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Posttraumatic Stress Disorder and Health-Related Quality of Life among a Sample of Treatment- and Pension-Seeking Deployed Canadian Forces Peacekeeping Veterans

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Original Research

Posttraumatic Stress Disorder and Health-Related Quality of Life Among a Sample of Treatment- and Pension-Seeking Deployed Canadian Forces Peacekeeping Veterans

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Objectives: To examine the health-related quality of life (HRQOL) in deployed Canadian Forces peacekeeping veterans, addressing associations with posttraumatic stress disorder (PTSD), and depression severity.

Methods: Participants (n = 125) were consecutive male veterans who were referred for a psychiatric assessment. Instruments administered included the Clinician-Administered PTSD Scale, Hamilton Depression Scale, Short-Form-36 Health Survey, and sociodemographic characteristics.

Results: Mental HRQOL was significantly lower for peacekeepers with, than without, PTSD. Using univariate analyses, PTSD and depression severity were each significantly negatively related to mental HRQOL. In sequential regression analyses controlling for age, we found that PTSD and depression severity significantly predicted both mental and physical HRQOL.

Conclusions: Veterans with PTSD have significant impairments in mental and physical HRQOL. This information is useful for clinicians and Veterans Affairs administrators working with the newer generation of veterans, as it stresses the importance of including measures of quality of life in the psychiatric evaluation of veterans to better address their rehabilitation needs.

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Clinical Implications

- Veterans with significant symptoms of PTSD and depression present with significant physical and mental impairment.
- Understanding the functional impairment in veterans with PTSD can assist with rehabilitation.
- It is important to include measures of quality of life in the comprehensive evaluation of veterans to better address their health care needs.

Limitations

- A male sample of veterans with a service-related disability limits generalizability.
- HRQOL was based on the Short-Form-36 Health Survey.
- Inherent to a cross-sectional study, at best we can establish an association but not causality.

Key words: *quality of life, peacekeepers, posttraumatic stress disorder*

Since the 1990s, with the end of the Cold War, there has been increased instability on the international stage with a rise in intra-state conflict, ethnic cleansing, and global terrorism. Recent United Nations peacekeeping missions in areas such as Rwanda, Somalia, and the former Yugoslavia expose peacekeepers to considerable stress and traumatic events, such as witnessing atrocities that they are helpless to prevent, especially the death of children.[1–5] The United Nations rules of engagement, in which soldiers must show restraint and neutrality, often prohibit the use of force. This may increase a soldier's sense of helplessness and exacerbate an already stressful situation. Of particular importance to peacekeeping, the feeling of being unable to control a situation at the time of trauma is an important risk factor for developing PTSD.[6,7]

Over the past 2 decades, many studies have demonstrated the negative psychiatric impact of peacekeeping operations.[8–12] The relations among PTSD, physical health, and mental health impairment is a large and well-developed area in combat veterans,[13–19] but less studied is the impact of psychiatric illness on quality of life among the deployed peacekeeping veteran population.

Physical and mental health functioning are among the principal domains of HRQOL,[20] and a growing amount of literature has examined the association between mental illness and HRQOL. However, its association with anxiety disorders, such as PTSD and HRQOL, has not been adequately studied, especially among combat and peacekeeping veterans.[21] Some studies have demonstrated a decrease in HRQOL among individuals suffering from PTSD.[22–24]

Many studies have used the Medical Outcomes Study SF-36[25] to measure the association between medical illness and functional health. Buckley et al[26] reported significantly lower physical health functioning in veterans with PTSD using the SF-36. In a smaller study in subjects with PTSD, Malik et al[3] reported mainly lower mental health functioning, but not in scales measuring physical health functioning (physical functioning and role physical). When comparing the PTSD-diagnosed participants with published SF-36 norms for major depressive disorder, those with PTSD had better functioning on physical health scales (physical functioning and role functioning), but worse functioning on mental health scales. Rapaport et al[27] reported similar impairment in HRQOL in subjects with PTSD, and that impairment was also predicted by PTSD severity and comorbid major depressive disorder.

To our knowledge, there have not been any published studies using the SF-36 to specifically examine HRQOL in samples mostly comprising peacekeeping veterans evaluated for PTSD. Studying peacekeeping veterans is important, given their relatively high exposure to extremely stressful and traumatic events, and their inability to respond to these traumas.

By administering the SF-36 to treatment- and penison-seeking veterans, we were able to address the following questions:

- To what extent is HRQOL impaired in veterans with PTSD?
- To what extent do PTSD severity and associated depression, which is often comorbid with PTSD,[28,29] predict HRQOL impairment?

