

Work team identification associated with less stress and burnout among front-line emergency department staff amid the COVID-19 pandemic

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ABSTRACT

Background The COVID-19 pandemic has exposed front-line healthcare workers to unprecedented risks and stressors threatening both physical and mental health. Prior work in the military has found that team identification, or the sense that one was a part of a team, can help reduce stress and prevent burnout during prolonged stress.

Methods We conducted repeated cross-sectional surveys embedded within emergency department workflow to understand whether team identification was associated with reduced reports of stress and burnout among front-line workers.

Results During the 10-week study which spanned the first wave of COVID-19, 327 of 431 (76%) front-line healthcare workers responded to at least one round of the survey. Higher team identification was associated with significantly less work stress ($B=-0.60$, 95% CI -0.84 to -0.40 , $p<0.001$) and burnout ($B=-12.87$, 95% CI -17.73 to -8.02 , $p<0.001$) in cross-sectional analyses. Further evidence of the protective effect of team identification for work stress ($B=-0.36$, 95% CI -0.76 to 0.05 , $p=0.09$) and burnout ($B=-13.25$, 95% CI -17.77 to -8.73 , $p<0.001$) was also found in prospective longitudinal evidence.

Conclusion This work suggests work team identification is a key buffering factor against feelings of stress and burnout. Efforts to promote team identification may offer a promising way for leaders to support front-line healthcare workers' well-being during the COVID-19 pandemic. These results can inform ongoing COVID-19 operational and quality improvement initiatives.

INTRODUCTION

From uncertainty regarding personal protective equipment to rapidly changing care models, the COVID-19 pandemic has created a working environment characterised by volatility, uncertainty and ambiguity.¹ These conditions, coupled with higher workload, resource scarcity and healthcare worker infection, have the potential to disrupt pre-existing team dynamics and negatively impact healthcare workers' well-being.²

Even prior to the era of COVID-19, burnout and stress were endemic among healthcare workers and disproportionately affected front-line staff.³ Early reports from countries struggling with the after-effects of COVID-19 have suggested healthcare

workers have increased risk of symptoms of depression, anxiety, insomnia and distress.⁴ In a recently published study of healthcare workers in New York City, 48% screened positive for depressive symptoms, 57% for acute stress and 33% for anxiety.⁵ Studies examining factors that may help ameliorate stress and burnout during COVID-19 have largely focused on individual-level behaviours, such as exercise, religion, talk therapy, and yoga, and their effectiveness has not yet been established.⁵

It is unknown if work team identification—or feeling part of a team at work—can buffer against stress and burnout during COVID-19. Earlier work has found that social support and effective team identification can reduce stress and burnout during non-crisis times,⁶ and studies of military service members suggest unit cohesion can also improve resiliency during the prolonged stress of war.⁷ Prolonged stressors, uncertainty and resource scarcity, however, can impede team performance and lead to higher rates of team conflict.¹⁸ We aimed to examine whether work team identification was associated with buffering front-line healthcare workers from stress and burnout during COVID-19.

METHODS

Data

Data come from a repeated cross-sectional study across three emergency departments (EDs) in one of the nation's largest multisite health systems, which began on 9 April 2020, just before the system experienced a surge in COVID-19 cases, and ended on 15 June. Of the three EDs, one is academic, one is community and one is free-standing, with a combined annual volume of 190 000 patients. Healthcare workers rotate between sites.

Surveys consisted of questions from previously published validated scales gauging burnout,⁹ stress¹⁰ and work team identification¹¹ (see online supplemental appendix for survey items). Because of the time pressure facing ED healthcare workers, we tailored survey length and language to avoid any interruption in workflow. Specifically, survey questions were rotated in and out across weeks of the survey to obtain the breadth of data desired and to minimise survey length and repetitive survey fatigue. For instance, questions related to burnout were only asked in later survey weeks since burnout is the result of longer-term stress. ED healthcare workers were contacted via text message 15 minutes prior to end of shift and were asked to complete a



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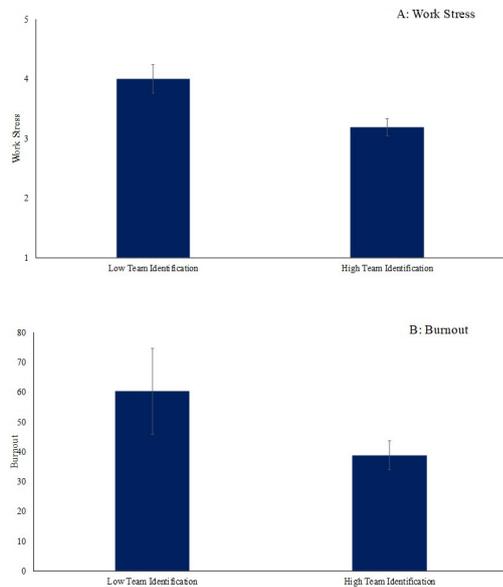


Figure 1 Healthcare workers with higher levels of work team identification reported lower levels of stress (A) and burnout (B). Both differences are statistically significant.

survey on their mobile device. Each healthcare worker received a text message every six shifts with an opt-out option. Note that different staff have varying clinical commitments, and six shifts represent varying time intervals per staff. Additional recruitment of physicians, advanced practice providers, nurses, technicians, unit clerks and environmental service team members was achieved through awareness campaigns involving signs posted in the ED with QR codes, as well as survey links in the daily operational emails. All survey items and communications were done in English.

