

University of Vermont

UVM ScholarWorks

Master of Public Health Culminating Projects

Larner College of Medicine

2020

Employee burnout and job retention scores among EMS workers in Vermont

Caitlin Eckert
University of Vermont

Andrew Gross
University of Vermont

Chris Haines
University of Vermont

Deanna Kish
University of Vermont

Jacob Porter
University of Vermont

See next page for additional authors

Follow this and additional works at: <https://scholarworks.uvm.edu/mphcp>



Part of the [Public Health Commons](#)

Recommended Citation

Eckert, Caitlin; Gross, Andrew; Haines, Chris; Kish, Deanna; Porter, Jacob; and Delaney, Thomas, "Employee burnout and job retention scores among EMS workers in Vermont" (2020). *Master of Public Health Culminating Projects*. 14.

<https://scholarworks.uvm.edu/mphcp/14>

This Project is brought to you for free and open access by the Larner College of Medicine at UVM ScholarWorks. It has been accepted for inclusion in Master of Public Health Culminating Projects by an authorized administrator of UVM ScholarWorks. For more information, please contact scholarworks@uvm.edu.

Author

Caitlin Eckert, Andrew Gross, Chris Haines, Deanna Kish, Jacob Porter, and Thomas Delaney

Employee burnout and job retention scores among EMS workers in Vermont

Caitlin Eckert, Andrew Gross, Chris Haines, Deanna Kish, Jacob Porter, Thomas Delaney

University of Vermont Larner College of Medicine

Given Medical Building, E-126, 89 Beaumont Ave, Burlington VT, 05405

Abstract:

Objective: To assess whether shift length and employment status were positively associated with increased burnout and retention among emergency medical service (EMS) workers in the state of Vermont.

Methods: We conducted a secondary analysis of cross-sectional data using the Vermont EMS Retention Survey from the Vermont Department of Health. 545 participants provided data from August to November 2019. Measures included burnout and retention using the Maslach Burnout Inventory.

Results: In an adjusted model, the 24-hour shift length was associated with higher burnout compared to the eight-hour shift. Volunteer workers displayed lower instances of burnout and had higher retention rates than their paid counterparts.

Conclusions: These findings suggest that in some cases, shift length and employment status may relate to burnout and retention. These relationships could inform policies related to staffing and scheduling of EMS workers. Further research could assess a predictive relationship between shift length, employment status and burnout or retention.

Introduction

Emergency medical service (EMS) is a high-stress field, associated with burnout and low job retention.¹ EMS is used as an umbrella term that includes Emergency Medical Responders, Emergency Medical Technicians, Advanced Emergency Medical Technicians, and Paramedics. EMS workers often encounter high-pressure circumstances and may witness or experience violence from patients or the critical incident setting.¹⁻² EMS workers may be at an increased risk for mental health concerns related to their work, which is closely associated with the experience of “burnout” and the subsequent decision to exit the workforce.¹⁻² The 2018 American Ambulance Association/Avesta Ambulance Industry Employee Turnover Study, describes an average total of 24.83% turnover rate for full-time EMTs and a 30.45% turnover rate for part-time EMTs in 2017.³ A national survey of EMS professionals in 2011 indicated that every year a significant number of EMS professionals choose to not re-credential.⁷

Burnout is an issue that affects a myriad of healthcare professions and can negatively affect patient care; moreover, it is a predictor of decreased patient safety and a predictor of medical error, and or, hospital-associated infection.⁴ Research demonstrates an association between burnout and the decision to leave the healthcare field for some EMS workers.⁵ Burnout and low job retention among EMS workers is a national public health concern, and especially prevalent in Vermont, a state that struggles with EMS staffing shortages. As a result of burnout and low job retention, some small towns in Vermont consider closing or merging their EMS departments.⁶ To this date, there is little research assessing the reason for the EMS workforce shortage in Vermont.

EMS staff often work varying shift lengths, most often between eight and 24 hours at a time.⁷ These long shifts are similar to those of nurses, who also work in a high-stress health care field.^{8,9} Current research suggests that nurses who work longer shifts (> 12 hours) suffer higher levels of burnout compared to nurses who work shorter shifts.^{8,9} Long shift lengths, particularly with little recuperation time, may be associated with injury, medical error, and increased risks associated with operating vehicles.⁸

We hypothesize that longer shifts among Vermont EMS workers, with less recuperation time, is associated with burnout.⁷ We also hypothesize that Vermont volunteer EMS workers may experience particular challenges and greater degrees of burnout than their paid counterparts. Furthermore, we hypothesize that burnout is a contributory factor to EMS workers leaving the field in Vermont.

