Assessment and Prevention of Burnout in Canadian Pharmacy Residency Programs

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ABSTRACT

Background: There is a paucity of literature describing the incidence of burnout among Canadian pharmacy residents, despite evidence that pharmacy professionals are at high risk of burnout.

Objectives: To characterize Canadian pharmacy residents experiencing high levels of burnout, as defined by the Maslach Burnout Inventory (MBI), to describe existing interventions that Canadian pharmacy residents perceive to be effective in managing burnout, and to describe opportunities for Canadian pharmacy residency programs in managing resident burnout.

Methods: An online survey, consisting of 22 validated questions from the MBI and 19 nonvalidated questions developed by the investigators, was distributed by email to 558 Canadian pharmacy residents from the 2020/21, 2019/20, and 2018/19 residency years.

Results: A total of 115 partial or complete survey responses were included in the analysis, and 107 respondents completed the MBI section of the survey. Of these, 62% (66/107) were at high risk of burnout according to at least 1 MBI subscale, with a slight majority of the entire sample being at high risk of burnout on the emotional exhaustion subscale (55/107 [51%]). The most common interventions offered to pharmacy residents to reduce or prevent burnout were mentorship programs, schedule changes, and promotion of self-organization. Current interventions reported to be the most useful were self-care workshops, discussion groups, and workload adjustment. Potential future interventions perceived to be most useful for reducing and preventing burnout were schedule changes and workload adjustment.

Conclusions: More than half of Canadian pharmacy residents who responded to the survey were at high risk of burnout. Canadian pharmacy residency programs should consider implementing additional interventions to help reduce and prevent resident burnout.

Keywords: burnout, pharmacy residents, Maslach Burnout Inventory, Canadian pharmacists

RÉSUMÉ

Contexte : Il y a peu de documentation qui décrit l'incidence de l'épuisement professionnel chez les résidents en pharmacie canadiens, malgré les preuves de risques élevés auxquels les professionnels en pharmacie sont exposés.

Objectifs : Décrire les résidents canadiens en pharmacie qui connaissent des niveaux élevés d'épuisement professionnel, tels que définis par l'inventaire d'épuisement mis au point par Maslach et Jackson [en anglais *Maslach Burnout Inventory (MBI)*]; décrire les interventions existantes que ces personnes perçoivent comme efficaces pour le gérer; et décrire les possibilités de gestion de l'épuisement professionnel dans les programmes canadiens de résidence en pharmacie.

Méthodes : Une enquête en ligne comprenant 22 questions validées du MBI et 19 questions non validées, préparées par les enquêteurs, a été envoyée par courriel à 558 résidents canadiens en pharmacie des années de résidence 2020-2021, 2019-2020 et 2018-2019.

Résultats : Au total, 115 réponses partielles ou complètes ont été incluses dans l'analyse, et 107 répondants ont rempli la section MBI de l'enquête. Parmi ces derniers, 62 % (66/107) présentaient un risque élevé d'épuisement professionnel selon au moins 1 sous-échelle du MBI, une légère majorité de l'ensemble de l'échantillon présentant un risque élevé d'épuisement professionnel sur la sous-échelle d'épuisement émotionnel (55/107 [51 %]). Les interventions les plus courantes offertes aux résidents en pharmacie pour réduire ou prévenir l'épuisement professionnel étaient les programmes de mentorat, les changements d'horaire et la promotion de l'auto-organisation. Les interventions actuelles signalées comme étant les plus utiles étaient les ateliers d'autosoins, les groupes de discussion et l'adaptation de la charge de travail. Les interventions futures potentielles perçues comme les plus utiles pour réduire et prévenir l'épuisement professionnel étaient les changements d'horaire et l'adaptation de la charge de travail.

Conclusions : Plus de la moitié des résidents canadiens en pharmacie qui ont répondu à l'enquête présentaient un risque élevé d'épuisement professionnel. Les programmes canadiens de résidence en pharmacie devraient envisager de mettre en œuvre des interventions supplémentaires pour aider à le réduire et à le prévenir.

