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Factors Associated With Emergency Medical Clinicians Leaving EMS

Christopher B. Gage[a,b], Christine B. Cooke[a], Jonathan R. Powell[a,b], Jacob C. Kamholz[a], Jordan D. Kurth[c], Shea van den Bergh[a], and Ashish R. Panchal[a,b,d]

[a]National Registry of Emergency Medical Technicians, Columbus, Ohio; [b]Department of Epidemiology, The Ohio State University College of Public Health, Columbus, Ohio; [c]Penn State College of Medicine, Hershey, Pennsylvania; [d]Department of Emergency Medicine, The Ohio State University College of Medicine, Columbus, Ohio

ABSTRACT

Objectives: Many United States (U.S.) communities face challenges with Emergency Medical Services (EMS) workforce turnover. The demands created by the pandemic have worsened the stressors EMS clinicians face, possibly changing the drivers of workforce turnover. Our study aims to understand the factors associated with Emergency Medical Technicians (EMTs) and paramedics' likelihood of leaving EMS.

Methods: We conducted a cross-sectional analysis of nationally registered civilian EMTs and paramedics ages 18–85 from October 2021 to April 2022. After recertifying their National EMS certification, respondents were invited to complete a survey regarding their primary role, additional jobs, and the likelihood of leaving EMS in the next 12 months. If likely to leave, reasons for leaving were collected and evaluated for the top reasons. Multivariable logistic regression modeling (OR, 95% CI) was used to describe the odds of being likely to leave in 12 months, adjusted for age, agency type, education level, primary role, and job satisfaction.

Results: A total of 29,671 (response rate-25.9%) EMTs and paramedics were included in the analysis, with 7.1% and 7.9%, respectively, reporting they were likely to leave EMS in 12 months. The EMTs likely to leave were younger (median age 32 vs. 37) and had fewer years with main EMS job (median 3 vs. 4) than paramedics. A lower proportion of EMTs were male (68.8% vs. 78.6%) and non-Hispanic White (79.8% vs. 87.6%). The EMTs were less likely full-time (65.6% vs. 87.5%) and held fewer EMS jobs (23.4% vs. 32.3%). The EMTs and paramedics reported stress as the most significant reason for leaving (27.9% and 38.8%, respectively), followed by COVID-19 (12.9% and 19.3%) and education (18.3% and 6.4%). Those dissatisfied had significantly higher odds of leaving (11.91 and 13.46, respectively). The EMTs and paramedics in hospitals (OR = 2.32, OR = 2.37), private (OR = 2.72, OR = 2.38), and government non-fire (OR = 2.22, OR = 1.98) agencies were likelier to leave than fire agencies.

Conclusion: Although increased stress and pandemic-related factors are most common reasons reported for being likely to leave EMS, job dissatisfaction was the most impactful factor. A better understanding of factors that drive job satisfaction needs evaluation to develop strategies to enhance retention.

Introduction

Emergency Medical Services (EMS) clinicians work in unstable, high-risk environments, offering the first line of medical care during prehospital emergencies (1, 2). These work environments sometimes place significant stress and strain on EMS clinicians, often leading them to leave the field (3, 4). Unfortunately, the reality of EMS clinicians leaving the prehospital field has become a persistent concern for many EMS agencies (5, 6). Rates of leaving EMS have increased, with several evaluations underscoring the ongoing challenges related to workforce shortages (7–9). Understanding the reasons and drives for leaving EMS may

assist in enhancing strategies to retain this important workforce.

In recent years, significant changes within EMS may have altered the factors influencing clinicians' decisions to leave. Traditionally, job dissatisfaction and pursuing better pay or education have been the primary factors driving clinicians to leave (5). Other emerging factors have recently contributed to the increased number of clinicians leaving the EMS field (6, 10), suggesting that historical reasons for leaving might no longer be the sole or dominant factors. New factors, such as stress from the evolving complexities of EMS work, emotional toll, and lack of career progression, may now play a more substantial role (10, 11). Given these shifts, a better

understanding of clinician turnover is essential to ensure that EMS agencies can effectively address these evolving challenges.

