

# Burnout among respiratory therapists during COVID-19 pandemic

Anna Spirczak, Ramandeep Kaur, David L. Vines

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**Background:** Respiratory therapists (RTs) faced many unpredicted challenges and higher stress levels while managing critically ill patients with the coronavirus disease (COVID-19). This study's primary objective was to evaluate the compassion satisfaction and compassion fatigue among RTs in the United States during the COVID-19 pandemic.

**Methods:** This cross-sectional, descriptive, survey-based study conducted from July 2020 to August 2020 was administered to all active members of the American Association of Respiratory Care via AARConnect. RTs' characteristics including personal, job-specific, and organizational factors were collected. Professional Quality of Life Scale (ProQOL, version 5) was used to measure compassion satisfaction and fatigue.

**Results:** A total of 218 participants fully completed the survey, 143 (65.6%) were female, 107 (49.1%) were between 35 and 54 years of age and 72 (33%) were above 55 years of age. Compassion satisfaction was moderate in 123 (56.4%) and high in 93 (42.7%) RTs. Higher compassion satisfaction was found in RTs who have a higher salary ( $P = 0.003$ ), work overtime ( $P = 0.01$ ), hold leadership positions ( $P < 0.001$ ), work in research/education ( $P < 0.001$ ) and work for departments that provide help in managing burnout and stress ( $P = 0.007$ ) and that promote a positive work environment ( $P < 0.001$ ). Burnout score was low in 90 (41.3%) and moderate in 127 (58.3%) RTs. Higher burnout was found among younger RTs ( $P = 0.019$ ), those with fewer years of experience ( $P = 0.013$ ) and those with less than a year at their current job ( $P = 0.045$ ). Secondary traumatic stress (STS) was low in 106 (48.6%) and moderate in 112 (51.4%) RTs. Higher STS levels were noted among younger RTs ( $P = 0.02$ ) and RTs with lower education levels ( $P = 0.016$ ).

**Conclusion:** This survey study identified various personal, job and organizational related factors associated with increased compassion satisfaction as well as compassion fatigue among RTs.

**Key Words:** respiratory therapists; COVID-19; burnout; compassion fatigue; compassion satisfaction

## INTRODUCTION

The coronavirus disease (COVID-19) pandemic placed an increased burden on health care facilities and health care professionals working in high stress environments such as critical care settings [1]. Burnout syndrome is characterized as feelings of fatigue, cynical detachment, exhaustion, inefficacy and loss of sense of personal achievement in the workplace, commonly seen in the intensive care unit (ICU) practitioners [2]. A systematic review reported the burnout prevalence rate between 0% and 70.1% among ICU clinicians [3]. Around 25%–33% of the critical care nurses have been reported to exhibit signs of severe burnout such as emotional exhaustion [2]. Burnout, caused by occupational stress, gained global attention as a potential threat to health care quality and patient safety even before the COVID-19 pandemic [4–6]. The unprecedented nature of the COVID-19 pandemic further exaggerated the burnout caused by workplace stress and greatly impacted the emotional well-being of the frontline clinicians including physicians, nurses and allied health workers [7].

### Theoretical framework

Compassion fatigue, including burnout and traumatic stress, commonly occurs among those in a caregiver's role, and it is characterized by physical and emotional exhaustion and the inability to empathize [4]. It is associated with decreased quality of patient care and increased

mortality risk [8]. The primary drivers of compassion fatigue are inadequate staffing, poor leadership style, increased workload, lack of organizational appreciation/recognition and moral distress [9, 10]. Research indicates that increased stress leads to burnout, job dissatisfaction, absenteeism and employees' intent to leave the job or field [11–13]. Compassion satisfaction, an interconnected concept, is about the positive emotions of being able to help those in need. Many clinicians enter the field to gain compassion satisfaction, their empathy toward alleviating someone's pain/suffering through their skills, which makes them feel satisfied and motivated. Professional Quality of Life Scale (ProQOL) is a common instrument used to measure both negative (compassion fatigue) and positive (compassion satisfaction) aspects of engaging in a caregiving role [14].

Respiratory therapists (RTs) are highly specialized clinicians who are an integral part of the interdisciplinary team responsible for providing care to patients with cardiopulmonary disorders. According to the US Bureau of Labor and Statistics, the respiratory therapy profession has been growing. It is projected to grow 23% from 2016 to 2026, much faster than average for all occupations [15]. Advancements in research and technology, as well as continuing demand for controlling costs and the need for evidence-based practice, have significantly increased RT responsibilities.

