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

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Abstract

Background: Burnout is a major challenge in health care, but its prevalence has not been evaluated in practicing respiratory therapist (RTs). The purpose of this study was to identify RT burnout prevalence and factors associated with RT burnout.

Methods: An online survey was administered to 26 centers in the United States and 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 staff. 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, and the response rate was 37%. Seventy-nine percent of respondents reported burnout, 10% with severe, 32% with moderate, and 37% with mild burnout. 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 protocols, reported inadequate RT staffing, reported being unable to complete assigned work, were more frequently exposed to COVID-19, had a lower leadership score, and fewer had a positive view of leadership. Logistic regression revealed burnout climate (OR 9.38, $p<0.001$), inadequate RT staffing (OR 2.08 to 3.19, $p=0.004$ to 0.05), being unable to complete all work (OR 2.14 to 5.57, $p=0.003$ to 0.20), and missing work for any reason were associated with increased risk of burnout (OR 1.96, $p=0.007$). Not providing patient care (OR 0.18, $p=0.02$) and a positive leadership score (0.55, $p=0.02$) were associated with decreased risk of burnout.

Conclusion: Burnout was common among RTs in the midst of the COVID-19 pandemic. Good leadership was protective against burnout while inadequate staffing, inability to complete work, and burnout climate were associated with burnout.

Keywords: burnout, well-being, respiratory therapist, respiratory care practitioner, leadership, COVID-19.

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 COVID-19 pandemic, burnout rates were reported as high as 50% in physicians and 33% in nurses.[1, 3] Factors associated with burnout among healthcare 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 front-line health care workers, including respiratory therapists (RTs), due to large influxes of critically ill patients 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, 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 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 convert regular floors into COVID specific intensive care units.[17, 18] The pandemic exacerbated

existing staffing shortages, resulting 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]

Data evaluating burnout prevalence in RTs are rare and in contrast to nurses and physicians, studies evaluating the effect of burnout on patient outcomes, turnover, staff satisfaction, engagement, and well-being among RTs have not been performed. A prior study from our group evaluating burnout resources in respiratory care departments found 72% of respondents reported experiencing burnout at some point in their careers.[20] Despite most respondents having experienced burnout, overall estimates of burnout were low but respondents perceived burnout increased modestly early in the COVID-19 pandemic, underscoring the importance of measuring burnout.[20] Several studies evaluating burnout, moral distress, and secondary traumatic stress have included RTs but have not reported RT burnout rates separately.[21-25] Similar to other professions, burnout among RTs may reduce the quality of care, as 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 identify factors associated with RT burnout through the use of multicenter survey of practicing RTs.

Methods

A survey was developed using REDCap (hosted at Duke University Medical Center, Durham, NC) by the authors 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 five academic centers, five community hospitals, and five 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 email. Reminders were left to the discretion of the leadership at each center. All respondents answered questions about staffing, COVID-19 exposure, leadership, emotional exhaustion and demographics. The director/manager at each center filled out the hospital demographics: number of beds, number of RTs on staff, unfilled positions, number of agency staff, affiliation with a medical school, patient population cared for, and use of protocol-based care. Follow-up emails were sent if demographics were not included as part of the original survey response. We focused on leadership and staffing in addition to burnout as these were identified in our prior survey as key drivers of burnout among RTs.[20] Centers with more than one campus were combined for analysis as respondents were only able to select the primary center from the menu.

Based on our prior survey of burnout resources within respiratory care departments, we developed questions related to staffing including number of shifts worked without adequate staffing, percentage of shifts in which all work was unable to be completed, and calculated each department's vacancy rate.[20] To measure burnout, we used validated sections of the 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 utilizes a 5-item emotional exhaustion derivative with high Cronbach alpha levels which has been demonstrated to be responsive to interventions along with two questions about missing work due to illness or missed work for any reason.[4, 30, 31] This derivative is commonly used in healthcare research as it is most predictive of clinical outcome in healthcare and is the largest predictor of burnout when the complete survey is used.[32] In order to keep the survey succinct, we used this 5-item SCORE scale to measure personal burnout, along with a single question to evaluate 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 with Duke Center for Healthcare Safety and Quality). Burnout and leadership scores were calculated as ((mean of the 5-items -1)*25). Responses were scored as: strongly agree = 5, agree =4, neutral/undecided = 3, disagree = 2, and strongly disagree 1. A score ≥ 50 on the burnout scale indicated the respondent had burnout. A score between 50 and 74 indicates mild burnout, 75 to 99 indicates moderate burnout, and 100 indicates 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 supplement A.

