Author's response to reviews

Title: How Does Burnout Affect Physician Productivity? A Systematic Literature Review

Authors:

Carolyn S Dewa (carolyn_dewa@camh.net)
Desmond Loong (desmond.loong@camh.ca)
Sarah Bonato (sarah.bonator@camh.ca)
Nguyen X Thanh (tnguyen@ihe.ca)
Philip Jacobs (pj Jacobs@ihe.ca)

Version: 5 Date: 10 July 2014

Author's response to reviews: see over
Thank you very much for the opportunity to revise our manuscript. We would like to thank the reviewers for their thoughtful comments.

Responses to Reviewer Comments (Reviewer comments in bold)

**REVIEWER 1: Adriana Baban**

Some small issues are discussed below and some suggestions are offered. The theoretical background makes a fair introduction to the topic of burnout among physicians. The article would benefit if the topic of productivity in hospital settings was also shortly discussed, and some details were given about the criteria used in operationalizing productivity for this study. Some information are presented in the list containing the search words, but a short introduction of the construct would be of help.

This text was added to clarify what is meant by productivity:

> In this review, we seek to identify how burnout affects the physician production of healthcare. This includes the ability to work, presence at work as well as workplace attachment.

The theoretical grounding of the review could be expanded by presenting the relevant literature on the relations between burnout and each of the four outcomes included in the analysis. Examples of such articles:


This text has been added:

> There has been increasing interest in the well-being of physicians and their contributions to the quality of the healthcare system [1]. Part of this focus has been attributed to the recognition that physicians are exposed to workplace factors that increase the risk of work stress. Examples of these factors include long work hours
[2], work overload [3], sleep deprivation and work conflicts [4]. In a meta-analysis, Alarcon [5] found that physician job demands, low job satisfaction and low organizational commitment are associated with emotional exhaustion among physicians. There is also recognition that long-term exposure to high work stress can result in burnout [6].

The additional text has been included:

As the literature examining the prevalence of burnout among physicians has increased, there also has been growing interest in understanding the outcomes associated with burnout. Identifying the outcomes associated with burnout is critical to understanding the scope of the problem as it affects the healthcare system. For example, Williams et al. [16] found that higher levels of perceived stress affect physician intention to withdraw from practicing. Other studies have observed burnout to be related to early retirement [17]. The losses in patient services related to work cutback and early retirement have been estimated to be at least CAN $213 million [18].

The methodology is appropriate for a systematic review and it is clearly presented. There is an ambiguity concerning the number of papers that qualified for review in the end. On page 7, the first paragraph refers to 5 articles, while the second paragraph refers to 4 articles.

We apologize for the confusion. There are indeed 5 papers. We have made the correction.

Some specifications about what qualified as a “validated measure of burnout” would be relevant in this section.

The text was revised to read,

Exclusion criteria were: (1) the study sample was not comprised of at least 50% physicians, (2) the study did not examine the relationship between burnout and productivity or (3) a validated measure of burnout was not used (i.e., there was no evidence that the psychometric properties of the measure had been evaluated).
I recommend the exclusion of Table 1 and shortly present the information regarding the search words in the text.

This table was moved to the Appendix and the subsequent tables were renumbered.

Results are also clearly presented, but some issues should be addressed. On page 9, paragraph 3 – results on the intention of continuing to practice medicine – some references appear to be missing.

Thank you for pointing this out. The reference was added.

Results presented in column 8 of Table 2 are confusing given that in some cases mean scores of burnout among physicians reported, while in others percentages of physicians with low, medium and high levels of burnout are presented. Reorganizing this information should be considered.

The numbers reported in Table 1 reflect how they were reported in each of the papers. The purpose of Table 1 is to offer interested readers more information about each study. Table 1 is organized alphabetically by first author to guide readers quickly and easily to studies done by authors of their interest. It is for this reason that we wanted to keep the present organization of Table 1.

REVIEWER 2: Ulla Walter

The inclusion and exclusion criteria should be explicitly pointed out.

The text was revised to be more explicit for inclusion criteria. It now reads:

Inclusion criteria were: (1) the study examined the relationship between burnout and work productivity, (2) the sample population was comprised of practicing physicians regardless of specialty who worked in civilian settings.

The text was revised to be more explicit for exclusion criteria. It now reads:

Exclusion criteria were: (1) the study sample was not comprised of at least 50% physicians, (2) the study did not examine the relationship between burnout and productivity or (3) a validated measure of burnout was not used (i.e., there was no evidence that the psychometric properties of the measure had been evaluated).
The search period and the limitation to English language journals are mentioned twice. Please, add the month (12/2012).

Thank you for pointing this out. The redundant text was deleted.