Methods

We utilized data from a cross-sectional study that took place from August to November 2019 using the Vermont EMS Retention Survey. This survey examined EMS workforce-related issues and the retention of EMS workers. Five hundred and forty five EMS workers, throughout Vermont, responded to the survey. Those licensed to work in the EMS field were sent the survey via email by the Vermont Department of Health. De-identified responses from EMS professionals were collected by the Vermont EMS workforce. The University of Vermont Institutional Review Board has reviewed this project and determined that it qualifies as exempt from additional review.

SPSS version 25 was used for data analysis. Non-Vermont response data and surveys in which participants did not answer all of the questions in the series used to measure burnout level and retention status were excluded. The unit of analysis was the participating EMS worker.

Using the available data, a score was generated indicating burnout and retention level by quantifying participants' answers to the Maslach Burnout Inventory and questions targeted at

measuring the likelihood an EMS worker would continue working in the field. These were labeled *burnout score* and *retention score*, respectively. In creating these scores, responses were coded such that a higher burnout score indicated a more burnt out worker, and a higher retention score indicated a higher likelihood of wanting to work in the field. It is important for interpreting results that it be clear that a **higher burnout score** indicated **more burnout**, and a **higher retention score** indicated **higher interest in continuing EMS work**. The aim of our assessment was to determine if longer shifts, shorter recuperation time between shifts, and being a volunteer (as opposed to a paid worker) were contributory factors to burnout or job retention scores among Vermont EMS workers. We ran descriptive statistics to assess these associations.

Results:

Table 1: Associations between Employment Status, Shift Length and Recuperation Time in Burnout and Retention scores

			Burnout	Retention
Employment	Volunteer	Stipend	$F(1,335)=0.04,$ $p=0.85$	$F(3, 583)=4.66, p= 0.92$
		Per Diem	$F(1,333)=5.55,$ $p=0.02$	$F(3, 583)=4.66, p= 0.03$
		Employed	$F(1, 428)=23.39,$ $p<0.001$	$F(3, 583)=4.66, p= 0.009$
	Stipend	Per Diem	$F(1,160)=3.29,$ $p=0.07$	$F(3, 583)=4.66, p= 0.31$
		Employed	$F(1, 255)=10.80,$ $p=0.001$	$F(3, 583)=4.66, p= 0.34$
	Per Diem	Employed	$F(1, 253)=1.89,$ $p=0.17$	$F(3, 583)=4.66, p= 0.99$
Shift Length**	8-Hour	12-Hour	$F(1, 247)=1.35,$ $p=0.25$	$F(7, 437)=2.69, p= 1.0$
		24-Hour	$F(1, 95)=14.46,$ $p<0.001$	$F(7, 437)=2.69, p= 0.36$
		36-Hour	$F(1, 33)=0.07,$ $p=0.79$	$F(7, 437)=2.69, p= 0.99$
		24/48-Hour	$F(1, 47)=5.97,$ $p=0.02$	$F(7, 437)=2.69, p= 0.94$

		24/72-Hour	$F(1, 36)=8.48,$ $p=0.006$	$F(7, 437)=2.69, p= 0.35$
		On Call	$F(1, 90)=0.14,$ $p=0.7$	$F(7, 437)=2.69, p= 1.0$
	12-Hour	24-Hour	$F(1, 282)=21.36,$ $p<0.001$	$F(7, 437)=2.69, p= 0.03$
		36-Hour	$F(1, 220)=0.02,$ $p=0.89$	$F(7, 437)=2.69, p= 0.99$
		24/48-Hour	$F(1, 234)=5.51,$ $p=0.02$	$F(7, 437)=2.69, p= 0.87$
		24/72-Hour	$F(1, 223)=8.14,$ $p=0.005$	$F(7, 437)=2.69, p= 0.24$
		On Call	$F(1, 277)=0.92,$ $p=0.34$	$F(7, 437)=2.69, p= 0.99$
	24-Hour	36-Hour	$F(1, 68)=1.71,$ $p=0.19$	$F(7, 437)=2.69, p= 0.65$
		24/48-Hour	$F(1, 82)=0.07,$ $p=0.80$	$F(7, 437)=2.69, p= 1.0$
		24/72-Hour	$F(1, 71)=1.07,$ $p=0.31$	$F(7, 437)=2.69, p= 0.97$
		On Call	$F(1, 125)=18.78,$ $p<0.001$	$F(7, 437)=2.69, p= 0.38$
	36-Hour	24/48-Hour	$F(1, 20)=0.93,$ $p=0.35$	$F(7, 437)=2.69, p= 0.88$
		24/72-Hour	$F(1, 9)=2.27,$ $p=0.17$	$F(7, 437)=2.69, p= 0.4$
		On Call	$F(1, 63)=0.02,$ $p=0.9$	$F(7, 437)=2.69, p= 0.98$
	24/48-Hour	24/72-Hour	$F(1, 23)=0.95,$ $p=0.34$	$F(7, 437)=2.69, p= 0.92$
		On Call	$F(1, 77)=6.6,$ $p=0.01$	$F(7, 437)=2.69, p= 0.99$
	24/72-Hour	On Call	$F(1, 66)=9.26,$ $p=0.003$	$F(7, 437)=2.69, p= 0.44$