COVID-19 is a viral respiratory illness causing acute respiratory failure among some patients, requiring increased respiratory support in

<sup>1</sup>Department of Cardiopulmonary Sciences, Division of Respiratory Care, Rush University Medical Center, Chicago, IL, USA

Correspondence: Ramandeep Kaur, Department of Cardiopulmonary Sciences, Division of Respiratory Care, Rush University, 1620 W Harrison St, Chicago, IL, USA. E-mail: ramandeep\_kaur@rush.edu

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terms of oxygen therapy, mechanical ventilation and prone positioning. During the first wave of the COVID-19 pandemic, RTs were at the front-line providing respiratory care to critically ill patients. Prolonged exposure to critically ill patients increases the risk of emotional and psychological distress among clinicians such as RTs [10, 11, 16]. However, very few studies addressed compassion fatigue among RTs [10, 11].

The primary objective of this study was to determine the prevalence of compassion satisfaction and fatigue among RTs in the United States during the COVID-19 pandemic using the ProQOL. The secondary objective was to assess the impact of various personal, job-related, and organizational factors on compassion satisfaction and fatigue.

## METHODS

### Sample and population

This descriptive, cross-sectional, survey-based research study conducted from July 2020 to August 2020 was approved by the Institutional Review Board (19091607-IRB01). The survey was designed and administered via REDCap, a secure, web-based software platform that supports data capture for research studies [17]. The survey link was sent to all active members of the American Association of Respiratory Care (AARC) via AARConnect and posted on the Adult Critical Care section, the Neonatal Pediatric section and the helpline on July 15, July 22 and August 13 of 2020. The response rate is not obtainable as RTs may be part of multiple AARC sections, some sections require a fee to join and some members opt out of emails where the survey notifications were sent. Instead, we reported response rate based on how many individuals clicked on the survey link during the study period. This study used a convenience sample that included all the practising RTs in the United States who had an active membership with the AARC and voluntarily filled the online survey.

### Instrumentation

Compassion satisfaction and fatigue were measured using the ProQOL, version 5 (2009) [18]. The ProQOL is a self-reported, 30-item questionnaire consisting of a five-point Likert-type scale from one (never) to five (very often) that yields composite scores for three domains: (i) compassion satisfaction (10 items) and compassion fatigue divided into two subscales: (ii) burnout (10 items) and (iii) secondary traumatic stress (STS) (10 items). A higher score on any of these subscales indicates higher compassion satisfaction, burnout or STS. The instrument has been tested and validated with reliability alphas of 0.87 for compassion satisfaction, 0.72 for burnout and 0.80 for STS [18, 19].

### Data collection

In addition to ProQOL, participant's demographic and job-specific information were collected. Personal factors such as age, gender, level of education, salary, demographic region and marital status were collected. Job specific factors such as job title, job responsibilities, shift working, years in respiratory care, hours worked per week and days missed per year were also recorded. Additionally, job-specific Likert questions regarding manageable workload before and after COVID-19 were asked. Other Likert-style questions included mainly organization issues such as dealing with stress and burnout, being engaged and feeling appreciated.

### Statistical analysis

Categorical variables were expressed as frequency (percentage). Continuous variables were presented as means  $\pm$  SD or as medians and interquartile ranges. Differences between two groups were determined with a two-tailed *t* test or Mann-Whitney test for quantitative variables and with  $\chi^2$  test or Fisher's exact test for categorical variables, as appropriate. The difference between grouping variables with more than two levels was determined using ANOVA or Kruskal-Wallis test. A post hoc analysis was performed using Tukey's test for ANOVA and using Dunn-Bonferroni post hoc method for Kruskal-Wallis test. A *P* value  $<0.05$  was considered statistically significant. All the analyses were performed using SPSS statistical software, version 26.0 (SPSS Inc., Chicago, Illinois).

## RESULTS

A total of 257 participants attempted to fill the survey, and 218 (84.8%) fully completed the survey. In this study, 39 (17.9%) participants were less than 34 years of age, 107 (49.1%) between 35 and 54 years of age and 72 (33%) were above 55 years of age. Out of 218 participants, 143 (65.6%) were female, 155 (71.1%) were married and 80 (36.7%) had children under 18 years of age (Table 1). Demographic representations included 60 (27.5%) participants from Northeast, 63 (28.9%) from Midwest, 63 (28.9%) from South and 32 (14.7%) from the West. In terms of the highest education in respiratory care, 96 (44%) participants had an associate degree/certificate, 88 (40.4%) had a Bachelor's degree and 33 (15.1%) had a Master's degree. Annual salary of less than \$60,000 was noted among 51 (23.4%), \$61,000–\$70,000 among 56 (25.7%), \$71,000–\$90,000 among 63 (28.9%) and above \$90,000 among 48 (22%) of the participants.