Based on this literature, we expected to find that veterans with PTSD would have greater functional impairment, and that the severity of impairment would be related to PTSD severity and associated depression.

Abbreviations used in this article

CAPS	Clinician-Administered PTSD Scale
HDRS	Hamilton Depression Rating Scale
HRQOL	health-related quality of life
MCS	Mental Component Summary Score
PCS	Physical Component Summary Score
PTSD	posttraumatic stress disorder
SF-36	Short-Form-36 Health Survey

Method

Participants and Procedures

Participants (n = 125) were consecutive male deployed Canadian Forces peacekeeping veterans who were referred by way of their medical provider or pension officer to Veterans Affairs Canada, or a mental health clinic whereby their evaluation was funded by Veterans Affairs Canada for a comprehensive psychiatric assessment between 2000 and 2006. The data presented here are based on the results of a retrospective file review of data gathered in the context of clinical assessment, having received Institutional Review Board approval from the Office of Research Ethics at the University of Western Ontario.

Instruments

The CAPS[30] was administered by a trained clinician to diagnose and assess the severity of PTSD. The CAPS is a structured clinical PTSD interview rating frequency and intensity of the 17 DSM-IV PTSD symptoms. The CAPS has strong interrater reliability (0.92 to 0.99) and high internal consistency (0.73 to 0.85), and convergent and concurrent validity.[31] A more recent review of the first 10 years of research using the CAPS continued to report excellent interrater reliability consistently at the 0.90 level or more, and excellent convergent and discriminant validity and diagnostic utility.[32] The diagnosis of PTSD was made using the more

restrictive CAPS (item frequency of 1 or more and intensity of 2 or more, for at least one PTSD criterion B, 3 C, and 2 D symptoms, and total severity of more than 65) rule.[33] The criterion A was determined by administering the Life Events Checklists,[34] packaged with the CAPS, and assessing the 3 worst military traumatic events.

Patients were assessed for severity of depressive symptoms by a trained clinician using the 21-item HDRS.[35] The reliability of the HDRS is adequate, with high interrater reliability ranging from 0.65[36] to 0.9,[37,38] and internal consistency of 0.76[37] to 0.92.[39] The HDRS is also highly correlated with other clinician-rated instruments such as the Montgomery-Asberg Depression Rating Scale, with correlations between 0.80 and 0.90.[40] HRQOL was assessed using the SF-36,[25] which measures functional impairment (or HRQOL). The SF-36 measures impairment in 8 domains or subscales, 4 of which relate to mental health, including vitality (a measure of energy level and fatigue), social functioning (the extent to which physical health or emotional problems have interfered with social activities), role emotional (difficulties in work or daily activities owing to emotional problems), and mental health (a measure of the degree of anxiety, depression, and of positive emotional states, such as feeling calm, peaceful, and happy). Additionally, 4 scales relate to physical health, including physical functioning (limitations in concrete physical actions), role physical (difficulties in work or daily activities owing to physical problems), bodily pain (the amount of pain and how much it has interfered with normal work), and general health (how their general health is perceived to be, and the extent to which it is perceived to get worse). The 8 SF-36 scales can be collapsed into 2 summary scores, PCS reflecting physical health, and the MCS reflecting mental health.[41] All scale scores range from 0 to 100, with higher scores indicating better functioning, standardized with the general population for a mean of 50, and SD of 10.[42] The validity and reliability of the SF-36 have been well-established in large samples drawn from the general population, including veterans and patients with medical and mental health disorders.[3,43–45]

Sociodemographic characteristics, military service history, significant life events, and current stress were also examined at the initial psychiatric evaluation.

Analysis

Continuous variables were screened for missing data, which were found to be minor and missing completely at random, and therefore missing data were imputed using maximum likelihood procedures. Pearson correlations were used to assess relations between PTSD (CAPS total score) and depressive symptoms (HDRS total score) on one hand, with HRQOL on the other (SF-36 MCS and PCS).

We examined predictors of mental (vitality, social functioning, role emotional, and mental health) and physical (physical functioning, role physical, bodily pain, and general health) health impairment severity (8 HRQOL subscale scores) using 8 separate sequential regression models. Although there are many possible sociodemographic variables that could potentially be related to SF-36, the main variables of interest were age, PTSD, and depression; the variables marital status, years of military service, current military service, employment status, and exposure to combat or a war zone are not well supported as predictors of health status on the SF-36. For all analyses, the first step controlled for age, the second step included PTSD severity (CAPS), and the third step added depression severity (HDRS).[27] The order of entry of variables in the regression analyses were chosen to first control for historical variables that are demographic in nature (for example, age) and then look at the additive effects of the symptom variables we used (PTSD and depression). To minimize both type I and type II error, alpha levels for the overall model tests were set at $P < 0.01$.

