



Gender differences in career satisfaction, moral distress, and incivility: a national, cross-sectional survey of Canadian critical care physicians

Différences hommes/femmes en matière de satisfaction professionnelle, de détresse morale et d'incivilité : un sondage national et transversal des médecins intensivistes canadiens

Karen E. A. Burns, MD, FRCPC, MSc · Alison Fox-Robichaud, MD, PhD, FRCPC · Edmund Lorens, BSc, Med · Claudio M. Martin, MD, FRCPC, MSc · for the Canadian Critical Care Society

Received: 29 August 2018 / Revised: 4 December 2018 / Accepted: 5 December 2019 / Published online: 20 February 2019
© Canadian Anesthesiologists' Society 2019

Abstract

Purpose *In a national cross-sectional survey, we aimed to i) characterize work profile, workload, and income, ii) evaluate work satisfaction, work-life integration, burnout,*

incivility, mentorship, and promotion, iii) gauge future physician resource requirements, and iv) assess for differences by gender and specialty (adult vs pediatric).

Methods *We developed, tested, and administered an electronic questionnaire.*

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s12630-019-01321-y>) contains supplementary material, which is available to authorized users.

Results *We analyzed 265 fully and 18 partially completed questionnaires. Respondents were predominantly men (192; 72.5%) and adult intensivists (229; 87.7%). Most intensivists (226/272; 83.1%) were somewhat satisfied or strongly satisfied with their career. Over one third of respondents felt that their daily intensive care unit (ICU) clinical work (113/270; 41.9%), yearly non-ICU clinical work (86/248; 34.7%), administrative work (101/264; 38.3%), and in-house call coverage (78/198; 39.4%) were somewhat high or very high. Nearly half (129/273; 47.3%) felt that their work schedule did not leave enough time for personal/family life. Twenty-seven percent (74/272) of respondents were experiencing at least one symptom of burnout when surveyed and 171/272 (63%) experienced burnout symptoms more than once a month. Ten percent planned to retire in the next five years and 17–20% retired each five-year interval thereafter. Compared with men, women felt that their work schedule left significantly less time for personal/family life ($\chi^2 [4] = 11.36, P < 0.05, \text{odds ratio [OR]} = 0.55$), experienced more frequent and severe burnout symptoms ($F [1,120.91] = 8.04, P < 0.01, \text{OR} = 2.0; F [1,112.80] = 4.91, P < 0.05, \text{OR} = 1.9$), and more incivility in their division ($\chi^2 [1] = 13.73, P < 0.001, \text{OR} = 2.8$), hospital ($\chi^2 [1] = 8.11, P < 0.01, \text{OR} = 2.2$), and university ($\chi^2 [1] = 4.91, P < 0.05, \text{OR} = 2.3$).*

K. E. A. Burns, MD, FRCPC, MSc (✉)
Interdepartmental Division of Critical Care, University of Toronto, Toronto, ON, Canada

Division of Critical Care Medicine, Department of Medicine, St. Michael's Hospital and the Li Ka Shing Knowledge Institute, 30 Bond Street, Office 4-045 Donnelly Wing, Toronto, ON M5B 1W8, Canada

A. Fox-Robichaud, MD, PhD, FRCPC
Hamilton Health Sciences, Hamilton, ON, Canada

Department of Medicine, McMaster University, Hamilton, ON, Canada

E. Lorens, BSc, Med
Department of Medicine, University of Toronto, Toronto, ON, Canada

C. M. Martin, MD, FRCPC, MSc
London Health Sciences Centre, London, ON, Canada

Lawson Research institute, London, ON, Canada

Division of Critical Care Medicine, Department of Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON, Canada

Conclusions Although most intensivists were satisfied with their careers, many were dissatisfied with their workload, experienced work-life integration challenges, and acknowledged burnout symptoms. Women intensivists were significantly less satisfied with their careers, experienced greater work-life integration challenges, more frequent and severe burnout symptoms, and greater incivility.

Résumé

Objectif Nous avons créé un sondage transversal national qui avait pour objectif de i) caractériser le profil professionnel, la charge de travail et le revenu; ii) évaluer la satisfaction professionnelle, l'intégration travail – vie privée, l'épuisement professionnel, l'incivilité, le mentorat et les opportunités d'avancement professionnel, iii) évaluer les besoins futurs en ressources humaines, et iv) évaluer les différences hommes/femmes et entre spécialités (population adulte vs pédiatrique).

Méthode Nous avons mis au point, testé et administré un questionnaire électronique.