Among participants, 127 (58.3%) were staff therapists, 73 (33.5%) were in management and 18 (8.3%) were working in pulmonary function testing (PFT) lab/clinic/research/quality improvement/education setting. A total of 156 (71.6%) participants worked primary days, 127 (58.3%) worked 36–40 h a week and 163 (74.8%) had  $>9$  years of experience in respiratory care. When asked, "During COVID-19, I have put myself at significant risk as part of clinical work," 69 (31.7%) agreed and 49 (22.5%) strongly agreed. When asked about having a manageable workload during shifts before the COVID-19 pandemic, 106 (48.6%) of the RTs responded "very often" and 13 (6%) responded "never or rarely." When asked, "During COVID-19, I had a manageable workload," only 69 (31.7%) responded "very often" and 37 (17%) responded "never or rarely" (Table 2).

In this study, 206 (94.5%) participants worked in the hospital setting and 12 (5.5%) in others such as clinics, skilled nursing, college/university and physician offices (Table 3). Sixty-nine (31.7%) RTs worked in large hospitals with  $>551$  beds, 75 (34.4%) in hospitals with 151–400 beds and 42 (19.3%) in smaller hospitals with  $<150$  beds. The typical shift in the department included a 12 h shift among 160 (73.4%) participants. Additionally, 146 (67%) RTs did not receive financial incentives/crisis pay, and 27 (12.4%) were redeployed during COVID-19.

### Prevalence of compassion satisfaction and fatigue among RTs

The overall compassion satisfaction level was high in 93 (42.7%), medium in 123 (56.4%) and low in 2 (0.9%) participants. The burnout level was low in 90 (41.3%), medium in 127 (58.3%) and high in 1 (0.5%) participants. Traumatic stress level was medium among 112 (51.4%) and low among 106 (48.6%) (Table 4).

### Association of personal factors with compassion satisfaction and fatigue

When assessing age, RTs under 34 years of age had higher burnout [25 (IQR 22–30) versus 23 (IQR 20–27); *P* = 0.019] as compared with 35–54 years of age range. Similarly, traumatic stress was higher among participants under 34 years of age as compared to 35–54 years of age [27 (IQR 22–29) versus 22 (IQR 18–27); *P* = 0.02] and above 55 years of age [27 (IQR 22–29) versus 22 (IQR 19–28); *P* = 0.046] (Table 1). In terms of education level, the lower education (associate degree/certificate) group had a higher STS score [25 (IQR 20–29) versus 22 (IQR 17–26); *P* = 0.016] as compared to the Bachelor's degree group. Furthermore, in terms of income, RTs with an annual salary of  $>90,000$  had a higher level of compassion satisfaction as compared to those with salaries of less than \$60,000 [43.5 (IQR 39–46) versus 39 (IQR 33–43); *P* = 0.003] and those with salaries between \$61,000 and \$70,000 [43.5 (IQR 39–46) versus 39 (IQR 33–43); *P* = 0.010]. After adjusting for geographic location, salary was an independent predictor of compassion satisfaction (*P*  $<0.001$ ). Noticeably more females earned an annual salary  $\leq$ \$70,000, but more males earned an annual salary  $\geq$ \$71,000 (*P* = 0.004) (Figure 1). There are no significant differences in years of experience, education level, job title, hours worked and having children between males and females. We found a significant difference in salary between gender and leadership roles (supervisor, manager, director). However, there was no difference in salary between gender and staff therapists and other roles (clinic, educator, professor).

TABLE 1

## Association of personal factors with compassion satisfaction, burnout, and secondary traumatic stress

	Total (n = 218)	Compassion satisfaction		Burnout		Secondary traumatic stress	
	n (%)	Median (IQR)	P*	Median (IQR)	P*	Median (IQR)	P*
Age, years			0.195		0.024		0.019
Under 34	39 (17.9)	39 (33–43)		25 (22–30)	0.019	27 (22–29)	0.02, 0.046
35–54	107 (49.1)	41 (37–44)		23 (20–27)	0.019	22 (18–27)	0.02
Above 55	72 (33)	39.5 (34–46)		24 (20–29)		22 (19–28)	0.046
Gender			0.207		0.314		0.001
Male	75 (34.4)	41 (36–46)		23 (20–28)		21 (17–26)	
Female	143 (65.6)	40 (35–44)		24 (20–28)		25 (25–29)	
Marital status			0.243		0.276		0.542
Single	41 (18.8)	39 (32–44)		25 (21–30)		21 (16–28)	
Married	155 (71.1)	40 (36–45)		23 (20–27)		23 (19–28)	
Divorced/separated	22 (10.1)	40 (34–45)		25.5 (20–28)		25 (19–30)	
Children (age <18 years)			0.718		0.286		0.140
Yes	80 (36.7)	40 (36–45)		23 (20–26)		22 (18–27)	
No	138 (63.3)	40 (35–45)		24 (20–29)		24 (19–28)	
Demographic region			0.073		0.841		0.488
Northeast	60 (27.5)	39 (34–43)		24 (21–28)		22 (19–27)	
Midwest	63 (28.9)	40 (36–45)		24 (20–27)		22 (19–27)	
South	63 (28.9)	40 (35–45)		23 (20–29)		25 (17–28)	
West	32 (14.7)	44 (37–47)		23 (18–28)		24 (20–31)	
Education			0.076 <sup>†</sup>		0.063 <sup>†</sup>		0.015 <sup>†</sup>
Associate degree/certificate	96 (44)	40 (34–45)		25 (21–29)		25 (20–29)	0.016
Bachelor's degree	88 (40.4)	40 (36–44)		23 (19–27)		22 (17–26)	0.016
Master's degree	33 (15.1)	43 (39–47)		22 (20–26)		21 (17–29)	
Other	1 (0.5)	36 (36)		28 (28)		19 (19)	
Annual salary			0.001		0.111		0.410
\$60,000 or less	51 (23.4)	39 (33–43)	0.003	25 (21–28)		24 (19–28)	
\$61,000–\$70,000	56 (25.7)	39 (33–43)	0.010	24 (21–29)		25 (19–29)	
\$71,000–\$90,000	63 (28.9)	41 (37–45)		23 (21–28)		23 (18–28)	
>\$90,000	48 (22)	43.5 (39–46)	0.003, 0.010	22 (18–27)		21 (17–27)	