Our study aims to identify and examine associations with emergency medical technicians (EMTs) and paramedics' intentions to leave the profession. Specifically, we aim to explore the drivers associated with the likelihood of EMTs and paramedics leaving EMS and better understand how clinician turnover factors have changed.

Methods

Study Design and Setting

In this study, we performed a cross-sectional evaluation of data from the National Registry's recertification dataset from October 2021 to April 2022. Accredited by the National Commission for Certifying Agencies, the National Registry of Emergency Medical Technicians (National Registry) is a nonprofit accrediting agency that certifies EMS clinicians in more than 46 states, territories, and federal agencies. All National Registry EMS clinicians voluntarily recertify biennially, with ten states requiring national EMS certification to maintain EMS licensure at one or more levels. The EMS clinicians who completed a recertification application for the 2021–2022 recertification cycle were invited to participate in a voluntary survey regarding their primary role, additional jobs, and the likelihood of leaving EMS in the next 12 months. If they were likely to leave, reasons for leaving were collected. Annually, approximately 100,000 National Registry EMS clinicians are eligible to participate in this voluntary survey using Alchemer Surveys (12) and previous recertification cohorts are a representative sample of the National EMS Certification database (13). This study was deemed exempt by the American Institutes of Research Institutional Review Board.

Population

The four levels of EMS clinicians certified by the National Registry include emergency medical responder (EMR), EMT, advanced emergency medical technician (AEMT), and paramedic. This study included only civilian EMTs and paramedics with at least one EMS job, aged 18–85, who recertified their national certification from October 2021 to April 2022. We included EMT and paramedic certification levels since they account for the vast majority of the EMS workforce in the United States (U.S.), accounting for 81% based on the National Workforce Assessment (14). We excluded clinicians who reported leaving the workforce due to retirement since we focused on the likelihood of leaving for reasons unrelated to retirement.

Measures

The respondent's demographics and EMS characteristics were self-reported. Demographic characteristics included sex (designated as male or female), race, and education level.

The race category included anyone who self-identified as White, non-Hispanic, Black or African American, Asian, Hispanic/Latino, or Native Hawaiian/Pacific Islander. Due to the small proportion of minority EMS clinicians, racial status was dichotomized to non-minority (White, non-Hispanic) or minority. Education level was categorized as high school or General Educational Development (GED) or less, some college, associate degree, or bachelor's degree or more. Primary EMS job roles were categorized as emergent response (with/without 9-1-1), medical transport (non-emergent), clinical services (e.g., hospital/urgent care), education/administration, and none of the above/other. Respondents' agency characteristics included main agency type and community size. The main agency was defined as the agency for which someone performed most of their EMS work and was categorized as either fire, hospital, government (non-fire), private, or other. Community size was defined as urban/suburban and rural by the U.S. Census classification, with urban/suburban areas having populations of >2500 and rural areas with <2500 (15). The likelihood of leaving the EMS profession was self-reported (definitely will leave, probably with leave, probably will not leave, and definitely with not leave) and dichotomized into likely and not likely to leave (3). If likely to leave, leaving reasons were collected (select all that apply), including lack of flexible schedule, I/my family moved to a new location, lack of opportunities for advancement, an illness, injury, or disability, desire for better pay and benefits, desire for a career change, dissatisfaction with organization's management, pursuing further education, worked too few hours, worked too many hours, negative working relationship with coworkers, stress/burnout, retirement, COVID-19, and other reason(s) (16).

Data Analysis

Age (years) was analyzed as a continuous variable and in quartiles. Certification years were analyzed as continuous. All other variables were treated categorically. Continuous variables were described with median and interquartile ranges (IQR). Categorial variables were expressed as a percentage (%) of each group's total. Based on previous research, we treated EMTs and paramedics as two distinct populations (16).

