Prevalence of Burnout Among Respiratory Therapists Amid the COVID-19 Pandemic

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BACKGROUND: Burnout is a major challenge in health care, but its prevalence has not been evaluated in practicing respiratory therapists (RTs). The purpose of this study was to identify RT burnout prevalence and factors associated with RT burnout. METHODS: An online survey was administered at 26 centers in the United States between January and March 2021. Validated quantitative cross-sectional surveys were used to measure burnout and leadership domains. The survey was sent to department directors and distributed by the department directors to their staffs. Data analysis was descriptive, and logistic regression analysis was performed to evaluate risk factors, expressed as odds ratios (OR), for burnout. RESULTS: The survey was distributed to 3,010 RTs; the response rate was 37%. Seventy-nine percent of the respondents reported burnout, 10% with severe, 32% with moderate, and 37% with mild burnout. Univariate analysis revealed that those with burnout worked more hours per week, worked more hours per week in the ICU, primarily cared for adult patients, primarily delivered care via RT protocols, reported inadequate RT staffing, reported being unable to complete assigned work, had more frequent exposure to COVID-19 (coronavirus disease 2019), had a lower leadership score, and fewer had a positive view of leadership. Logistic regression revealed that burnout climate (OR 9.38; $P < .001$), inadequate RT staffing (OR 2.08 to 3.19; $P = .004$ to .05), unable to complete all work (OR 2.14 to 5.57; $P = .003$ to .02), and missed work for any reason were associated with an increased risk of burnout (OR 1.96; $P = .007$). Not providing patient care (OR 0.18; $P = .02$) and a positive leadership score (.55; $P = .02$) were associated with a decreased risk of burnout. CONCLUSIONS: Burnout was common among the RTs in the midst of the COVID-19 pandemic. Good leadership was protective against burnout, whereas inadequate staffing, an inability to complete work, and a burnout climate were associated with burnout. *Key words: burnout; well-being; respiratory therapist; respiratory care practitioner; leadership; COVID-19.* [Respir Care 2021;66(11):1639–1648. © 2021 Daedalus Enterprises]

Introduction

Burnout is a major challenge in health care and is associated with poor patient outcomes, lower staff well-being, increased turnover, and worsening health-care system function.[1] Burnout is characterized by emotional exhaustion, depersonalization, and lack of professional efficacy. Hospitals with higher levels of nursing burnout have been shown to have increased mortality and prolonged length of stay.[2] Before the coronavirus disease 2019 (COVID-19) pandemic, burnout rates were reported as high as 50% in physicians and 33% in nurses.[1,3] Factors associated with burnout among health-care workers include the work climate, inadequate staffing, high workloads, and poor leadership.[4-6] Organizations with high rates of physician burnout have high turnover, lower staff satisfaction, less engagement, and lower quality of care.[7] In addition to these negative work-related sequalae, burnout results in broken relationships, alcoholism or substance abuse, depression, and suicide.[7]

The COVID-19 pandemic placed enormous strain on frontline health-care workers, including respiratory therapists (RTs), due to large influxes of patients who are critically ill and with respiratory failure and frequent exposure to aerosol-generating procedures, such as intubation, extubation, noninvasive ventilation, and nebulizer therapy.[8-10] Multiple studies of critical care practitioners found increases in burnout associated with the COVID-19 pandemic.[11,12] Shortages of personal protective equipment, respiratory equipment, and mechanical ventilators, and moral distress related to care limitation were associated with increases in burnout and emotional distress.[13]

Anxiety about contracting the virus at work and transmitting it to family members was also a major concern. Economic uncertainty and increased child-care burden due to school closings also increased stress. RTs opted to travel to COVID-19 hotspots to help out, but this may have exacerbated staffing shortages within their "home" institutions.[14] Some facilities were forced to rapidly train non-RTs to help with the increase in respiratory care workload.[15,16] Many facilities were forced to redeploy staffing resources from non-critical care areas to critical care areas and to convert regular floors into COVID-19-specific ICUs.[17,18] The pandemic exacerbated existing staffing shortages, which resulted in significantly increased workloads and an increase in patient acuity. The need to properly don and doff personal protective equipment may have reduced the efficiency of RTs caring for multiple patients with COVID-19. All of these factors have resulted in significant increases in stress and burnout among ICU professionals.[12,19]

