Article details: 2018-0093	
Title	An examination of chronic pain and mental health conditions in a population-based, cross-sectional survey of active Canadian Forces personnel
Authors	Everett Vun BSc, Sarah Turner MSc, Jitender Sareen MD, Natalie Mota PhD, Tracie O. Afifi PhD, Renée El-Gabalawy PhD
Reviewer 1	Joel Katz PhD (with assistance from senior trainee, Dr. Teresa Marin)
Institution	York University, Psychology, Toronto, Ont.
General comments (in bold) and author response	**1. It's not clear why TBI or concussion is included as a pain condition unless the pain condition was headache but this is not made clear and notably the presence of TBI depending on its severity introduces a variety of cognitive and other limitations that may invalidate these participants' responses to the survey.** Thank you for your feedback. Of note, individuals who endorsed having a TBI but also endured cognitive impairment were not able to partake in the study. Despite this, both yourself and Reviewer 2 have provided good justification for why TBI should not be considered a chronic pain condition. We have decided to remove TBI from this study given its potential limitations. **2. The authors focus their literature review mainly (and not inappropriately) on Canadian Armed Forces personnel but I would encourage them to cite the results of the large scale international study by Demyttenaere et al 2007 who published a cross-national survey of ~85,000 community dwelling people in 18 countries examining comorbid chronic back/neck pain and mental disorders (also assessed with the CIDI). Their results are quite similar to the present authors' in terms of ORs for comorbid pain and PTSD and I think this should be highlighted.** Thank you for bringing this piece of literature to our attention. After reviewing the article we agree that it has similar results as our manuscript and have added it as a citation to our introduction on page 3. **3. Also comparable is the 12-month prevalence rate of chronic non-cancer pain in Canada (not in a military sample). Three surveys show the prevalence to be between 19% and 29%, with most respondents reporting pain of moderate to severe intensity. International surveys (among them the Demyttenaere study noted above) also show comparable prevalent rates for chronic pain. I think it would be important to point out the similarities in prevalence rates between the military samples and the general community dwelling samples** The articles above do show comparable rates of chronic pain between the civilian and military population, and one of these articles have been added as a citation within the introduction. This comment, however, appears to be contradictory to what Reviewer 2 would like to be highlighted within the introduction; which is that chronic pain is more prevalent in the military population compared to the Canadian General Population (CGP). Both reviewers have provided literature to support their suggestions. Our efforts to include both of the reviewers' suggestions has been added to the introduction on page 3. Moreover, these discrepancies in prior research highlights the need for more research in this area to better understand the rates of chronic pain between these two populations. **4. The authors take a nuanced (and novel) look at the associations between specific mental disorders and chronic pain, including moderation analyses with a focus on pain severity in a military sample. However, in the authors could create a stronger rationale in the introduction for these analyses, as well as the analyses looking at pain severity and activity limitation.** We agree that our reasoning for looking at chronic pain within this population, as well as a better rationale for our analyses looking at chronic pain characteristics and its impact on the comorbid relationship was needed. The lack of a recent prevalence estimate of chronic pain within the serving Canadian Armed Forces, combined with much of the previous literature showing greater disability with a comorbid physical condition and mental disorder compared to having a single condition alone are large factors driving our decision to pursue these analyses. These comments have been integrated within our introduction found on page 3. **5. The findings do not seem to support the specificity model (of mental disorders) as outlined by the author in the introduction. Indeed, the authors describe the differential pain findings across diagnostic groups as a trend. Many individuals diagnosed with PTSD also meet criteria for other mental health conditions, and in comparison to other anxiety disorders, it could be argued that PTSD is a more severely disabling condition. Could this be explained by reporting biases? The paper could benefit from a more careful discussion of these issues.** Thank you for your comment. Though individuals with PTSD often meet criteria for other mental disorders,

	we attempted to limit the effects of other comorbid mental disorders within our results by adjusting for the other mental disorders not of interest (in addition to the sociodemographic factors) in fully adjusted logistic regression models. Moreover, literature looking at the disabling effects of PTSD within the military population have shown that non-PTSD psychiatric disorders have similar disabling results compared to PTSD.[8,9] Given this literature and how several of our results remained significant after adjusting for other mental disorders within our analyses, we believe that the specificity of the model is supported. **6. As the authors note, the cross-sectional design and self-report measures of health are important limitations of this work. It would be helpful if the authors could expand on this point in the discussion. What implications does the cross-sectional design have for the interpretability of the findings? Moreover, the authors state that the self-reported pain conditions may result in biased estimates, yet the nature of this potential bias and how it might impact the findings is unclear.** A more thorough explanation of these limitations has been added to the manuscript and can be found on page 7 within the discussion. **Minor points** **7. Page 5 - line 60 - The use of the word "usual pain" to describe chronic pain is a bit confusing** We have decided to use the term "chronic pain" rather than "usual pain" in order to be clearer in our results found on page 5. **8. Typo on page 7, line 9 - "Otis"** Thank you for bringing this to our attention. We have made the necessary changes on page 6 in our discussion.
Reviewer 2	Name and comments withheld
Institution	NA
Author responses (comments withheld)	**Abstract** **Comment (withheld)** Thank you for drawing our attention to this detail. The appropriate changes have been made to the abstract on page two to reflect the wide spectrum of back problems experienced by individuals. **Comment (withheld)** Thank you for your feedback. We have revised the abstract found on page 2 to better represent the other mental disorders that were significantly associated with the pain conditions to reduce the perpetuation of unhelpful stereotypes. **Introduction** **Comment (withheld)** The introduction on page 3 has been revised accordingly to be a more accurate reflection of what was studied in the article. **Comment (withheld)** Thank you for providing us with these references. This comment, however, appears to be contradictory to what Reviewer 1 would like to be highlighted within the introduction; which is that chronic pain has a similar prevalence in both the military population and general population. Our efforts to include both of the reviewers' suggestions have been added to the introduction on page 3. Again, these discrepancies warrant further research in this area (such as this study) looking into the rates of chronic pain in the military population. **Comment (withheld)** We agree with the reviewers' stance, which supported our moderation analysis. Thank you for suggesting these relevant articles. We have incorporated several of the articles cited above to our introduction on page 3 to provide a stronger rationale as to why we looked at chronic pain within the comorbid relationships within this population.