Data analysis was performed using SPSS (IBM, Chicago, IL) v25. 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 comparing centers with a response rate ≥ 40% to those < 40%. Responses were compared for those with a burnout score ≥ 50 to those < 50. Continuous data were compared using the Mann-Whitney and counts (percentages) were compared using Chi-Squared test. Multivariable logistic regression analysis was performed to identify factors associated with burnout using the Forced Entry Method for all variables. All responses with a $p<0.05$ in univariate analysis and additional factors added a priori by the investigators. A priori responses included in the model included 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 was categorized as other or not reported. Role within the department was divided into 2 categories, staff therapist or leadership (director, manager, supervisor, educator, lead/charge RT, clinical specialist). Hours worked per week and hours worked in intensive care per week were categorized as ≤ 40 hours per week, 41-50 hours, and > 50

hours per week. Commute time was categorized as ≤ 30 minutes, 31-59 minutes and ≥ 60 minutes. Years of experience were categorized as < 2, 2-5, 6-10, 11-20, and > 20 years of experience.

Results

There were a total of 1156 responses from 26 institutions, representing 30 individual hospitals and one large healthcare system. Complete responses for burnout were available for 1114 respondents, with a response rate of 37%. Two-thirds of 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%. Measured burnout rate and respondents agree/strongly agreeing with "people in this work environment are burned out" were highly correlated, with a Pearson coefficient of 0.85, $p<0.001$. When only centers with a response rate > 25% were included, the Pearson coefficient was 0.92, $p<0.001$. Sensitivity analysis comparing centers with a response rate ≥ 40% to those < 40% revealed no statistically significant differences for burnout rate ($p=0.23$), burnout score ($p=0.13$), leadership score ($p=0.42$), positive leadership score ($p=0.23$), burnout climate ($p=0.37$), hospital beds ($p=0.41$), number of RTs ($p=0.29$), unfilled positions ($p=0.29$), vacancy rate ($p>0.99$), and number of agency staff ($p=0.83$). 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. Respondents reporting burnout worked more hours per week (median 38 vs. 36, $p=0.001$), worked more hours in intensive care (median 36 vs. 25, $p<0.001$), reported more exposure to COVID-19 ($p<0.001$), and were more likely to work in community hospitals ($p=0.004$). Burnout also varied by years of experience working as an RT ($p=0.01$), caring for different populations ($p<0.001$), and care delivered via protocol ($p=0.004$). There were no differences in burnout for highest degree earned, role within the department, years as an RT, commute time, shift worked, gender, or race. Results are summarized in Table 2 and supplemental table 1.

There were significant differences in reported burnout for all staffing and leadership questions. The median leadership score was significantly lower in respondents with burnout (55 vs. 75, p<0.001), fewer had a leadership score ≥ 50 (61% vs. 86%, p<0.001) and there were significant differences for leadership score quartiles (p<0.001). Burnout was also negatively associated for positive leadership behaviors (strongly agree/agree %): my department director/manager is available at predictable times (64% vs. 84%, p<0.001), my department director/manager regularly makes time to provide positive feedback to me about how I am doing (38% vs. 67%, p<0.001), my department director/manager provides frequent feedback about my job performance (36% vs. 63%, p<0.001), my department director/manager provides useful feedback about my job performance (38% vs. 67%, p<0.001), and my department director/manager communicates their expectations to me about my performance (50% vs. 74%, p<0.001). Results are summarized in table 3 and supplemental table 2. Significant differences existed for all individual questions related to burnout (Table 4).

The logistic regression model revealed an increased risk of burnout associated with: adequate RT staffing for < 50% of shifts (OR 3.19, p=0.004), never adequately staffed (OR 2.64, p=0.045), occasionally without adequate staffing (OR 2.08, p=0.050), and people in this work setting are burned out from their work (burnout climate; OR 9.38, p<0.001). Staff reporting burnout also reported missing work in the last month for any reason (OR 1.96, p=0.007). Statistically significant burnout odds ratios were observed for 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=0.02). There were no other statistically significant factors associated with burnout. Primary results are summarized in table 5 and complete results in supplemental table 3.

