

ORIGINAL RESEARCH

Emergency Medical Services

Paramedic educational programs maintain entry level competency throughout the COVID-19 pandemic

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Abstract

Objective: The COVID-19 pandemic required unprecedented changes to emergency medical services (EMS) educational frameworks in the United States. It is unclear if pandemic-related changes impacted paramedic educational outcomes. We aimed to evaluate curricular and performance changes resulting from the initial COVID-19 pandemic on paramedic educational programs.

Methods: We performed a retrospective cross-sectional evaluation of paramedic educational programs in 2019 and 2020 using the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions annual reports. These reports contain detailed program components and measures of program success. We included programs reporting at least one graduate in the study period. Descriptive statistics (proportions [%], median [interquartile range, IQR]) were calculated for paramedic program characteristics in 2019 and 2020, as well as pandemic specific curriculum changes. Wilcoxon rank-sum and Fisher's exact tests were used to evaluate differences in characteristics by year.

Results: The number of paramedic educational programs in our population decreased from 640 programs in 2019 to 612 in 2020, with a statistically significant decrease in clinical hours (2019: 219 [IQR 168–272]; 2020: 200.5 [IQR 157–261]). There was no difference in first or third-attempt certification examination success between years. Temporary shutdown was experienced in 34% of programs (duration: 3 weeks [2–7]) and 72% of required curricular changes. Curricular changes commonly included decreased in-person education (86%), traditional classroom lectures (78%), number of clinical sites (78%), and increased online didactic education (92%). Only 20% of programs decreased laboratory simulation or total training hours.

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Conclusion: During the pandemic, paramedic educational programs changed educational delivery with no observed differences on overall program performance. Identifying key curricular changes and best practices for implementation may be necessary to better optimize future educational delivery.

KEYWORDS

accreditation, attrition, certification, emergency medical services, paramedic education

1 | INTRODUCTION

1.1 | Background

In the United States, paramedics are the highest national certification level for emergency medical services (EMS) clinicians providing advanced life support prehospital care and are an important link in the continuum of healthcare.^{1,2} Paramedic educational training is completed through programs accredited by recommendation of the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP).³ CoAEMSP provides paramedic program standards designed to ensure competent clinicians in the cognitive, psychomotor, and affective learning domains.⁴ To produce this, programs require a minimum number of live patient experiences (eg, gender, disease etiology, age range), skills training (e.g., spinal immobilization, intravenous access), and clinical experiences (eg, obstetrical delivery, defibrillation) to complement didactic educational experiences. These minimums are often educational program specific and require approval from CoAEMSP-mandated advisory councils made up of local stakeholders such as medical directors, EMS agency leadership, and state EMS office staff.^{4,5}

1.2 | Importance

After declaration of a public health emergency due to COVID-19, the Centers for Disease Control and Prevention recommended social distancing, mask wearing, and shelter in place mitigation strategies to decrease the spread of disease.⁶ These mandates affected paramedic educational programs across the United States, from requiring shut-downs to curricular changes. On April 5, 2020, CoAEMSP released a statement detailing allowable changes for educational program requirements, including altering the number of required minimum competency skills, allowing simulations to replace patient contacts, and altering curriculum plans.⁷ Previous research has shown that the number of National Registry certification examinations administered for paramedics decreased 7% in 2020 compared to 2019, with a stark decrease in number of examinations administered starting at FEMA's COVID-19 emergency declaration.⁸ As these revised standards were enacted, paramedic programs were able to continue to train EMS clinicians, although there was a periodic decrease in the total number of paramedics certified in 2020 which reversed in

2021.^{8,9} Cash et al. identified future research priorities due to these changes such as strengthening educational infrastructure and identifying drivers of program outcomes.¹⁰ With signals of EMS educational programs increasing reliance on distance learning for continuing education, further exploration in initial education is necessary.¹¹ It is currently unclear whether these pandemic-related changes impacted initial paramedic educational program characteristics.

1.3 | Goals

In this study, we aimed to evaluate the curricular and performance changes of the initial COVID-19 pandemic on paramedic educational programs. To assess this, we described and compared paramedic educational program characteristics and outcomes for 2019 and 2020. In addition, we described specific programmatic changes put in place by programs for 2020.

