# Letters to the Editor

## Posttraumatic Stress Disorder and Health-Related Quality of Life in Pension-Seeking Canadian World War II and Korean War Veterans

To the Editor: Studying the relationship between posttraumatic stress disorder (PTSD) and health-related quality of life (HRQoL) in older veterans is important, given these individuals' high exposure to traumatic events during combat and their increasing health care needs due to advanced age, which may compound the already greater health care utilization and increased health costs associated with PTSD.<sup>1,2</sup> Many factors can influence the susceptibility to PTSD among elderly veterans, including diminished functional and cognitive capacity and ongoing life stressors.3,4 Current stressors such as retirement or the death of a loved one may precipitate a worsening of PTSD, and, as this population of veterans ages, one can expect not only a worsening of HRQoL due to physical illnesses such as chronic cardiovascular diseases, but also an increase in claims for psychiatric illnesses related to service, such as PTSD.<sup>3,5</sup> Although rates of PTSD in World War II and Korean War veterans were reported to be 7% to 9% in veterans who had never sought psychiatric treatment and as high as 37% to 80% in veterans in psychiatric treatment-seeking populations,<sup>6-13</sup> research on PTSD and its impact on HRQoL in the elderly veteran population is lacking.<sup>14,15</sup>

The relationship between PTSD and HRQoL has been well established in younger combat veterans.<sup>16–22</sup> The few studies that have focused on HRQoL in older veterans have demonstrated a decrease in HRQoL among individuals suffering from PTSD.<sup>21,23,24</sup> The primary goal of this study was to examine the impact of PTSD on HRQoL impairment in older veterans, as well as the extent to which PTSD severity and depression, which is often comorbid with PTSD,<sup>25,26</sup> predict HRQoL impairment. A secondary goal was to examine the relationship between HRQoL and the PTSD symptom clusters of reexperiencing, avoidance/numbing, and hyperarousal.

*Method.* <u>Participants and procedures.</u> Participants were 120 consecutive male World War II and Korean War veterans referred to Veterans Affairs (VA) Canada for a comprehensive psychiatric assessment between September 2000 and December 2008 to determine both new and current pension entitlement for a psychiatric condition and to assess the degree of impairment. The data presented here are based on the results of a retrospective file review of data gathered in the context of the psychiatric assessment, after receipt of Institutional Review Board approval from the Office of Research Ethics at the University of Western Ontario, London, Ontario, Canada.

Instruments. The Clinician-Administered PTSD Scale (CAPS)<sup>27</sup> was administered by a trained clinician to diagnose and assess frequency and intensity of the 17 *DSM-IV* PTSD symptoms. The 21-item Hamilton Depression Rating Scale (HDRS)<sup>28</sup> was used to assess severity of depressive symptoms. HRQoL was assessed using the SF-36 Health Survey (SF-36),<sup>29</sup> which measures functional impairment in 8 domains or subscales. The 8 SF-36 scales can be collapsed into 2 summary scores: a physical component summary (PCS) score, reflecting the 4 physical health subscales, and a mental component summary (MCS) score, reflecting the 4 mental health subscales.<sup>30</sup> All scale scores range from 0 to 100, with higher scores indicating better functioning, and are standardized with the general population for a mean of 50 and standard deviation of 10.<sup>31</sup>

<u>Analyses</u>. All analyses were 2-tailed and computed with SPSS 16 for Macintosh (SPSS Inc., Chicago, Illinois). A total of 25 participants were excluded due to substantial missing data (ie, > 20% of items missing) on the CAPS, HDRS, and SF-36, and 2 participants were excluded for severe cognitive impairment, resulting in a sample size of 120 participants. Data for the remaining 120 participants were missing at random and estimated using maximum likelihood procedures in SPSS Missing Value Analysis software<sup>32</sup> and according to the SF-36v2 software program (QualityMetric Incorporated, Lincoln, Rhode Island).