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 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, reported a lower leadership score, and fewer had a positive view of leadership. Significant associations were noted between burnout and likelihood of missing work due to illness or missing work for any reason, illustrating the negative downstream effects of burnout. Multivariable logistic regression analysis found the strongest predictors of burnout were burnout climate, RT staffing, and inability to complete all 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 is consistent with prior work in health care workers in which emotional exhaustion was highly predicted by burnout climate.[4] Data from our prior survey indicated 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 prior to the COVID-19 pandemic demonstrated burnout was significantly associated with 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 as RTs are often

assigned to different locations throughout the hospital, potentially exposing them to negative working environment beyond the control 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 prior study.[20] We did not define adequate RT staffing and thus the respondents' were reporting their individual perceptions of staffing. There is no national standard method for determining RT workload or RT productivity standards by hospital administrations. A white paper published by the AARC has called for RT workloads to be assessed by a system that accounts for all clinical activities.[34] Despite this, many hospitals utilize metrics that rely on billed tests or Ambulatory Procedure Code Weights leaving many "value added" activities unaccounted for in RT productivity. With inadequate 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 many RTs began traveling to COVID-19 hotspots, which may have left their prior facilities understaffed.[14] Given the desire to help and the substantial financial incentives for traveling to hotspots, this may have exacerbated existing staffing shortages although our survey was unable to evaluate the impact of RT staff leaving for travel opportunities.

The relationship between high workload and insufficient staffing with burnout has also been observed in nurses,[5, 6] with one study identifying supportive services and ample time to take a 30 minute 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% reporting they were never able to complete all their work. This is higher than what was reported in the most recent AARC survey that revealed 10% of RTs were unable to complete their work in one shift and 21% reported using a prioritization system every shift.[35] Those experiencing 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 multivariable analysis. This indicates that the increase in workload, impact on staffing due to staff falling ill, requiring quarantining, or caring for sick family members may be as important as COVID-19 exposure. A recent study using the HERO-registry found 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 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 taking care of patients with infectious diseases. A study of nurses and physicians from the Netherlands, found 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 healthcare workers in Portugal noted 53% of respondents reported burnout, but this study did not include RTs.[36] Given the burnout rate in our study was higher than 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 prior survey indicated that poor leadership was perceived as a major driver of burnout among RTs.[20] The results of our current study indicated 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 personal burnout and 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 front-line staff while showing support for bedside providers by listening to their concerns, implementing suggestions and increasing staff engagement in departmental decision making.

Limitations

There are significant limitations to our study. Respondents may have had a special interest in burnout and may not have been representative of the profession. People experiencing burnout may have been more likely to respond, thus skewing 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, resulting in order effect bias. Our respondents compared favorably to the 2020 AARC Human Resources survey for median years of experience (10 vs. 15 years), gender (67% vs. 70% female), race (77% vs. 82% white), hours worked per week (36 vs. 36 hours), 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 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 the survey was distributed to all RT staff at each center. We asked about COVID-19 exposure within the prior 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 burnout climate to a single question but measured burnout rates and perceived burnout climate were highly correlated, with a Pearson coefficient of 0.85.

Conclusion

Burnout was common among RTs in the midst of the COVID-19 pandemic. Good leadership was protective against burnout while inadequate staffing, inability to complete work, and burnout climate

were associated with burnout. Further studies are needed to further evaluate factors associated with burnout and investigating interventions to reduce burnout among RTs.

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Quick Look

Current Knowledge:

Burnout is a major challenge in health care and is associated with a number of negative effects on the healthcare 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 demonstrates a 79% prevalence of burnout among RTs. All centers reported a burnout rate of at least 53%. Significant associations were noted between burnout and likelihood of missing work due to illness or missing work for any reason. The strongest predictors of burnout were burnout climate, RT staffing, and inability to complete all work. Positive perceptions of leadership and not providing direct patient care were protective against burnout.

Table 1 – Center Demographics

Table 1 – Center demographics	
Total centers	26
Responses per center	38.5 (6-203)
Response rate, %	37 (9.6-79)
Hospital Demographics	
Number of hospital beds*	418 (144-1630)
Number of RTs on staff	93 (15-640)
Unfilled positions	8 (0-43)
Vacancy rate, %	6.7% (0-37.5%)
Agency staff	14 (54%)
Number of agency staff	7 (3-32)
Managers/supervisors	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	
Limited < 50% via RT protocol	9 (35%)
Most 50-80% via RT protocol	7 (26%)
Primarily > 80% via RT protocol	10 (37%)
Burnout and Leadership Scores	
Leadership score	56.5 (36-100)
Positive leadership score	60% (30%-96%)
Burnout score	74 (50-83)
Percent of RTs with burnout	82.5% (53%-100%)
People are burned out	87.5% (42%-92%)