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Data evaluating prevalence in RTs are rare, and, in contrast to nurses and physicians, studies that evaluated the effect of burnout on patient outcomes, turnover, staff satisfaction, engagement, and well-being among RTs have not been performed. A previous study from our group that evaluated burnout resources in respiratory care departments found that 72% of the respondents reported experiencing burnout at some point in their careers.[20] Despite most respondents having experienced burnout, the overall estimates of burnout were low but the respondents perceived that burnout increased modestly early in the COVID-19 pandemic, which underscores the importance of measuring burnout.[20] Several studies that evaluated burnout, moral distress, and secondary traumatic stress included RTs but did not report RT burnout rates separately.[21-25] Similar to other professions, burnout among RTs may reduce the quality of care because RTs have been shown to provide significant value to our patients through the use of RT-driven protocols, advanced airway management, and procedural excellence.[26-29] The purpose of this study was to identify RT burnout prevalence and the factors associated with RT burnout through the use of a multicenter survey of practicing RTs.

QUICK LOOK

Current knowledge

Burnout is a major challenge in health care and is associated with a number of negative effects on the health-care system. Respiratory therapists (RTs) have been greatly impacted by the COVID-19 pandemic. The prevalence of burnout among RTs has not been described.

What this paper contributes to our knowledge

This study demonstrated a 79% prevalence of burnout among RTs. All centers reported a burnout rate of at least 53%. Significant associations were noted between burnout and the likelihood of missing work due to illness or missing work for any reason. The strongest predictors of burnout were burnout climate, RT staffing, and the inability to complete all work. Positive perceptions of leadership and not providing direct patient care were protective against burnout.

Methods

A survey was developed by using REDCap (hosted at Duke University Medical Center, Durham, North Carolina) by us to evaluate burnout among RTs. The survey was active from January 17, 2021, to March 15, 2021. The survey was declared exempt by the Duke University Medical Center Institutional Review Board. A convenience sample of individual centers within the United States were recruited with a goal of identifying a minimum of 5 academic centers, 5 community hospitals, and 5 standalone children's hospitals willing to participate. We contacted the respiratory care leadership at each center, who subsequently administered the survey to their staff via e-mail. Reminders were left to the discretion of the leadership at each center. All the respondents answered questions about staffing, COVID-19 exposure, leadership, emotional exhaustion, and demographics. The director or manager at each center filled out the hospital demographics: number of beds, number of RTs on staff,

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unfilled positions, number of agency staff, affiliation with a medical school, patient population cared for, and use of protocol-based care. Follow-up e-mails were sent if the demographics were not included as part of the original survey response. We focused on leadership and staffing in addition to burnout because these were identified in our previous survey as key drivers of burnout among RTs.[20] Centers with > 1 campus were combined for analysis because the respondents were only able to select the primary center from the menu.

Based on our previous survey of burnout resources within respiratory care departments, we developed questions related to staffing, including the number of shifts worked without adequate staffing and percentage of shifts in which all work was unable to be completed, and we calculated each department's vacancy rate.[20] To measure burnout, we used validated sections of the Safety, Communication, Operational Reliability, and Engagement (SCORE) survey on emotional exhaustion and leadership behaviors.[4] The 22-item Maslach Burnout Inventory is the most commonly used instrument to measure burnout, and the emotional exhaustion subscale produces the largest effect. The SCORE survey uses a 5-item emotional exhaustion derivative with high Cronbach alpha levels, which have been demonstrated to be responsive to interventions, along with 2 questions about missing work due to illness or missing work for any reason.[4,30,31] This derivative is commonly used in health-care research because it is most predictive of the clinical outcome in health care and is the largest predictor of burnout when the complete survey is used.[32] To keep the survey succinct, we used this 5-item SCORE scale to measure personal burnout, along with a single question to evaluate the burnout climate: "people in this work setting (respiratory care department) are burned out from their work."