IQR, interquartile range.

\*Significance values have been adjusted by the Bonferroni correction for multiple tests.

<sup>†</sup>Three group comparisons (associate degree/certificate versus Bachelor's degree versus Master's degree).**Association of job specific factors with compassion satisfaction and fatigue**

When assessing job title, RTs working as a staff therapist had significantly lower compassion satisfaction as compared to those with leadership titles such as supervisor, department manager and director [39 (IQR 34–43) versus 43 (IQR 39–46);  $P < 0.001$ ] and those with titles such as PFT lab, clinic, research, quality improvement, educator [39 (IQR 34–43) versus 42 (IQR 40–48);  $P = 0.017$ ]. Staff therapists had higher traumatic stress [25 (IQR 19–29) versus 19 (IQR 17–23);  $P = 0.047$ ] as compared to other RT job titles. As noted in Table 2, for job responsibilities, compassion satisfaction was higher among RTs in leadership, education and research, and burnout was lower among RTs who worked in research and education. When assessing years of work experience, burnout was high among RTs with work experience less than 2 years as compared to those with 3–8 years [28 (IQR 26–30) versus 23 (IQR 20–26);  $P = 0.017$ ] and >9 years [28 (IQR 26–30) versus 23 (IQR 20–28);  $P = 0.013$ ]. For working hours, compassion satisfaction was significantly higher among RTs who worked >40 h as opposed to <36 h [42 (IQR 38–46) versus 36 (IQR 34–39);  $P = 0.01$ ] and those in the 36–40 h category [42 (IQR 38–46) versus 40 (IQR 34–44);  $P = 0.015$ ].

When answering “during COVID-19, I have put myself at significant risk as part of my clinical work,” significantly higher traumatic stress was found among those who “strongly agreed” versus “strongly disagreed” [25 (IQR 19–31) versus 15 (IQR 13–25);  $P = 0.019$ ]. When asking if RTs had a manageable workload before the COVID-19 pandemic, RTs who answered “sometimes” as compared to “always” had higher burnout [26 (IQR 21–29) versus 21 (IQR 16–26);  $P = 0.017$ ]. Similarly, when asked if RTs had a manageable workload during the COVID-19 pandemic, participants who answered rarely had higher burnout [28.5 (IQR 25–31)] as compared to those who stated “sometimes” [23 (IQR 20–28)], “very often” [23 (IQR 21–26)] or “always” [18.5 (IQR 14–24)] (Table 2).

**Association of organizational factors with compassion satisfaction and fatigue**

When evaluating place of employment, compassion satisfaction was higher among RTs who worked in places such as clinics, laboratories, and university settings as opposed to a hospital [45.5 (IQR 42–47) versus 40 (IQR 35–44);  $P = 0.001$ ]. RTs who work in departments that “always” promote team collaboration, respect and excellence had higher satisfaction [42 (IQR 37–47)] as compared to those organizations that “rarely” [34 (IQR 27–38)] or “sometimes” [37 (IQR 33–45)] promote these

