

# Burnout and distress among allied health care professionals in a cardiovascular centre of a quaternary hospital network: a cross-sectional survey

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## Abstract

**Background:** Burnout and distress negatively affect the well-being of health care professionals and the treatment they provide. Our aim was to measure the prevalence of burnout and distress among allied health care staff at a cardiovascular centre of a quaternary hospital network in Canada, and compare outcomes to those for nonphysician employees in the United States.

**Methods:** We conducted a survey of allied health care staff, including physical, respiratory and occupational therapists, pharmacists, social workers, dietitians and speech-language pathologists, in a cardiovascular centre at 2 quaternary referral hospitals in Toronto, Ontario, between Nov. 27, 2018, and Jan. 31, 2019. The survey tool included the Well-Being Index (WBI), which measures fatigue, depression, burnout, anxiety or stress, quality of life, work–life integration, meaning in work and overall distress; a score of 2 or higher indicated high distress. We carried out standard univariate statistical comparisons using the  $\chi^2$ , Fisher exact or Kruskal–Wallis test as appropriate to perform univariate comparisons in the sample of respondents. We assessed the relation between a WBI score of 2 or higher and demographic characteristics. We compared univariate associations among WBI data for nonphysician employees in the US who completed the WBI to responses from our participants.

**Results:** The response rate to the survey was 86% (45/52). Thirty-three respondents (73%) reported experiencing burnout in the previous month, and 31 (69%) reported emotional problems. Compared to respondents who perceived fair treatment in the workplace, those who perceived unfair treatment (20 [44%]) were more likely to report emotional problems (17 [85%] v. 13 [54%],  $p = 0.05$ ), to worry that work was hardening them emotionally (15 [75%] v. 8 [33%],  $p = 0.008$ ), and to feel down, depressed or hopeless (12 [60%] v. 4 [17%],  $p = 0.005$ ). Twenty-five respondents (56%) and 13 respondents (29%) reported WBI scores consistent with high ( $\geq 2$ ) or severe ( $\geq 5$ ) distress, respectively. Respondents were more likely to have a high WBI score if they perceived unfair treatment or inadequate staffing levels. Our respondents had a higher prevalence of burnout (73.3% v. 53.6%,  $p = 0.008$ ) and a higher average WBI score (2.6 [SD 2.8] v. 1.7 [SD 2.6],  $p = 0.05$ ) than 9096 nonphysician employees in the US.

**Interpretation:** The prevalence of burnout, emotional problems and distress was high among allied health care staff. Fair treatment in the workplace and adequate staffing may lower distress levels and improve the work experience of these health care professionals.

Burnout is a work-related syndrome characterized by emotional exhaustion, a sense of reduced personal accomplishment and depersonalization that may manifest as negativity, cynicism, and the inability to express empathy or grief.<sup>1–3</sup> The term burnout was first used in a medical context by Freudenberg,<sup>4</sup> who described emotional depletion and loss of motivation and commitment that he and others had observed and experienced. Maslach and colleagues<sup>1,3</sup> subsequently noted that the emotional stress human services workers experienced and their coping strategies had important implications for people’s professional identity and job behaviour.

Burnout adversely affects the quality of care that health care workers provide, and correlates with an increased risk of medical errors, serious safety events, malpractice proceedings, reduced patient satisfaction and worse patient outcomes.<sup>5–10</sup> Health care workers are at high risk for mental health issues, including anxiety, depression and suicide.<sup>11,12</sup>

Although many studies have focused on the prevalence and causes of burnout and distress in nurses<sup>6,13–15</sup> and physicians,<sup>16–18</sup> comparatively fewer studies have addressed these issues among allied health care staff, including pharmacists<sup>19,20</sup> and physical,<sup>21</sup> respiratory<sup>22</sup> and occupational<sup>23,24</sup> therapists. The aim of this research was to measure the prevalence of burnout and overall distress among allied health care staff practising in a cardiovascular centre of a quaternary hospital network.

**Competing interests:** None declared.

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## Methods

### Design, setting and recruitment

We conducted a survey at the Peter Munk Cardiac Centre (PMCC), which is the cardiovascular centre for University Health Network in Toronto, Ontario. It is based at 2 quaternary referral hospitals: Toronto General Hospital and Toronto Western Hospital. The survey was open to all PMCC allied health staff, including physical, respiratory and occupational therapists, pharmacists, social workers, dietitians and speech-language pathologists.