The leadership domain is a 5-item scale and has also been demonstrated to have a Cronbach alpha value, of 0.96 (personal communication, Duke Center for Healthcare Safety and Quality. December 2020). Burnout and leadership scores were calculated as ([the mean of the 5 items]–1) × 25. The responses were scored as the following: strongly agree, 5; agree, 4; neutral/undecided, 3; disagree, 2; and strongly disagree, 1. A score ≥ 50 on the burnout scale indicated that the respondent had burnout. A score between 50 and 74 indicated mild burnout, 75 to 99 indicated moderate burnout, and 100 indicated severe burnout. For the leadership scale, a score ≥ 50 indicated a positive view of leadership. The leadership score was divided into quartiles (<25, 25–49, 50 –74 and ≥75) for analysis. The complete survey is included as Supplementary Material A (see the supplementary materials at http://www.rcjournal.com).

Data analysis was performed by using SPSS version 25 (IBM, Chicago, Illinois). Descriptive results for centers were described as median (interquartile range) for continuous variables and counts (percentages). Center demographics were described as median (range). Sensitivity analysis was performed by comparing centers with a response rate ≥ 40% to those < 40%. The responses were compared for those with a burnout score ≥ 50 with those < 50. Continuous data were compared by using the Mann-Whitney test, and counts (percentages) were compared by using the chi-square test. Multivariable logistic regression analysis was performed to identify factors associated with burnout by using the forced entry method for all variables. All responses with a $P < .05$ in univariate analysis and additional factors added a priori by the investigators were included in the final model. A priori responses included in the model were commute time, highest degree earned, protocol use, shift worked, years as an RT, and role (leadership vs staff) within the department. Only responses with complete answers for all 5 burnout and leadership questions were included in the logistic regression model. Missing data for other variables were categorized as other or not reported. The role within the department was divided into 2 categories: staff therapist or leadership (director, manager, supervisor, educator, lead/charge RT, clinical specialist). The hours worked per week and hours worked in intensive care unit per week were categorized as ≤40 h per week, 41–50 h, and > 50 h per week. Commute time was categorized as ≤30 min, 31–59 min, and ≥60 min. Years of experience were categorized as <2, 2–5, 6–10, 11–20, and >20 years of experience.

Results

There were a total of 1,156 responses from 26 institutions, which represented 30 individual hospitals and 1 large health-care system. Complete responses for burnout were available for 1,114 respondents, with a response rate of 37%. Two thirds of the centers were affiliated with medical schools and 30% were children's hospitals. The median burnout rate by center was 84% and ranged from 53% to 100%. The measured burnout rate and respondents agree/strongly agree with "people in this work environment are burned out" were highly correlated, with a Pearson coefficient of 0.85, $P < .001$. When only centers with a response rate > 25% were included, the Pearson coefficient was 0.92, $P < .001$. Sensitivity analysis that compared centers with a response rate ≥ 40% with those < 40% revealed no statistically significant differences for the burnout rate ($P = .23$), burnout score ($P = .13$), leadership score ($P = .42$), positive leadership score ($P = .23$), burnout climate ($P = .37$), hospital beds ($P = .41$), number of RTs ($P = .29$), unfilled positions ($P = .29$), vacancy rate ($P > .99$), and number of agency staff ($P = .83$). The hospital demographics are summarized in Table 1.

The overall burnout rate was 79%, with 10% having severe burnout, 32% moderate burnout, and 37% mild burnout. The respondents who reported burnout worked more hours per week (median 38 vs 36 h; $P = .001$), worked more hours in intensive care (median 36 vs 25 h; $P < .001$), reported more exposure to COVID-19 ($P <$