Results

Descriptive Analyses

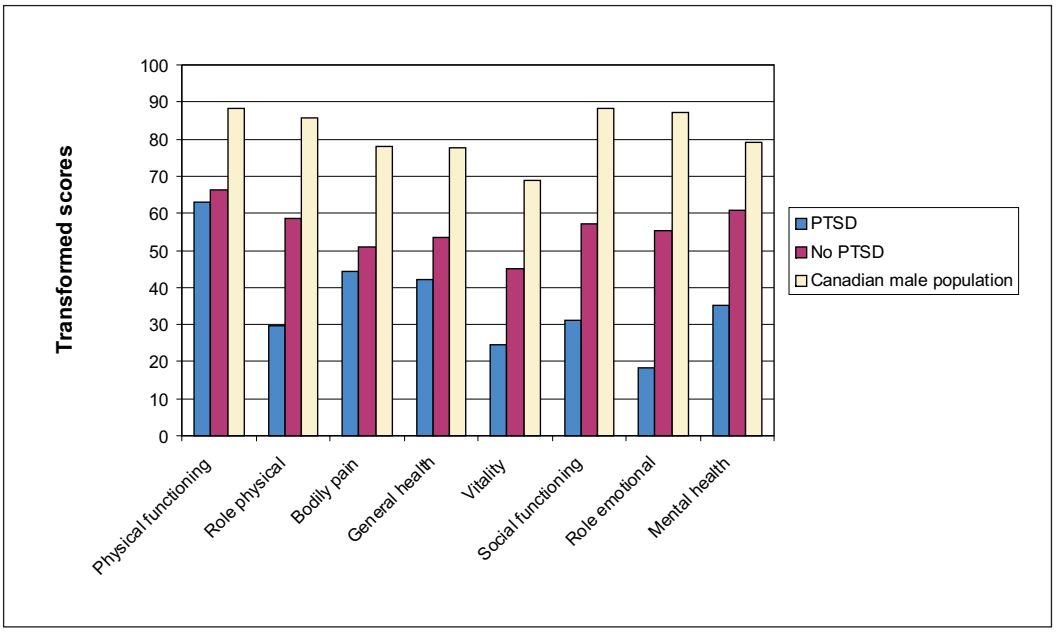
The sample had a mean age of 41.49 years (SD 8.12). The majority was currently in a formal or common-law marriage (n = 89, 71.2%). Years of military service averaged 16.07 (SD 7.54), with 73.4% released and 26.6% still serving in the Canadian military. While a proportion (n = 41, 32.8%) were unemployed, most 64% (n = 80) were currently working for pay, or attending retraining or school. The most common military theatres in which participants reported serving were the Balkan states (Bosnia, Croatia, the former Yugoslavia, and Kosovo; n = 60, 48%). About 82.9% (n = 102) had exposure to combat or to a war zone during their deployment. Other common traumatic events endorsed were assault with a weapon (such as, being shot, stabbed, or threatened with a knife, gun, or bomb) (n = 97, 78.9 %); physical assault (n = 93, 76.9 %); transportation accident (n = 81, 65.9 %); and, exposure to a toxic substance (n = 73, 60.3 %).

Using the more restrictive CAPS (item frequency of 1 or more and intensity of 2 or more, for at least one PTSD criterion B, 3 C, and 2 D symptoms, and total severity of more than 65) rule, 77.6% (n = 87) of this sample met criteria for PTSD. The mean total CAPS score for this sample was 75.21 (SD 24.17). The mean total HDRS score was 22.50 (SD 7.74). HRQOL as measured by the PCS and MCS was 43.69 (SD 10.76) and 30.02 (SD 12.73), respectively.

Univariate Analyses

First, we examined the relation between PTSD and depression severity, given their high comorbidity in military

Figure 1 Health-related quality of life in veterans with and without PTSD



veterans.[28,29] As expected, the CAPS and HDRS were significantly correlated ($r = 0.76$, $P = 0.01$).

We found that PTSD symptoms severity ($r = –0.70$, $P < 0.001$) and depression severity ($r = –0.67$, $P < 0.001$) were each significantly negatively related to MCS scores. In contrast to these large relations with the MCS, neither PTSD severity ($r = –0.06$, $P = 0.46$) nor depression ($r = –0.17$, $P = 0.06$) were correlated with the PCS.