Data analysis

To examine the associations between work team identification and our key dependent variables—stress and burnout—we estimated two sets of regression models with two-way robust SEs clustered by day and respondent, which takes into account that observations within a given day are likely to be correlated as are responses by the same individual. The first set of models relied on cross-sectional data. The second set of models used measures of team identification at time₁ to predict future burnout and work stress at time₂. All models controlled for suspected COVID-19 caseload, the ED volume and the job of the respondent since these are likely to be associated with stress and burnout. In longitudinal models, the control variables in the models were measured at time₂ since current patient volumes are most likely to reflect one's current level of stress and burnout.

RESULTS

Of 431 (76%) front-line healthcare workers, 327 responded to the survey. Of the 327 respondents, 245 (75%) respondents entered information to create unique IDs that would allow us to collect a second round of data, and of these, 71 (29%) completed multiple survey iterations of the study and were included in the prospective longitudinal analysis. Eighty-two respondents did not include information that would allow for a longitudinal analysis but were identified by unique internet protocol (IP) addresses. Of the responses, 111 came from nurses, 93 from attendings, 60 from residents, 53 from ED techs and the remainder from other roles. Finally, only later survey iterations

included a question about burnout since burnout is the result of prolonged stress. A total of 69 respondents completed the burnout screening.

Healthcare workers who identified with their team, indicated by stronger agreement with the statement 'I feel part of a team where I work', had lower work-related stress and burnout levels than healthcare workers who did not (figure 1). In the graph, team identification was dichotomised into high or low by splitting the data at the mean. In unadjusted results, workers who were below average in their sense of team identification had a mean stress level of 4 (95% CI 3.76 to 4.24) on a 6-point scale compared with a stress level of 3.2 (95% CI 3.05 to 3.35) among healthcare workers with higher levels of team identification. Similarly, lower levels of burnout were reported among those with higher levels of team identification.

Regression results examining the association between team identification, stress and burnout, while controlling for suspected COVID-19 caseload and ED volume, supported these initial findings (table 1). Team identification was associated with reporting significantly less work stress ($B = -0.60$, 95% CI -0.84 to -0.40 , $p < 0.001$) and burnout ($B = -12.87$, 95% CI -17.73 to -8.02 , $p < 0.001$) but not home stress in cross-sectional analyses. Moreover, in prospective longitudinal analyses, team identification at time₁ was associated with lower levels of future work stress ($B = -0.36$, 95% CI -0.76 to 0.05 , $p = 0.09$) and burnout ($B = -13.25$, 95% CI -17.77 to -8.73 , $p < 0.001$). In supplementary analyses, we examined the association between team identification and different dimensions of burnout and found that the association was strongest for work-related burnout ($B = -17.1$, 95% CI -25.6 to -8.61 , $p < 0.001$), though the differences in coefficients across models were not statistically significant.

Potential COVID-19 caseloads did not have a linear association with stress and burnout. However, stress levels were highest in the week with the highest number of possible COVID-19 cases. Preliminary evidence suggest that members of lower-status occupations (nurses, residents and technicians) may benefit more from team identification (interaction between team identification and low status ($B = -7.86$, 95% CI -14.93 to -0.79 , $p = 0.03$). However, these results only held for burnout.

Open-ended comments from healthcare workers reaffirm the importance of feeling one is part of a team during the pandemic. As one team member wrote, 'I feel very supported at work, COVID-19 or not. We at (hospital site) work as a team and support each other'. As one nurse wrote, 'Look around, everyone is overwhelmed, exhausted, and stressed. With that said, I have never felt more like a team...everyone has really stepped up and is working together better'.

DISCUSSION

COVID-19 is unlike any challenge faced by most healthcare workers in modern times. While short-term stressors can be highly charged events, the uncertainty of the duration of COVID-19 will continue to put burdens on the front lines. Our study points to steps that leaders can take to improve the well-being of front-line healthcare workers facing the COVID-19 crisis or other protracted occupational stressors.