Results. The age of the sample ranged from 68 to 89 years (mean = 79.32 years, SD = 4.52). Most participants (101/120, 84.1%) had only primary school education or less, the majority (104/106, 98.1%) were currently retired, and 81.5% (97/119) were currently in a formal or common-law marriage. The 3 most commonly endorsed traumatic events were exposure to combat/ war zones (107/111, 96.4%), the sudden death of someone close (86/111, 77.5%), and experiencing a life-threatening illness or injury (80/110, 72.7%). Consistent with treatment- and pensionseeking samples, the overall PTSD prevalence in this sample using the CAPS FI/I2 rule was 61.7% (n = 74), with a mean total CAPS score of 53.01 (SD = 18.74) (total CAPS score of 40-59 = moderate severity). Eighty-six participants (71.7%) met criteria for depression on the HDRS (score  $\geq$  14), with a mean depression symptom severity of 17.32 (SD = 7.74). The majority of the sample (n = 64, 53.3%) met criteria for both PTSD and depression, with significantly more of the sample meeting criteria for both depression and PTSD ( $\chi^2 = 21.3$ , *P*<.001) than either PTSD (n = 10, 8.3%) or depression (n = 22, 18.3%) alone.

Average scores for mental (MCS) and physical (PCS) health functioning of the sample were 33.75 (SD = 13.03) and 38.36 (SD = 8.65), respectively; both are significantly below scores for age-matched controls in the Canadian population (mean MCS = 54.9, SD = 8.0, and mean PCS = 43.7, SD = 10.8).<sup>33</sup> PTSD severity (r = -0.58, P < .01) and depression severity (r = -0.62, P < .01) were both significantly negatively correlated to mental health impairment. However, only depression severity (r = -0.24, P < .01) evidenced a significant, negative relationship to physical health impairment.

To assess the functional impairment associated with having a PTSD diagnosis, we examined the difference in HRQoL in veterans with and without PTSD. Veterans meeting a CAPS PTSD diagnosis had a mean MCS score of 30.25 (SD = 13.12), which was significantly lower than that for veterans without PTSD (mean = 39.67, SD = 10.98;  $t_{118}$  = 3.82, P < .001, Cohen d = 0.37). However, the mean PCS score of 37.59 (SD = 7.58) for veterans with PTSD was not found to be significantly different from that for veterans with out PTSD (mean = 39.60, SD = 10.10). In contrast, veterans with a depression diagnosis evidenced significantly greater impairment in both mental functioning (mean MCS score = 30.03, SD = 12.27;  $t_{118}$  = 5.55, P < .001, Cohen d = 0.59) and physical functioning (mean PCS score = 36.80, SD = 6.95;  $t_{118}$  = 3.27, P < .001, Cohen d = 0.31).

For the primary analyses, a series of sequential regression analyses was conducted to examine the prediction of HRQoL (as measured by the SF-36 subscales) by the 3 DSM-IV PTSD symptom cluster criteria and depression (HDRS score  $\geq$  14). Reexperiencing, avoidance/numbing, and hyperarousal were entered in the first step of the hierarchy and explained a significant amount of variance across all of the mental health subscales. These variables explained 29% of the variance in vitality ( $F_{3,117}$  = 15.68, P < .001), 22% of the variance in social functioning ( $F_{3,117} = 10.86, P < .001$ ), 16% of the variance in role emotional ( $F_{3,117}$ =7.37, P<.001), and 40% of the variance in mental health ( $F_{3,117} = 26.18$ , P < .001). The PTSD symptom criteria also explained a significant amount of variance in all of the physical health subscales, with the variables accounting for 7% of the variance in physical functioning ( $F_{3,117}$  = 2.95, P = .04), 7% of the variance in role physical  $(F_{3,117}=3.10, P=.03)$ , 12% of the variance in bodily pain  $(F_{3,117}=5.53, P=.001)$ , and 19% of the variance in general health  $(F_{3,117} = 9.08, P < .001).$ 

### LETTERS TO THE EDITOR

Depression was entered in the second step and also accounted for a significant amount of variance across both mental and physical health subscales. This variable accounted for an additional 11% of the variance in vitality ( $F_{1,116}$ =21.42, P<.001); 3% of the variance in social functioning ( $F_{1,116}$ =4.30, P=.04); 9% of the variance in role emotional ( $F_{1,116}$ =12.91, P<.001); 6% of the variances in mental health ( $F_{1,116}$ =13.98, P<.001), physical functioning ( $F_{1,116}$ =8.45, P=.004), and role physical ( $F_{1,116}$ =8.45, P=.004); 4% of the variance in bodily pain ( $F_{1,116}$ =17.03, P<.001).