**TABLE 2**

**Association of job-specific factors with compassion satisfaction, burnout, and secondary traumatic stress**

	Total (n = 218)	Compassion satisfaction		Burnout		Secondary traumatic stress	
	n (%)	Median (IQR)	P*	Median (IQR)	P*	Median (IQR)	P*
Job title			<0.001		0.264		0.018
Staff therapist	127 (58.3)	39 (34–43)	<0.001, 0.017	24 (21–28)		25 (19–29)	0.047
Supervisor/department manager/director	73 (33.5)	43 (39–46)	<0.001	23 (20–27)		21 (19–27)	
PFT lab/clinic/research/QI/educator	18 (8.3)	42 (40–48)	0.017	22 (18–27)		19 (17–23)	0.047
Primary job responsibilities <sup>†</sup>							
Basic floor therapy	111 (50.9)	39 (35–44)	0.071	25 (21–28)	0.249	24 (19–28)	0.116
Critical care	165 (75.7)	39 (35–44)	0.025	24 (20–28)	0.710	24 (18.5–28)	0.128
Education	87 (39.9)	42 (37–46)	<0.001	22 (18–26)	0.005	22 (19–26)	0.186
Leadership	90 (41.3)	42 (37–45)	0.004	23 (21–28)	0.728	21 (19–27)	0.313
Diagnostics	36 (16.5)	41.5 (34–46)	0.365	24 (20–30)	0.371	24 (19–30)	0.297
Research	24 (11)	44.5 (41–48)	<0.001	21.5 (17–25)	0.032	21 (17–23)	0.060
Primary shift working			0.088		0.197		0.084
Days	156 (71.6)	40 (36–45)		23 (20–28)		22 (18–27)	
Evenings/nights	46 (21.1)	37.5 (34–44)		25.5 (21–29)		24 (19–28)	
Shifts vary	16 (7.3)	42 (36–46)		23.5 (21–26)		27 (20–34)	
RT work experience			0.068		0.014		0.089
<2 years	11 (5)	36 (31–40)		28 (26–30)	0.013, 0.017	27 (24–32)	
3–8 years	44 (20.2)	42 (37–47)		23 (20–26)	0.017	23 (19–27)	
>9 years	163 (74.8)	40 (35–45)		23 (20–28)	0.013	22 (18–28)	
Total years at current job			0.062		0.044		0.481
<1 year	13 (6)	40 (33–46)		29 (21–32)	0.045	26 (19–35)	
1–6 years	73 (33.5)	40 (37–46)		23 (21–27)		22 (19–27)	
7–11 years	34 (15.6)	42.5 (41–44)		22 (18–25)	0.045	21 (18–28)	
>12 years	98 (45)	39 (34–43)		24 (20–29)		24 (19–28)	
Hours worked per week			0.002		0.582		0.741
<36 h	14 (6.4)	36 (34–39)	0.01	25 (17–27)		23 (18–33)	
36–40 h	127 (58.3)	40 (34–44)	0.015	24 (20–28)		23 (19–28)	
>40 h	77 (35.3)	42 (38–46)	0.01, 0.015	23 (20–27)		22 (18–28)	
Days missed per year			0.260		0.642		0.150
<3 days	148 (67.9)	40 (35–45)		23 (20–27)		22 (18–27)	
3–5 days	46 (21.1)	40 (38–44)		23 (20–28)		23.50 (19–29)	
>6 days	24 (11)	38 (32–43)		26 (20–30)		26 (20–36)	
During COVID-19, I have put myself at significant risk as part of my clinical work.			0.271		0.015		0.003
Strongly disagree	13 (6)	46 (37–49)		22 (15–27)		15 (13–25)	0.019, 0.007
Disagree	34 (15.6)	40 (37–42)		23 (22–28)		22 (19–26)	
Neutral	53 (24.3)	42 (36–46)		22 (19–25)	0.054	21 (18–26)	
Agree	69 (31.7)	39 (35–43)		25 (21–28)		26 (19–29)	0.007
Strongly agree	49 (22.5)	40 (33–46)		26 (20–30)	0.054	25 (19–31)	0.019
Before COVID-19, I had a manageable workload during my shifts.			0.202		0.011		0.529
Never	3 (1.4)	29 (22–)		31 (15–)		21 (15–)	
Rarely	10 (4.6)	39.5 (33–46)		26.5 (22–30)		25.5 (19–32)	
Sometimes	64 (29.4)	39 (35–45)		26 (21–29)	0.017	25 (19–28)	
Very often	106 (48.6)	40 (36–43)		23 (20–26)		22 (19–28)	
Always	35 (16.1)	43 (39–47)		21 (16–26)	0.017	22 (17–27)	
During COVID-19, I had a manageable workload during my shifts.			0.755		<0.001		0.001
Never	7 (3.2)	41 (22–48)		23 (20–39)		21 (16–36)	
Rarely	30 (13.8)	38.5 (34–46)		28.5 (25–31)	<0.001, 0.007	27.5 (26–34)	0.001, 0.003
Sometimes	92 (42.2)	40 (36–44)		23 (20–28)	0.011	23.5 (19–27)	
Very often	69 (31.7)	40 (36–44)		23 (21–26)	0.007	22 (19–26)	0.003
Always	20 (9.2)	41.5 (37–47)		18.5 (14–24)	0.011, <0.001	17.5 (13–28)	0.001

IQR, interquartile range; PFT, pulmonary function testing; QI, quality improvement; RT, respiratory therapist.