First, research suggests the importance of framing work at the start of each and every shift to establish mutual understanding and to create alignment.¹² Getting healthcare workers aligned and coordinated regarding the situation at hand is crucial in a crisis. This can be accomplished through huddles or small group clusters, to connect with everyone, and proactively communicate the importance of a

Table 1 Association between team identification, work stress and burnout

	Work stress						Burnout					
	Cross-sectional			Prospective longitudinal			Cross-sectional			Prospective longitudinal		
	B	95% CI	P value	B	95% CI	P value	B	95% CI	P value	B	95% CI	P value
Team identification	-0.60	(-0.84 to -0.40)	<0.001	-0.36	(-0.76 to 0.05)	0.09	-12.87	(-17.73 to -8.02)	<0.001	-13.25	(-17.77 to -8.73)	<0.001
COVID-19 cases (10s)	0.05	(-0.04 to 0.14)	0.24	0.05	(-0.14 to 0.25)	0.59	-0.33	(-5.30 to 4.64)	0.89	2.01	(-0.79 to 4.82)	0.16
ED volume (100s)	0.01	(-1.02 to 1.01)	0.99	0.71	(-0.74 to 2.15)	0.34	6.35	(-18.07 to 30.76)	0.59	-20.79	(-29.55 to 12.03)	<0.001
N	317			93			69			43		

All models control for occupation. SEs clustered by day and respondent. In longitudinal analyses, team identification lagged, while COVID-19 cases and ED volumes were measured concurrently with the dependent variables. ED, emergency department.

team, that it is critical to support each other and that everyone has a valuable role to contribute to the team's success.¹³

Second, team stability during extraordinary times can help to cement familiarity, identification, cohesion and the sense of a shared journey with members of the team.¹⁴ Where possible, using workload sharing¹⁵ or maintaining personnel combinations to build a stronger sense of being part of the team can be beneficial. Working side by side with familiar teammates builds a sense of belonging that may protect provider well-being.

Finally, departments can promote team inclusivity to make all healthcare workers, regardless of role or tenure, feel part of the team. This can be accomplished by proactively seeking out the input of those most at risk of not having a voice, such as newcomers to the unit, temporary members, or those in lower-status roles.¹⁶ Such steps boost a sense of belonging for more peripheral members while reinforcing the boundaries and existence of the team for all members. Our work provides preliminary evidence that occupations that are of lower occupational status or that are uniquely vulnerable may benefit most from work team identification. Interestingly, the effect of team identification on work stress appears to diminish over time. This might suggest, as a stressor such as COVID-19 continues, individuals become more comfortable through increased data dissemination, comfort with hospital protocols or the normalisation of experience. The strength of this association does not appear to diminish for burnout, however. Given that burnout is a condition that arises from cumulative or long-term stressors, we would anticipate that this relationship would be more stable. Therefore, the benefit of developing good team dynamics is paramount early in high-stress situations both in helping diminish reduce work stress and helping prevent longer-term burnout. The negative association between total ED volume and longitudinal burnout is another finding that appears counterintuitive, given the high prevalence of burnout in emergency medicine.¹⁷⁻¹⁹ It is possible that this association arises from the substantially lower patient volume that the ED experienced during stay-at-home orders. This has been documented in other EDs, as well.²⁰ As patient volume began to increase, this in many ways represented a return to normalcy and may have helped ease the chronic stress arising from COVID-19. Prior work examining mental health responses to disasters has identified a phasic psychological response to sustained stress. Our work likely only covers the earlier phases of this response (early impact, heroic and honeymoon). Further work examining how the association between team identification and work stress may change during later phases is needed.²¹

During our study, we encountered several important hurdles in promoting the wellness of front-line healthcare workers during COVID-19. First, higher team identification does not appear to buffer against stress at home, suggesting that the benefits of team identification are domain-specific. These findings pose a challenge for healthcare organisations since tools that are effective for reducing COVID-19-related stress at work may not help reduce stress once healthcare workers leave the hospital.

Finally, while improving team identification presents a tangible task to accomplish, creating and sustaining a sense of shared team identity may be difficult in changing teams. While the ED largely consists of a core group of healthcare workers and there is some rotation across sites or from other units, the workforce in this department was largely stable throughout the study period. Specifically, during this study, the workforce was composed of healthcare workers hired for their role in this department as opposed to transferring from another department to help the ED with volume management. In crises such as COVID-19, more staff rotations, floats and reassignments are common, and therefore strong team identification may be more difficult to achieve in some departments and systems.¹

Future work examining differences in the relationship between team identification and stress by occupational groups and across different organisational models may lead to a better understanding of potential moderators of this relationship. Moreover, our work suggests that studies examining potential interventions to improve team identification during periods of crises could potentially be fruitful.

CONCLUSION

This work speaks of the importance of sustained attention to the complex interaction between clinical and operational management of COVID-19 and healthcare worker stress and burnout. Consequently, optimising both patient and provider outcomes requires sustained surveillance, leadership and iterative workplace improvements that support workforce attention, morale and stamina through the coming months.

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