Résultats Au total, 265 questionnaires intégralement complétés et 18 questionnaires partiellement complétés nous ont été retournés pour analyse. Les répondants étaient principalement des hommes intensivistes (192; 72,5 %) spécialisés en populations adultes (229; 87,7 %). La plupart des intensivistes (226/272; 83,1 %) se considéraient plutôt satisfaits ou très satisfaits de leur carrière. Plus d'un tiers des répondants étaient d'avis que leur travail clinique quotidien à l'unité des soins intensifs (USI) (113/270; 41,9 %), leur travail clinique annuel non lié à l'USI (86/248; 34,7 %), leur travail administratif (101/264; 38,3 %) et la couverture des gardes sur place (78/198; 39,4 %) étaient plutôt élevés ou très élevés. Près de la moitié (129/273; 47,3 %) des répondants étaient d'avis que leur horaire de travail ne laissait pas suffisamment de temps pour leur vie personnelle/de famille. Vingt-sept pour cent (74/272) des répondants présentaient au moins un symptôme d'épuisement professionnel au moment du sondage et 171/272 (63 %) souffraient de symptômes d'épuisement professionnel plus d'une fois par mois. Dix pour cent planifiaient prendre leur retraite au cours des cinq prochaines années, et 17–20 % planifiaient de le faire dans le courant de chaque intervalle de cinq ans subséquent. Par rapport à leurs collègues masculins, les femmes étaient d'avis que leur horaire de travail laissait significativement moins de temps pour leur vie personnelle/de famille ($\chi^2 [4] = 11,36$, $P < 0,05$, rapport de cotes [RC] = 0,55), souffraient de symptômes d'épuisement professionnel plus fréquents et plus graves ($F [1120,91] = 8,04$, $P < 0,01$, RC = 2,0; $F [1112,80] = 4,91$, $P < 0,05$, RC = 1,9), et de plus d'incivilité dans leur

département ($\chi^2 [1] = 13,73$, $P < 0,001$, RC = 2,8), leur hôpital ($\chi^2 [1] = 8,11$, $P < 0,01$, RC = 2,2) et dans leur université ($\chi^2 [1] = 4,91$, $P < 0,05$, RC = 2,3).

Conclusion Bien que la plupart des intensivistes s'estiment satisfaits de leur carrière, bon nombre s'avouent mécontents de leur charge de travail, des défis d'intégration travail / vie de famille et reconnaissent souffrir de symptômes d'épuisement professionnel. Les femmes intensivistes sont significativement moins satisfaites de leur carrière, font face à des défis plus importants en matière d'intégration vie professionnelle / vie privée, souffrent de symptômes d'épuisement professionnel plus fréquents et plus prononcés ainsi que d'une plus grande incivilité.

Career satisfaction is an important facet of a physician's well-being. Physician satisfaction strongly correlates with patient satisfaction and desirable patient outcomes.^{1,2} Dissatisfied physicians may be more likely to experience medical problems³ and leave clinical practice.⁴ Career dissatisfaction may also reduce the number of trainees entering into particular specialties and compromise patient safety by increasing medical errors.^{4,5}

In a cross-sectional survey of American physicians ($n = 6,590$), Leigh and coworkers found that practitioners in selected specialties (e.g., geriatric medicine, neonatal/prenatal medicine, internal medicine and pediatrics, pediatric subspecialties) had significantly higher career satisfaction than family practitioners (referent category) while those in pulmonary and critical care medicine, neurosurgery, and nephrology had significantly lower satisfaction.⁶ Although these authors did not find that race or gender influenced career satisfaction, several surveys have found that women physicians, especially in selected specialties, have lower career satisfaction than men.⁷⁻⁹ Gender differences in career satisfaction begin early and continue during career development. A survey of 1,708 early clinician researchers, who received National Institutes of Health K08 and K23 awards for mentored career development, found that although career dissatisfaction was generally low, dissatisfaction with work-life integration was high, and was significantly higher in women than men.¹⁰ In a systematic review of 30 studies, Rizvi and coworkers found that women physicians were less satisfied with mentoring relationships, support from all sources, recognition, opportunities for career advancement, time for relationships, and salary.¹¹

There is a paucity of data regarding career satisfaction, work-life integration, and burnout in critical care

physicians, specifically women intensivists. To address this knowledge gap, we developed, tested, and administered a questionnaire to Canadian intensivists to i) characterize work descriptions, workload, and income, ii) evaluate work satisfaction, work-life integration, burnout, incivility, mentorship, and promotion, iii) gauge future physician resource requirements, and iv) assess for differences by gender and specialty (adult vs pediatric).

Methods

Participant identification

We merged lists from the Canadian Critical Care Society (CCCS) and the Royal College of Physicians and Surgeons of Canada (RCPSC), supplemented by contact information from local, regional, and provincial critical care leaders, to broadly sample Canadian intensivists. We excluded physicians-in-training, those who were no longer in practice, and those who did not wish to complete the questionnaire. To preserve anonymity, personnel (S.D., C.J.) at the RCPSC administered e-mail invitations to complete the questionnaire.

Survey development

We used a systematic approach to questionnaire design.¹² Research ethics approval was sought, but not required, from the Hamilton Health Sciences Research Ethics Board.

Item generation, reduction, and formatting

Using a template questionnaire, three investigators (K.B., A.F.R., C.M.) generated questions in nine domains (work description, remuneration, work-life integration [including burnout], work environment, teaching, research, collegial culture, mentorship, and promotion). Two authors (C.M., K.B.) reduced items within domains to retain relevant items and reduce respondent burden. To assess burnout, we used a single item that correlates well with the full domain of the original version.¹³ We offered a 10% reduction on 2018 CCCS membership dues for survey completion.^{14,15}

Questionnaire testing

We pilot tested the questionnaire with eight intensivists to identify poorly worded or redundant questions and responses and to assess questionnaire flow, salience, and acceptability.¹² After revising the questionnaire, we pilot tested the questionnaire with two additional intensivists. Subsequently, we assessed the clinical sensibility (comprehensiveness, clarity, and face validity) and time required to complete the questionnaire (25 min) with three

intensivists.¹² The final questionnaire was formatted in English and French and included 43 questions plus 19 demographic questions with nominal and ordinal, and open-ended response formats (available as Electronic Supplementary Material [ESM] eAppendix 1). Participation was voluntary and questionnaire completion implied consent to participate.

