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Title	Burnout and distress among allied health professionals in a cardiovascular centre at a quaternary hospital: a survey
Authors	Barry Rubin MD PhD, Rebecca Goldfarb PhD, Daniel Satele MSc, Leanna Graham BScPT MHSc
Reviewer 1	Mr. Matthew Patel
Institution	Royal College of Surgeons in Ireland Faculty of Medicine and Health Sciences, Dublin, Ireland
General comments (author response in bold)	1. The manuscript does a good job outlining the impact of burn-out and the survey instruments used to measure burnout. It would be nice to read more about discovery/first identification of burnout among healthcare staff. **The following text has been added to the first paragraph of the Introduction. "The term burnout was first used in a medical context by Freudenberger, who described the emotional depletion and loss of motivation and commitment he and others had observed and experienced. Maslach subsequently noted that the emotional stress human services workers experienced and their coping strategies had important implications for people's professional identity and job behavior."** 2. The authors should address the purpose for comparing the WBI survey of allied health care providers to the same survey of nurses and physicians. **The Peter Munk Cardiac Centre functions as an integrated program that includes allied health staff, cardiac and vascular surgeons, cardiovascular anaesthesiologists, cardiologists, cardiac rehabilitation physicians and medical imaging physicians and nurses that focus on patients with diseases of the cardiovascular system. We therefore undertook an assessment of burnout and distress in all staff in the Peter Munk Cardiac Centre: the responses of the WBI survey that was distributed to physicians (127 of 151 responded) and nurses (243 of 493 responded) in the Peter Munk Cardiac Centre have been reported in manuscripts that are currently under review by CMAJ Open. Given that we had results of the WBI survey for all staff in the PMCC, we thought it would appropriate to identify potential differences in the prevalence of burnout and distress between these groups of heath care providers, and to identify any factors that could contribute to these differences. The number of respondents in this analysis (45 allied health, 127 physicians, 243 nurses) allowed us to conduct a robust multivariable analysis of these results.** 3. The authors should expand on why they decided to look at "years in practice, area of practice, satisfaction with the hospital electronic health record, perception of the adequacy of staffing levels, being treated fairly in the workplace, work-life integration and meaning in work were evaluated", were these factors investigated in other studies, anecdotal evidence suggesting these would be implicated… **Years in practice and areas of practice are standard demographic questions that are included in the WBI survey.** **"The work I do is meaningful to me" and "My work schedule leaves me enough time for personal/family life" constitute questions eight and nine of the nine question WBI index.** **The company that hosts the WBI survey, CWS Inc. provides the opportunity to include additional questions in the WBI survey from a list of questions**

that have previously been used in peer-reviewed publications. The authors selected the following additional questions:

a. Please rate your satisfaction with your electronic medical record (EMR),

b. I am treated fairly in the workplace.

c. The staffing levels in this work setting are sufficient to handle the number of patients.

from the document “Exemplary Survey Items to Explore Impact of Well-Being Initiatives” (reproduced below), which was provided to the Authors by Dr. Liselotte Dyrbye, Mayo Clinic.

Domain Exemplary Item National Benchmark

Practice Efficiency: “Please rate your satisfaction with your electronic medical record (EMR)”2 b

“Please rate your satisfaction with computerized order entry”1 b

“The amount of time I spend on clerical tasks related to the following is reasonable:

• Tasks directly related to patient care (e.g. order entry, dictation, lab results review, communicating with patients via the patient portal, etc)”

• Tasks indirectly related to patient care (e.g. correspondence, completion of forms, answering phone calls, etc).” (b) Reference 1

Resources: “The staffing levels in this work setting are sufficient to handle the number of patients.” (b)

“My employer provides the necessary resources for me to achieve my career goals.” (b)

Autonomy: "I have significant autonomy in determining how I do my job” (a) Reference 2

Work-Life balance: “My work schedule leaves me enough time for my personal/family life.” (b) Reference 2

Control / Flexibility: “I have sufficient flexibility/control over how I do my work.” (b)

“I am satisfied with my involvement in decisions that affect my work.” (b)

Organizational leadership: specific leadership dimensions of immediate supervisor (b) Reference 3

Fairness: “I am treated fairly in the workplace.” (b)

Meaning in work: “The work I do is meaningful to me” (a)

Productivity / Retention: “What is the likelihood that you will reduce the number of hours you devote to clinical care over the next 12 months?”