All of the final models for the mental health impairment subscale analyses demonstrated statistical significance ( $P \le .001$ ), but only the avoidance/numbing PTSD symptom cluster and depression predictors evidenced significant effects on any of the subscales. Without exception, the significant coefficients were negative, indicating that the greater the severity of the avoidance/numbing symptoms and the greater the depression severity, the greater the mental health impairment. All of the physical health subscales also evidenced statistically significant final models (physical functioning and role physical, P < .01; bodily pain and general health,  $P \le .001$ ), although the only significant, negative coefficients in the equation were for depression (for all of the subscales but bodily pain), indicating that depression severity was the only variable associated with severity of physical impairment.

Our results demonstrate that older World War II/Korean War veterans with PTSD have greater functional impairment (lower SF-36 scores compared to veterans without PTSD) and illustrate the significant association between PTSD and HRQoL. Consistent with previous studies,<sup>34-38</sup> our results illustrate the significant association between PTSD and HRQoL, especially in the scales measuring emotional well-being. The degree of functional impairment was similar to that found among patients with both serious medical and psychiatric diseases.<sup>39</sup> This observation may have important clinical implications in the aging veteran population, especially when they seek pension entitlement for mental health conditions, as measures of HRQoL may be necessary to adequately assess functional impairment. Undetected or misdiagnosed PTSD in the geriatric population<sup>12</sup> may contribute to functional impairment, which demonstrates the importance of measuring HRQoL in older veterans seeking medical or psychiatric treatment. This functional impairment reflects not only a diminished HRQoL for the individual with PTSD but also the greater health care utilization and increased health cost associated with PTSD,40-42 as well as the social costs such as social isolation.43 Further study would be needed to determine if treatment of PTSD in the elderly veteran population would result in a substantial improvement in HRQoL.

The additional association found in this study between depression and HRQoL on scales measuring severity of mental and physical health impairment is consistent with studies of depression and HRQoL<sup>34,38</sup> and highlights the importance of assessing for depression, which often presents with PTSD.<sup>44</sup> Depression may also be an independent effect of trauma exposure that may independently contribute to impaired HRQoL.<sup>45</sup> However, because of the high comorbidity between depression and PTSD seen in this study and in past research,<sup>26,44</sup> it is difficult to distinguish between primary depression and primary PTSD.

A limitation of this study is that we cannot generalize to the elderly population as a whole, as the study included only male veterans who were seeking pension entitlement for a psychiatric condition. Additionally, HRQoL measurement was based on patient self-report (SF-36) in the context of a pension entitlement assessment, and there are systemic factors among disability-seeking veterans,<sup>46–48</sup> especially overreporting of symptoms, that may have influenced symptom presentation and systematically biased the observed relationship between PTSD (and depression) and HRQoL.

World War II/Korean War veterans with PTSD resulting from serving in combat operations more than 50 years ago continue to have significant impairments in HRQoL, especially in emotional functioning. This information is useful for clinicians and VA administrators to better understand the potential treatment needs of World War II/Korean War veterans with PTSD and to help predict the future health care needs of our aging younger veterans. The observation that psychiatric illnesses such as PTSD and depression impair HRQoL underscores the importance of including measures of quality of life in the comprehensive evaluation of veterans to better address their health care needs.