Methods

Comment (withheld)

Thank you for your feedback. We have adjusted the wording to be clearer in what we meant. For example, we clarified that assessed physical conditions were those that "were frequently characterized by pain". In addition, we also used exact wording from the chronic conditions module of the CFMHS, stating that the physical conditions were "described as expected to last or had already lasted 6 months and were based on…being diagnosed by a health professional". These edits can be found on page 4 of our manuscript under the methods.

Comment (withheld)

Thank you for your feedback. Please see the response to Comment 1 from Reviewer 1. Upon further reflection and in light of these comments, we have decided to remove TBI from this study.

Comment (withheld)

Although we agree that gastrointestinal (GI) conditions are commonly characterized by pain, GI conditions were not assessed in the CFMHS.

Comment (withheld)

Thank you for your feedback. We have included that diabetes and asthma were not included in the study due to them having low prevalence rates in this population, in addition to not being primarily characterized by pain on page 4 of our methods. Heart disease and cancer were not included within the CFMHS.

Comment (withheld)

Thank you for your feedback. We have revised our methods on page 4 appropriately to provide the exact wording for the pain item in the survey.

Comment (withheld)

Thank you for bringing this detail to our attention. In wanting to remain consistent with the terminology used within the CFMHS we have decided to use the term "Canadian Force element" throughout the manuscript.

Comment (withheld)

More information regarding the analysis has been incorporated within the Analytic Strategy section within the Methods on page 5.

Results

Comment (withheld)

We have revised the results section on page 5 appropriately to reflect the nature of the prevalence estimates.

Comment (withheld)

Thank you for our feedback. We have added the significant findings between pain conditions and other mental disorders (other than PTSD) within the results on page 5.

Comment (withheld)

Thank you for bringing that detail [spelling out of acronym] to our attention. It has been revised within the results on page 5.

Comment (withheld)

Thank you for your feedback. In order to be clearer in what we are referring to, we have re-iterated in our Results on page 5 that these are based on the significant results from the fully adjusted model. In addition, we have also added a figure for better demonstration of the results (Figure 1, found on page 18).

Discussion

Comment (withheld)

The discussion on page 6 has been adjusted accordingly to demonstrate the similarity between released CAF members and active members.

Comment (withheld)

Thank you for bringing this detail to our attention. An additional citation has been added which better demonstrates how migraines may be due to prior physical injury found on page 6.

Comment (withheld)

The wording has been adjusted to clarify what was meant and can be found on page 6.

Comment (withheld)

Thank you for your feedback. Both yourself and Reviewer 1 have provided strong justification as to whether TBI should be considered a chronic pain condition and we have decided to remove it from the study.

Comment (withheld)

Thank you for your feedback. We have clarified how the cross-sectional disease does not permit causality to be assessed on page 7 within our discussion.

Comment (withheld)

Thank you for your feedback. Though we agree that the cited piece of literature does not look at all the issues around self-report, we have decided to keep it within the manuscript, as it supports that self-report can be a reliable method of assessing diagnosed physical conditions. We have, however, revised the wording within the discussion on page 7 to better reflect that only certain physical health conditions diagnoses are reliably reported based on self-report.

Comment (withheld)

Thank you for your feedback. We agree that there are important implications for released Regular Forces members as well and have incorporated your suggestions into the discussion on page 7.

Comment (withheld)

Thank you for bringing this to our attention. We have added 95% confidence intervals to Table 1 found on page 13.

Comment (withheld)

Thank you for your feedback. The appropriate edits have been made to clarify what was meant in Table 1 on page 13.

Comment (withheld)

We have added an 'Any Pain Condition' prevalence in Table 1 on page 13. Table 1 also provides the prevalence of all individual pain conditions. Of note, cross tabulations assessing the presence of each mental disorder within the pain condition of interest have been completed and in Table 2.

Comment (withheld)

Thank you for this suggestion. We have now included the sample size, percent and 95% confidence interval for all tables.

Comment (withheld)

Thank you for your feedback. We have reiterated within our results that Table 3 is based on only the significant relationships in the fully-adjusted model from our logistic regressions. Furthermore, we have also included a figure to better represent the results demonstrated in Table 3.