“What is the likelihood that you will leave your current practice situation within 2 years?” (c) Reference 4

(a) Response option: 7-point Likert agreement scale

(b) Response option: 5-point Likert satisfaction or agreement scale

(c) Response option: None, slight, moderate, likely, and definite

1. Shanafelt T, Dyrbye LN, Sinsky C, et al. Relationship Between Clerical Burden and Characteristics of the Electronic Environment With Physician Burnout and Professional Satisfaction. Mayo Clin Proc 2016;91:836-48.

2. Shanafelt T, Hasan O, Dyrbye L, et al. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. Mayo Clin Proc 2015;90:1600-13.

3. Shanafelt TD, Gorringe G, Menaker R, et al. Impact of organizational leadership on physician burnout and satisfaction. Mayo Clinic Proceedings 2015;90:432-40.

4. Sinsky CA, Dyrbye LN, West CP, Satele D, Tutty M, Shanafelt TD. Professional Satisfaction and the Career Plans of US Physicians. Mayo Clinic Proceedings 2017;92:1625-35.
All three of the additional survey questions we added to the WBI survey have been independently validated, as documented in the peer-reviewed publications listed above.

4. The authors mention that the causes of burnout in allied health staff has not been adequately addressed in prior research, they should include a statement on the importance of identifying these factors.
The Interpretation section of the manuscript now includes the statement: "The finding that more than a quarter of allied health staff had high WBI scores and more than half had severe WBI scores strongly suggests that burnout and overall distress are having a negative impact on the career of allied health staff in the PMCC, their wellbeing and the patient care that they provide."

5. The authors should expand why the survey was sent to 52 health-staff, were there only 52 staff members that practice in the Peter Munk Cardiac Centre? The criteria to receive an invitation to participate in the survey should be included. The authors should address the issue that staff which could be viewed as "additional work."
There are 52 allied health staff in the Peter Munk Cardiac Centre. All 52 allied health staff were eligible for inclusion in this study, and all received an invitation to participate in the study from Canadian Viewpoint, the independent third-party survey company we engaged for this research. Canadian Viewpoint sent individual e-mail invitations to all Allied Health Staff that work in the PMCC, to emphasize the point that neither University Health Network nor the study authors would have access to individual survey participant's responses. All responses were collected by CWS, 3014 Allegro Park LN SW, Rochester, MN. St.
We choose to use the 9-question WBI survey in part because it is short and only takes a few minutes to complete. The high response rate we observed, where 45 of 52 eligible allied health staff completed the survey suggests that staff did not view the survey as "additional work". This survey was designed with the intent of not creating "additional work." Nonetheless, we can not exclude this possibility, and have therefore added the following sentence to the limitations section of the manuscript.
"It is possible that a response bias exists, because allied health staff experiencing burnout or distress may have less interest or motivation to complete the WBI survey."

6. The authors should address initiatives that could be undertaken to decrease the level of burnout among allied health care staff and should place importance on identifying modifiable predictors of burnout.
The Future Directions segment of the Interpretation section of the manuscript now has a description of interventions that could be used to decrease the level of burnout and overall distress among allied health care staff. The following text now appears on page 8 of the revised manuscript: "Future directions. The prevalence of burnout and distress identified in this