Table 1. Center Demographics

Variables	Results
Total no. centers	26
No. responses per center	38.5 (6–203)
Response rate, %	37 (9.6–79)
Hospital demographics	
No. hospital beds*	418 (144–1,630)
RTs on staff, *n*	93 (15–640)
Unfilled positions, *n*	8 (0–43)
Vacancy rate, %	6.7 (0–37.5)
Agency staff	14 (54)
Agency staff, *n*	7 (3–32)
Managers or supervisors, *n*	6.5 (1–30)
Affiliated with medical school	17 (65)
Children's hospital	7 (27)
Patient populations cared for	
Adult	21 (81)
Pediatric	22 (85)
Neonatal	25 (96)
Protocol-based care (via RT protocol)	
Limited, <50%	9 (35)
Most, 50%–80%	7 (26)
Primarily, >80%	10 (37)
Burnout and leadership scores	
Leadership score	56.5 (36–100)
Positive leadership score, %	60 (30–96)
Burnout score	74 (50–83)
RTs with burnout, %	82.5 (53–100)
People in this work setting are burned out, %	87.5 (42–92)

Data are presented as median (range) for continuous variables and and *n* (%) for categorical variables.
*Responses were missing for 1 center.
RT = respiratory therapist

.001), and were more likely to work in community hospitals ($P = .004$). Burnout also varied by years of experience working as an RT ($P = .01$), caring for different populations ($P < .001$), and care delivered via protocol ($P = .004$). There were no differences in burnout for the highest degree earned, the role within the department, years as an RT, commute time, shift worked, sex, or race. Results are summarized in Table 2 and Supplementary Table 1 (see the supplementary materials at http://www.rcjournal.com).

There were significant differences in reported burnout for all staffing and leadership questions. The median leadership score was significantly lower in the respondents with burnout (55 vs 75; $P < .001$), fewer had a leadership score ≥ 50 (61% vs 86%; $P < .001$), and there were significant differences for leadership score quartiles ($P < .001$). Burnout was also negatively associated for positive leadership behaviors (strongly agree/agree percentage): my department director/manager is available at predictable times (64% vs 84%; $P < .001$), my department director/manager regularly makes time to provide positive feedback to me about how I am doing (38% vs 67%; $P < .001$), my department director/manager provides frequent feedback about my job performance (36% vs 63%; $P < .001$), my department director/manager provides useful feedback about my job performance (38% vs 67%; $P < .001$), and my department director/manager communicates his or her expectations to me about my performance (50% vs 74%; $P < .001$). The results are summarized in Table 3 and Supplementary Table 2 (see the supplementary materials at http://www.rcjournal.com). Significant differences existed for all individual questions related to burnout (Table 4).

The logistic regression model revealed an increased risk of burnout associated with the following: adequate RT staffing for <50% of shifts (odds ratio [OR] 3.19; $P = .004$), never adequately staffed (OR 2.64; $P = .045$), occasionally without adequate staffing (OR 2.08; $P = .050$), and people in this work setting are burned out from their work (burnout climate, OR 9.38; $P < .001$). Staff members who reported burnout also reported missing work in the past month for any reason (OR 1.96; $P = .007$). Statistically significant burnout ORs were observed for respondents being unable to complete all their work, 2.14 for < 25% of shifts, 5.57 for 50%–74%, 3.35 for 75%–99%; and 0.18 for not providing patient care. A positive leadership score was protective against burnout (OR 0.55; $P = .02$). There were no other statistically significant factors associated with burnout. Primary results are summarized in Table 5 and complete results are in Supplementary Table 3 (see the supplementary materials at http://www.rcjournal.com).

Discussion

We found a burnout prevalence of 79% in a convenience sample of RTs practicing in the United States during the COVID-19 pandemic. All the centers reported a burnout rate of at least 53%. Univariate analysis revealed those with burnout worked more hours per week, worked more hours per week in the ICU, primarily cared for adult patients, primarily delivered care via RT protocol, reported inadequate staffing, reported being unable to complete assigned work, were frequently exposed to COVID-19, and reported a lower leadership score, and fewer had a positive view of leadership. Significant associations were noted between burnout and the likelihood of missing work due to illness or missing work for any reason, which illustrated the negative downstream effects of burnout. A multivariable logistic regression analysis found that the strongest predictors of burnout were burnout climate, RT staffing, and an inability to complete all their work. Positive perceptions of leadership and not providing direct patient care were protective against burnout.