To assess the functional impairment of having a PTSD diagnosis, we examined differences in HRQOL in peacekeepers with and without PTSD. We found that peacekeepers meeting CAPS PTSD criteria had a mean MCS score of 25.22 (SD 10.22) which was significantly lower than that for peacekeepers without PTSD (mean 41.00, SD 11.05), $t = 7.75$, df = 123, $P < 0.001$, Cohen's $d = 0.74$. However, the mean PCS score of 43.53 (SD 10.50) for peacekeepers with PTSD was not found to be significantly different from those without PTSD (mean 44.06, SD 11.46), $t = 0.25$, df = 123, $P = 0.80$, Cohen's $d = 0.02$. When specifically examining the SF-36 subscales, the means between peacekeepers with and without PTSD were statistically significantly different for the 4 mental health impairment subscales, vitality ($t = 5.78$, df = 123, $P < 0.001$, $d = 0.54$), social functioning ($t = 5.54$, df = 123, $P < 0.001$, $d = 0.52$), role emotional ($t = 5.81$, df = 123, $P < 0.001$, $d = 0.53$), and mental health ($t = 7.28$, df = 123, $P < 0.001$, $d = 0.70$). However, only 2 of the 4 physical health impairment subscales, role physical ($t = 4.02$, df = 123, $P < 0.001$, $d = 0.38$), *and general health (*$t = 2.78$, df = 123, $P = 0.006$, $d = 0.23$), also evidenced statistically significant differences between peacekeepers with and without PTSD (Figure 1).

Multivariate Analyses

In the first 4 sequential regression analyses, in which we examined prediction of mental health impairment severity, as measured by the SF-36 subscales vitality, social functioning, role emotional, and mental health, we found that the first step (age) contributed a significant amount of variance to only the social functioning subscale ($R^2_{change} = 0.04$). The addition of PTSD severity in the second step contributed a large amount of variance across all 4 mental health subscales (R^2_{change} ranged from 0.29 to 0.42). The third step (adding depression severity) contributed small but significant amounts of variance (R^2_{change} ranged from 0.04 to 0.09). All of the final models for the mental health impairment subscale analyses demonstrated statistical significance for the PTSD and depression symptoms severity variables, with age being significant for only the social functioning subscale (Table 1). In these models, both the depression and PTSD variables evidenced similarly moderate-to-large associations on the outcome variables (PTSD βs ranged from –0.29 to –0.35, and depression βs from –0.29 to –0.47).

In the 4 sequential regression analyses in which physical health impairment (SF-36 subscales: physical functioning, role physical, bodily pain, and general health) severity was predicted, we again found that age contributed a significant amount of variance to only one subscale, the physical functioning subscale ($R^2_{change} = 0.04$). The addition of PTSD and depression severity contributed small but significant amounts of variance in both the second and third steps, respectively, across all physical impairment severity analyses (PTSD R^2_{change} ranged from 0.03 to 0.17, and depression

R^2_{change} ranged from 0.03 to 0.09). Similar to the mental health impairment analyses, all but one of the final models for the physical health impairment analyses demonstrated statistical significance for 2 of the 3 predictor variables—with only the physical functioning subscale resulting in a moderate, significant association for the age variable (β = –0.26). In those final models in which both the PTSD and depression variables were significant, PTSD symptom severity evidenced small, nonsignificant effects (βs ranged from –0.01 to –0.17), while depression evidenced moderate associations with the outcome variables (βs ranged from –0.27 to –0.46).

Table 1 Sequential regression, predicting severity of impairment in HRQOL on the SF 36 subscales: final models

Subscales	*F*	Adj R^2
MCS		
Vitality	21.30[a]	0.329
Social functioning	29.98[a]	0.412
Role emotional	22.28[a]	0.340
Mental health	54.28[a]	0.517
PCS		
Physical functioning	7.35[a]	0.133
Role physical	12.17[a]	0.213
Bodily pain	5.18[b]	0.092
General health	8.44[a]	0.153

df = 3,121
[a]*P* < 0.001
[b]*P* = 0.001

Discussion

Our results, demonstrating that veterans with PTSD have greater functional impairment (lower SF-36 scores), illustrates the significant association between PTSD on 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.[46] Consistent with previous studies,[3,21,47,48] this study illustrates the significant association between PTSD and HRQOL in veterans, but mainly for scales measuring mental health impairment (SF-36 subscales: social functioning, role emotional, and mental health, and not vitality).