Recuperation	Never	Rarely	$F(1, 99)=0.25,$ $p=0.62$	$F(5, 174)=1.57, p= 0.97$
		<Half	$F(1, 90)=4.75,$ $p=0.03$	$F(5, 174)=1.57, p= 0.98$
		>Half	$F(1, 62)=1.65,$ $p=0.2$	$F(5, 174)=1.57, p= 0.16$
		Freq.	$F(1, 72)<0.001,$ $p=0.99$	$F(5, 174)=1.57, p= 0.7$
		Always	$F(1, 57)=2.11,$ $p=0.15$	$F(5, 174)=1.57, p= 0.68$
	Rarely	<Half	$F(1, 87)=3.0,$ $p=0.09$	$F(5, 174)=1.57, p= 1.0$
		>Half	$F(1, 59)=0.96,$ $p=0.33$	$F(5, 174)=1.57, p= 0.37$
		Freq.	$F(1, 69)=0.18,$ $p=0.68$	$F(5, 174)=1.57, p= 0.96$
		Always	$F(1, 54)=1.47,$ $p=0.23$	$F(5, 174)=1.57, p= 0.89$
	<Half	>Half	$F(1, 50)=0.06,$ $p=0.81$	$F(5, 174)=1.57, p= 0.4$
		Freq.	$F(1, 60)=3.01,$ $p=0.09$	$F(5, 174)=1.57, p= 0.97$
		Always	$F(1, 45)=0.01,$ $p=0.91$	$F(5, 174)=1.57, p= 0.91$
	>Half	Freq.	$F(1, 32)=1.69,$ $p=0.2$	$F(5, 174)=1.57, p= 0.82$
		Always	$F(1, 17)=0.16,$ $p=0.7$	$F(5, 174)=1.57, p= 0.99$
	Freq.	Always	$F(1, 27)=2.91,$ $p=0.1$	$F(5, 174)=1.57, p= 0.99$

*Significant findings in **bold** **Mean values found below ***'Other' Shift length excluded-unable to establish general length of 'other' shift

A one-way ANOVA between subjects was conducted to compare the effect of employment status, shift length and recuperation time on EMS burnout and job retention. There was a significant effect

of employment status on burnout score at the $p < 0.05$ level for the four conditions [$F(3,434) = 11.2$, $p < 0.001$] (Table 1). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the Employed ($M = 21.44$ $SD = 5.38$) were significantly different than Volunteers ($M = 18.91$ $SD = 4.59$). The mean score for Stipend workers ($M = 19.02$ $SD = 4.87$) was significantly different than Employed workers. Workers that immediately worked a second shift less than half of the time ($M = 21.73$ $SD = 5.40$) had a significantly higher burnout score than those that never did ($M = 19.19$ $SD = 5.04$).

A one-way between subjects ANOVA was conducted to compare the effect of employment status, shift length and recuperation time on EMS burnout and job retention. There was a significant effect of employment status on burnout score at the $p < 0.05$ level for the four conditions [$F(3,434) = 11.2$, $p < 0.001$] (Table 1). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the Employed ($M = 21.44$, $SD = 5.38$) were significantly different than Volunteers ($M = 18.91$, $SD = 4.59$). The mean score for Stipend workers ($M = 19.02$, $SD = 4.87$) was significantly different than Employed workers. Workers that immediately worked a second shift less than half of the time ($M = 21.73$, $SD = 5.40$) had a significantly higher burnout score than those that never did ($M = 19.19$, $SD = 5.04$).

Shift length significantly affected burnout scores at the $p < 0.05$ level for the seven conditions [$F(6,395) = 6.58$, $p < 0.001$]. Shift length was positively correlated with a higher burnout score. The 24 hour shift ($M = 22.65$, $SD = 4.91$) was significantly higher than the eight-hour shift ($M = 18.22$, $SD = 5.37$). However, the 36-hour shift ($M = 19$, $SD = 6.98$) did not significantly affect burnout scores.

There was a significant effect of employment status [$F(3,583) = 4.66$, $p = 0.003$] and shift length [$F(7, 437) = 2.69$, $p = 0.01$] on retention scores at the $p < 0.05$ level. However, Post hoc comparisons showed a significant difference only between Volunteers ($M = 22.78$, $SD = 3.31$) and Per Diem ($M = 21.53$, $SD = 4.05$) and Employed ($M = 21.7$, $SD = 3.5$). There was also only a significant difference between the 12-hour shift ($M = 22.56$, $SD = 3.54$) and the 24-hour shift ($M = 20.9$, $SD = 3.97$).