Descriptive statistics were calculated to describe the overall sample. Multivariable logistic regression modeling (Odds Ratio [OR], 95% Confidence Interval [CI]) was used to describe the primary outcome variable, odds of being likely to leave EMS in 12 months, adjusted for age, agency type, education level, primary role, number of EMS jobs, and job satisfaction. Backward selection was used to identify variables associated with the outcome. Missing data were handled using complete case analysis. Model fit was assessed using Hosmer-Lemeshow goodness-of-fit testing and Likelihood Ratio Test of Area Under the Receiver Operating Characteristic Curves.

To manage potential sampling bias and to ensure our estimates better reflect the characteristics of the overall population, we conducted survey weighting based on the

nationally certified EMS population demographics identified by the National Registry's recertification dataset. Survey weights were calculated for demographic variables: age, sex, race, education, agency type, and number of EMS jobs. Weights were computed as the ratio of national to survey population proportions of each variable's subgroups (e.g., education: high school/GED, some college, associates, etc.). Composite base weights were then assigned to every individual to account for the multiple variables/subgroups in the dataset. A sampling-weighted logistic regression analysis was conducted with the variables from the final model defined above. All analyses were completed using Stata/SE version 18 (Stata Corp LP, College Station, TX) (17).

Results

Between October 2021 and April 2022, 114,553 EMS clinicians were recertified, with 29,671 (25.9% response rate) survey respondents included in this analysis (Figure 1). The median age in the total surveyed population was 35 years (IQR: 28–44), with 26.7% identifying as female and 73.3% as male (Table 1). Most respondents identified as non-Hispanic White (83.4%), with 16.6% reporting minority status. Regarding education, 32.2% had some college education, 21.3% held an associate degree, and 32.1% reported having a bachelor's degree or higher. The median years with their main EMS job was 3 years (IQR: 2–5). Most respondents (75.7%) were employed full-time in EMS, while 12.1% reported volunteering. A total of 72.6% worked in one EMS job, with the remaining 27.4% holding two or more EMS jobs. Most respondents worked in urban or suburban settings (89.3%) and served in agencies primarily focused on 9-1-1 services (67.1%). Agency types were diverse, with 44.2% working in fire-based services and 22.1% in private services.

Notable differences between EMTs and paramedics include age and full-time employment status. Paramedics had a higher median age (37 years, IQR: 31–46) compared to EMTs (32 years, IQR: 26–41), and a larger proportion of

paramedics (87.5%) reported full-time employment compared to EMTs (65.6%). Additionally, paramedics were more likely to hold an associate degree (28.9% vs. 14.9%) and were less likely to report volunteering (3.0% vs. 19.8%).

The leading reasons for leaving among EMTs and paramedics were stress, education, and COVID-19, with stress being the most significant, affecting 27.9% of EMTs and 38.8% of paramedics (Table 2). Education was a notable factor for EMTs (18.3%), whereas paramedics were more impacted by COVID-19 (19.3%). Other top reasons included pay, changing careers, and organizational management issues. Additionally, demographic and EMS job characteristics of respondents' likeliness of leaving EMS in 12 months differed by certification level (Supplemental File Appendix 1).

Associates With Leaving EMS in 12 Months

Age was a significant predictor of leaving for EMTs (OR = 0.96, 95% CI [0.95–0.96]) and paramedics (0.97, 0.97–0.98) (Table 3). Education level was also significant, with EMTs holding an associate degree (1.45, 1.11–1.90) and a bachelor's degree or higher (2.13, 1.70–2.66) showing higher odds ratio of leaving. Paramedics with bachelor's degrees or higher exhibited a higher odds ratio of leaving (1.58, 1.20–2.06).