Mots-clés : épuisement professionnel, résidents en pharmacie, Maslach Burnout Inventory, pharmaciens canadiens

INTRODUCTION

Health care professionals can experience burnout at any stage of their careers.[1] The World Health Organization defines burnout as a syndrome resulting from chronic workplace stress. It is classified in the *International Classification of Diseases*, 11th revision, as an occupational phenomenon and not as a medical condition.[2] Burnout can be characterized by a constellation of physical and behavioural symptoms, including increased career frustration, excessive inflexibility in practice, and the appearance of features of depression.[1] Burnout progresses through 3 stages: emotional exhaustion, depersonalization, and reduced sense of personal accomplishment.[1,3,4] This process begins with emotional exhaustion, a state in which the individual feels indifferent about their job and lacks devotion to their work. The person then advances to depersonalization, developing a negative attitude toward their job and workplace. Finally, the person will progress to a reduced sense of personal accomplishment, which may include feelings of incompetence even when achieving success.[1,3,4] As a result, practitioners may begin to despise a once-loved job, which can have negative effects on them and on others, including patients.[1]

Although burnout may affect health care professionals at any point of their career, it has been suggested that younger practitioners may be at increased risk of burnout because they have less practice experience.[3,5,6] Pharmacy has previously been identified as a stressful profession, with front-line pharmacists being at high risk of burnout.[3,6] Furthermore, pharmacy residents are at an increased risk of experiencing burnout because of their long working hours, busy schedules, and high stress levels.[1,6,7] It has been shown that pharmacy residents working more than 60 hours per week have higher levels of stress and anxiety, as measured by the validated 10-item perceived stress scale, which puts them at increased risk of burnout.[6,8] Additionally, there is some evidence that female pharmacy residents and residents with children may have higher levels of stress than their respective counterparts.[9] Other significant stressors that may increase the risk of burnout include a person's financial situation, work overload, fear of making an error, and inability to achieve work–life balance.[9]

The Maslach Burnout Inventory (MBI) is a validated tool for measuring the severity of burnout.[4,5] In a study aimed at quantifying burnout in hospital pharmacists, Durham and others[3] found that pharmacists most frequently reported feelings of emotional exhaustion (36.5%), followed by reduced personal accomplishment (32.2%) and depersonalization (20.1%), according to the MBI. In a similar study utilizing the MBI, Kang and others[10] found that health-system pharmacists most commonly experienced emotional exhaustion (49.6%), followed by depersonalization (35%), and reduced personal accomplishment (33.3%).

It is well documented that burnout among health care practitioners is associated with poor clinical decision-making, medical errors, and poor patient safety outcomes.[1,11,12] A survey completed in Ireland revealed that 64% of medical residents experiencing burnout reported making a medical error, compared with 22% of those who had not experienced burnout.[1] Likewise, a survey of US surgeons showed that every 1-point increase in depersonalization on the MBI was associated with an 11% increase in the likelihood of reporting a medical error, and each 1-point increase in emotional exhaustion was associated with a 5% increase.[13]

A variety of interventions have been proposed and assessed in terms of their effectiveness in preventing and managing health care professional burnout. Typically, such interventions are grouped into 2 categories: individual-led interventions and organization-directed interventions. Individual-led interventions include mindfulness training (which involves in-depth personal and situational reflection), meditation exercises, communication skills training, discussion groups related to stress and job satisfaction, and self-care workshops discussing risk factors and coping behaviours for burnout.[14,15] In contrast, most organization-directed interventions focus on changes in scheduling to reduce workload, as well as projects to improve communication and workflow.[15] A meta-analysis comparing the effectiveness of individual-led and organization-directed interventions found that the latter were associated with higher treatment effects and greater reductions in burnout.[15] Other interventions that have been suggested to promote resilience and prevent burnout include engaging in leisure activities outside of work, mentorship programs for younger clinicians, and increasing self-organization.[16]

Identifying useful interventions will help pharmacy residency programs to reduce the incidence of burnout among residents. The purpose of this study was to determine whether interventions are currently implemented by Canadian pharmacy residency programs to manage resident burnout and to describe the perceived effectiveness of any existing interventions. The specific objectives were to quantify and characterize Canadian pharmacy residents experiencing high levels of burnout as defined by the MBI, to describe existing interventions that Canadian pharmacy residents perceive to be effective in managing burnout, and to describe current opportunities for Canadian pharmacy residency programs in managing resident burnout.

METHODS

This study was approved by the Saskatchewan Health Authority Research Ethics Board.

Study Design

An anonymous online survey, consisting of 22 validated questions from the MBI and 19 nonvalidated questions

about interventions to manage burnout during residency developed by the study investigators, was distributed to study participants (survey questions available by request to the corresponding author). The survey consisted of a mix of multiple choice and free-text questions. None of the survey questions were mandatory, and incomplete responses were accepted for data analysis.