#### REFERENCES

- Richardson JD, Elhai JD, Pedlar DJ. Association of PTSD and depression with medical and specialist care utilization in modern peacekeeping veterans in Canada with health-related disabilities. *J Clin Psychiatry*. 2006;67(8):1240–1245.
- Fikretoglu D, Elhai JD, Liu A, et al. Predictors of likelihood and intensity of past-year mental health service use in an active Canadian military sample. *Psychiatr Serv*. 2009;60(3):358–366.
- 3. Foa E, Keane T, Friedman L, et al. Introduction. In: *Effective Treatments* for *PTSD*. New York, NY: The Guilford Press; 2009:1–20.
- Port CL, Engdahl B, Frazier P, et al. Factors related to the long-term course of PTSD in older ex-prisoners of war. J Clin Geropsychol. 2002;8(3):203–214.
- Committee on Medical Evaluation of Veterans for Disability Compensation. A 21st Century System for Evaluating Veterans for Disability Benefits. Washington, DC: The National Academies Press; 2007.
- Lipton MI, Schaffer WR. Post-traumatic stress disorder in the older veteran. *Mil Med.* 1986;151(10):522–524.
- 7. Stenger CA. American Prisoners of War in WWI, WWII, Korea, Vietnam, Persian Gulf, and Somalia. Washington, DC: Veterans Health Services and Research Administration, Department of Veterans Affairs Advisory Committee on Former Prisoners of War; 2000.
- Carlson EB, Lauderdale S, Hawkins J, et al. Posttraumatic stress and aggression among veterans in long-term care. J Geriatr Psychiatry Neurol. 2008;21(1):61–71.
- 9. Port CL, Engdahl B, Frazier P. A longitudinal and retrospective study of PTSD among older prisoners of war. *Am J Psychiatry*. 2001;158(9): 1474–1479.
- Cook JM. Post-traumatic stress disorder in older adults. PTSD Res Q. 2001;12:1–7.
- Dirkzwager AJ, Bramsen I, Van der Ploeg HM. The longitudinal course of posttraumatic stress disorder symptoms among aging military veterans. J Ment Dis. 2001;189(12):846–853.
- Rosen J, Fields RB, Hand AM, et al. Concurrent posttraumatic stress disorder in psychogeriatric patients. J Geriatr Psychiatry Neurol. 1989;2(2):65–69.
- Blake DD, Keane TM, Wine PR, et al. Prevalence of PTSD symptoms in combat veterans seeking medical treatment. *J Trauma Stress*. 1989;3(1):15–27.
- Busuttil W. Presentations and management of Post Traumatic Stress Disorder and the elderly: a need for investigation. *Int J Geriatr Psychiatry*. 2004;19(5):429–439.
- Hiskey S, Luckie M, Davies S, et al. The emergence of posttraumatic distress in later life: a review. J Geriatr Psychiatry Neurol. 2008;21(4): 232–241.
- Boscarino JA. Diseases among men 20 years after exposure to severe stress: implications for clinical research and medical care. *Psychosom Med.* 1997;59(6):605–614.
- Boscarino JA. Posttraumatic stress disorder and mortality among US Army veterans 30 years after military service. *Ann Epidemiol.* 2006;16(4):248–256.
- Hoge CW, Terhakopian A, Castro CA, et al. Association of posttraumatic stress disorder with somatic symptoms, health care visits, and absenteeism among Iraq war veterans. *Am J Psychiatry*. 2007;164(1):150–153.
- Hoge CW, Lesikar SE, Guevara R, et al. Mental disorders among US military personnel in the 1990s: association with high levels of health care utilization and early military attrition. *Am J Psychiatry*. 2002;159(9):1576–1583.