Primary roles influenced the odds ratio of leaving for both EMTs and paramedics. The EMTs in medical (1.45, 1.18–1.79), clinical (1.57, 1.25–1.99), and other roles (1.47, 1.07–2.03) had higher odds ratios of leaving compared to those in emergent roles. Similarly, paramedics in clinical (1.53, 1.18–2.00) and other roles (1.81, 1.25–2.64) showed higher odds ratios of leaving. EMTs working multiple EMS jobs had lower odds of leaving (0.81, 0.68–0.96).

Agency type was a strong predictor for both EMTs and paramedics. Compared to those working in fire agencies, EMTs and paramedics in hospitals (EMT 2.32, 1.79–3.01; paramedic 2.41, 1.93–3.00), government non-fire agencies (EMT 2.24, 1.74–2.88; paramedic 1.99, 1.59–2.48), private agencies (EMT 2.73, 2.24–3.34; paramedic 2.42, 1.99–2.94), and other types of agencies (EMT 2.20, 1.69–2.87; paramedic 2.40, 1.86–3.09) had significantly higher odds ratios of being likely to leave.

Job satisfaction was the most significant predictor of leaving for EMTs and paramedics. Those unsatisfied with their EMS job had dramatically higher odds ratios of leaving (EMT 11.49, 9.61–11.74; paramedic 13.48, 11.64–15.61) than those satisfied.

Due to minimal differences between the survey population and the weighted sample, there were minimal differences between ORs (Supplemental File Appendices 2 and 3). The OR differences between populations range from −0.99 to 0.27 among EMTs and 0.02 to 0.09 among paramedics.

Discussion

Emergency medical service clinicians leaving the workforce is an evolving issue and affects the critical bandwidth

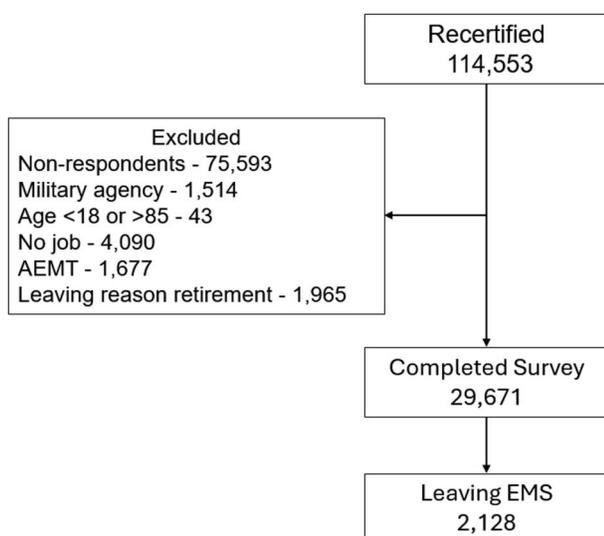
Figure 1. Flow diagram of populations. Abbreviation: AEMT: advanced emergency medical technician; EMS: emergency medical services.

Recertified
114,553

Excluded
Non-respondents - 75,593
Military agency - 1,514
Age <18 or >85 - 43
No job - 4,090
AEMT - 1,677
Leaving reason retirement - 1,965

Completed Survey
29,671

Leaving EMS
2,128

Table 1. Demographic and EMS job characteristics of nationally certified emergency medical technicians (EMT) and paramedic clinicians in this analysis.

