depression screening. This finding suggests that symptoms specific to PTSD are particularly relevant to physical health problems.

The findings from this study should be interpreted in light of its limitations. First, the study design is correlational and therefore directionality cannot be established. Furthermore, the

response rate (23.6%; cooperation rate 29.0%) for this survey was low, which may limit the generalizability of the results; however, this rate is consistent with other mail survey studies using OEF/OIF samples (e.g., 21.9%–33%).^{36, 37, 38, 39 and 40} Exposure to other events that may impact mental health status (e.g., toxins, non-combat traumas) was not assessed in the current study; in particular, the effects of childhood trauma and military sexual trauma were not specifically assessed, but it is unknown what traumatic event(s) participants considered when they completed the PCL. Additionally, the results of this study may be confounded by the presence of comorbid physical disorders (which may have fallen in different categories) and mental disorders, particularly traumatic brain injury and substance use disorders, which may also have deleterious effects on physical health. Finally, results of the study can be generalized only to recently deployed veterans.

Conclusions

The results of the current study add to the growing literature suggesting an association between PTSD symptoms and physical health. The results of the current study extend previous findings by documenting that severity of PTSD symptoms was associated with poorer health status in veterans of recent conflicts. These findings are important because a high percentage of OEF/OIF veterans report symptoms of PTSD, suggesting that healthcare providers may need to be attentive to recognizing and evaluating physical health issues among this cohort of veterans, as well as encouraging engagement in positive health behaviors among those whose PTSD symptoms may place them at increased risk. These findings are consistent with previous qualitative research in which veterans and their spouses requested increased health promotion and disease prevention (e.g., sleep hygiene, smoking cessation, reduction of alcohol misuse⁴¹) efforts in addition to effective PTSD-specific treatments for returning veterans.

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TABLE 1

List of Assessed Health Conditions and Health Symptoms

Category	Health condition(s) assessed
Neoplasms	Cancer
Endocrine disorders	Diabetes or high blood glucose level
Nervous system or sensory organ disorders	Hearing loss Epilepsy or seizures
Circulatory system disorders	Heart problems High blood pressure
Respiratory system disorders	Asthma and other breathing problems Allergies Sinusitis
Digestive system diseases	Irritable bowel syndrome Ulcers Liver problems
Genitourinary system disorders	Kidney problems
Skin disorders	Skin rashes (dermatitis)
Musculoskeletal system disorders	Fibromyalgia Arthritis
Ill-defined conditions	Chronic fatigue syndrome
Category	Health symptom(s) assessed
Constitutional symptoms	Sore throat, hoarse voice, or throat problems (not related to a cold) Fatigue lasting more than 24 hours after exertion
Neurologic symptoms	Headaches Dizziness Fainting spells Hearing loss or ringing in the ears Vision problems
Cardiovascular symptoms	Chest pain Feeling your heart pound or race
Gastrointestinal symptoms	Stomach pain Constipation Loose bowels or diarrhea Nausea, gas, or indigestion
Genitourinary symptoms	Problems with your menstrual cycle or fertility problems Pain or problems during sexual intercourse Sexual disinterest or impotence
Dermatologic symptoms	Skin disorders, itching, or extreme dryness
Musculoskeletal symptoms	Back pain Pain in your arms, legs, or joints Generalized muscle aching or cramps

Dental symptoms	Teeth grinding
	Dental problems or pain
Respiratory symptoms	Coughing, wheezing, sinus, or breathing problems
	Shortness of breath

TABLE 2Demographic and Military Information for Participants ($N = 1030$)

Variable	M	SD
Age (in y) [*]	38.63	9.77
Combat sum [†]	4.12	4.02
PCL score [‡]	30.48	15.87
	<i>n</i>	%
Sex		
Male	851	82.6
Female	176	17.1
Missing data	3	0.3
Race		
American Indian/Alaskan Native	10	1.0
Asian	20	1.9
Black or African American	165	16.0
Native Hawaiian/Pacific Islander	7	0.7
White	737	71.6
Other	48	4.7
Missing data	43	4.2
Marital status		
Single, never married	154	15.0
Married	689	66.9
Committed/living as married	33	3.2
Separated	38	3.7
Divorced	101	9.8
Widowed	3	0.3
Missing data	12	1.2
Employment status [§]		
Active duty military	120	11.7
Employed full-time as a civilian	647	62.8
Employed part-time as a civilian	51	5.0
Unemployed	122	11.8
Retired	120	11.7
Disabled	48	4.7
Homemaker	37	3.6
Student	117	11.4
Missing data	4	0.4
Number of deployments		
1	592	57.5
2	291	28.3
3	77	7.5

Variable	M	SD
4 or more	62	6.0
Missing data	8	0.8
Component		
Active duty	632	61.4
Reserves	186	18.1
National guard	188	18.3
Missing data	24	2.3
Branch		
Army	498	48.3
Air force	148	14.4
Coast guard	1	0.1
Navy	224	21.7
Marines	139	13.5
Missing data	20	1.9
Highest rank		
E1–E4	216	21.0
E5–E7	437	42.4
E8 or higher	104	10.1
O1–O3	111	10.8
O4 or higher	154	15.0
Missing data	8	0.8
Service-connected injury		
Yes	367	35.6
No	639	62.0
Missing data	24	2.3
Positive depression screening		
Yes	177	17.2
No	853	82.8

M = mean; SD = standard deviation.