## LETTERS TO THE EDITOR

- Schnurr P, Green BL, eds. Trauma and Health: Physical Health Consequences of Exposure to Extreme Stress. Washington, DC: American Psychological Association; 2004.
- Schnurr PP, Spiro A 3rd. Combat exposure, posttraumatic stress disorder symptoms, and health behaviors as predictors of self-reported physical health in older veterans. *J Nerv Ment Dis.* 1999;187(6):353–359.
- Asmundson GJG, Stein MB, McCreary DR. Posttraumatic stress disorder symptoms influence health status of deployed peacekeepers and nondeployed military personnel. J Nerv Ment Dis. 2002;190(12):807–815.
- Schnurr PP, Friedman MJ, Green BL. Post-traumatic stress disorder among World War II mustard gas test participants. *Mil Med.* 1996;161(3):131–136.
- Magruder KM, Frueh BC, Knapp RG, et al. PTSD symptoms, demographic characteristics, and functional status among veterans treated in VA primary care clinics. *J Trauma Stress*. 2004;17(4):293–301.
- Keane TM, Kaloupek DG. Comorbid psychiatric disorders in PTSD. Implications for research. *Ann N Y Acad Sci.* 1997;821(1 Psychobiology):24–34.
- Keane TM, Wolfe J. Comorbidity in post-traumatic stress disorder: an analysis of community and clinical studies. J Appl Soc Psychol. 1990;20(21):1776–1788.
- Blake DD, Weathers FW, Nagy LM, et al. A clinician rating scale for assessing current and lifetime PTSD: the CAPS-1. *Behav Therapist*. 1990;18:187–188.
- Hamilton M. Development of a rating scale for primary depressive illness. Br J Soc Clin Psychol. 1967;6(4):278–296.
- 29. Ware J, Kosinski M, Gandek B. SF-36 Health Survey: Manual and Interpretation Guide. Lincoln, RI: Quality Metric Incorporated; 1993, 2000.
- Ware JE Jr, Kosinski M, Bayliss MS, et al. Comparison of methods for the scoring and statistical analysis of SF-36 health profile and summary measures: summary of results from the Medical Outcomes Study. *Med Care*. 1995;33(suppl):AS264–AS279.
- Ware J, Kosinski M, Keller S. SF-36 Physical and Mental Health Summary Scales: A User's Manual. Boston, MA: The Health Institute; 1994.
- Schafer JL, Graham JW. Missing data: our view of the state of the art. Psychol Methods. 2002;7(2):147–177.
- Hopman WM, Towheed T, Anastassiades T, et al; Canadian Multicentre Osteoporosis Study Research Group. Canadian normative data for the SF-36 health survey. CMAJ. 2000;163(3):265–271.
- Hannson L. Quality of life in depression and anxiety. Int Rev Psychiatry. 2002;14(3):185–189.
- 35. Malik ML, Connor KM, Sutherland SM, et al. Quality of life and posttraumatic stress disorder: a pilot study assessing changes in SF-36 scores before and after treatment in a placebo-controlled trial of fluoxetine. *J Trauma Stress*. 1999;12(2):387–393.
- Mendlowicz MV, Stein MB. Quality of life in individuals with anxiety disorders. Am J Psychiatry. 2000;157(5):669–682.
- Mittal D, Fortney JC, Pyne JM, et al. Impact of comorbid anxiety disorders on health-related quality of life among patients with major depressive disorder. *Psychiatr Serv.* 2006;57(12):1731–1737.
- Richardson JD, Long ME, Pedlar D, et al. Posttraumatic stress disorder and health-related quality of life among a sample of treatment- and pension-seeking deployed Canadian Forces peacekeeping veterans. *Can J Psychiatry*. 2008;53(9):594–600.
- McHorney CA, Ware JE Jr, Raczek AE. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med Care*. 1993;31(3):247–263.
- Rosenheck RA, Fontana A. Do Vietnam-era veterans who suffer from posttraumatic stress disorder avoid VA mental health services? *Mil Med.* 1995;160(3):136–142.
- 41. Wallace AE, Weeks WB, Wang S, et al. Rural and urban disparities in health-related quality of life among veterans with psychiatric disorders. *Psychiatr Serv*. 2006;57(6):851–856.
- Wilson IB, Cleary PD. Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *JAMA*. 1995;273(1):59–65.
- Zatzick DF, Marmar CR, Weiss DS, et al. Posttraumatic stress disorder and functioning and quality of life outcomes in a nationally representative sample of male Vietnam veterans. *Am J Psychiatry*. 1997;154(12):1690–1695.
- 44. Kessler RC, Sonnega A, Bromet E, et al. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*.

1995;52(12):1048-1060.

- Breslau N, Davis GC, Peterson EL, et al. A second look at comorbidity in victims of trauma: the posttraumatic stress disorder-major depression connection. *Biol Psychiatry*. 2000;48(9):902–909.
- Taylor S, Frueh BC, Asmundson GJ. Detection and management of malingering in people presenting for treatment of posttraumatic stress disorder: methods, obstacles, and recommendations. J Anxiety Disord. 2007;21(1):22–41.
- Frueh BC, Hamner MB, Cahill SP, et al. Apparent symptom overreporting in combat veterans evaluated for PTSD. *Clin Psychol Rev.* 2000;20(7):853–885.
- Frueh BC, Elhai JD, Gold PB, et al. Disability compensation seeking among veterans evaluated for posttraumatic stress disorder. *Psychiatr Serv.* 2003;54(1):84–91.

## J. Don Richardson, MD, FRCPC

Don.Richardson@sjhc.london.on.ca Mary E. Long, PhD David Pedlar, PhD Jon D. Elhai, PhD

Author affiliation: Operational Stress Injury Clinic, St Joseph's Health Care London-Parkwood Hospital, Toronto, Ontario, and National Centre for Operational Stress Injury, Veterans Affairs Canada, Sainte-Anne-de-Bellevue, Québec, Canada (Dr Richardson); Mental Illness Research, Education, and Clinical Center (MIRECC), Houston Center for Quality of Care and Utilization Studies, Texas (Dr Long); Veterans Affairs Canada, Charlottetown, Prince Edward Island, Canada (Dr Pedlar); and Department of Psychology, University of Toledo, Ohio (Dr Elhai). Potential conflicts of interest: None reported. Funding/support: None reported. Disclaimer: The views expressed in this manuscript are those of the authors and do not necessarily represent the views of Veterans Affairs Canada.

doi:10.4088/JCP.09l05920blu

© Copyright 2010 Physicians Postgraduate Press, Inc.