Questionnaire administration

We used the Qualtrics Survey Platform (Qualtrics, DE, USA) to administer the questionnaire, track respondents and non-respondents, and issue electronic reminders.¹⁶ Potential respondents received a prenotification e-mail followed by an invitation to complete the questionnaire three days later. We administered three electronic reminders (separated by approximately 10-14 days) and a brief e-mail between the first two reminders and the final reminder to notify respondents of survey closure. We alternated e-mail distributions between the beginning (Monday or Tuesday) and end (Friday) of the week. All e-mails were personalized with the recipient's name and contained their unique survey link to prevent duplicate submissions (ESM, eAppendix 2).

Statistical analysis

We analyzed interval data using mean with standard deviation and median with interquartile ranges. We used the Pearson Chi-square and Likelihood Ratio tests of association, Mann Whitney U or Kruskal-Wallis and robust (Brown-Forsythe) one-way analyses of variance, and binary/ordinal logistic regression, where appropriate, to estimate odds ratios (OR) as effect sizes.^{17,18} In *a priori* subgroup analyses, we compared responses based on respondent gender (men vs women) and specialty (adult vs pediatric). To assess representativeness, we compared the age, gender, and location of survey respondents with individuals in the RCPSC database. We considered *P*-values < 0.05 to be statistically significant. Using the merged lists of potential respondents, we planned to administer 900 questionnaires to intensivists and expected a 50% response rate.

Results

Respondents

Including opt-out responses, we received 418/1,130 (37.0%) responses. Of these, 18 questionnaires were completed in part and 265 were completed in full (analyzable response rate 283/1,130 = 25%). Of the questionnaires completed in full, respondents were

predominantly adult intensivists (229/261; 87.7%), men (192/265; 72.5%), and represented nine of the ten Canadian provinces (Table 1). Survey respondents were similar in provincial distribution, age, and gender to the 1,043 registered Fellows in Critical Care Medicine with the RCPSC (ESM, eFig. 1).

Work profile, workload, and income

Over a third of respondents felt that their daily intensive care unit (ICU) clinical workload (113/270; 41.9%), yearly non-ICU clinical workload (86/248; 34.7%), administrative workload (101/264; 38.3%), and in-house call coverage (78/198; 39.4%) were somewhat high or very high (Fig. 1). Similar proportions of respondents expressed dissatisfaction with the transparency of hiring practices (104/270; 38%), the distribution of clinical ICU weeks (153/272; 28%), and other paid positions (99/258; 31%) (ESM, eFig. 2). Most respondents felt comfortable raising personal/professional or family concerns when scheduling workplace obligations within their division/department (158/201; 79% and 152/205; 74.1%) and other divisions/departments within their hospital (124/201; 62% and 122/205; 59.5%).

Using a multiple response format, we found that intensivist income was largely derived from fee-for-service work (217/794; 27.3%), sessional fees (fixed income per unit of time) (138/794; 17.4%), and on-call stipends (134/794; 16.9%). Most respondents were somewhat satisfied or strongly satisfied with their remuneration (191/273; 70.0%) from the aforementioned income sources and total income (176/264; 66.6%).

Work satisfaction and work-life integration

Although most respondents felt a sense of belonging within their division (219/265; 83%) and hospital (212/267; 79%) and were somewhat satisfied or strongly satisfied (226/272; 83%) with their career, nearly half (129/273; 47.3%) disagreed (somewhat or strongly) that their work schedule left enough time for personal/family life.

Burnout and civility

Using an abbreviated version of the Maslach Burnout Inventory, 171/272 (63%) respondents reported feeling burnt out from their work more than a few times per year. Of these respondents, 58/272 (21.3%) felt this way once per month or less, 61/272 (22.4%) a few times per month, 18/272 (6.6%) once per week, 31/272 (11.4%) a few times per week, and 3/272 (1.1%) every day.¹³ With regard to symptom severity, 198/272 (73%) never experienced

Table 1 Characteristics of respondents, their practice settings, and appointments