The MBI uses 3 subscales to describe the frequency with which respondents experience feelings of emotional exhaustion, depersonalization, and reduced personal accomplishment. There are 9 items in the emotional exhaustion subscale, 5 items in the depersonalization subscale, and 8 items in the personal accomplishment subscale. Each item is written in the form of a statement describing a personal feeling, for which frequency is measured on a scale of 0 (never experiencing such a feeling) to 6 (experiencing that feeling every day).[4]

Inclusion and Exclusion Criteria

Pharmacy residents who participated in a Canadian Pharmacy Residency Board year 1 (PGY1) or year 2 (PGY2) program or a 16-month Master's degree at the Université de Montréal or Université Laval during the 2020/21, 2019/20, or 2018/19 residency year were eligible to participate in the study.

Participant Recruitment

A survey invitation was sent by email in early 2021 to Canadian pharmacy residency program coordinators with a request to distribute to all pharmacy residents who were or had been enrolled in their respective programs for the 2020/21, 2019/20, and 2018/19 residency years. The target population consisted of 558 individuals, the number of Canadian PGY1, PGY2, and Quebec Master's residency program positions filled for the aforementioned academic years. The survey was available online from January 18 to February 12, 2021. A reminder email was sent to the program coordinators on February 1, 2021.

Data Collection

Study data were collected and managed using REDCap electronic data-capture tools hosted at the Saskatchewan Health Authority. REDCap is a secure, web-based software platform designed to support data capture for research studies. It provides an intuitive interface for validated data capture, audit trails for tracking data manipulation and export procedures, automated export procedures for seamless data downloads to common statistical packages, and procedures for data integration and interoperability with external sources.[17,18]

Statistical Analysis

Each subscale of the MBI is evaluated separately, to produce 3 separate scores. High risk of burnout is defined as a high score on either the emotional exhaustion subscale (defined as z = mean + [SD * 0.5]) or the depersonalization subscale (defined as z = mean + [SD * 1.25]) or a low score on the personal accomplishment subscale (defined as not being a high score at z = mean + [SD * 0.10]), where SD is the standard deviation.[4] Partial survey responses were included in the data analysis and in calculation of burnout risk.

For the nonvalidated questions, statistical analyses were performed using SPSS software (IBM SPSS Statistics 22.0). Descriptive statistics were computed and expressed as frequencies and percentages. Continuous variables were summarized as means or medians with SDs. Categorical data were analyzed using frequency distributions and percentages. Free-text data were coded, grouped into common categories, and summarized by the primary investigator (C.D.).

RESULTS

Overview of Respondents

Of the pharmacy residents eligible for study inclusion (n = 558), a total of 129 (23%) responded to the survey. Of these, 14 were excluded from the data analysis because although they initiated a survey response, they did not answer any of the survey questions; therefore, a total of 115 partial or complete responses were included in the analysis. Given that none of the survey questions were mandatory, the total number of respondents for each question varied and is denoted for each finding. The survey respondents represented all 9 provinces with a pharmacy residency program. The median age while completing residency was 26 (SD 2.58) years, and 75% (86/115) of the respondents identified as female. The majority of participants (89/115 [77%]) were enrolled in a PGY1 program, and 46% (53/115) of the responses came from those participating in the 2020/21 residency year. The median number of vacation days offered to pharmacy residents was 10 (SD 4.90), and the median number of hours spent on residency-related activities per week was 60 (SD 13.43). Just over half of the residents participating in this study (52% [59/114]) reported having successfully completed their residency program, whereas 46% (52/114) were in the process of completing their program at the time of survey distribution (Table 1).

Maslach Burnout Inventory

A total of 107 respondents were included in the MBI analysis. The remaining 8 respondents were excluded because they did not complete all components of the MBI, which is required for the determination of burnout risk with this tool. Overall, 62% (66/107) of these respondents were at high risk of burnout on at least 1 subscale. A slight majority of respondents scored high on the emotional exhaustion subscale (55/107 [51%]), and 14% (15/107) were at high risk of burnout on all 3 subscales (Table 2). Demographic differences between respondents at high risk of burnout and those not at high risk were not statistically significant (data not shown).

Interventions to Reduce Pharmacy Resident Burnout

Overall, 75% (80/106) of respondents expressed interest in interventions to help alleviate burnout. According to survey responses, the most common intervention offered to pharmacy residents was a mentorship program (54/107 [50%]), followed by scheduling changes (31/107 [29%]) and promotion of self-organization (25/107 [23%]). Figure 1 depicts the interventions offered to pharmacy residents during their programs, as reported by survey respondents.