\*Significance values have been adjusted by the Bonferroni correction for multiple tests.

<sup>†</sup>Participant can have more than one primary job responsibility.

initiatives (Table 4). Similarly, burnout was higher among RTs who work in departments that “rarely” [28 (IQR 24–33)] as compared to those that “always” [22 (IQR 18–25)] promote these initiatives. Departments that

valued employee contribution to the COVID-19 crisis received a significantly higher compassion satisfaction score as compared to those that did not [44.5 (IQR 41–47) versus 32 (IQR 29–40); *P* < 0.001] and a

TABLE 3

## Association of organizational factors with compassion satisfaction, burnout, and secondary traumatic stress

	Total (n = 218)	Compassion satisfaction		Burnout		Secondary traumatic stress	
	n (%)	Median (IQR)	P*	Median (IQR)	P*	Median (IQR)	P*
Primary place of employment			0.001		0.087		0.451
Hospital	206 (94.5)	40 (35–44)		24 (20–28)		23 (19–28)	
Clinic/lab/university	12 (5.5)	45.5 (42–47)		21 (17–26)		22 (16–28)	
Hospital bed size			0.584		0.597		0.082
<150 beds	42 (19.3)	41 (34–45)		24.5 (21–28)		22.5 (20–28)	
151–400 beds	75 (34.4)	41 (36–46)		24 (20–29)		25 (19–30)	
401–550 beds	32 (14.7)	39 (36–43)		25 (21–29)		22.5 (16–28)	
>551 beds	69 (31.7)	40 (35–44)		23 (19–29)		21 (18–26)	
Typical shift in hours			0.052		0.871		0.411
8 h	36 (16.5)	41 (37–45)		23.5 (17–27)		21 (18–26)	
12 h	160 (73.4)	39 (35–44)		24 (20–28)		23.5 (19–28)	
Other	22 (10.1)	43.5 (39–46)		23 (20–29)		22.5 (19–30)	
COVID-19 redeployment, n (%)			0.345		0.392		0.561
Yes	27 (12.4)	40 (30–45)		25 (20–29)		24 (20–27)	
No	191 (87.6)	40 (36–35)		24 (20–28)		23 (18–28)	
During COVID-19, my institution provided financial incentives/crisis pay.			0.139		0.060		0.168
Yes	72 (33)	42 (37–46)		22 (18–27)		21.5 (17–28)	
No	146 (67)	40 (35–44)		24 (21–28)		23.5 (19–28)	
My department promotes team collaboration, respect, innovation and excellence.			<0.001		<0.001		0.210
Never	4 (1.8)	48 (47–50)	0.001, 0.010	18 (15–22)	0.027	17 (15–25)	
Rarely	15 (6.9)	34 (27–38)	0.017, <0.001, 0.001	28 (24–33)	0.027, 0.002	24 (17–31)	
Sometimes	41 (18.8)	37 (33–45)	0.021, 0.010	28 (23–30)	0.027, <0.001, 0.023	24 (17–31)	
Very often	94 (43.1)	40 (37–44)	0.017	23.5 (20–27)	0.023	22 (19–28)	
Always	64 (29.4)	42 (37–47)	<0.001, 0.021	22 (18–25)	<0.001, 0.002	21.5 (18–27)	
My institution has valued my contribution to the COVID-19 crisis.			<0.001		<0.001		0.314
Strongly disagree	19 (8.7)	32 (29–40)	0.005, <0.001	28 (25–34)	0.001, <0.001, 0.049	26 (21–29)	
Disagree	34 (15.6)	39 (35–45)	0.041	25 (21–29)		23 (19–30)	
Neutral	58 (26.6)	38 (33–42)	<0.001	24 (21–28)	0.002	22 (18–27)	
Agree	65 (29.8)	40 (37–45)	0.005	23 (21–28)	0.036, 0.049	24 (19–28)	
Strongly agree	42 (19.3)	44.5 (41–47)	<0.001, <0.001, 0.041	20 (15–24)	0.036, 0.002, 0.001, <0.001	21 (17–28)	
During the COVID-19 pandemic, my department helped me manage stress and burnout.			<0.001		<0.001		0.042
Never	69 (31.7)	38 (33–45)	0.003, 0.007	26 (23–31)	<0.001, 0.023	25 (21–29)	
Rarely	51 (23.4)	39 (35–43)	0.008, 0.011	25 (21–30)	0.001, <0.001	23 (19–30)	
Sometimes	67 (30.7)	40 (37–44)		23 (20–26)	0.029, 0.002, 0.023	22 (19–26)	
Very often	25 (11.5)	45 (40–47)	0.003, 0.008	18 (15–21)	0.002, <0.001	21 (17–25.5)	
Always	6 (2.8)	48 (44–50)	0.007, 0.011	16.5 (13–18)	0.029, 0.001, <0.001	17.5 (12.5–27.25)	

IQR, interquartile range.