	Men	Women
Number (<i>n</i> , %)	192 (72.5)	73 (27.5)
Respondents		
Age, yr (mean, SD)	45.4 (9.3)	43.6 (8.0)
Married/common law (% yes)	171 (89.1)	55 (76.4)
Have young children (12 yr or less) (%)	109 (57.1)	32 (43.8)
Practice settings and characteristics of practice		
Province (%)		
British Columbia	17 (8.9)	4 (5.5)
Alberta	22 (11.5)	6 (8.2)
Saskatchewan	7 (3.6)	3 (4.1)
Manitoba	6 (3.1)	1 (1.4)
Ontario	74 (38.5)	29 (39.7)
Quebec	34 (17.7)	11 (15.1)
Maritime provinces	14 (7.3)	6 (8.2)
Not declared (missing)	18 (9.4)	13 (17.8)
Pediatric critical care	18 (9.5)	14 (20.0)
Years independent practice (mean, SD)	12.9 (9.7)	11.1 (7.5)
Years since MD degree obtained (mean, SD)	21.2 (9.9)	19.0 (8.6)
Years since RCPSC fellowship obtained (mean, SD)	11.8 (11.3)	12.2 (7.6)
Appointments		
Academic rank (%)		
Lecturer	26 (15.6)	4 (6.9)
Assistant professor	43 (25.7)	23 (39.7)
Associate professor	31 (18.6)	14 (24.1)
Full professor	14 (8.4)	3 (5.2)
Adjunct assistant clinical professor	7 (4.2)	-
Assistant clinical professor	23 (13.8)	6 (10.3)
Associate clinical professor	14 (8.4)	5 (8.6)
Full clinical professor	8 (4.8)	3 (5.2)
Other	1 (0.6)	-
Clinical appointments (%)		
Associate staff (probationary period)	6 (3.2)	3 (4.2)
Active staff (regular)	178 (94.2)	61 (84.7)
Term appointment (temporary, locum)	5 (2.6)	8 (11.1)
Leadership roles (%)		
Not applicable	109 (66.9)	50 (75.8)
Chief (hospital, department, division, or equivalent)	46 (28.2)	13 (19.7)
Chief of staff or equivalent role	3 (1.8)	1 (1.5)
Chair (academic) or department or division	5 (3.1)	2 (3.0)

FRCPS = Fellow of the Royal College of Physicians and Surgeons (of Canada); Maritime Provinces include New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland; MD = medical doctor; RCPSC = Royal College of Physicians and Surgeons of Canada; SD = standard deviation

burnout symptoms or only occasionally felt under stress, 50/272 (18.4%) affirmed having at least one burnout symptom, 13/272 (4.8%) experienced persistent burnout symptoms, and 11/272 (4.0%) were completely burnt out.¹⁹

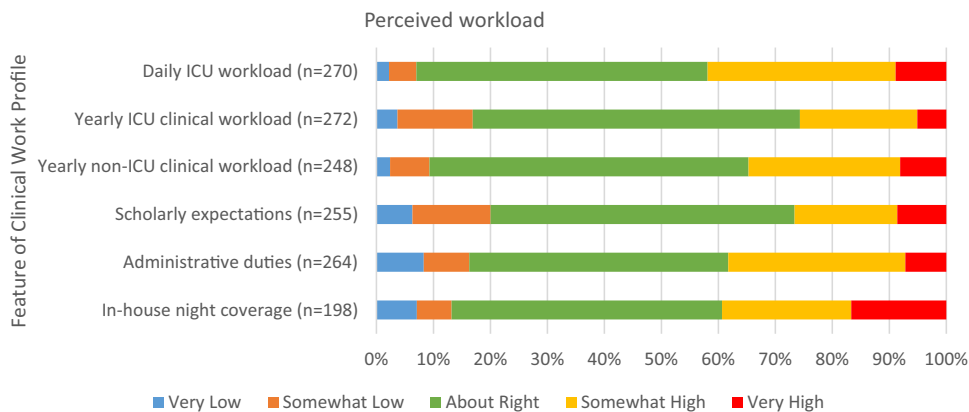


Fig. 1 Self-reported work profile. Daily ICU workload ($n = 270$) was reported to be very low, somewhat low, about right, somewhat high, and very high by six, 13, 138, 89, and 24 respondents, respectively. Yearly ICU clinical workload ($n = 272$) was reported to be very low, somewhat low, about right, somewhat high, and very high by ten, 36, 156, 56, and 14 respondents, respectively. Yearly non-ICU clinical workload ($n = 248$) was reported to be very low, somewhat low, about right, somewhat high, and very high by six, 17, 139, 66, and 20 respondents, respectively. Scholarly work expectations ($n = 255$) were

reported to be very low, somewhat low, about right, somewhat high, and very high by 16, 35, 136, 46, and 22 respondents, respectively. Administrative duties ($n = 264$) were reported to be very low, somewhat low, about right, somewhat high, and very high by 22, 21, 120, 82, and 19 respondents, respectively. In-house night coverage ($n = 198$) was reported to be very low, somewhat low, about right, somewhat high, and very high by 14, 12, 94, 45, and 33 respondents, respectively. ICU = intensive care unit

More than one third (88/263 and 96/265) of intensivist respondents affirmed being bullied or disrespected by ICU or hospital colleagues, respectively. Although two thirds (180/266 and 166/262) of respondents were aware of policies to address incivility at their hospital or university, respectively, only about half of respondents felt somewhat or very confident that they could take action to address incivility within their division/department (137/265) and even fewer felt they could do so within their university (110/260) (Fig. 2).

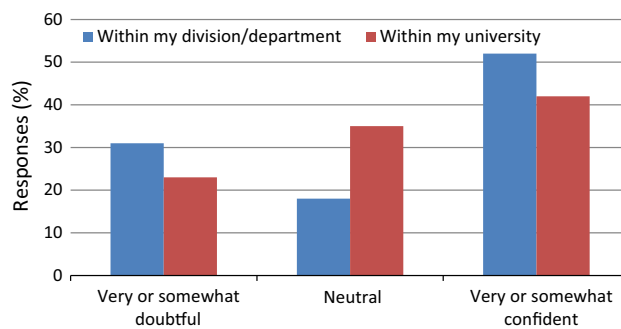


Fig. 2 Respondent's confidence that they could take action to address incivility. Within their division/department 81/265, 47/265, and 137/265 respondents were very or somewhat doubtful, neutral, or very or somewhat confident, respectively, that they could take action to address incivility without fear of reprisal. Within their hospital, 60/260, 90/260, and 110/260 respondents were very or somewhat doubtful, neutral, or very or somewhat confident, respectively, that they could take action to address incivility without fear of reprisal

Teaching and research

Most respondents (262/270; 97%) affirmed that their work included teaching activities. Although 60% (154/258) of respondents felt that their teaching activities were valued by their colleagues and division heads, only 37% (93/251) felt they were valued by their university (Table 2).