* Age was missing for 5 participants.

† Combat sum was missing for 19 participants.

‡ PCL raw score (i.e., before transformation to z-score).

§ Participants could select multiple responses to this question.

TABLE 3

Results of Negative Binomial Regressions for Total Number of Health Conditions and Total Number of Health Symptoms

Dependent variable	Predictor	<i>b</i>	95% CI for <i>b</i>
Total health conditions	Age	0.036 ***	0.028–0.044
	Sex *	0.208	–0.001–0.417
	Race †	–0.018	–0.201–0.164
	Combat sum	0.012	–0.010–0.034
	PCL score ‡	0.231 ***	0.145–0.317
Total health symptoms	Age	0.010 **	0.003–0.017
	Sex *	0.264 **	0.085–0.443
	Race †	–0.002	–0.158–0.153
	Combat sum	–0.002	–0.021–0.017
	PCL score §	0.373 ***	0.295–0.451

PCL score = *z*-score from PTSD Checklist.

* Male = 0; female = 1.

† White = 0; not white = 1.

‡ When the PHQ-2 depression screening was also entered as a covariate in the model, $b = 0.215$ ***.

§ When the PHQ-2 depression screening was also entered as a covariate in the model, $b = 0.359$ ***.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 4

Results of Logistic Regressions for Self-Reported Health and Whether Health Limits Moderate Activities

Dependent variable	Predictor	<i>b</i>	OR	95% CI for OR
Self-reported health [*]	Age	0.010	1.016	0.995–1.037
	Sex [†]	−0.692 [*]	0.501 [*]	0.286–0.878
	Race [‡]	0.268	1.308	0.854–2.002
	Combat sum	−0.050	0.951	0.902–1.003
	Health cond.	0.288 ^{***}	1.334 ^{***}	1.196–1.489
	Health sym.	0.096 ^{***}	1.100 ^{***}	1.050–1.153
	PCL score [§]	0.953 ^{***}	2.593 ^{***}	2.065–3.255
Health limits activities ^{//}	Age	0.019 [*]	1.019 [*]	1.001–1.037
	Sex [†]	−0.687 ^{**}	0.503 ^{**}	0.317–0.797
	Race [‡]	0.233	1.263	0.875–1.822
	Combat sum	0.005	1.005	0.961–1.051
	Health cond.	0.258 ^{***}	1.294 ^{***}	1.171–1.431
	Health sym.	0.143 ^{***}	1.154 ^{***}	1.107–1.203
	PCL score [¶]	0.477 ^{***}	1.611 ^{***}	1.315–1.973

Health cond. = number of health conditions; Health sym. = number of health symptoms; OR = odds ratio; PCL score = z-score from PTSD Checklist.

^{*} Good/very good/excellent = 0; poor/fair = 1.

[†] Male = 0; female = 1.

[‡] White = 0; not white = 1.

[§] When the PHQ-2 depression screening was also entered as a covariate in the model, $b = 0.767$; OR = 2.153^{***}.

^{//} No = 0; yes = 1.

[¶] When the PHQ-2 depression screening was also entered as a covariate in the model, $b = 0.457$; OR = 1.579^{***}.

^{*} $p < 0.05$.

^{**} $p < 0.01$.

^{***} $p < 0.001$.

TABLE 5

Adjusted Odds Ratios (AORs) for the Effect of PCL Score on Categories of Health Conditions and Categories of Health Symptoms

Dependent variable	AOR for PCL score [*]	95% CI for AOR for PCL score	AOR for PCL score [†]
Health conditions			
Neoplasms	0.604	0.330–1.107	0.605
Endocrine disorders	1.773 ^{***}	1.314–2.393	1.443
Nervous system or sensory organ disorders	1.345 ^{***}	1.153–1.570	1.361 ^{**}
Circulatory system disorders	1.498 ^{***}	1.281–1.752	1.582 ^{***}
Respiratory system disorders	1.260 ^{**}	1.091–1.457	1.313 ^{**}
Digestive system diseases	1.527 ^{***}	1.265–1.844	1.424 ^{**}
Genitourinary system disorders	1.282	0.930–1.769	0.839
Skin disorders	1.215 [*]	1.027–1.436	1.179
Musculoskeletal system disorders	1.369 ^{***}	1.161–1.615	1.303 [*]
Ill-defined conditions	2.144 ^{***}	1.541–2.985	1.239
Health symptoms			
Constitutional symptoms	2.553 ^{***}	2.138–3.048	2.470 ^{***}
Neurologic symptoms	4.150 ^{***}	3.004–5.733	4.600 ^{***}
Cardiovascular symptoms	2.720 ^{***}	2.273–3.256	2.678 ^{***}
Gastrointestinal symptoms	2.140 ^{***}	1.767–2.592	1.871 ^{***}
Genitourinary symptoms	2.346 ^{***}	1.967–2.797	2.083 ^{***}
Dermatologic symptoms	1.673 ^{***}	1.434–1.953	1.618 ^{***}
Musculoskeletal symptoms	3.990 ^{***}	2.671–5.959	4.021 ^{***}
Dental symptoms	1.749 ^{***}	1.500–2.039	1.808 ^{***}
Respiratory symptoms	2.349 ^{***}	1.975–2.793	2.389 ^{***}

PCL = z-score from PTSD Checklist

* Adjusted for age, sex, race, and combat sum.

† Adjusted for age, sex, race, combat sum, and depression.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.