Burnout climate, or the perceived prevalence of burnout in co-workers, was the strongest predictor of burnout in our study. This was consistent with previous work in healthcare workers in which emotional exhaustion was highly

Table 2. Respondent Demographics

Demographic	All Respondents (N = 1,114)	Burned Out (n = 891)	Not Burned Out (n = 233)	P
Burnout score ≥ 50	891 (79)			
Mild	420 (37)			
Moderate	359 (32)			
Severe	112 (10)			
Years as an RT, median	10 (5–10)	10 (5–19)	11 (5–20)	.46
<2 y	84 (7.8)	58 (6.8)	26 (12)	.01
2–5 y	243 (23)	204 (24)	39 (17)	
6–10 y	229 (21)	189 (22)	40 (18)	
11–20 y	283 (26)	214 (25)	69 (30)	
>20 y	235 (22)	182 (22)	53 (23)	
Hours worked per week, median	36 (36–48)	38 (36–48)	36 (36–40)	.001
≤40 h	784 (71)	602 (69)	182 (80)	.004
41–50 h	240 (22)	206 (24)	34 (15)	
>50 h	80 (7.2)	68 (7.8)	12 (5.3)	
Hours worked in intensive care per week, median	36 (20–36)	36 (24–38)	25 (12–36)	<.001
≤40 h	955 (89)	741 (88)	214 (96)	.001
41–50 h	97 (9.1)	90 (11)	7 (3.1)	
>50 h	18 (1.7)	16 (1.9)	2 (0.9)	
Affiliated with medical school	1,081	879	216	.004
Affiliated with medical school, Y	871 (81)	694 (79)	189 (88)	
Affiliated with medical school, N	210 (19)	185 (21)	27 (12)	
Patient population primarily cared for	1,111	882	229	<.001
Adult	611 (55)	518 (59)	93 (41)	
Neonatal/pediatric	283 (26)	188 (21)	95 (42)	
Both–rotate through all areas	183 (17)	153 (17)	30 (13)	
Do not provide direct patient care	34 (3.1)	23 (2.6)	11 (4.8)	
Protocol-based care, n	1,060	839	221	.004
None	0 (0)	0 (0)	0 (0)	
<50%	307 (29)	249 (30)	58 (26)	
50%–80%	226 (21)	161 (19)	65 (29)	
>80%	527 (50)	429 (51)	98 (44)	

Data are presented as median (interquartile range) for continuous variables and n (%) for categorical variables.
RT = respiratory therapist

predicted by burnout climate.[4] Data from our previous survey indicated that RTs most often mentioned external factors as drivers of burnout, consistent with the work environment being a primary driver of burnout.[20] Burnout has been demonstrated to be contagious in critical care nurses,[33] and a recent study with data collected before the COVID-19 pandemic demonstrated that burnout was significantly associated with the work environment.[2] Importantly, this latter study also demonstrated worse patient outcomes in hospitals with high rates of burnout. Thus, focusing on improving the work environment is likely an effective strategy to reduce burnout and optimize patient outcomes. The relationship between RT burnout and patient outcomes has not been studied; however, providing a positive working environment should be a primary goal of every respiratory care department. Importantly, RT burnout climate crosses multiple individual units within the hospital because RTs are often assigned to different locations throughout the hospital, which potentially exposes them to a negative working environment beyond the control of the RT leadership.

The inability of RTs to complete all their work and inadequate RT staffing were also significantly associated with burnout in our study, consistent with our previous study.[20] We did not define adequate RT staffing, and, thus, the respondents' reported their individual perceptions of staffing. There is no national standard method for determining the RT's work load or the RT's productivity standards by hospital administrations. A white paper published by the American Association for Respiratory Care has called for RT workloads to be assessed by a system that accounts for all clinical activities.[34] Despite this, many hospitals use metrics that rely on billed tests or Ambulatory Procedure Code Weights, which leave many "value added" activities unaccounted for in RT productivity. With inadequate