2 | METHODS

2.1 | Study design, setting, and participants

This analysis is a retrospective cross-sectional evaluation of paramedic educational programs comparing 2020 and 2019 data using CoAEMSP annual reports. Following the CAAHEP Standard V.A.4, all programs "must maintain, and make available to the public, current and consistent summary information about student/graduate achievement that includes the results of one or more of the outcomes assessments required in the CAAHEP Standards."¹² Each program receives annual report training and has access to assistance to report data accurately. Annual report data are self-reported by all accredited paramedic educational programs each year, allowing for multi-year comparisons. Annually, each report contains a set of standard questions and then a unique set of questions that differ by year. The 2020 CoAEMSP report included questions regarding the types and extent of changes implemented by paramedic programs due to the 2020 COVID-19 pandemic. Because graduates are given a 2-year period to gain certification, annual reports are completed 2 years post-program completion. This design ensures accurate outcome variable measurements. Included for analysis were programs reporting at least one graduate from the 2019 and 2020 cohort. The 2020 annual report data were received and made available in 2022.

The Bottom Line

In this study, we conducted a national evaluation of paramedic educational programs' curriculum delivery after the onset of the COVID-19 pandemic. We observed that 72% of paramedic educational programs reported having curricular changes from 2019 to 2020, including decreased in-person education sessions, decreased traditional classroom lectures, decreased number of clinical sites, and increased online didactic education. Compared to 2019, significant differences were observed in 2020 among hours of clinical experience with pass rates, attrition, and positive placement remaining similar. This work allows for future emergency medical services educational system planning for responding to potential large-scale interruptions.

2.2 | Measurements/outcomes

Descriptive data for key program characteristics were collected for the 2019 and 2020 graduating cohorts. Programs answered yes or no if they had at least one graduating cohort, then this variable was used as a count variable. Total students enrolled per program was a continuous variable. The number of graduating cohorts was reported as a continuous variable and grouped into categories (1, 2, 3, or ≥ 4). National Association of State Emergency Medical Services Officials (NASEMSO) regions were defined by the number of programs located in each region, previously defined by NASEMSO.¹³

Questions regarding COVID-19 program changes were presented to reporting 2020 paramedic educational programs and included the number of programs that required any amount of shutdown time, the number of students that withdrew from the program and curriculum changes. Whether the program required any amount of shutdown time and whether the program required curriculum changes were reported as binary (yes/no) variables. The number of weeks shutdown and the number of students that withdrew were reported and evaluated as continuous variables. Specific curriculum changes included an increase or decrease of in-person education sessions, total training hours, traditional classroom lectures, laboratory simulation hours, clinical training hours, field training hours, live patient experiences, total number of required skills, number of clinical sites available to students, and online didactic education experience per program. These variables were measured as the number of programs that reported a decrease, except for online didactic education, which was reported as the number of programs that reported an increase.

Comparable program characteristics, with 2019 acting as a comparator to the outcome of 2020, were also collected. Total months to completion was a continuous variable. Total hours of instruction was a cumulative combination of didactic, laboratory, field experience, clinical experience, and capstone internship hours. Each of these components was also evaluated separately from each other. The total

number of full-time faculty was a categorical variable, grouped into one or less, two, three, and four or more. Programs also report their resource assessment matrix (RAM) annually. Although no standards exist to determine high-performing programs, those with a RAM of 80% are generally seen as programs with enough resources to ensure a well-functioning program. The number of programs with a RAM of 80% was reported as a continuous variable. Examination pass rates were defined as the number of students with a first-attempt pass rate or the cumulative third-attempt pass rate and were assessed as a continuous variable. Positive placement was defined as the number of students graduating that are employed full or part-time or volunteers in the profession or in a related field, or is continuing their education, or serving in the military after completing the paramedic program and was evaluated as a continuous variable. Total attrition was a continuous variable of the number of students who failed to complete their educational program.

2.3 | Data analysis

Descriptive statistics (proportions [%], median [interquartile range]) were calculated for each paramedic educational program characteristic in 2019 and 2020, as well as the 2020 specific curriculum changes. Using Wilcoxon rank-sum test for continuous variables and Fisher's exact test for categorical variables, we assessed differences in program characteristics between 2019 and 2020, with a significance threshold set at 0.05. This study was deemed exempt by the American Institute of Research Institutional Review Board.