Characteristics	EMT N = 16,086 n (%)	Paramedic N = 13,585 n (%)	Total N = 29,671 n (%)
Age			
Median (IQR)	32 (26, 41)	37 (31, 46)	35 (28-44)
Min	19	20	19
Max	81	79	81
Sex			
Female	5001 (31.2)	2907 (21.4)	7908 (26.7%)
Male	11,013 (68.8)	10,652 (78.6)	21,665 (73.3%)
Missing	72	26	98
Minority status			
Non-Hispanic White	12,618 (79.8)	11,718 (87.6)	24,336 (83.4%)
Minority	3197 (20.2)	1652 (12.4)	4849 (16.6%)
Missing	271	215	486
Education			
HS/GED or less	2919 (18.2)	1322 (9.7)	4241 (14.3%)
Some college	5516 (34.4)	4036 (29.7)	9552 (32.2%)
Associates degree	2397 (14.9)	3923 (28.9)	6320 (21.3%)
Bachelor's degree or more	5226 (32.5)	4301 (31.7)	9527 (32.1%)
Missing	28	3	31
Years with main EMS job - (median, IQR)	3 (2,5)	4 (3,6)	3 (2-5)
Primary EMS employment status			
Full-time-yes	10,449 (65.6)	11,824 (87.5)	22,270 (75.7%)
Volunteer-yes	3178 (19.8)	405 (3.0)	3583 (12.1%)
Number of EMS jobs			
1 job	12,330 (76.7)	9203 (67.7)	21,533 (72.6%)
2+ jobs	3756 (23.3)	4382 (32.3)	8138 (27.4%)
Agency type			
Hospital	1850 (11.6)	1880 (13.9)	3730 (12.6%)
Fire	7241 (45.4)	5809 (42.9)	13,050 (44.2%)
Government non-fire	1617 (10.1)	1865 (13.8)	3482 (11.8%)
Private	3806 (23.9)	2723 (20.1)	6529 (22.1%)
Other	1436 (9.0)	1274 (9.4)	2710 (9.2%)
Missing	136	34	170
Service type			
9-1-1	10,332 (64.7)	9466 (69.9)	19,777 (67.1%)
Medical transport	1087 (6.8)	545 (4.0)	1632 (5.5%)
9-1-1 & medical transport	2077 (13.0)	2,160 (16.0)	4236 (14.4%)
Clinical services	1288 (8.1)	682 (5.0)	1970 (6.7%)
Other	1192 (7.5)	685 (5.1)	1877 (6.4%)
Missing	132	47	179
Urbanicity			
Rural	2270 (14.6)	790 (6.0)	3060 (10.7%)
Urban/suburban	13,282 (85.4)	12,387 (94.0)	25,648 (89.3%)
Missing	555	408	963

Abbreviations: IQR: interquartile range; HS: high school; GED: General Education Development.

available for emergency care delivery. Our study revealed several predictors of why EMTs and paramedics may consider leaving the EMS profession. Most notably, job satisfaction emerged as a crucial factor. The EMTs and paramedics who were unsatisfied with their EMS jobs had over 11 times higher odds of leaving within a year, which was much higher than any other associated factors. The reasons for leaving also appear to have changed, with stress being the most common reason for leaving, affecting 28% of EMTs and 39% of paramedics, followed by education and COVID-19. These changes highlight the need for better support systems and management strategies to improve EMS job retention among EMS personnel. As the stress and strain in the EMS workforce evolve, so do the characteristics of leaving the workforce.

As job dissatisfaction is highly associated with intentions of leaving within 12 months, gauging what satisfies EMS clinicians in their roles is imperative for future workforce planning. Agencies should prioritize identifying and addressing these satisfaction drivers as a cornerstone strategy to

mitigate workforce attrition. In the demanding post-COVID-19 landscape, actively ensuring the well-being and satisfaction of EMS clinicians is paramount to sustaining a robust, effective, and resilient workforce. These workforce concerns reach past the field of EMS, as post-COVID-19 leaving and burnout have affected many healthcare sectors (18–20). In 2022, the U.S. Surgeon General issued an advisory on Health Worker Burnout (21), offering strategies to alleviate clinicians' growing challenges. Though not included in this study, EMS clinicians exhibit heightened burnout, increased incivility, more frequent absences from work, and reduced workforce availability (10, 22). Future evaluations of satisfaction with validated survey tools that evaluate the various dimensions that drive job satisfaction are needed to understand its association with leaving the EMS profession.

We noted several other demographic factors that were also associated with leaving EMS. Increasing age was a notable factor for EMTs and paramedics being less likely to leave. Education level was also associated with leaving, as EMTs with an associate degree or bachelor's degree were

Leaving reasons for those likely to leave the profession in the next 12 months.