Of the interventions offered at the time of residency enrolment, a mentorship program was reported to be useful by 73% (37/51) of the residents to whom it was offered. Schedule changes were reported to be useful by 70% (21/30) of respondents, and promotion of self-organization was reported to be useful by 56% (14/25) of respondents. Self-care workshops (5/5) and discussion groups (7/7) were reported to be useful by 100% of the residents to whom they were offered, and workload adjustment was reported to be useful by 87% (13/15). Interventions most frequently reported as somewhat or not useful included a weekly cap on hours spent on residency-related activities (2/4 [50%]) and mindfulness-based training (3/9 [33%]) (Figure 2).

With regard to the perceived effectiveness of potential or future interventions to reduce burnout, respondents most frequently indicated that implementing schedule changes (78/97 [80%]) would be useful. This was followed by workload adjustment, reported to be potentially useful by 77% (75/97), and a mentorship program, perceived to be useful by 74% of respondents (72/97) (Figure 3).

TABLE 1. Characteristics of Survey Participants

Characteristic	No. (%) of Respondents
Province	*n* = 115
Alberta	17 (15)
British Columbia	19 (17)
Manitoba	< 5%[a]
New Brunswick	8 (7)
Newfoundland and Labrador	< 5%[a]
Nova Scotia	< 5%[a]
Ontario	22 (19)
Quebec	25 (22)
Saskatchewan	14 (12)
Gender	*n* = 115
Female	86 (75)
Male	26 (23)
Prefer not to say	3 (3)
Type of program	*n* = 115
PGY1	89 (77)
PGY2	4 (3)
16-month Master's	22 (19)
Year in residency program	*n* = 115
2020/21	53 (46)
2019/20	44 (38)
2018/19	18 (16)
Marital status during residency	*n* = 114
Single	35 (31)
Married or common law	21 (18)
In a relationship (not married or common law)	55 (48)
Prefer not to say	3 (3)
Child in direct care during residency	*n* = 114
No	113 (99)
Successful completion of residency program	*n* = 114
Yes	59 (52)
No	3 (3)
In progress	52 (46)
Age (years)	*n* = 113
Median ± SD	26 ± 2.58
Vacation during residency[b] (days)	*n* = 113
Median ± SD	10 ± 4.90 (minimum 0, maximum 38)
Time spent on residency activities[b] (h/week)	*n* = 114
Median ± SD	60 ± 13.43 (minimum 10, maximum 100)

PGY = postgraduate year, SD = standard deviation.
[a]Reported as "< 5%" to maintain anonymity.
[b]Potential misinterpretation of survey questions; see Discussion for further explanation.

DISCUSSION

We asked survey respondents if they thought burnout was an issue affecting pharmacy residents, and 93% (99/106) agreed. Furthermore, our survey showed that more than half of pharmacy residents (62%) were at high risk of burnout as

TABLE 2. Overall Assessment of Burnout among Pharmacy Residents Responding to the Survey

Variable	No. (%) of Respondents (*n* = 107)
Distribution of MBI scores by subscale	
High emotional exhaustion[a]	55 (51)
High depersonalization[b]	27 (25)
Low personal accomplishment[c]	32 (30)
Risk of burnout, as scored by MBI subscales	
High risk of burnout on at least 1 subscale	66 (62)
No high risk of burnout on any subscale	41 (38)
High risk of burnout on only 1 subscale	34 (32)
High risk of burnout on 2 subscales	17 (16)
High risk of burnout on all 3 subscales	15 (14)

MBI = Maslach Burnout Inventory.
[a]High risk of burnout defined as a score ≥ 27.
[b]High risk of burnout defined as a score ≥ 10.
[c]High risk of burnout defined as a score ≤ 33.

determined by the MBI. In a similar study conducted in the United States, Gonzalez and Brunetti[19] found that an even greater proportion of pharmacy residents (35/43 [81.4%]) were at high risk of burnout on at least 1 MBI subscale.