Over half (154/269; 57%) of respondents acknowledged that their work included research activities with 91/155 (60%) expressing a moderately high or high level of autonomy over the focus of their research and 108/155 (70%) being somewhat satisfied or strongly satisfied with the level of autonomy that they had over their research focus. While over half of respondents felt that their research activities were valued by their colleagues (81/151; 54.0%) and division heads (109/150; 60.0%), only 35% (50/144) felt that they were valued by their university (Table 2).

Mentorship and promotion

Most respondents did not have a formal mentor (225/266; 85%), while 166/266 (62%) reported having at least one informal mentor. Respondents characterized mentorship to be of high quality (117/187; 63%) and sufficient frequency (97/186; 52%).

Although 35% (82/236) of respondents were promoted in the last five years, the promotion process and evaluation criteria were not clear to 93/229 (41%) and 108/229 (47%) of respondents, respectively.

Table 2 Perceived value of teaching and research contributions

Value associated with teaching and research contributions	Strongly or somewhat disagree	Neutral	Strongly or somewhat agree
Teaching			
Critical care colleagues	50 (19.3%)	54 (20.9%)	154 (59.7%)
Division/department heads	53 (20.8%)	54 (21.2%)	148 (58.0%)
University	96 (38.2%)	62 (24.7%)	93 (37.1%)
Research			
Critical care colleagues	35 (23.2%)	35 (23.2%)	81 (53.6%)
Division/department heads	33 (22.0%)	28 (18.7%)	109 (59.4%)
University	51 (35.4%)	43 (29.9%)	50 (34.7%)

Physician resources

Using a two-year time interval, we depict recent and anticipated changes to respondents' clinical practices in the ESM, eTable. Ten percent of intensivists plan to retire in the next five years with 17-20% retiring in each five-year period thereafter (ESM, eFig. 3).

Subgroup analyses

Gender

Compared with men, significantly fewer women were somewhat satisfied with the predominant sources of their remuneration ($H\ 1 = 5.10$, $P < 0.05$; $OR = 0.5$), and personal salary support from their hospital/institution ($H\ 1 = 7.11$, $P < 0.01$; $OR = 0.42$). Compared with men, women were more likely to disagree (strongly or somewhat) with the statement that their work schedule left enough time for personal/family life ($H\ 1 = 5.46$, $P < 0.05$; $OR = 0.55$). Women were significantly less satisfied with their careers ($H\ 1 = 10.38$, $P < 0.01$; $OR = 0.43$) and felt that they had to work significantly harder to be perceived as legitimate scholars ($H\ 1 = 6.54$, $P < 0.05$; $OR = 2.0$) and capable clinicians ($H\ 1 = 6.77$, $P < 0.01$; $OR = 1.9$) (Table 3).

Compared with men, women intensivists experienced a significantly greater frequency ($H\ 1 = 7.69$, $P < 0.01$; $OR = 2.0$)¹³ and severity of burnout symptoms ($H\ 1 = 5.64$, $P < 0.05$; $OR = 1.9$)¹⁸ (Fig. 3, ESM, eFig. 4). Moreover, female intensivists were significantly less aware of policies to address disrespect at their hospital ($H\ 1 = 4.06$, $P < 0.05$; $OR = 0.6$) and significantly less confident that they could take action to address incivility in their hospital and university ($H\ 1 = 12.25$, $P < 0.001$; $OR = 0.4$; $H\ 1 = 10.27$, $P < 0.01$; $OR = 0.45$) (Table 3).

Adult vs pediatric critical care

Compared with adult intensivists, pediatric intensivists reported significantly higher teaching workload ($\bar{x} = 19.4$,

$SD = 25.0$ days/yr vs $\bar{x} = 31.0$, $SD = 23.6$ days/yr; $F[1, 174] = 5.21$, $P = 0.02$, $\omega = 0.15$), particularly didactic teaching ($F[1, 240] = 4.31$, $P = 0.04$, $\omega = 0.12$).

Discussion

In a national, cross-sectional survey of intensivists, we found that although most respondents (83%) were somewhat satisfied or strongly satisfied with their career, over a third were dissatisfied with their workload, and half felt that their work schedule did not leave enough time for personal/family life. Thirty percent of respondents experienced at least one symptom of burnout and 60% experienced burnout symptoms more than once per month. Ten percent of physicians planned to retire in the next five years with 17-20% retiring each five-year period thereafter. Women intensivists were significantly less satisfied with their careers and experienced greater work-life integration challenges, more frequent and severe burnout symptoms, and greater incivility. Women intensivists were significantly less aware of policies to address incivility and significantly more doubtful that they could take action to address incivility without concern for reprisal.