Table 1 legend: continuous variables median (range), categorical variables as n (%), *responses missing for 1 center RT=respiratory therapist

Table 2 – Respondent Demographics

Table 2 – Respondent Demographics	All Respondents	Burned Out	Not Burned Out	P
Burnout score ≥ 50	883 (79%)			
Mild	414 (37%)			
Moderate	357 (32%)			
Severe	112 (10%)			
Years as an RT	10 (5-10)	10 (5-19)	11 (5-20)	0.46
< 2 years	84 (7.8%)	58 (6.8%)	26 (12%)	0.014
2-5 years	243 (23%)	204 (24%)	39 (17%)	
6-10 years	229 (21%)	189 (22%)	40 (18%)	
11-20 years	283 (26%)	214 (25%)	69 (30%)	
>20 years	235 (22%)	182 (22%)	53 (23%)	
Hours worked per week	36 (36-48)	38 (36-48)	36 (36-40)	0.001
≤ 40 hours	784 (71%)	602 (69%)	182 (80%)	0.004
41-50 hours	240 (22%)	206 (24%)	34 (15%)	
>50 hours	80 (7.2%)	68 (7.8%)	12 (5.3%)	
Hours worked in intensive care per week	36 (20-36)	36 (24-38)	25 (12-36)	<0.001
≤ 40 hours	955 (89%)	741 (88%)	214 (96%)	0.001
41-50 hours	97 (9.1%)	90 (11%)	7 (3.1%)	
>50 hours	18 (1.7%)	16 (1.9%)	2 (0.9%)	
Affiliated with medical school	1081	879	216	0.004
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	1111	882	229	<0.001
Adults	611 (55%)	518 (59%)	93 (41%)	
Neonatal/pediatrics	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	1060	839	221	0.004
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%)	

Table legend: continuous variables are median (interquartile range) and categorical variables n (%).
RT=respiratory therapist

Table 3 – Staffing and Leadership

Table 3 – Staffing and Leadership Responses	All respondents	Burned Out	Not Burned Out	P
Staffing				
In the last month, how many shifts have you worked without adequate staffing	1112	884	228	
Always (adequately staffed for 0%)	149 (13%)	135 (15%)	14 (6.1%)	<0.001
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 COVID-19 patients	1118	890	228	<0.001
100%	302 (27%)	259 (29%)	43 (19%)	
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	1118	888	230	<0.001
100%	51 (4.6%)	44 (5.0%)	7 (3.0%)	
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	60 (40-75)	55 (35-75)	75 (55-99)	<0.001
Overall leadership score positive	1080	856	224	<0.001
Positive	710 (66%)	518 (61%)	192 (86%)	
Negative	370 (34%)	338 (39%)	32 (14%)	
Leadership Score Quartiles				
≥75	385 (36%)	259 (30%)	126 (56%)	<0.001
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	1120	889	231	<0.001
Strongly agree	76 (6.8%)	69 (7.8%)	7 (3.0%)	
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%)	
N/A 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)	1117	887	230	<0.001
Strongly agree	115 (10%)	101 (11%)	16 (6.1%)	
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%)	
N/A or prefer not to answer	40 (3.6%)	32 (3.6%)	8 (3.5%)	

Table legend: continuous variables are median (interquartile range) and categorical variables n (%).