In our study, a high risk of burnout was most commonly attributable to a high score on the emotional exhaustion subscale. Similarly, Gonzalez and Brunetti[19] found that the majority (62.8%) of pharmacy residents at high risk of burnout scored high on the emotional exhaustion subscale. Our survey findings mirrored burnout assessments conducted by Durham and others[3] and Kang and others,[10] who found that 53.2% and 55.5%, respectively, of US health-system

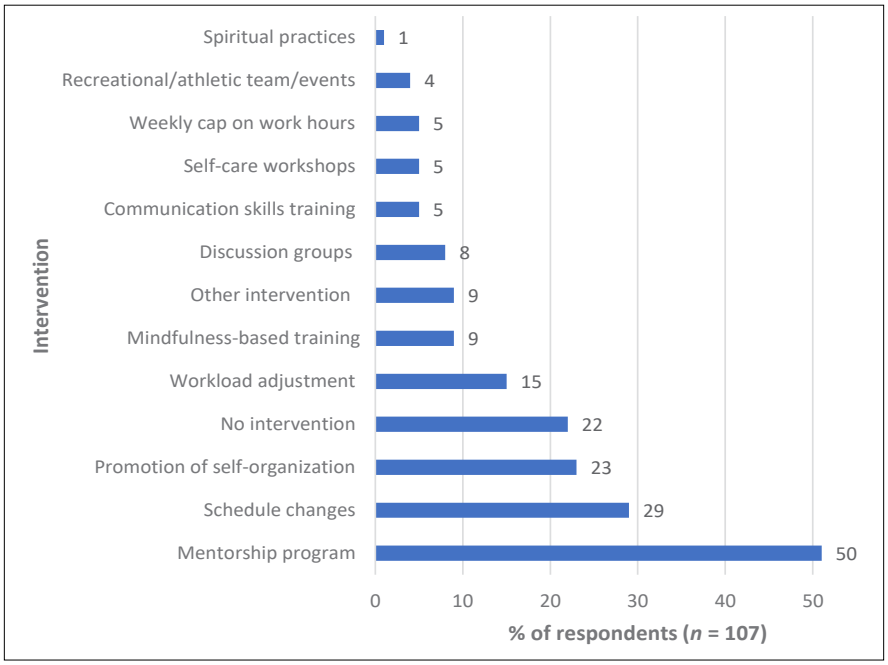

FIGURE 1. Interventions to reduce burnout currently offered to pharmacy residents, as reported by survey respondents. Percentages sum to more than 100%, as survey respondents were allowed to select more than 1 answer.

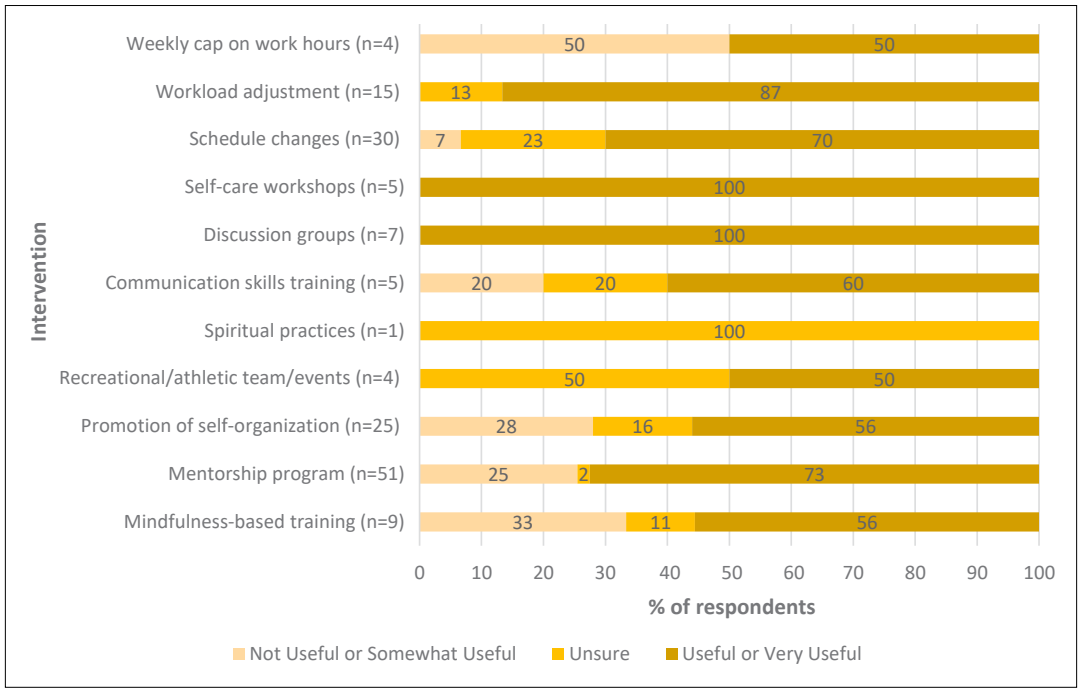

FIGURE 2. Effectiveness of interventions currently offered to pharmacy residents, as reported by survey respondents.