The survey was conducted between Nov. 27, 2018, and Jan. 31, 2019. Posters describing the survey were placed in multiple areas across the 2 sites (Appendix 1, available at [www.cmajopen.ca/content/9/1/E29/suppl/DC1](http://www.cmajopen.ca/content/9/1/E29/suppl/DC1)). An independent third party (Canadian Viewpoint, <https://canview.com/>) sent an initial email invitation (Appendix 2, available at [www.cmajopen.ca/content/9/1/E29/suppl/DC1](http://www.cmajopen.ca/content/9/1/E29/suppl/DC1)) and subsequent reminders to complete the survey to all allied health care staff practising in the PMCC. Neither the University Health Network nor the authors had access to individual responses to the survey, which were collected by Corporate Web Services (<https://www.cws.net/>).

### Survey tool

Multiple surveys can be used to assess burnout, well-being and other work-related dimensions of distress, including the Maslach Burnout Inventory – Human Services Survey for Medical Personnel,<sup>1-3</sup> the Oldenburg Burnout Inventory, the single-item measure used in the Physician Worklife Study, the Copenhagen Burnout Inventory, the Stanford Professional Fulfillment Index, the Well-Being Index (WBI)<sup>25,26</sup> and the Patient Health Questionnaire-9 of the self-report component of the Primary Care Evaluation of Mental Disorders inventory. The validity and reliability of these survey instruments, including consideration of the format, source of data, development and testing, links to outcomes or health system characteristics related to health care professionals, past or validated applications, and cost, have been reported.<sup>27</sup>

After reviewing all these validated survey instruments, we chose to use the WBI because it has a core of only 9 questions, takes only minutes to complete, provides instantaneous and confidential feedback to survey participants, and has been independently validated for use in a diverse group of employees and health care professionals, including physicians, nurses and nonphysician employees.<sup>25,26,28,29</sup> Use of the WBI also enabled comparison of our results to a large ( $n = 9096$ ) group of nonphysician employees in the United States, in whom a WBI score of 2 or higher identified employees with high levels of overall distress.<sup>26</sup> The WBI can also identify employees who are doing well (high overall quality of life, high degree of meaning in work, satisfied with work-life balance) and employees whose degree of distress increases the risk of adverse professional consequences.<sup>26</sup>

Seven of the 9 WBI items are questions that are answered “Yes” or “No,” with 1 point assigned for each “Yes” response.

Responses to the statement “The work I do is meaningful

to me” were based on the Empowerment at Work Scale<sup>30</sup> (7-point Likert scale where 1 = very strongly disagree and 7 = very strongly agree). Respondents who indicated 1 or 2 on the Likert scale had 1 point added to their score, and those who indicated 6 or 7 on the Likert scale had 1 point subtracted from their score.

Respondents indicated their level of agreement with the statement “My work schedule leaves me enough time for my personal/family life” on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree. Respondents who indicated lower satisfaction with work-life integration (i.e., 1 or 2 on the Likert scale) had 1 point added to their score, and those who indicated higher satisfaction (i.e., 4 or 5 on the Likert scale) had 1 point subtracted from their score.

Accordingly, the total score for the WBI ranged from -2 to 9.

We also asked survey participants to supply demographic information and respond to 3 additional statements designed to assess work culture (“Please rate your satisfaction with your electronic health record,”<sup>31</sup> “The staffing levels in this work setting are sufficient to handle the number of patients” and “I am treated fairly in the workplace”). Respondents indicated their level of agreement with the 3 statements on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree. The full survey tool is presented in Appendix 3 (available at [www.cmajopen.ca/content/9/1/E29/suppl/DC1](http://www.cmajopen.ca/content/9/1/E29/suppl/DC1)).

### Feedback

On completion of the survey, respondents received instantaneous feedback via email in the form of a dashboard from the survey administrator that quantified each dimension of distress. If a WBI score indicative of distress (i.e.,  $\geq 2$ ) was identified, the email response to individual study participants included the information required to access local, regional and provincial resources that provide assistance managing stress and resilience, fatigue, emotional concerns, suicidal thoughts, issues related to relationships and work-life balance, and alcohol or substance abuse.