Leaving Reason	EMT N = 1082 (n, %)	Paramedic N = 1046 (n, %)	Total N = 2128 (n, %)
Stress	302 (27.9%)	406 (38.8%)	708 (33.3%)
COVID-19	140 (12.9%)	202 (19.3%)	342 (16.1%)
Education	198 (18.3%)	67 (6.4%)	265 (12.5%)
Other	127 (11.7%)	120 (11.5%)	247 (11.6%)
Pay	72 (6.7%)	56 (5.4%)	128 (6.0%)
Changing careers	67 (6.2%)	35 (3.3%)	102 (4.8%)
Organization management	46 (4.3%)	56 (5.4%)	102 (4.8%)
Too many hours	29 (2.7%)	42 (4.0%)	71 (3.3%)
Negative coworkers	18 (1.7%)	15 (1.4%)	33 (1.6%)
Illness or injury	16 (1.5%)	14 (1.3%)	30 (1.4%)
Moving	17 (1.6%)	6 (0.6%)	23 (1.1%)
Lack of support	10 (0.9%)	8 (0.8%)	18 (0.8%)
Flexibility	7 (0.6%)	3 (0.3%)	10 (0.5%)
Not enough hours	4 (0.4%)	1 (0.1%)	5 (0.2%)
Missing	29 (2.7%)	15 (1.4%)	44 (2.1%)

Abbreviation: EMT: emergency medical technician.

Table 3. Odds ratios and 95% confidence intervals (CI) for the likelihood of leaving the emergency medical service profession in the next 12 months.

	OR (95% CI) EMT[a]	OR (95% CI) Paramedic[b]
Age (continuous)	0.96 (0.95–0.96)***	0.97 (0.97–0.98)***
Education level		
HS/GED or less	Reference	Reference
Some college	1.13 (0.90–1.42)	0.97 (0.74–1.28)
Associates	1.45 (1.11–1.90)**	1.11 (0.84–1.46)
Bachelor's or above	2.13 (1.70–2.66)***	1.58 (1.20–2.06)**
Primary role		
Emergent	Reference	Reference
Medical	1.45 (1.18–1.79)***	1.25 (0.96–1.62)
Clinical	1.57 (1.25–1.99)***	1.53 (1.18–2.00)**
Education/administration	0.66 (0.36–1.21)	0.87 (0.64–1.20)
Other	1.47 (1.07–2.03)*	1.81 (1.25–2.64)**
Number of EMS jobs		
1 job	Reference	–
2+ jobs	0.81 (0.68–0.96)**	–
Agency type		
Fire	Reference	Reference
Hospital	2.32 (1.79–3.01)***	2.41 (1.93–3.00)***
Government non-fire	2.24 (1.74–2.88)***	1.99 (1.59–2.48)***
Private	2.73 (2.24–3.34)***	2.42 (1.99–2.94)***
Other	2.20 (1.69–2.87)***	2.40 (1.86–3.09)***
Urbanicity		
Rural	Reference	–
Urban/suburban	1.20 (0.96–1.50)	–
Satisfaction with EMS		
Satisfied	Reference	Reference
Not satisfied	11.49 (9.61–11.74)***	13.48 (11.64–15.61)***

Significance levels: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
Abbreviations: EMT: emergency medical technician, GED: General Educational Development, HS: high school. (a) Goodness-of-fit test: p-0.0861; Likelihood Ratio Test of Area Under the Receiver Operating Characteristic Curves: 0.7929. (b) Goodness-of-fit test: p 0.2917; Likelihood Ratio Test of Area Under the Receiver Operating Characteristic Curves: 0.7938. – Variables not included in the model.

more likely to leave, and this was similar for paramedics. The EMS training and certification requirements in the United States vary by level: EMTs typically complete a state-approved course of 120–150 h, often through vocational programs, and pass both cognitive and psychomotor exams. Paramedics undergo more extensive training, usually 1200–1800 h, often in academic settings, and must complete a capstone internship and pass additional exams (2). This structured educational progression may influence the likelihood

of leaving, as EMTs and paramedics with higher educational attainment may seek career advancement opportunities outside EMS.