Table 3. Staffing and Leadership Responses

Response	All Respondents (N = 1,114)	Burned Out (n = 891)	Not Burned Out (n = 233)	P
Staffing				
In the past month, how many shifts have you worked without adequate staffing, *n*	1,112	884	228	
Always (adequately staffed for 0% of shifts)	149 (13)	135 (15)	14 (6.1)	<.001
Frequently (adequately staffed for <50% of shifts)	335 (30)	306 (35)	29 (13)	
Occasionally (adequately staffed for 50%–74% of shifts)	330 (30)	271 (31)	59 (26)	
Rarely (adequately staffed for 75%–99% of shifts)	210 (19)	131 (15)	79 (35)	
Never (adequately staffed for 100% of shifts)	88 (7.9)	41 (4.6)	47 (21)	
In the past month, what percentage of your shifts have you provided direct patient care to patients with COVID-19, *n*	1,118	890	228	
100%	302 (27)	259 (29)	43 (19)	<.001
75%–99%	299 (27)	251 (28)	48 (21)	
50%–74%	169 (15)	128 (14)	41 (18)	
<50%	284 (25)	205 (23)	79 (35)	
Do not provide direct patient care	64 (5.7)	47 (5.3)	17 (7.5)	
In the past month, what percentage of shifts have you been unable to complete all your work, *n*	1,118	888	230	<.001
100%	51 (4.6)	44 (5.0)	7 (3.0)	<.001
75%–99%	141 (13)	132 (15)	9 (3.9)	
50%–74%	118 (11)	114 (13)	4 (1.8)	
<50%	141 (13)	125 (14)	16 (7.0)	
<25%	341 (31)	284 (32)	57 (25)	
0%	291 (26)	169 (19)	122 (53)	
Do not provide direct patient care	35 (3.1)	20 (2.2)	15 (6.8)	
Leadership behaviors				
Leadership score median	60 (40–75)	55 (35–75)	75 (55–99)	<.001
Overall leadership score positive	1,080	856	224	
Positive	710 (66)	518 (61)	192 (86)	<.001
Negative	370 (34)	338 (39)	32 (14)	
Leadership score by quartiles				
≥75	385 (36)	259 (30)	126 (56)	<.001
50–74	325 (30)	259 (30)	66 (30)	
25–49	256 (24)	232 (27)	24 (11)	
<25	114 (11)	106 (12)	8 (3.6)	
In the past month, my activities have been restricted due to illness, *n*	1,120	889	231	
Strongly agree	76 (6.8)	69 (7.8)	7 (3.0)	<.001
Agree	106 (10)	96 (11)	10 (4.3)	
Neutral or undecided	132 (12)	126 (14)	6 (2.6)	
Disagree	403 (36)	332 (37)	71 (31)	
Strongly disagree	353 (32)	226 (25)	127 (55)	
NA or prefer not to answer	50 (4.5)	40 (4.5)	10 (4.3)	
In the past month, I have missed work (for any reason), *n*	1,117	887	230	
Strongly agree	115 (10)	101 (11)	16 (6.1)	<.001
Agree	241 (22)	208 (23)	33 (14)	
Neutral or undecided	39 (3.5)	38 (4.3)	1 (0.4)	
Disagree	256 (23)	202 (23)	54 (24)	
Strongly disagree	426 (38)	306 (35)	120 (52)	
NA or prefer not to answer	40 (3.6)	32 (3.6)	8 (3.5)	

Data are presented as median (interquartile range) for continuous variables and *n* (%) for categorical variables.
RT = respiratory therapist
COVID-19 = coronavirus disease 2019
NA = not applicable