### Statistical analysis

We evaluated the relation between responses to individual WBI questions and participants’ gender, years in practice, area of practice, satisfaction with the hospital’s electronic health record, perception of the adequacy of staffing levels, perception of being treated fairly in the workplace, work-life integration and meaningful work. We assessed demographic and environmental factors that predicted respondents’ WBI scores, and compared their responses to the WBI scores of nonphysician employees in the US who completed the WBI.<sup>26</sup> We also recorded the number of times respondents accessed contact information for local, regional or provincial resources after they received feedback.

We carried out standard univariate statistical comparisons using the  $\chi^2$  test when expected counts were 5 or greater, the Fisher exact test when expected counts were less than 5 and the Kruskal-Wallis test for nonparametric continuous

variables to perform univariate comparisons in the sample of respondents. We assessed selected demographic and work culture items and elements of the WBI survey, both between and within groups. We also assessed the relation between a WBI score of 2 or higher and demographic characteristics, as well as responses to statements about work culture. Finally, we compared univariate associations among WBI data for nonphysician employees in the US<sup>26</sup> with responses from our participants. We conducted all analyses using SAS version 9 (SAS Institute).

### Ethics approval

The University Health Network Research Ethics Board provided a waiver for the requirement for research ethics approval for this study (waiver 18-0246).

### Results

Of the 52 allied health care staff invited to participate in the survey, including 17 pharmacists, 11 respiratory therapists, 6 physical therapists, 6 dietitians, 5 occupational therapists, 4 social workers and 3 speech-language pathologists, 45 (86%) responded. We report the respondents' gender, years since graduation, years working at University Health Network, primary practice location and employment status (full-time, part-time, casual) in Table 1. Given the total small number of allied health staff we identified in the PMCC (52), and the small number of employees in each discipline (3–17), we did not ask allied health care staff to identify their area of specialization, to ensure confidentiality.

The mean WBI score for all respondents was 2.6 (standard deviation [SD] 2.8). Figure 1 shows the distribution of WBI scores.

Almost three-quarters of respondents (33 [73%]) reported that, during the previous month, they felt burned out from their work, almost one-third (31 [69%]) noted they were bothered by emotional problems, and 17 (38%) reported falling asleep while sitting inactive in a public place. Almost half (21 [47%]) agreed or strongly agreed that their work schedule left them enough time for their personal life. Male respondents appeared to have a lower rate of burnout than female respondents (0/3 v. 32/41 [78%],  $p = 0.02$ ). Responses to the remaining survey questions are presented in Appendix 4 (available at [www.cmajopen.ca/content/9/1/E29/suppl/DC1](http://www.cmajopen.ca/content/9/1/E29/suppl/DC1)).

Just over half (24 [53%]) of respondents agreed or strongly agreed that they were treated fairly in the workplace. Compared to those respondents, the 20 respondents (44%) who somewhat or strongly disagreed that they were treated fairly in the workplace were more likely to report emotional problems (17 [85%] v. 13 [54%],  $p = 0.05$ ), to worry that work is hardening them emotionally (15 [75%] v. 8 [33%],  $p = 0.008$ ), and to feel down, depressed or hopeless (12 [60%] v. 4 [17%],  $p = 0.005$ ).

The 33 respondents (73%) who reported that the work they did was meaningful to them were more likely to be somewhat or very satisfied than to be neutral or unsatisfied

**Table 1: Characteristics of allied health care staff who responded to the Well-Being Index survey**

Characteristic	No. (%) of respondents <i>n</i> = 45
<b>Sex</b>	
Male	3 (7)
Female	41 (91)
Missing	1 (2)
<b>Time since graduation in field, yr</b>	
< 2	1 (2)
2–5	10 (22)
6–10	10 (22)
11–15	11 (24)
> 15	13 (29)
<b>Time working at University Health Network, yr</b>	
< 2	3 (7)
2–5	12 (27)
6–10	10 (22)
11–15	9 (20)
> 15	11 (24)
<b>Employment status</b>	
Full-time permanent	39 (87)
Part-time permanent	4 (9)
Casual, temporary, other	2 (4)

with the electronic health record (17/18 [94%] v. 16/26 [62%],  $p = 0.04$ ) and to somewhat or strongly agree than to be neutral or disagree that they were treated fairly in the workplace (21/24 [88%] v. 12/20 [60%],  $p = 0.05$ ). They were less likely to somewhat or strongly agree than to be neutral or disagree that staffing levels in the work setting were sufficient (3/8 [38%] v. 30/36 [83%],  $p = 0.02$ ).