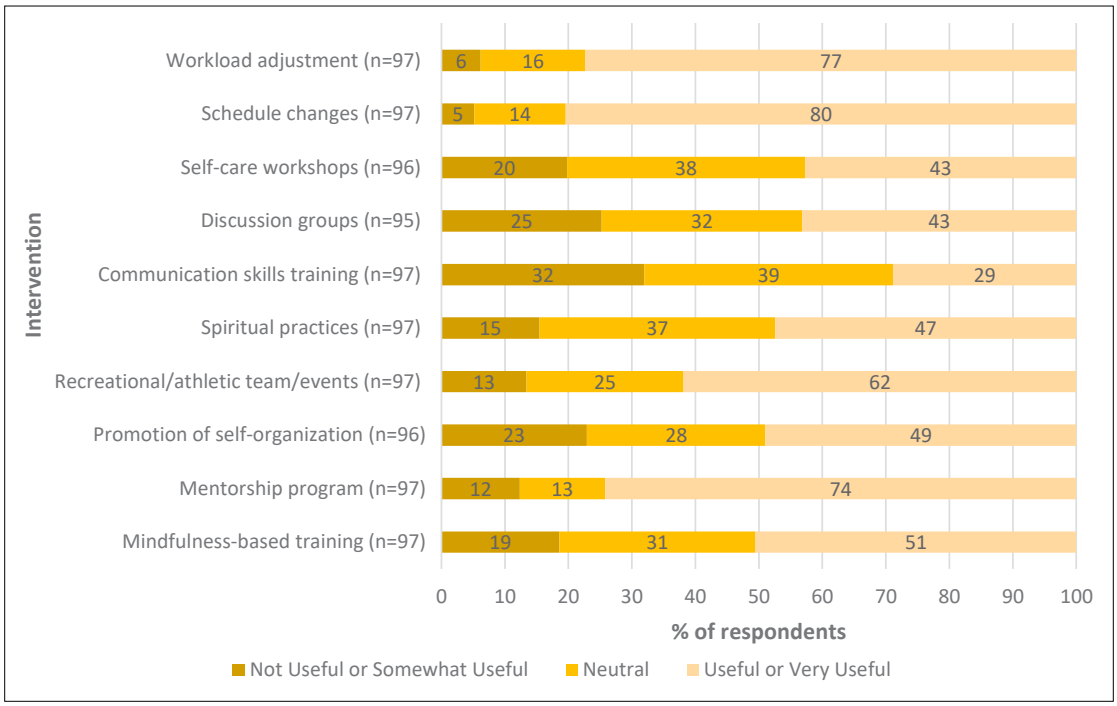

FIGURE 3. Predicted effectiveness of potential future interventions to reduce burnout, as reported by survey respondents.

pharmacists were at high risk of burnout according to the MBI. Similarly, the pharmacists in those studies most frequently scored high on the emotional exhaustion subscale (36.5% and 49.6%, respectively).[3,10] Consistently high emotional exhaustion scores among pharmacists and pharmacy residents may indicate that emotional exhaustion is the driving cause of burnout among pharmacy professionals. Experiencing emotional exhaustion is often the first stage of burnout to affect an individual, which may explain why pharmacy professionals were at higher risk according to this subscale, relative to the other 2 subscales.[1,2-4]

Kang and others[10] found 3 factors that were significantly associated with increased burnout among pharmacists: female gender, working more hours per week (50–59 versus 40–49), and working primarily in a distribution role.[10] Although these factors were not statistically significant in our study, the majority of our survey respondents were female (75%) and the median amount of time spent on residency-related activities was 60 hours per week, which may have been associated with the high risk of burnout that we observed. Our survey findings add to the growing body of evidence that burnout is an issue affecting pharmacists and pharmacy residents and that strategies to reduce or prevent burnout are therefore needed in Canadian pharmacy residency programs.