The month of the search was added:

The search period covered January 2002 to November 2012 and searches were limited to English language journals.

Inter-rater reliability: Kappa (?) should be mentioned.

The text was revised to clarify the statistic used to measure inter-rater reliability. It now reads,

The inter-rater reliability corrected for chance between CSD and DL was $\kappa = 0.69$.

Is quality assessment the only subheading? That is a little bit confusing.

Sub-headings were added. There are now sub-headings for “Search Strategy”, “Screening Process” and “Quality Assessment”.

It is unclear if the quality assessment was done by two reviewers as well.

The clarification was added:

Articles that passed the three stage screening process moved on for quality assessment by the two reviewers (CSD and DL) using the following 10-item criteria adapted from Lagerveld et al. [19]:

Additionally, the authors have made a hand search. But the results were not mentioned later.

The results of the hand search were added to the Consort diagram and the text was revised to:

After the full-text review, 5 articles remained and their reference lists were hand searched for relevant studies. No articles were identified in the hand search process.
Please, add some more statistical details as well as information about the included physicians (e.g. years of professional experience, socio-demographic data)

For the papers that included them, the 95% Confidence Intervals were added to the Tables. Also added were descriptive statistics for the sample population’s sex, age and years of practice for the papers that reported them.

P 8: the divergent results of Soler et al. and Siu et al. should be placed in the introductory or in the discussion.

The text was edited to read,

This review indicates that countries all over the world are beginning to recognize the potential impact of physician burnout on productivity. In the studies that were identified, productivity was examined in four different ways that included number of sick leave days, intent to continue practicing, intent to change jobs, and work ability. The results of the studies indicate that there is a negative relationship between burnout and productivity. However, there was at least one discrepancy depending on the type of productivity outcome of interest. For example, Soler et al. [22] found a significant relationship between burnout and sick leave while Siu et al. [14] did not. This may be because the type of productivity decrease chosen by physicians who experience burnout may be related to the context in which they practice. That is, one system may offer the option of taking sick leave while in another it may be more discouraged. This suggests that rather than one measure of productivity, it is important to consider several depending on the context in which the study is being conducted. At the same time, to help facilitate the translation of results to other systems, it may be important to consider a variety of productivity outcomes in the evaluation of physician burnout interventions.
The focus of the discussion lies mainly on limitations. The types of bias should be mentioned. The problematic of outcome measurement could be discussed in more detail.

The text was added:

Finally, there may be a publication bias. There may be studies which have not found significant relationships between burnout and productivity outcomes that may not have been published. If this is the case for a large number of studies, the bias could lead to an exaggeration of the relationship between burnout and productivity.

The text was added:

For example, Soler et al. [22] found a significant relationship between burnout and sick leave while Siu et al. [14] did not. This may be because the type of productivity decrease chosen by physicians who experience burnout may be related to the context in which they practice. That is, one system may offer the option of taking sick leave while in another it may be more discouraged. This suggests that rather than one measure of productivity, it is important to consider several depending on the context in which the study is being conducted. At the same time, to help facilitate the translation of results to other systems, it may be important to consider a variety of productivity outcomes in the evaluation of physician burnout interventions.

Do the title and abstract accurately convey what has been found?
Main in/exclusion criteria should be added.

The Methods text in the Abstract was revised to read,

Methods: A systematic literature search of the following databases were performed: Medline Current, Medline in process, PsycInfo, Embase and Web of Science. The search period covered 2002-2012. The searches focused on identifying articles about practicing physicians regardless of specialty who worked in civilian settings. Articles that primarily looked only at residents or medical students were excluded. Productivity was captured by hours worked, patients seen, sick leave, disability quitting, leaving the profession, retirement, workload and presenteeism. Studies also were excluded if: (1) the study sample was not comprised of at least 50% physicians, (2) the study did not examine the relationship between
burnout and productivity or (3) a validated measure of burnout was not used.

The Results section was revised to read,

**Results:** A total of 870 unique citations were identified. Of these, 5 met the inclusion/exclusion criteria. This review indicates that countries all over the world are beginning to recognize the potential impact of physician burnout on productivity. In the studies that were identified, productivity was examined in four different ways: number of sick leave days, intent to continue practicing, intent to change jobs, and work ability. The majority of the studies indicate that there is a negative relationship between burnout and productivity. However, there is variation depending on the type of productivity outcome that was examined.

We would respectfully contend that the current title of this manuscript satisfies the function of a title. That is, it is concise and indicates the topic of the paper. Recommendations have been made to avoid long titles [Ibelloni. (2012). Scientific Articles’ Titles: Thanks for the Information Contained in your Title. *Rev Bras Anestesiol.* 62(2): 139-140].