Table 4

Table 4 – Individual Burnout Responses	All respondents	Burned Out	Not Burned Out	P
Burnout score	70 (50-80)	75 (65-85)	30 (20-40)	<0.001
I feel burned out from my work	1124	891	233	<0.001
Strongly agree	336 (30%)	336 (38%)	0 (0%)	
Agree	457 (41%)	431 (48%)	26 (11%)	
Neutral or undecided	160 (14%)	104 (12%)	56 (24%)	
Disagree	127 (11%)	17 (1.9%)	110 (47%)	
Strongly disagree	43 (3.8%)	2 (0.2%)	41 (18%)	
N/A or prefer not to answer	1 (0.1%)	1 (0.1%)	0 (0%)	
Events in this work setting affect my life in an emotionally unhealthy way	1124	891	233	<0.001
Strongly agree	235 (21%)	235 (26%)	0 (0%)	
Agree	433 (39%)	415 (47%)	18 (7.7%)	
Neutral or undecided	204 (18%)	169 (19%)	35 (15%)	
Disagree	176 (16%)	65 (7.3%)	111 (48%)	
Strongly disagree	75 (6.7%)	6 (0.7%)	69 (30%)	
N/A or prefer not to answer	1 (0.1%)	1 (0.1%)	0 (0%)	
I feel fatigue when I get up in the morning and have to face another day on the job	1124	891	233	<0.001
Strongly agree	326 (29%)	326 (37%)	0 (0%)	
Agree	463 (41%)	437 (49%)	26 (11%)	
Neutral or undecided	157 (14%)	107 (12%)	50 (22%)	
Disagree	125 (11%)	20 (2.2%)	105 (45%)	
Strongly disagree	51 (4.5%)	0 (0%)	51 (22%)	
N/A or prefer not to answer	2 (0.2%)	1 (0.1%)	1 (0.4%)	
I feel frustrated by my job	1124	891	233	<0.001
Strongly agree	235 (21%)	234 (26%)	1 (0.4%)	
Agree	423 (38%)	407 (46%)	16 (6.9%)	
Neutral or undecided	210 (19%)	182 (20%)	28 (12%)	
Disagree	190 (17%)	67 (7.5%)	123 (53%)	
Strongly disagree	66 (5.9%)	1 (0.1%)	65 (28%)	
N/A or prefer not to answer	0 (0%)	0 (0%)	0 (0%)	
I am working too hard on my job	1124	891	233	<0.001
Strongly agree	202 (18%)	200 (22%)	2 (0.9%)	
Agree	366 (33%)	349 (39%)	17 (7.3%)	
Neutral or undecided	327 (29%)	278 (31%)	49 (21%)	
Disagree	181 (16%)	64 (7.2%)	117 (50%)	
Strongly disagree	48 (4.3%)	0 (0%)	48 (21%)	
N/A or prefer not to answer	0 (0%)	0 (0%)	0 (0%)	
People in this work setting (respiratory care department) are burned out from their work	1115	884	231	<0.001
Strongly agree	452 (41%)	445 (50%)	7 (3.0%)	
Agree	461 (41%)	368 (42%)	93 (40%)	
Neutral or undecided	149 (13%)	66 (7.5%)	83 (36%)	
Disagree	29 (2.6%)	2 (0.2%)	27 (12%)	

Strongly disagree N/A or prefer not to answer	18 (1.6%) 6 (0.5%)	1 (0.1%) 2 (0.2%)	17 (7.4%) 4 (1.7%)	

Table legend: continuous variables median (interquartile range), categorical variables as n (%).

Table 5

Table 5 – Results for Multivariable Logistic Regression Model	N	Odds Ratio	95% Confidence interval	P
Total Responses included	1080			
In the past month, how many shifts have you worked without adequate RT staffing?				0.032
Never - reference	83			
Always (adequately staffed for 0%)	143	2.64	1.02-6.82	0.045
Frequently (adequately staffed for < 50% of shifts)	321	3.19	1.44-7.05	0.004
Occasionally (adequately staffed for 50-74% of shifts)	314	2.08	1.0-4.34	0.050
Rarely (adequately staffed for 75-99% of shifts)	207	1.31	0.65-2.65	0.46
Not reported	12	0.89	0.09-8.54	0.92
In the past month, what percentage of shifts have you been unable to complete all your work?				<0.001
0% - reference	278			
100%	49	3.38	1.20-9.50	0.021
75-99%	135	3.35	1.42-7.92	0.006
50-74%	113	5.57	1.81-17.1	0.003
< 50%	136	2.34	1.18-4.63	0.015
< 25%	329	2.14	1.30-3.51	0.003
Do not provide patient care	34	0.18	0.04-0.76	0.020
Not reported	6	1.41	0.02-95.0	0.87
Leadership score positive				
Negative - reference	370			
Positive	710	0.55	0.34-0.89	0.015
People in this work setting (respiratory care department) are burned out from their work				<0.001
No - reference	185			
N/a or prefer not to answer	14	1.45	0.35-5.98	0.56
Yes	881	9.38	5.96-14.77	<0.001
In the past month, I have missed work (for any reason)				0.020
No – Reference	694			
N/a	45	1.91	0.61-6.02	0.27
Yes	341	1.96	1.21-3.20	0.007
Non-statistically significant variables in the model: Provided direct care to COVID-19 patients, hours worked per week, hours worked per week in 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.				

Omnibus test of model coefficients <0.001, Nagelkerke R2 0.46, Hosmer and Lemeshow Test 0.21.

Table Legend: RT=respiratory therapist, ICU=intensive care unit