Of the interventions already offered to pharmacy residents, self-care workshops and discussion groups were reported to be useful by every respondent who had participated in either of these types of intervention. Examples of self-care workshops included tips from a psychologist on reducing stress, self-care improvement, and burnout prevention. Descriptions of discussion groups included scheduled meetings with the residency coordinator or other residents to discuss progress or hardships in the program. Despite these methods being reported as potentially effective in reducing burnout, their utilization appears to be low, and opportunities exist for many residency programs to implement them. Martins and others[20] found that among pediatric medical residents participating in self-care workshops (focused on discussing the negative effects of burnout, recognizing risk factors for burnout, and identifying strategies to cope with burnout) for 2 months, there was no reduction in the prevalence of burnout according to the MBI; however, depersonalization scores did improve significantly. Given that 25% of pharmacy residents in our study scored high on the depersonalization subscale, implementing self-care workshops in Canadian pharmacy residency programs may have utility.

About half of respondents in our study reported that mentorship programs were available, and nearly three-quarters of this group deemed them useful. Jordan and others[21] assessed the impact of a mentorship program on fourth-year medical students and found that mentorship led to a statistically significant improvement in the personal accomplishment score of the MBI.

Although workload adjustment was rarely offered to pharmacy residents (reported by only 15% of respondents), nearly all of these (87%) reported that the intervention was useful. Likewise, workload adjustment was perceived by 77% as a potentially useful future intervention in residency

programs. Similarly, schedule changes were deemed by most respondents (80%) to be a potentially useful future intervention. The perceived utility of schedule changes and workload adjustment is consistent with the meta-analysis conducted by Panagioti and others,[15] who found that organization-directed interventions (including schedule changes and workload reduction) were more effective than individual-led interventions at reducing burnout in physicians. Addressing pharmacy resident burnout at the organizational level was also supported by Potter and Cadiz[22] in a commentary on this topic. The interventions perceived to be effective by study respondents were commonly organization-directed. One proposed explanation for the benefit of organization-directed interventions in reducing burnout, relative to individual-led interventions, may be that the latter are perceived as an "add-on burden" to an already busy schedule.[23] As such, there may be more benefit (in terms of reducing burnout) in removing nonessential tasks and burdens from residents' workload than in introducing an additional activity into their schedule.

Our study had limitations inherent to surveys. For example, it appears that some participants misinterpreted the questions about hours per week spent on residency-related activities and number of vacation days allotted to residents. Each of these questions received multiple outlying responses (e.g., reporting only 10 working hours per week or 38 days of vacation); such outliers indicate possible misunderstanding of the question. Our survey was also subject to recall and response bias, because individuals from the earlier years were asked to retrospectively report how they felt during residency. There was also a risk of misinterpretation of results by the researchers, given the abundance of free-text responses provided. The incidence of burnout may have been underestimated for the 2020/21 residents, depending on the start date of their program in relation to survey distribution. In addition, the COVID-19 pandemic may have affected the incidence of burnout among the 2020/21 and 2019/20 residents. Lastly, our survey was not offered in French, which may have affected the number of responses received from French-speaking pharmacy residents.

Currently, there are no mandatory requirements for Canadian pharmacy residency programs to offer programs or supports to help reduce burnout, despite the majority of pharmacy residents being at high risk. Our findings indicate that it may be beneficial for programs to offer mentorship programs, self-care workshops, and discussion groups to their residents. It may also be beneficial to implement workload adjustment and scheduling changes for residents who are struggling with burnout, since these were the interventions most frequently perceived as useful by pharmacy residents. More research is needed to measure the effectiveness of interventions at reducing burnout among pharmacy residents.

CONCLUSION

More than half of the pharmacy residents who responded to our survey were found to be at high risk of burnout as defined by the MBI. Emotional exhaustion was the most frequent MBI subscale on which residents had a high risk of burnout. Residency programs should continue to offer interventions perceived to be useful, such as mentorship programs, discussion groups, and self-care workshops. They should also consider looking for opportunities to incorporate workload adjustment and schedule changes to help reduce resident burnout.