Univariate analysis did not identify any associations between years since completion of graduate training, years working at University Health Network or employment status and any of the individual survey questions.

The number of times respondents accessed contact information for local, regional or provincial resources that help manage stress, emotional concerns, relationships and work-life balance, suicidal thoughts, finances, career development, fatigue and health behaviour is presented in Figure 2.

### Predictors of high scores

Twenty-five respondents (56%) had a WBI score of 2 or higher, and 13 (29%) had a score of 5 or higher (Figure 1). Respondents were more likely to have a WBI score of 2 or higher if they were neutral or disagreed than if they agreed or strongly agreed that they were treated fairly in the workplace (15/24 [62%] v. 9/24 [38%],  $p = 0.02$ ) (Table 2). Respondents

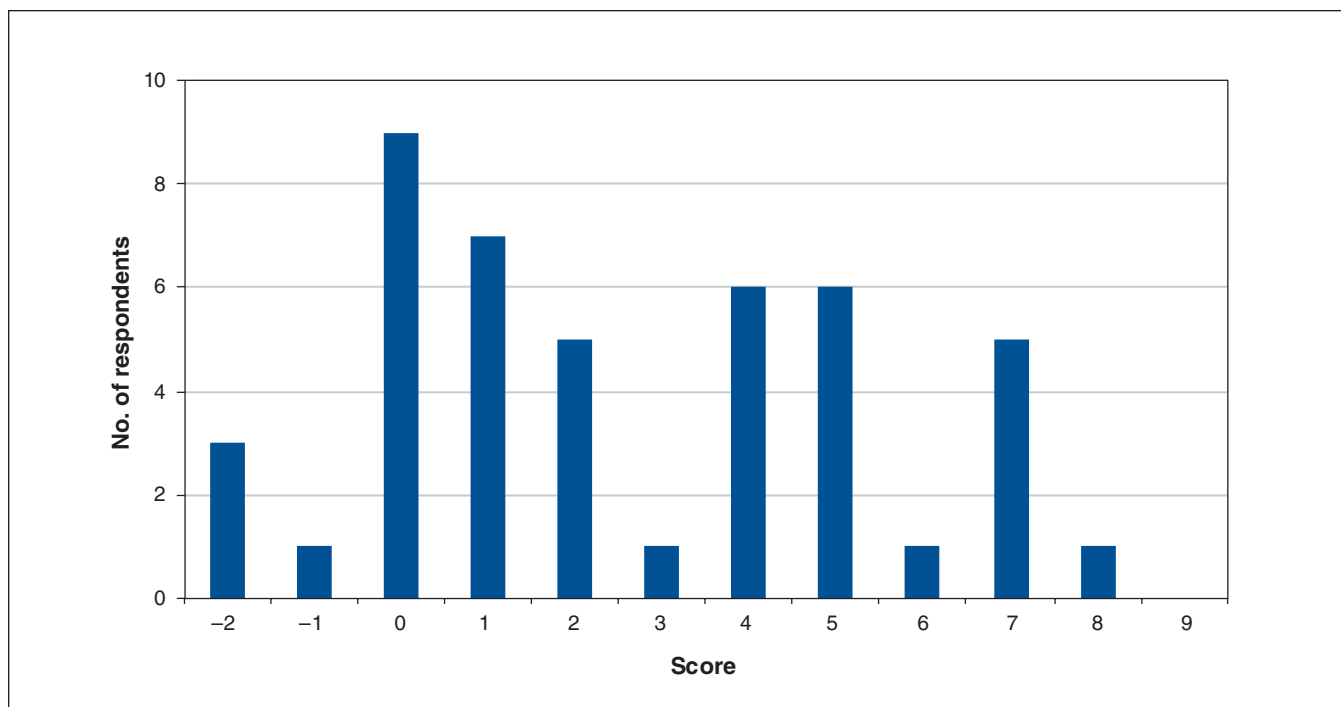


Figure 1: Well-Being Index scores for 45 allied health care staff in the Peter Munk Cardiac Centre.