Similar to previous evaluations, the type of agency significantly influenced retention, with EMTs and paramedics working in hospital, private, and government non-fire agencies being more likely to leave than those working in fire agencies (16). The current overall reasons for leaving the EMS profession, such as stress and COVID-19-related concerns, differ from previous national evaluations, where pursuing further education (now ranked 3) and relocating (now ranked 11) were most prominent (Table 2) (23). Similarly, current reasons for leaving differ from earlier evaluations of EMS clinicians who had already left the profession, which highlighted the desire for better pay and benefits (now ranked 5), the decision to pursue further education (now ranked 3), and dissatisfaction with organizational management (now ranked 7) (5). These shifting priorities underscore the evolving challenges EMS clinicians face, highlighting the need for targeted interventions that address emerging issues like pandemic-related stress and long-standing concerns such as career advancement and organizational support.

It is important to note that though the top reasons for leaving have evolved, recurring themes still exist, similar to past studies where pay, benefits, further education, and satisfaction are critical to evaluate and address to mitigate continued workforce shortages. Additional evaluations should be performed to assess organizational culture among EMS agencies and how it is associated with leaving.

While recent evaluations have identified similar factors predicting leaving within the EMS workforce, they do not encompass a sample size as expansive or employ a replicable methodology (7). Unlike other healthcare clinicians, including physicians and mid-level clinicians with National Provider Identifiers (NPI) and nurses with Unique Nurse Identifiers (UNI), no national identifier database accounts for all EMS clinicians in the U.S. Currently, the National Registry has the largest EMS clinician profile database in the U.S. Still, without clinician profiles for the entire EMS workforce, no single report can evaluate the full extent of workforce problems. A national EMS database encompassing the workforce would allow for a better evaluation of regional and state variations.

The population of this study focused on those recertifying as civilian National Registered EMTs and paramedics. Though the National Registry accounts for >500,000 EMS clinicians in the U.S., we do not evaluate those certified only through their state. Thus, our evaluation may not fully represent the entire EMS population. However, no current database represents the full national frontline EMS workforce population of approximately 900,000 EMS clinicians per the National Association of State EMS Officials' 2020 EMS Workforce Assessment (14). Additionally, our study evaluates those self-reporting that they are likely to leave the EMS profession and does not measure leaving the profession. These two outcome variables represent distinctly different constructs, with the likelihood of leaving EMS being

potentially intervenable. While our list of leaving reasons updates previous findings to include COVID-19, it may not capture every factor influencing EMS clinicians' decisions to leave the profession. Nonetheless, it provides a relevant and robust overview of the primary drivers currently identified. Finally, although not measured, those less satisfied with EMS may have been less likely to complete the optional survey. However, it is also possible that individuals considering leaving EMS were motivated to participate in order to express their opinions on this topic.

Conclusions

Most EMTs and paramedics have similar reasons for leaving the EMS workforce. Although increased stress and pandemic-related factors are the most common reasons reported for being likely to leave EMS, job dissatisfaction was highly associated with the likelihood of leaving. A better understanding of the factors that drive employee/job satisfaction in EMS is essential for developing strategies to enhance retention.

Acknowledgments

Authors Contributions

JRP and ARP conceived, designed, and obtained regulatory permission for the study. JRP designed the data collection and acquired data under the supervision of ARP. CBG and JRP performed the statistical analysis. CBG, JRP, and ARP interpreted and contributed significantly to contextualizing the data. CBG drafted the manuscript, and all authors contributed substantially to its revision; all authors provided final approval of the version to be published. CBG and ARP take responsibility for the paper as a whole.

Disclosure Statement

Data Sharing Statement

Data are available at reasonable request where this does not violate the protection of human subjects or other valid ethical, privacy, or security concerns.

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