References

1. Bridgeman PJ, Bridgeman MB, Barone J. Burnout syndrome among healthcare professionals. *Am J Health Syst Pharm*. 2018;75(3):147-52.
2. Burn-out an "occupational phenomenon": International Classification of Diseases. World Health Organization; 2019 May 28 [cited 2020 Oct 18]. Available from: http://www.who.int/mental_health/evidence/burn-out/en/
3. Durham ME, Bush PW, Ball AM. Evidence of burnout in health-system pharmacists. *Am J Health Syst Pharm*. 2018;75(23 Suppl 4):S93-S100.
4. Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory. 3rd ed. In: Zalaquett CP, Wood RJ, editors. *Evaluating stress: a book of resources*. Scarecrow Press; 1996 [cited 2020 Aug 5]. p. 191-218. Available from: https://www.researchgate.net/profile/Christina-Maslach/publication/277816643_The_Maslach_Burnout_Inventory_Manual/links/5574dbd708aeb6d8c01946d7/The-Maslach-Burnout-Inventory-Manual.pdf
5. Wurm W, Vogel K, Holl A, Ebner C, Bayer D, Mörkl S, et al. Depression-burnout overlap in physicians. *PLoS One*. 2016;11(3):e0149913.
6. Silvester JA, Cosme S, Brigham TP. Adverse impact of pharmacy resident stress during training. *Am J Health Syst Pharm*. 2017;74(8):553-4.
7. Chisholm-Burns MA. Building resilience to combat stress, burnout, and suicidal ideation among pharmacists. *Am J Health Syst Pharm*. 2019;76(18):1364-7.
8. Le HM, Young SD. Evaluation of stress experienced by pharmacy residents. *Am J Health Syst Pharm*. 2017;74(8):599-604.
9. Zinurova E, DeHart R. Perceived stress, stressors, and coping mechanisms among PGY1 pharmacy residents. *Am J Pharm Educ*. 2018;82(7):6574.
10. Kang K, Absher R, Granko RP. Evaluation of burnout among hospital and health-system pharmacists in North Carolina. *Am J Health Syst Pharm*. 2020;77(6):441-8.
11. Brigham T, Barden C, Dopp AL, Hengerer A, Kaplan J, Malone B, et al. A journey to construct an all-encompassing conceptual model of factors affecting clinician well-being and resilience [discussion paper]. In: *NAM Perspectives*. National Academy of Medicine; 2018 Jan 29 [cited 2020 Jul 19]. Available from: https://nam.edu/journey-construct-encompassing-conceptual-model-factors-affecting-clinician-well-resilience/
12. Dyrbye LN, Shanafelt TD, Sinsky CA, Cipriano PF, Bhatt J, Ommaya A, et al. Burnout among health care professionals: a call to explore and address this underrecognized threat to safe, high-quality care [discussion paper]. In: *NAM Perspectives*. National Academy of Medicine; 2017 Jul 5 [cited 2020 Jul 19]. Available from: https://nam.edu/burnout-among-health-care-professionals-a-call-to-explore-and-address-this-underrecognized-threat-to-safe-high-quality-care/
13. Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, et al. Burnout and medical errors among American surgeons. *Ann Surg*. 2010;251(6):995-1000.
14. Mackenzie CS, Poulin PA, Seidman-Carlson R. A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Appl Nurs Res*. 2006;19(2):105-9.

15. Panagioti M, Panagopoulou E, Bower P, Lewith G, Kontopantelis E, Chew-Graham C, et al. Controlled interventions to reduce burnout in physicians: a systematic review and meta-analysis. *JAMA Intern Med*. 2017;177(2):195-205.
16. Zwack J, Schweitzer J. If every fifth physician is affected by burnout, what about the other four? Resilience strategies of experienced physicians. *Acad Med*. 2013;88(3):382-9.
17. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) – a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-81.
18. Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, et al.; REDCap Consortium. The REDCap Consortium: building an international community of software partners. *J Biomed Inform*. 2019;95:103208.
19. Gonzalez J, Brunetti L. Assessment of burnout among postgraduate pharmacy residents: a pilot study. *Curr Pharm Teach Learn*. 2021;13(1):42-8.
20. Martins AE, Davenport MC, Del Valle MP, Di Lalla S, Domínguez P, Ormando L, et al. Impact of a brief intervention on the burnout levels of pediatric residents. *Pediatr (Rio J)*. 2011;87(6):493-8.
21. Jordan J, Watcha D, Cassella C, Kaji AH, Trivedi S. Impact of a mentorship program on medical student burnout. *AEM Educ Train*. 2019;3(3):218-25.
22. Potter JM, Cadiz ML. Addressing burnout in pharmacy residency programs. *Am J Pharm Educ*. 2021;85(3):8287.
23. Busireddy KR, Miller JA, Ellison K, Ren V, Qayyum R, Panda M. Efficacy of interventions to reduce resident physician burnout: a systematic review. *J Grad Med Educ*. 2017;9(3):294-301.

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