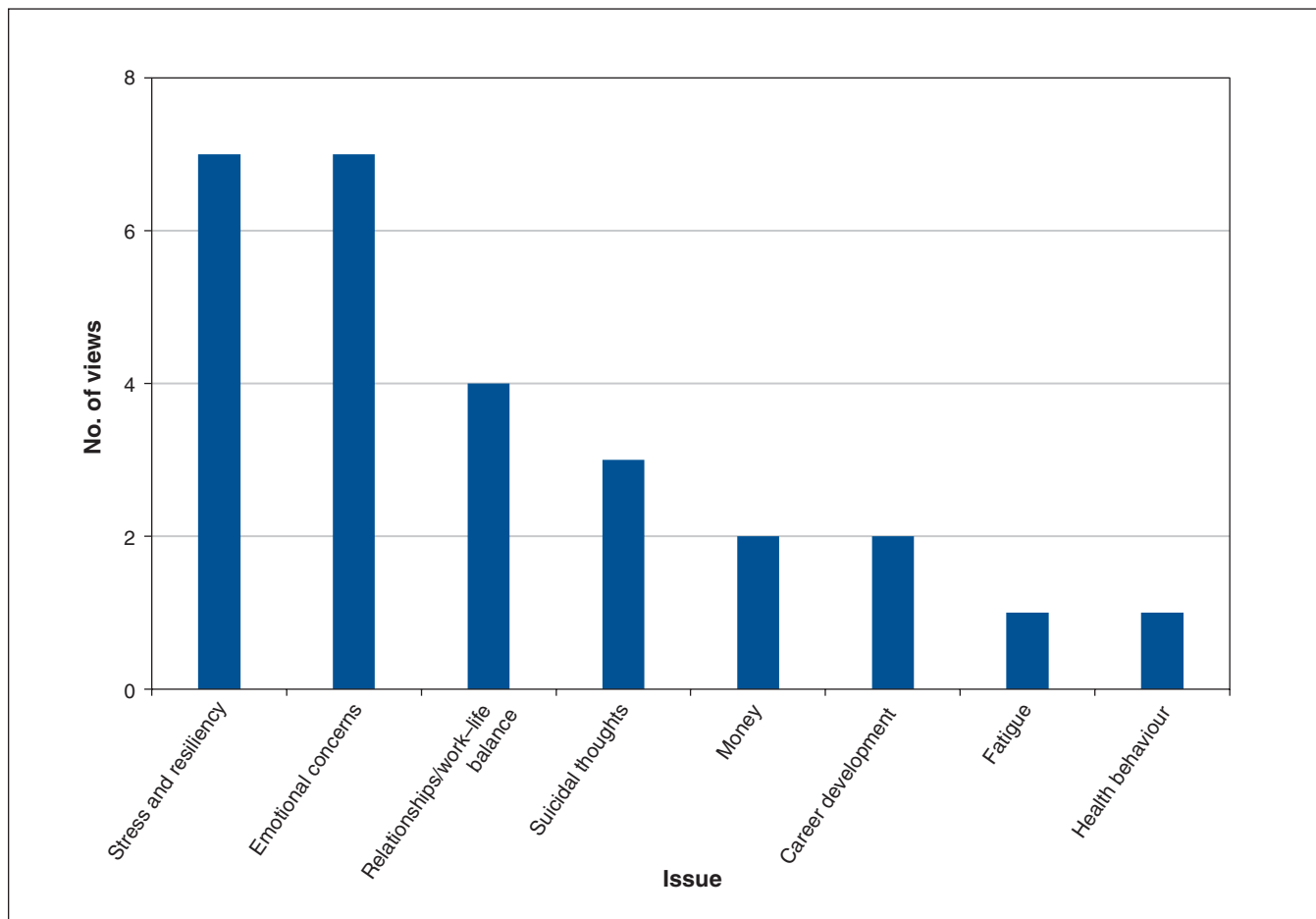


Figure 2: Number of views of online resources by respondents, by issue.