	study could be used as a baseline to evaluate the efficacy of interventions that are designed to decrease burnout and distress among allied health staff in the PMCC. These interventions could include individual-focused approaches, such as mindfulness training, stress management, and small group discussions. Structural or organisational strategies, such as changes in work schedules, fostering communication between members of health care teams, and cultivating a sense of teamwork and job control, as well as professional coaching sessions could also be implemented to decrease allied health staff burnout and distress."
Reviewer 2	Dr. Diane Louise Aubin
Institution	School of Public Health, University of Alberta, Edmonton, Alta.
General comments (author response in bold)	Although this is a worthwhile and well-written article, I have several concerns, including: 1. the overall goal of the study - what prompted you to do this study, and why just a focus on CV physicians? **We carried out this study because we became aware of the impact of burnout and overall distress on the quality and safety of the care that allied health staff provide, and the clear association between burnout and distress and the increased risk of medical errors, serious safety events, malpractice proceedings, reduced patient satisfaction and worse patient outcomes. We were also struck by the extraordinary risk for the development of mental health issues among health care workers, including anxiety, depression, and suicidal ideation. We therefore sought to understand if any institutional factors in the Peter Munk Cardiac Centre impacted the prevalence of burnout and distress among our allied health staff.** **The Peter Munk Cardiac Centre functions as an integrated program that includes allied health staff, cardiac and vascular surgeons, cardiovascular anaesthesiologists, cardiologists, cardiac rehabilitation physicians and medical imaging physicians and nurses that focus on the cardiovascular system. We therefore undertook an assessment of burnout and distress in all staff in the Peter Munk Cardiac Centre. In addition to the results reported in this manuscript for allied health staff, we also reported the responses to the WBI survey that was distributed to physicians (127 of 151 responded) and nurses (243 of 493 responded) in the Peter Munk Cardiac Centre in separate manuscripts that are currently under review by CMAJ Open.** 2. The focus of the study is on burnout and distress, where the WBI is a measure of distress, with only one dimension being burnout. **We agree with this comment. The question about burnout is one of the nine questions in the WBI survey. The ability of this question to provide a measure of burnout has been independently validated (Dyrbye LN, Satele D, Shanafelt T. Ability of a 9-Item Well-Being Index to Identify Distress and Stratify Quality of Life in US Workers. J Occup Environ Med. 2016;58(8):810-7). Analysis of survey replies allowed us to identify the relationship between responses to all the WBI survey questions and staffing levels, satisfaction with the EHR and the perception that their work schedule leaves enough time for personal life. We focused on burnout because the relationship between burnout and job performance, job attrition and serious mental health issues among health care providers.**

3. There is no explanation of why the additional questions were asked about EMR, satisfaction and "being treated fairly"...this last question was concerning as there was no explanation of what this meant, or how/whether it was defined for participants.
Please refer to the response to Reviewer 1, question 3 above.

4. It was not clear to me why it was important to compare this study with studies in the US.
The research that was completed by Dyrbye and colleagues to validate the use of the WBI survey (Dyrbye LN, Satele D, Shanafelt T. Ability of a 9-Item Well-Being Index to Identify Distress and Stratify Quality of Life in US Workers. J Occup Environ Med. 2016;58(8):810-7) was carried out on a group of 5,392 non-physician employees in the United States. We were unable to identify a validated survey instrument that considered burnout and distress among Canadian non-physician employees.

5. The Interpretation section was weak, as it was mostly a reiteration of the results and background.
The Interpretation section has been reorganized. The CMAJ Open instructions to authors request that the interpretation section have a "Brief summary of the main results of the study (one paragraph)", followed by an "Explanation of the findings; comparison and contrast of findings with other related studies in the literature (up to three paragraphs)", and then a paragraph addressing "Knowledge gaps and future directions in the area of study." The revised discussion more closely adheres to this format.

6. The conclusion, which should summarize why this study was valuable and what you learned from it, did not address either of these points. It would be helpful to expand on "strategies to decrease distress among physicians" - this is vague, and something we have known for a very long while.
We have supplemented the "Future Directions" section of the manuscript, as suggested, which now states:
"Future directions. The prevalence of burnout and distress identified in this study could be used as a baseline to evaluate the efficacy of interventions that are designed to decrease burnout and distress among allied health staff in the PMCC. These interventions could include individual-focused approaches, such as mindfulness training, stress management, and small group discussions. Structural or organisational strategies, such as changes in work schedules, fostering communication between members of health care teams, and cultivating a sense of teamwork and job control, as well as professional coaching sessions could also be implemented to decrease allied health staff burnout and distress."