\*Significance values have been adjusted by the Bonferroni correction for multiple tests.

significantly lower burnout score [20 (IQR 15–24) versus 28 (IQR 25–34);  $P < 0.001$ ] (Table 3).

As shown in Figure 2, compassion satisfaction was higher for RTs who always received help in managing stress and burnout and burnout score was significantly higher among RTs who never received help from the department to manage stress and burnout during the pandemic.

## DISCUSSION

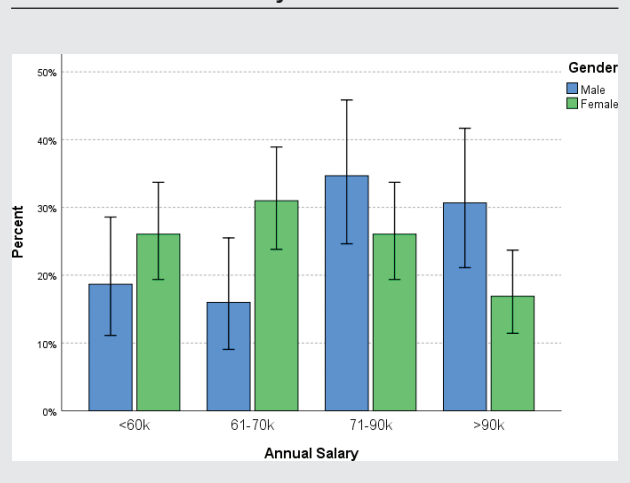
This survey study identified moderate compassion fatigue level (burnout and traumatic stress) among 51%–58% of the RTs during the COVID-19

pandemic. Several factors such as younger age, low level of education, working as a staff therapist, critical care as primary job responsibility, less RT work experience and working for organizations that rarely promoted team collaboration, inspired RTs to perform best or helped RTs manage stress and burnout were significantly associated with increased compassion fatigue. However, 99% of the RTs during the COVID-19 pandemic reported a moderate to high compassion satisfaction score, which indicates they are still engaged in their work. Most organizations desire highly engaged and motivated employees to achieve organizational success such as improved patient outcomes, customer satisfaction,

**TABLE 4**  
**Prevalence of compassion satisfaction, burnout, and secondary traumatic stress**

Variables	n (%)
Compassion satisfaction	
Low (≤22)	2 (0.9)
Medium (23–41)	123 (56.4)
High (≥42)	93 (42.7)
Burnout	
Low (≤22)	90 (41.3)
Medium (23–41)	127 (58.3)
High (≥42)	1 (0.5)
Secondary traumatic stress	
Low (≤22)	106 (48.6)
Medium (23–41)	112 (51.4)
High (≥42)	0

**FIGURE 1**  
**Gender and annual salary**

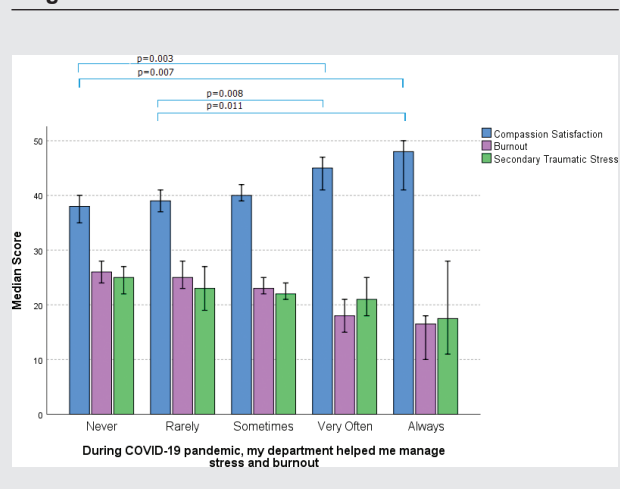


profitability and employee retention [20, 21]. But highly engaged employees are shown to be at increased risk of burnout [22].

Compassion fatigue impacts the clinician’s ability to work effectively, leading to an increase in medical errors and malpractice, reduced patient satisfaction and safety, increased health care costs and increased risk for substance abuse, mood disorder and suicide rates [23]. RTs are an integral part of the critical care workforce, but compassion fatigue among RTs is not well explored. A recent survey reported moderate to severe burnout among 10%–32% of the RTs measured using SCORE survey [10]. This study identified several factors that are predictive of burnout, such as burnout climate, defined as the perceived prevalence of burnout in coworkers, inadequate staffing and work absence. Positive leadership and non-patient-related job roles were associated with decreased burnout. Another longitudinal cohort study of prevalence and incidence of burnout noted an immediate increase in burnout symptoms in ICU professionals after COVID-19 [24]. Similar to these studies, our study reported an increased prevalence of compassion fatigue among RTs during the COVID-19 pandemic.