**Table 2 (part 1 of 2): Predictors of high Well-Being Index score (≥ 2)**

Variable	No. (%) of respondents		p value*
	WBI score ≥ 2 n = 25	WBI score < 2 n = 20	
Gender			0.6
Male	1 (4)	2 (10)	
Female	23 (92)	18 (90)	
Missing	1 (4)	0 (0)	
Time since graduation in field, yr,			0.8
< 2	0 (0)	1 (5)	
2–5	6 (24)	4 (20)	
6–10	6 (24)	4 (20)	
11–15	7 (28)	4 (20)	
> 15	6 (24)	7 (35)	
Time working at University Health Network, yr			0.6
< 2	1 (4)	2 (10)	
2–5	8 (32)	4 (20)	
6–10	7 (28)	3 (15)	
11–15	4 (16)	5 (25)	
> 15	5 (20)	6 (30)	
Employment status			0.4
Full-time permanent	23 (92)	16 (80)	
Part-time permanent	2 (8)	2 (10)	
Casual, temporary, other	0 (0)	2 (10)	
Satisfaction with electronic health record			0.05
Very unsatisfied	2 (8)	5 (25)	
Somewhat unsatisfied	9 (36)	1 (5)	
Neutral	5 (20)	4 (20)	
Somewhat satisfied	8 (32)	9 (45)	
Very satisfied	0 (0)	1 (5)	
Missing	1 (4)	0 (0)	
Somewhat/very satisfied with electronic health record (v. neutral/unsatisfied)†			0.4
Yes	8 (44)	10 (56)	
No	16 (62)	10 (38)	
Missing	1 (100)	0 (0)	
Staffing levels in work setting are sufficient			0.06
Disagree strongly	8 (32)	3 (15)	
Disagree somewhat	8 (32)	13 (65)	
Neutral	1 (4)	3 (15)	
Agree somewhat	6 (24)	1 (5)	
Agree strongly	1 (4)	0 (0)	
Missing	1 (4)	0 (0)	

**Table 2 (part 2 of 2): Predictors of high Well-Being Index score (≥ 2)**

Variable	No. (%) of respondents		p value*
	WBI score ≥ 2 n = 25	WBI score < 2 n = 20	
Somewhat/strongly agree that staffing levels in work setting are sufficient (v. neutral/disagree)†			0.05
Yes	7 (88)	1 (12)	
No	17 (47)	19 (53)	
Missing	1 (100)	0 (0)	
Treated fairly in workplace			0.1
Disagree strongly	5 (20)	3 (15)	
Disagree somewhat	6 (24)	1 (5)	
Neutral	4 (16)	1 (5)	
Agree somewhat	7 (28)	10 (50)	
Agree strongly	2 (8)	5 (25)	
Missing	1 (4)	0 (0)	
Somewhat/strongly agree treated fairly in workplace (v. neutral/disagree)†			0.02
Yes	9 (38)	15 (62)	
No	15 (75)	5 (25)	
Missing	1 (100)	0 (0)	

Note: WBI = Well-Being Index.  
\*Fisher exact test.  
†Proportion of row total.

were also more likely to have a WBI score of 2 or higher if they were neutral or disagreed than if they agreed or strongly agreed that staffing levels in the work setting were sufficient (17/24 [71%] v. 7/24 [29%],  $p = 0.05$ ). We did not identify any relation between a WBI score of 2 or higher and gender, years since completion of graduate training, years working at University Health Network, employment status, primary practice location or satisfaction with the electronic health record.

**Comparison with nonphysician employees in the United States**

Our respondents had a higher average WBI score than 9096 nonphysician employees in the US (2.6 [SD 2.8] v. 1.7 [SD 2.6],  $p = 0.05$ ). Higher proportions of our respondents reported burnout (73% v. 54%,  $p = 0.008$ ), were worried that work was hardening them emotionally (53% v. 34%,  $p = 0.007$ ), reported falling asleep while sitting inactive in a public place (36% v. 13%,  $p < 0.001$ ) and reported that their physical health interfered with their ability to do their daily work (36% v. 21%,  $p < 0.02$ ) (Table 3). Similar proportions of the 2 groups had a WBI score of 2 or higher (56% v. 51%,  $p = 0.5$ ).