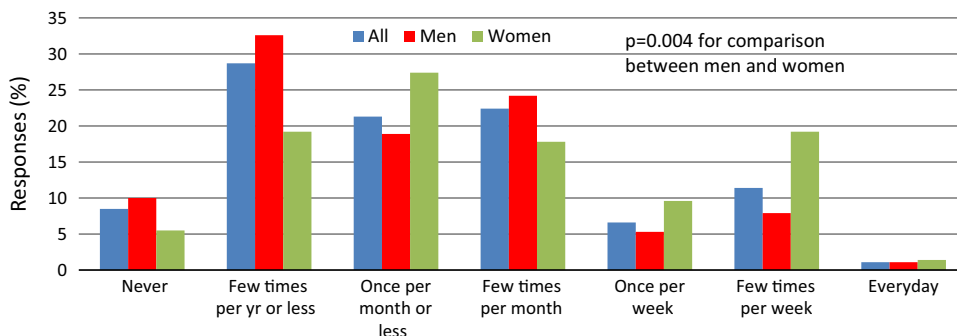
Two systematic reviews have reported the prevalence of burnout in ICU providers and estimates varied widely. Up to 70% of ICU providers reported burnout symptoms,^{20,21} with severe burnout syndrome (BOS) being present in approximately 50% of ICU physicians and one third of ICU nurses.²² Our results are consistent with these observations. Burnout includes three aspects: emotional exhaustion, depersonalization, and lack of personal and professional completion.²³ High workload and time pressures and a lack of influence are major causes of high levels of burnout with qualitative and quantitative workload contributing to burnout, especially emotional exhaustion.^{24,25} Nevertheless, determinants of severe BOS differed between ICU physicians and nurses; long working hours was a determinant for intensivists and ICU organization and end-of-life care were determinants for

Table 3 Gender differences in work schedule, career satisfaction, moral distress, and incivility

Feature of career (women vs men)	Odds ratio (95% CI)	P-value
Work schedule		
Work schedule left enough time for personal/family life	0.55 (0.33 to 0.89)	< 0.05
Career satisfaction		
Satisfaction with career	0.43 (0.26 to 0.73)	< 0.01
Work harder to be perceived as a legitimate scholar	2.0 (1.2 to 3.3)	< 0.05
Work harder to be perceived as a capable clinician	1.9 (1.2 to 3.2)	< 0.01
Burnout		
Frequency of burnout symptoms	2.0 (1.2 to 3.2)	< 0.01
Severity of burnout symptoms	1.9 (1.1 to 3.2)	< 0.05
Incivility		
Awareness of policies to address disrespect at the hospital	0.6 (0.3 to 1.0)	< 0.05
Confidence that they could take action to address incivility at hospital		
Confidence that they could take action to address incivility at university	0.5 (0.3 to 0.7)	< 0.01

CI = confidence intervals

Fig. 3 Frequency of feeling burnout by gender. Respondents ($n = 272$) reported feeling burnt out never ($n = 23$), a few times per year or less ($n = 78$), once a month or less ($n = 58$), a few times a month ($n = 61$), once a week ($n = 18$), a few times a week ($n = 31$), and every day ($n = 3$)



nurses.^{22,26} For ICU practitioners, conflict was an independent predictor of severe BOS, and high relationship quality was associated with lower burnout scores.^{22,27} A recent “call for action” summarized risk factors for burnout into four categories: 1) personal characteristics, 2) organizational factors, 3) quality of working relationships, and 4) exposure to end-of-life issues.²⁷

Data supporting gender differences in the prevalence of burnout are emerging. Although Sanfillipo and coworkers identified several factors (strained working pattern, being a junior consultant, and having children) associated with burnout in anesthetists, they did not find a relationship between BOS and hospital or practitioner characteristics such as gender and marital status.²⁸ In 3,541 questionnaires completed by German anesthetists, Heinke *et al.* identified that 40% of respondents had a high risk of burnout. Moreover, they noted differences in burnout based on gender (men= 37% vs women = 46%) and qualifications (senior consultant = 29% vs junior doctor = 47%) with the highest burnout scores occurring in junior

women physicians.²⁹ In a survey of 89 Austrian anesthetists, Kinzl identified that women anesthetists differed from men anesthetists with regard to their assessment of task-related stressors and their ability to control their work environment.³⁰ In a one-day national point prevalence survey of ICU personnel in adult French public hospitals, Embriaco and colleagues noted high levels of burnout (46.5%) and identified being a woman (OR 1.58; 95% confidence interval, 1.09 to 2.30) as independently associated with higher burnout scores.²⁶

While physicians who choose critical care as a subspecialty presumably self-select for their professional enjoyment of providing care in a high stress, often chaotic environment, few studies have investigated the prevalence of resilience or strategies that build physicians’ resilience. In a survey of American ICU nurses, 22% were classified as highly resilient.³¹ These nurses were significantly less likely to report symptoms of posttraumatic stress disorder, anxiety, depression, or burnout syndrome.³² In other specialties, resilient physicians were more self-aware, engaged in stress-reducing activities (e.g., mindfulness,

physical fitness), and were part of “support communities”. Nevertheless, recognizing that women intensivists are underrepresented in most ICUs, it may be more challenging for them to find peer support groups.³³ A recent study of pediatric intensivists identified that the risk of burnout was two times greater in women than men, especially in the emotional exhaustion domain, and that regular physical activity appeared to be protective.³⁴ We postulate that the additional work-life integration challenges experienced by women may result in less time for self-care and reduced resilience. In addition, women physicians are often paid less³⁵ and experience greater work culture challenges.³⁶ Although women physicians may defer marriage and having children,³⁷ women with children or those who care for elderly parents often assume a greater burden of domestic responsibilities.³⁸ In addition to opportunities for physical activity and a supportive work community, debriefing after critical events may be an important strategy to build resilience.³⁹ As recently highlighted in an editorial, women in medicine face multiple challenges that are not experienced by men, and these factors may contribute to increased burnout and reduced resilience.⁴⁰ A systematic review of 22 low to moderate quality studies identified that psychosocial skills training and mindfulness training may be promising strategies to build resilience in physicians.⁴¹