The COVID-19 pandemic resulted in an increased workload for the critical care workforce, including RTs. In this study, lower burnout was seen among RTs who answered “always” when asked if they had a manageable workload before and during the COVID-19 pandemic instead of

**FIGURE 2**  
**Stress management and compassion satisfaction and fatigue**



those who answered “sometimes.” In reviewing the literature, causes and consequences of increasing nurses’ burnout included excessive workload, low nurse-to-patient ratio and short staffing [6]. Previous research studies have shown that younger and less experienced professionals have a higher burnout and lower compassion satisfaction [25, 26]. Our study shows similar results where younger and less experienced RTs had higher burnout and traumatic stress. Burnout tends to decrease with increased professional experience as experienced professionals have a better understanding of their professional roles and boundaries and have coping mechanisms that help build resilience to chronic workplace emotional stress [8, 9, 27]. Another reason for this finding could be the “healthy worker effect” in which older and more experienced professionals suffering from burnout and distress do not volunteer to participate in surveys or might abandon the profession [28].

Gender inequalities and perceived lack of fairness are considered to be important causes of burnout [29]. Previous studies have reported lower compassion satisfaction and higher compassion fatigue among women [26, 30]. The present study revealed increased compassion fatigue among female RTs. This finding could be attributed to women being more empathic than men, enabling them to connect with their patients and feel their fears and traumas [26, 27]. Furthermore, female physicians are reported to get paid less than men leading to gender inequalities [31]. A cohort study among pediatric physiatrists concluded that women were paid less than their counterparts and provided evidence of the importance of intangible, unmeasured bias and institutional culture [32]. Similar to these findings, our study reported higher number of females earning less than \$70,000 and higher number of males earning more than \$71,000 in an annual salary despite similar demographics and work characteristics.

Prior studies support our findings that higher paid clinicians have higher job satisfaction [33]. Financial compensation and higher job satisfaction positively impact the workplace, ultimately reducing burnout rates [34, 35]. Similarly, education level is associated with increased job satisfaction, and our study results established increased compassion satisfaction and lower compassion fatigue among RTs with higher education [36]. We found that RTs who worked evenings/nights instead of days had a lower compassion satisfaction, but it was not statistically significant. The balancing act of sleep, family and work is especially stressful for employees with children. Many social events are missed among those working evenings/nights. Previous studies have reported differences between social and biological time leading to a lack of natural sleep, potentially contributing to low compassion satisfaction and increased depression and anxiety [37]. Organizations that inspire their

employees are associated with increased productivity and performance and have better satisfaction among departments and overall customers [38]. A satisfied employee treats and positively focuses on their customer [39]. Employees return the favour of being treated with respect by putting a great deal of effort to help their organization succeed. Our study supports this finding that organizations that help employees deal with burnout and stress had higher satisfaction and lower burnout. Individuals who understand compassion fatigue are able to take preemptive positive steps to deal with the issue rather than waiting until they experience more severe consequences [40]. Evidence-based interventions that increase compassion satisfaction and decrease compassion fatigue are essential to promote RTs emotional well-being.

### LIMITATIONS

This study has some limitations. As with all surveys, there is a risk of nonresponse bias [41]. Our survey represents one snapshot of the rapidly changing nature of the pandemic; therefore, data must be interpreted with caution. The survey response was relatively low and only includes RTs who have a membership with the AARC and access to the sections where the survey was posted. Additionally, since the survey was sent through a professional organization, self-selection bias may have resulted in RTs who were experiencing burnout at that time of the survey to most likely fill the survey due to motivation toward this topic. Finally, mental health variables and health disorders were not evaluated and could affect the professional quality of life.

### CONCLUSION

The current study contributes to our understanding of RTs who might be at a higher risk for compassion fatigue (burnout and traumatic stress). The study demonstrates the importance of exploring strategies to decrease compassion fatigue among RTs as they play a crucial role in the health care setting in managing cardiopulmonary diseases. There is a need to identify effective leadership strategies for stress management, including coping programs, education and safe working environments for all RTs.

### DISCLOSURES

#### Contributors

All authors contributed to the conception or design of the work and the acquisition, analysis or interpretation of the data. All authors were involved in drafting and commenting on the paper and have approved the final version.

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#### Competing interests

All authors have completed the ICMJE uniform disclosure form and declare no conflict of interest.

#### Ethical approval

This descriptive, cross-sectional, survey-based research study conducted from July 2020 to August 2020 was approved by the Institutional Review Board (19091607-IRB01).

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