**Table 3 (part 1 of 2): Comparison of responses to the Well-Being Index between Peter Munk Cardiac Centre allied health care staff and nonphysician employees in the United States<sup>26</sup>**

Item	No. (%) of respondents*		p value
	PMCC allied health care staff n = 45	US nonphysician employees n = 9096	
Gender			0.07§
Male	3 (7)	1903 (20.9)	
Female	41 (91)	7163 (78.7)	
Gender diverse	0 (0)	16 (0.2)	
Missing	1 (2)	14 (0.2)	
Have you felt burned out from your work?			0.008§
Yes	33 (73)	4871 (53.6)	
No	12 (27)	4225 (46.4)	
Have you worried that work is hardening you emotionally?			0.007§
Yes	24 (53)	3118 (34.3)	
No	21 (47)	5978 (65.7)	
Have you often felt bothered by feeling down, depressed or hopeless?			0.99§
Yes	17 (38)	3435 (37.8)	
No	28 (62)	5661 (62.2)	
Have you fallen asleep while sitting inactive in a public place?			< 0.001§
Yes	16 (36)	1143 (12.6)	
No	29 (64)	7953 (87.4)	
Have you felt that all things you had to do were piling up so high that you could not overcome them?			0.8§
Yes	19 (42)	3625 (39.8)	
No	26 (58)	5471 (60.1)	
Have you been bothered by emotional problems?			0.2§
Yes	31 (69)	5364 (59.0)	
No	14 (31)	3732 (41.0)	
Has your physical health interfered with your ability to do your daily work at home and/or away from home?			0.02§
Yes	16 (36)	1917 (21.1)	
No	29 (64)	7179 (78.9)	
The work I do is meaningful to me†			0.2¶
Mean rating ± SD	5.8 ± 1.11	5.5 ± 1.44	
Median rating (range)	6 (2 to 7)	6 (1 to 7)	
The work I do is meaningful to me, rating			0.09§
1–2	1 (2)	463 (5.1)	
3–5	10 (22)	3199 (35.2)	
6–7	34 (76)	5434 (59.7)	

**Table 3 (part 2 of 2): Comparison of responses to the Well-Being Index survey between Peter Munk Cardiac Centre allied health care staff and nonphysician employees in the United States<sup>26</sup>**

Variable	No. (%) of respondents*		p value
	PMCC allied health care staff n = 45	US nonphysician employees n = 9096	
My work schedule leaves me enough time for my personal/family life†			0.2¶
Mean rating ± SD	3.2 ± 1.25	3.5 ± 1.18	
Median rating (range)	3 (1 to 5)	4 (1 to 5)	
My work schedule leaves me enough time for my personal/family life, rating			0.5§
1–2	14 (31)	2183 (24.0)	
3	10 (22)	2088 (23.0)	
4–5	21 (47)	4825 (53.0)	
WBI score			0.05¶
Mean ± SD	2.6 ± 2.78	1.7 ± 2.62	
Median (range)	2 (–2 to 8)	2 (–2 to 9)	
High WBI score (≥ 2)			0.5§
Yes	25 (56)	4637 (51.0)	
No	20 (44)	4459 (49.0)	

Note: PMCC = Peter Munk Cardiac Centre, SD = standard deviation, WBI = Well-Being Index.  
 \*Except where noted otherwise.  
 †Rated on a 7-point Likert scale where 1 = very strongly disagree and 7 = very strongly agree.  
 ‡Rated on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree.  
 § $\chi^2$  test.  
 ¶Kruskal–Wallis test.

## Interpretation

In this study, 73% of allied health care staff practising in the PMCC reported burnout in the previous month, and 69% reported emotional problems. Over half (56%) had a WBI score of 2 or higher, and 29% had a score of 5 or higher. Respondents were more likely to have a high WBI score if they perceived unfair treatment in the workplace or disagreed that staffing levels were sufficient.