Discussion

This study examined differences in burnout and retention scores among EMS workers' shift length and employment status. The key findings were that the 24-hour shift length was associated with higher burnout compared to the eight-hour shift. Notably, volunteer workers were associated with

lower instances of burnout and had higher retention scores than their paid counterparts. Our analysis demonstrated a significant association between employment statuses, shift length and burnout and/or retention score.

Previous literature revealed significant associations between burnout and retention among EMS professionals, with higher burnout associated with a greater likelihood of leaving the field.¹ As there are currently a high proportion of EMS professionals exiting the workforce, research in this area continues to be important. Our study was unique in that it examined burnout within the rural state of Vermont, which has a smaller population and a rapidly aging workforce.^{7,11} These findings may provide important guidance for the Vermont Department of Health related to future staffing and practices that reduce EMS job stressors.¹⁰ Of particular note, is the lower burnout and retention among volunteers. This finding ran counter to our hypothesis, which may suggest that compensation is not necessarily linked with burnout. The lower burnout scores and higher retention scores among volunteers warrants further exploration.

There are several potential limitations to our study. While our data and results may be relevant to the state of Vermont, they may not be generalizable to other states and communities due to varying demographics. Although the associations between compensation, shift length, burnout, and EMS worker retention were assessed, a predictive relationship cannot be measured in a cross-sectional study. Furthermore, given the scope of the study, the relationship between specific job stressors beyond shift length, recuperation, and compensation and burnout/job retention is cannot be determined. Finally, another potential limitation is selection bias. Individuals that have already left the field may not have participated in this survey if their license expired.

References

1. Crowe RP, Bower JK, Cash RE, et al. Association of burnout with workforce-reducing factors among EMS professionals. *Prehosp Emerg Care*. 2018; 22(2): 229-36. doi: 10.1080/10903127.2017.1356411
2. SAMHSA. First responders: behavioral health concerns, emergency response, and trauma. May, 2018. www.samhsa.gov/sites/default/files/dtac/supplementalresearchbulletin-firstresponders-may2018.pdf. Accessed September 14, 2019.
3. Avesta Systems Inc and the American Ambulance Association. AA/Avesta 2018 Ambulance Industry Employee Turnover Study. Updated May 1, 2018. Accessed September 9, 2019. docs.google.com/viewer?a=v&pid=forums&srcid=MDA4NTk2NjU0OTA0NTQ5OTgwMDcBMTA1MjE1MDQ2NzZwOTE2OTk4NjI0aEJleFRJOWNDZ0FKATAuMQEBdjI

4. Lyndon, A. Burnout Among Health Professionals and Its Effect on Patient Safety. *Patient Safe Net*. February 2016. Accessed September 9, 2019. psnet.ahrq.gov/perspectives/perspective/190/burnout-among-health-professionals-and-its-effect-on-patient-safety.
5. Perkins BJ, DeTienne J, Fitzgerald K, et al. Factors associated with workforce retention among emergency medical technicians in Montana. *Prehosp Emerg Care*. 2009; 13(4). doi.org/10.1080/10903120902935330
6. Noyes Kolb AA, Weiss-Tisman H. Lacking volunteers, small towns considering closing, merging EMS. VPR. Febraury 14 2019. Accessed September 18, 2019. www.vpr.org/post/lacking-volunteers-small-towns-considering-closing-merging-ems#stream/0
7. Patterson PD, Runyon MS, Higgins JS, et al. Shorter versus longer shift durations to mitigate fatigue and fatigue-related risks in emergency medical services personnel and related shift workers: a systematic review. *Prehosp Emerg Care*. 2018; 22(sup 1): 28-36. doi: 10.1080/10903127.2017
8. Stimpfel AW, Sloane DM, Aiken LH. The longer the shifts for hospital nurses, the higher the levels of burnout and patient dissatisfaction. *Health Affairs*. 2012;31(11):2501–2509. doi: 10.1377/hlthaff.2011.1377
9. Dall'Ora C, Griffiths P, Ball J, et al. Association of 12 h shifts and nurses' job satisfaction, burnout and intention to leave: findings from a cross-sectional study of 12 European countries. *BMJ Open*. 2015;5:e008331. doi: 10.1136/bmjopen-2015-008331
10. Jones CB, Dorrian J, Rajaratnam SM, et al. Working hours regulations and fatigue in transportation: a comparative analysis. *Safety Sci*. 2005; 43(4): 225-52. doi: doi.org/10.1016/j.ssci.2005.06.001
11. Jones K, Schwarz L. Vermont population projections – 2010-2030. State of Vermont. August 2013. dail.vermont.gov/sites/dail/files//documents/vt-population-projections-2010-2030.pdf