Our survey has several strengths. First, it is the first national, cross-sectional, survey focused on career satisfaction, overall and by gender. Second, to survey broadly, we merged lists from the RCPSC and the CCCS to develop our sampling frame. Third, we used strategies in questionnaire development (originating from academic centres, cover letter endorsement), testing (pilot testing), and administration (incentive, reminders) to limit bias.^{12,14}

Our survey also has limitations. Despite a concerted effort to sample widely, academic intensivists were highly represented in our responses reflecting their tendency to be societal members and participate in research. Our response rate was 13% lower than anticipated. This finding may be because we explored sensitive topics, surveyed broadly, or due to our inability to directly access membership lists. Nevertheless, response rate may not reflect survey representativeness or quality.⁴² To this end, we demonstrated that our respondents were similar to the 1,043 fellows registered in Critical Care with the RCPSC. Finally, our results reflect the stated practices of Canadian intensivists and may not reflect those of non-respondents, other practitioners, and in other settings.

Our survey highlights the fragility of work-life integration for Canadian intensivists. Moreover, it identifies that women intensivists experience greater work-life integration challenges, more frequent and severe burnout symptoms, and workplace incivility.

These findings underscore the urgent need for additional research to understand the consequences of burnout and incivility, develop strategies to build resilience, and foster organizational changes that better support the health and well-being of intensivists, particularly women intensivists.

Acknowledgements The authors wish to acknowledge the contributions of Shanna DiMillo (S.D.) and Carole Jacob (C.J.) from the RCPSC to survey design and distribution.

Conflicts of interest The authors declare that they have no financial relationships with any organizations that may have an interest in the submitted work or other relationship or activities that could appear to have influenced the submitted work.

Editorial responsibility This submission was handled by Dr. Gregory L. Bryson, Deputy Editor-in-Chief, *Canadian Journal of Anesthesia*.

Author contributions Karen E.A. Burns, Alison Fox-Robichaud, Edmund Lorens, and Claudio M. Martin designed the study, developed, tested and administered the questionnaire, interpreted the analyses, and drafted and revised the manuscript. Edmund Loren conducted the analyses. Karen E.A. Burns and Edmund Loren take responsibility for the integrity of the data.

Financial support Nominal funding to conduct the analyses was provided by the Canadian Critical Care Society (CCCS).

References

1. Magrane D. The changing representation of men and women in academic medicine. *AAMC: Analysis Brief* 2005; 5: 1-2. Available from URL: <https://www.aamc.org/download/75776/data/aibvol5no2.pdf> (accessed December 2018).
2. Nonnemaker L. Women physicians in academic medicine: new insights from cohort studies. *N Engl J Med* 2000; 342: 399-405.
3. Carr PL, Szalacha L, Barnett R, Caswell C, Inui T. A “ton of feathers”: gender discrimination in academic medical careers and how to manage it. *J Womens Health (Larchmt)* 2003; 12: 1009-18.
4. Levine RB, Lin F, Kern DE, Wright SM, Carrese J. Stories from early-career women physicians who have left academic medicine: a qualitative study at a single institution. *Acad Med* 2011; 86: 752-8.
5. Lowenstein SR, Fernandez G, Crane LA. Medical school faculty discontent: prevalence and predictors of intent to leave academic careers. *BMC Med Educ* 2007; 7: 37.
6. Leigh JP, Tancredi DJ, Kravitz RL. Physician career satisfaction within specialties. *BMC Health Serv Res* 2009; 9: 166.
7. Howell LP, Lyons ML, Thor A, Dandar V. Sex differences in workplace satisfaction and engagement of academic pathologists: opportunities to enhance faculty diversity. *Arch Pathol Lab Med* 2015; 139: 936-42.
8. Gerson LB, Twomey K, Hecht G, et al. Does gender affect career satisfaction and advancement in gastroenterology? Results of an AGA institute-sponsored survey. *Gastroenterology* 2007; 132: 1598-606.
9. Waljee JF, Chang KW, Kim HM, et al. Gender disparities in academic practice. *Plast Reconstr Surg* 2015; 136: 380e-7e.