A WBI score of 2 or higher identified allied health care staff with high levels of overall distress because such scores were associated with a 1.2-fold higher likelihood of poor overall quality of life, 1.2-fold higher likelihood of severe fatigue, 1.3-fold higher likelihood of recent suicidal ideation and 1.3-fold higher likelihood of burnout in the sample of nonphysician employees in the US.<sup>26</sup> Analysis of that cohort showed that a WBI score of 2 or higher equated to a 34% probability of burnout.<sup>26</sup> We interpreted a WBI score of 5 or higher to indicate severe distress among our respondents because such scores are associated with a 2.3-fold higher likelihood of severe fatigue, 2.9-fold higher likelihood of poor overall quality of life, 3.2-fold higher likelihood of recent suicidal ideation and 5.7-fold higher likelihood of burnout among nonphysician employees.<sup>26</sup> A WBI score of 5 or higher equated to a 69% probability of burnout in that group.<sup>26</sup> This is relevant, because workplace burnout, as well as organizational climate

and job stress, are predictors of job retention among some allied health care staff.<sup>19</sup> The finding that more than half of our respondents had high WBI scores and more than a quarter had scores consistent with severe distress strongly suggests that burnout and overall distress are having a negative impact on the careers of allied health care staff in the PMCC, their well-being and the patient care that they provide.<sup>5–10</sup>

Our respondents were more likely to find their work to be meaningful if they were satisfied with the electronic health record. Although finding meaning in work may mitigate the relation between job-related stress and psychologic distress,<sup>32–34</sup> we did not identify any correlation between satisfaction with the electronic health record and the prevalence of burnout or overall distress.

We plan to use the prevalence of burnout and distress identified in this study as a baseline to evaluate the efficacy of interventions designed to decrease burnout and distress among allied health care staff in the PMCC. These interventions may include individual-focused approaches such as mindfulness training, stress management and small-group discussions.<sup>35</sup> Structural or organizational strategies, such as changes in work schedules, fostering communication between members of health care teams, and cultivating a sense of teamwork and job control,<sup>36,37</sup> as well as professional coaching sessions,<sup>38</sup> could also be implemented. Our results suggest that interventions to decrease distress among

these professionals should focus on addressing unfair treatment in the workplace and inadequate staffing levels.

The PMCC functions as an integrated program that includes allied health care professionals, nurses, nurse practitioners, cardiac and vascular surgeons, cardiovascular anesthesiologists, cardiologists, cardiac rehabilitation physicians and medical imaging physicians who focus on the care of patients with cardiovascular disease. In concurrent studies, we noted that levels of burnout were also high among physicians (66%) and nurses (79%) in the PMCC.<sup>39,40</sup> The 78% of PMCC nurses with a high WBI score were more likely to perceive insufficient staffing levels or unfair treatment in the workplace, and to be dissatisfied with the electronic health record.<sup>40</sup> Similarly, the 55% of physicians in the PMCC with a high WBI score were more likely to perceive insufficient staffing levels or unfair treatment in the workplace.<sup>39</sup> These findings, combined with the results of this study, identify the perception of unfair treatment and of inadequate staffing levels as common institutional factors that drive burnout and overall distress among health care professionals in the PMCC.

### Limitations

This study has several limitations. Study participants were restricted to allied health care staff practising in the area of cardiovascular medicine and surgery in 2 quaternary referral hospitals, which could limit the generalizability of our results. The relatively modest number of respondents may limit study validity and makes type 2 statistical errors more likely. The low number of male respondents limited our ability to compare their results with those of the female respondents. The previously described supplemental survey questions that relate to the perception of the adequacy of staffing levels, fair treatment in the workplace and satisfaction with the electronic health record were not subject to pilot evaluation in this study. The 9096 nonphysician employees in the cohort of respondents to the WBI survey in the US<sup>26</sup> represent a variety of professions, which limited our ability to compare WBI scores directly with a group of allied health care professionals in the PMCC. Finally, the limited number of respondents to our survey precluded multivariable analysis of the data.

### Conclusion

The perception of inadequate staffing levels and unfair treatment in the workplace predicted higher levels of overall distress among allied health care staff. Initiatives that focus on addressing these institutional factors might lower distress levels and burnout among allied health care staff in the PMCC and improve their work experience and patient outcomes.

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