The functional impairment observed in this sample of veterans serving in peacekeeping missions also highlights the psychiatric impact and associated impairment of being deployed to modern peacekeeping operations. PTSD severity was not significantly correlated with physical health impairment (SF-36 subscales: physical functioning, role physical, bodily pain, and general health), corroborating findings by Malik et al,[3] but differing from several studies of American veterans.[26,44,49] This discrepancy may be related to sample bias, as this Canadian sample was much younger than the American veteran samples and included pension-seeking veterans. It may also be related to the nature of the traumatic event in peacekeeping operational deployment, which often involves witnessing atrocities and being unable to intervene,[1,9,50,51] rather than traumatic events related to physical injury often seen in combat veterans.[52] The veterans in this sample were also referred for a psychiatric assessment and it is possible that veterans with more severe physical disabilities may not have been referred for psychiatric care, but rather receiving treatment from their medical care provider. The additional association between depression and HQOL on scales measuring mental health impairment (SF-36 subscales: social functioning, role emotional, mental health, and vitality) and physical health impairment (SF-36 subscales: physical functioning, role physical, bodily pain, and general health) severity found in this study, although modest, is consistent with studies on depression and HRQOL[21] and highlights the importance of assessing for depression that often present with PTSD.[53] Depression may also be an independent effect of trauma exposure such as peacekeeping, which may have independently contributed to impaired HRQOL.[54] However, because of the high comorbidity between depression and PTSD in this study and in past research,[29,53] it is difficult to distinguish between primarily depression and primarily PTSD.

This study demonstrates that anxiety disorders such as PTSD are associated with impaired quality of life, especially in emotional well-being. This observation may have important clinical implications in the veteran population, especially when they seek pension entitlement for mental health conditions, as measures of HRQOL may be necessary to adequately assess functional impairment. This impairment in emotional and physical functioning not only reflects diminished quality of life for the individual veteran but also has a social cost resulting from time off work, unemployment, social isolation, and interpersonal violence. [49] It is also likely that the lower HRQOL in veterans with PTSD are associated with greater health care use and therefore increased health costs.[55–57] Further study would be needed to determine if treatment of PTSD in a veteran population would also result in a substantial improvement in HRQOL, as was demonstrated by Malik et al.[3]

A limitation of this study is that we cannot generalize to a general population, as the study included only male veterans who were either seeking treatment or pension entitlement for a psychiatric condition. This not only limits the generalizability of the study but may have further biased

reporting in the sample. Additionally, as that HRQOL was based on patient self-report (SF-36) in the context of a pension entitlement assessment, it may have systematically biased the observed relation between PTSD (and depression) and HRQOL.

In conclusion, deployed peacekeeping veterans with PTSD have significant impairments in HRQOL in emotional functioning. This information is useful for clinicians and Veterans Affairs administrators in understanding potential rehabilitation needs of veterans with PTSD. The observation that the psychiatric illnesses, such as PTSD and depression, impair HRQOL stresses the importance of including measures of quality of life in the comprehensive evaluation of veterans to better address their health care needs. Further study would be needed to determine if treatment of PTSD in a veteran population would also result in an improvement in HRQOL.

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Résumé : Le trouble de stress post-traumatique et la qualité de vie liée à la santé dans un échantillon d'anciens combattants des Forces canadiennes de maintien de la paix en quête de traitement et de leur pension

Objectifs : Examiner la qualité de vie liée à la santé (QDVLS) chez d'anciens combattants déployés des Forces canadiennes de maintien de la paix, en abordant les associations avec le trouble de stress post-traumatique (TSPT) et la gravité de la dépression.

Méthodes : Les participants (n = 125) étaient d'anciens combattants masculins consécutifs qui ont été adressés pour une évaluation psychiatrique. Les instruments administrés comprenaient l'échelle du TSPT administrée par un clinicien, l'échelle de dépression de Hamilton, le questionnaire sur la santé SF-36, et les caractéristiques sociodémographiques.

Résultats : La qualité de vie liée à la santé mentale était significativement plus faible chez les gardiens de la paix qui souffraient du TSPT que chez ceux qui n'en étaient pas affectés. Les analyses univariées ont révélé que le TSPT et la gravité de la dépression étaient chacun significativement négativement liés à la QDVLS mentale. Dans les analyses de régression séquentielles contrôlant l'âge, nous avons observé que le TSPT et la gravité de la dépression prédisaient significativement la QDVLS tant physique que mentale.

Conclusions : Les anciens combattants souffrant de TSPT ont des déficiences significatives de QDVLS. Cette information est utile aux cliniciens et aux administrateurs du ministère des Anciens combattants qui travaillent auprès des anciens combattants de la nouvelle génération, car elle souligne l'importance d'inclure des mesures de la qualité de vie dans l'évaluation psychiatrique des anciens combattants, afin de mieux répondre à leurs besoins en matière de réhabilitation.