10. Decastro R, Griffith KA, Ubel PA, Stewart A, Jagsi R. Mentoring and the career satisfaction of male and female academic medical faculty. *Acad Med* 2014; 89: 301-11.
11. Rizvi R, Raymer L, Kunik M, Fisher J. Facets of career satisfaction for women physicians in the United States: a systematic review. *Women Health* 2012; 52: 403-21.
12. Burns KE, Duffett M, Kho ME, et al.; ACCADEMY Group. A guide for the design and conduct of self-administered surveys of clinicians. *CMAJ* 2008; 29; 179: 245-52.
13. West CP, Dyrbye LN, Sloan JA, Shanafelt TD. Single item measures of emotional exhaustion and depersonalization are useful for assessing burnout in medical professionals. *J Gen Intern Med* 2009; 24: 1318-21.
14. Burns KE, Kho ME. How to assess a survey report: a guide for readers and peer reviewers. *CMAJ* 2015; 187: E198-205.
15. Edwards PJ, Roberts I, Clarke MJ, et al. Methods to increase response to postal and electronic questionnaires. *Cochrane Database Syst Rev* 2009; 3: MR000008.
16. Qualtrics. Qualtrics Survey Platform. Available from URL: www.Qualtrics.com (accessed December 2018).
17. Streiner DL, Norman GR. *Health Measurement Scales - A Practical Guide to Their Development and Use*. 4th ed. UK: Oxford University Press; 2008 .
18. Institute for Digital Research and Education. Ordered logistic regression. Available from URL: <https://stats.idre.ucla.edu/spss/output/ordered-logistic-regression/> (accessed December 2018).
19. Shanafelt TD, Hasan O, Dyrbye LN, 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.
20. van Mol MM, Kompanje EJ, Benoit DD, Bakker J, Nijkamp MD. The prevalence of compassion fatigue and burnout among healthcare professionals in intensive care units: a systematic review. *PLoS One* 2015; 10: e0136955.
21. Chuang CH, Tseng PC, Lin CY, Lin KH, Chen YY. Burnout in intensive care unit professionals: a systematic review. *Medicine (Baltimore)* 2016; 50: e5629.
22. Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. *Curr Opin Crit Care* 2007; 13: 482-8.
23. Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav* 1981; 2: 99-113.
24. Schaufeli WB. Burnout in health care. In: Carayon P, editor. *Handbook of Human Factors and Ergonomics in Health Care and Patient Safety*. NY: CRC Press; 2007. p. 217-32.
25. Deckard G, Meterko M, Field D. Physician burnout: an examination of personal, professional, and organizational relationships. *Med Care* 1994; 32: 745-54.
26. Embriaco N, Azoulay E, Barrau K, et al. High level of burnout in intensivists: prevalence and associated factors. *Am J Respir Crit Care Med* 2007; 175: 686-92. Erratum: *Am J Respir Crit Care Med* 2007; 175: 1209-10.
27. Moss M, Good VS, Gozal D, Kleinpell R, Sessler CN. A Critical Care Societies collaborative statement: Burnout syndrome in critical care health-care professionals. A call for action. *Am J Respir Crit Care Med* 2016; 194: 106-13.
28. Sanfilippo F, Noto A, Foresta G, et al. Incidence and factors associated with burnout in anesthesiology: a systematic review. *Biomed Res Int* 2017; 2017: 8648925.
29. Heinke W, Dunkel P, Brähler E, Nübling, Riedel-Heller S, Kaisers UX. Burnout in anesthesiology and intensive care : is there a problem in Germany? (German). *Anaesthetist* 2011; 60: 1109-18.
30. Kinzl JF, Traweger C, Trefalt E, Riccabona U, Lederer W. Work stress and gender-dependent coping strategies in anesthesiologists at a university hospital. *J Clin Anesth* 2007; 19: 334-8.
31. Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anxiety* 2003; 18: 76-82.
32. Mealer M, Jones J, Newman J, McFann KK, Rothbaum B, Moss M. The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: results of a national survey. *Int J Nurs Stud* 2012; 49: 292-9.
33. Rodríguez-Rey R, Palacios A, Alonso-Tapia J, et al. Burnout and posttraumatic stress in paediatric critical care personnel: Prediction from resilience and coping styles. *Aust Crit Care* 2018; DOI: <https://doi.org/10.1016/j.aucc.2018.02.003>.
34. Shenoj AN, Kalyanaraman M, Pillai A, Raghava PS, Day S. Burnout and psychological distress among pediatric critical care physicians in the United States. *Crit Care Med* 2018; 46: 116-22.
35. Read S, Butkus R, Weissman A, Moyer DV. Compensation disparities by gender in internal medicine. *Ann Intern Med* 2018; DOI: <https://doi.org/10.7326/m18-0693>.
36. Shillcutt S, Peterson-Layne C. More than the money: work culture challenges for women anesthesiologists. *Int Anesthesiol Clin* 2018; 56: 44-58.
37. Bering J, Pflibsen L, Eno C, Radhakrishnan P. Deferred personal life decisions of women physicians. *J Womens Health (Larchmt)* 2018; 27: 584-9.
38. Jolly S, Griffith KA, DeCastro R, Stewart A, Ubel P, Jagsi R. Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. *Ann Intern Med* 2014; 160: 344-53.
39. Colville GA, Smith JG, Brierley J, et al. Coping with staff burnout and work-related posttraumatic stress in intensive care. *Pediatr Crit Care Med* 2017; 18: e267-73.
40. DeFilippis EM. Putting the 'she' in doctor. *JAMA Intern Med* 2018; 178: 323-4.
41. Fox S, Lydon S, Byrne D, Madden C, Connolly F, O'Connor P. A systematic review of interventions to foster physician resilience. *Postgrad Med J* 2018; 94: 162-70.
42. Johnson TP, Wislar JS. Response rates and nonresponse errors in surveys. *JAMA* 2012; 307: 1805-6.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.