

## 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.<sup>3,4</sup> 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. Participants and procedures.** 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>

**Analyses.** 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 pension-seeking 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 without 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 ( $F_{3,117} = 9.08$ ,  $P < .001$ ).

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 ( $F_{1,116} = 5.16, P = .03$ ); and 10% of the variance in general health ( $F_{1,116} = 17.03, P < .001$ ).

All of the final models for the mental health impairment subscale analyses demonstrated statistical significance ( $P \leq .001$ ), 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,  $P \leq .001$ ), 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,<sup>40-42</sup> as well as the social costs such as social isolation.<sup>43</sup> 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.

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