Table 4. Individual Burnout Responses

Response	All Respondents (N = 1,114)	Burned Out (n = 891)	Not Burned Out (n = 233)	P
Burnout score, median	70	75	30	<.001
I feel burned out from my work, *n*	1,124	891	233	
Strongly agree	336	336	0	<.001
Agree	457	431	26	
Neutral or undecided	160	104	56	
Disagree	127	17	110	
Strongly disagree	43	2	41	
NA or prefer not to answer	1	1	0	
Events in this work setting affect my life in an emotionally unhealthy way, *n*	1,124	891	233	
Strongly agree	235	235	0	<.001
Agree	433	415	18	
Neutral or undecided	204	169	35	
Disagree	176	65	111	
Strongly disagree	75	6	69	
NA or prefer not to answer	1	1	0	
I feel fatigue when I get up in the morning and have to face another day on the job, *n*	1,124	891	233	
Strongly agree	326	326	0	<.001
Agree	463	437	26	
Neutral or undecided	157	107	50	
Disagree	125	20	105	
Strongly disagree	51	0	51	
NA or prefer not to answer	2	1	1	
I feel frustrated by my job, *n*	1,124	891	233	
Strongly agree	235	234	1	<.001
Agree	423	407	16	
Neutral or undecided	210	182	28	
Disagree	190	67	123	
Strongly disagree	66	1	65	
NA or prefer not to answer	0	0	0	
I am working too hard on my job, *n*	1,124	891	233	
Strongly agree	202	200	2	<.001
Agree	366	349	17	
Neutral or undecided	327	278	49	
Disagree	181	64	117	
Strongly disagree	48	0	48	
NA or prefer not to answer	0	0	0	
People in this work setting (respiratory care department) are burned out from their work, *n*	1,115	884	231	
Strongly agree	452	445	7	<.001
Agree	461	368	93	
Neutral or undecided	149	66	83	
Disagree	29	2	27	
Strongly disagree	18	1	17	
NA or prefer not to answer	6	2	4	

Data are presented as median (interquartile range) for continuous variables and *n* (%) for categorical variables.
NA = not applicable

staffing being an independent risk factor for RT burnout, research into RT staffing methodology, benchmarking, and its relationship to burnout and staff retention are urgently needed. It is possible that many RTs began traveling to COVID-19 hotspots, which may have left their previous facilities understaffed.[14] Given the desire to help and the substantial financial incentives for traveling to hotspots, this may have exacerbated existing staffing shortages,

Table 5. Results of the Multivariable Logistic Regression Model

Response	Respondents, *n*	Odds Ratio	95% CI	*P*
Total responses included	1,080			
In the past month, how many shifts have you worked without adequate RT staffing?				
Never (reference)	83			
Always (adequately staffed for 0% of shifts)	143	2.64	1.02–6.82	.045
Frequently (adequately staffed for <50% of shifts)	321	3.19	1.44–7.05	.004
Occasionally (adequately staffed for 50%–74% of shifts)	314	2.08	1.0–4.34	.050
Rarely (adequately staffed for 75%–99% of shifts)	207	1.31	0.65–2.65	.46
Not reported	12	0.89	0.09–8.54	.92
In the past month, what percentage of shifts have you been unable to complete all your work?				
0% (reference)	278			
100%	49	3.38	1.20–9.50	.02
75%–99%	135	3.35	1.42–7.92	.006
50%–74%	113	5.57	1.81–17.1	.003
<50%	136	2.34	1.18–4.63	.02
<25%	329	2.14	1.30–3.51	.003
Do not provide patient care	34	0.18	0.04–0.76	.02
Not reported	6	1.41	0.02–95.0	.87
Positive leadership score				
Negative (reference)	370			
Positive	710	0.55	0.34–0.89	.02
People in this work setting (respiratory care department) are burned out from their work				
No (reference)	185			
NA or prefer not to answer	14	1.45	0.35–5.98	.56
Yes	881	9.38	5.96–14.77	<.001
In the past month, I have missed work (for any reason)				
No (reference)	694			
NA	45	1.91	0.61–6.02	.27
Yes	341	1.96	1.21–3.20	.007

Omnibus test of model coefficients < 0.001; Nagelkerke $R^2 = 0.46$; Hosmer and Lemeshow test = 0.21.
Non-statistically significant variables in the model: provided direct care to patients with coronavirus disease 2019 (COVID-19), hours worked per week, hours worked per week in the ICU, commute time, highest degree earned, RT protocol use, shift worked, patient population cared for, role within the department, and activities restricted due to illness.
RT = respiratory therapist,
NA = not applicable

although our survey was unable to evaluate the impact of RT staff who left for travel opportunities.

The relationship between a high workload and insufficient staffing with burnout has also been observed in nurses,[5,6] with 1 study that identified supportive services and ample time to take a 30 min break were associated with lower rates of burnout.[5] Half of our respondents with burnout indicated they were never adequately staffed or were adequately staffed for less than half of their shifts. One third of those with burnout also reported they were unable to complete all their work for at least half of their shifts, with 5% who reported that they were never able to complete all their work. This is higher than what was reported in the most recent American Association for Respiratory Care survey, which revealed that 10% of RTs were unable to complete their work in 1 shift and 21% reported using a prioritization system every shift.[35] Those who experienced burnout were more likely to miss work, which places an increased burden on staff who are working. This may lead to an increased risk of burnout while creating moral distress for staff who feel guilty if they are unable or unwilling to pick up extra shifts.

In an unexpected finding, we did not find COVID-19 exposure to be associated with burnout in our multivariable analysis. This indicated that the increase in workload; impact on staffing due to staff falling ill, which required quarantining; or caring for sick family members may be as important as COVID-19 exposure. A recent study that used the Healthcare Worker Exposure Response and Outcomes (HERO) Registry found that RTs had a similar risk of burnout as other health-care providers but did not find any profession to be associated with an increased or a decreased risk of burnout, even though RTs in this study had the second highest COVID-19 exposure risk.[21] This could be related to RTs' routine exposure to respiratory viruses and

thus were more comfortable with taking care of patients with infectious diseases. A study of nurses and physicians from the Netherlands found that the COVID-19 pandemic resulted in an increase in burnout, from 23% to 36%.[12] A different study of critical care professionals found an increase in burnout, from 50% to 57%, but did not include RTs.[11] A survey of health-care workers in Portugal noted that 53% of respondents reported burnout, but this study did not include RTs.[36] Given that the burnout rate in our study was higher than that reported in other clinicians, it is possible that the COVID-19 pandemic has exacerbated an existing problem within respiratory care departments, our respondents had a special interest in burnout, or those with burnout were more likely to fill out our survey.

Our previous survey indicated that poor leadership was perceived as a major driver of burnout among RTs.[20] The results of our current study indicated that a positive view of leadership was protective against burnout. Leadership rounding with feedback has been associated with reductions in burnout, increases in engagement, and improved safety culture.[4] This study found that personal burnout and the burnout climate were lowest in settings with the highest rate of rounding with feedback.[4] RT leaders could implement consistent rounding within their department as a strategy to provide consistent, useful, and positive feedback for frontline staff while showing support for bedside providers by listening to their concerns, implementing suggestions, and increasing staff engagement in departmental decision-making.

Limitations

There were significant limitations to our study. The respondents may have had a special interest in burnout and may not have been representative of the profession. People who experienced burnout may have been more likely to respond, which thus skewed the results to be higher than the true burnout rate. The survey may also have primed respondents to provide internally consistent results based on the order of the questions, which resulted in order effects bias. Our respondents compared favorably with the 2020 American Association for Respiratory Care Human Resources survey[35] for median years of experience (10 vs 15 years), sex (67% vs 70% women), race (77% vs 82% white), hours worked per week (36 vs 36 h), and a similar percentage had an associate degree as their highest degree (48% vs 51%).The difference in years of experience is likely explained by a higher proportion of staff RTs in our survey (75% vs 48%).[35] Despite our best efforts, the centers surveyed may not be representative of all RT departments and the respondents may have had a special interest in burnout. We only included centers in the United States, and it was not possible for us to confirm that the survey was distributed to all RT staff at each center. We asked about COVID-19 exposure within the previous month, which may not be reflective of cumulative exposure or pandemic-related effects on work-life balance. Some questions may not have been worded clearly. We simplified our measure of the burnout climate to a single question but measured burnout rates and perceived burnout climate were highly correlated, with a Pearson coefficient of 0.85.

Conclusions

Burnout was common among RTs in the midst of the COVID-19 pandemic. Good leadership was protective against burnout, whereas inadequate staffing, inability to complete work, and burnout climate were associated with burnout. Further studies are needed to evaluate factors associated with burnout and investigate interventions to reduce burnout among RTs.

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