3 | RESULTS

In 2019 there were 690 accredited paramedic educational programs with 640 reporting graduating at least one cohort in 2019 (Table 1). There was a total of 17,457 total students enrolled across these programs with a median of 18 students enrolled per program (Table 1). In 2020, there were 709 accredited paramedic educational programs in which 612 reported having at least one graduating cohort, a 4% decrease from 2019, with 16,347 total students enrolled and a median of 18 students enrolled per program. There was no significant difference between the number of programs with graduating cohorts or the median number of total students enrolled. The majority of programs in both 2019 and 2020 had one graduating cohort. There was no significant difference amongst the number of cohorts graduating per program between 2019 and 2020. The number of programs in each NASEMSO region had essentially no change between 2019 and 2020.

In 2020, 34% of programs required some length of shutdown (duration: 3 weeks [2–7]), and 72% of programs required curricular changes (Table 2). More than half of programs in 2020 required curricular changes including decreased in-person education (86%), traditional classroom lectures (78%), clinical hours (54%), and number of clinical sites (78%). A total of 92% of programs increased online didactic education.

TABLE 1 Program characteristics for paramedic educational programs with graduating cohorts 2019 and 2020 from the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions annual reports.

Characteristic	2019	2020	p-value
Total paramedic education programs, <i>n</i>	690	709	
Total students enrolled across programs, <i>n</i>	17,457	16,347	
Programs with graduating cohorts, <i>n</i> (%)	640 (93%)	612 (86%)	0.11
Students enrolled per program, median (IQR)	18 (12–30)	18 (11–29)	0.49
Graduated cohorts per program, freq (%)			
1 cohort	384 (56%)	392 (64%)	0.15
2 cohorts	153 (22%)	137 (22.4%)	
3 cohorts	52 (8%)	42 (7%)	
≥4 cohorts	51 (8%)	40 (7%)	
NASEMSO regions, <i>n</i> (%)			
East	107 (17%)	102 (17%)	0.99
South	254 (40%)	243 (40%)	
Great Lakes	134 (21%)	122 (20%)	
Western Plains	72 (11%)	72 (12%)	
West	72 (11%)	72 (12%)	

Abbreviations: freq, frequency; IQR, interquartile range; NASEMSO, National Association of State Emergency Medical Services Officials.

Programs in 2019 and 2020 had the same total months to completion (12 [12–16]) (Table 3). There was no significant change in the total hours of instruction, total hours of field experience, or total hours of capstone field internship. Interestingly, the difference in total hours of clinical experience was significantly different between 2019 and 2020 (2019: 219, 2020: 200.5, $p < 0.01$). Most programs in 2019 and 2020 had one or fewer full-time faculty members. Approximately one-quarter of programs in 2019 and 2020 did not meet the 80% RAM goal. The percentage of students with first-attempt pass rates did not differ significantly, and neither did cumulative third-attempt pass rates. Interestingly, 2020 had a greater percentage (69%) of programs with >90% positive placement than 2019 (64%), although not significant. The median percentage of attrition were 19% for 2019 and 18% in 2020.

4 | LIMITATIONS

This study faced several limitations. Data were self-reported by each program and collected 2 years after the graduating cohort completed their initial EMS educational program, which could lead to recall and misclassification biases. Additionally, programs with no graduating students in their 2020 cohort were not included, minimizing the number of curricular changes implemented and some programs may have chosen

TABLE 2 Impact of COVID-19 pandemic on Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions included in the 2020 annual report, paramedic educational program framework with at least one graduating cohort in 2020.

Characteristic	2020 cohort
Program shutdown, freq (%)	211 (34%)
Number of weeks shutdown, median (IQR)	3 (2–7)
Limited clinical/field experience due to lack of access to PPE	130 (21%)
Curriculum required changes	437 (72%)
Program held a new cohort, freq (%)	46 (11%)
Decreased in-person education sessions, freq (%)	377 (86%)
Decreased total training hours, freq (%)	86 (20%)
Decreased traditional classroom lectures, freq (%)	339 (78%)
Decreased laboratory simulation hours, freq (%)	83 (20%)
Decreased clinical training hours, freq (%)	235 (54%)
Decreased field training hours, freq (%)	136 (31%)
Decreased live patient experiences, freq (%)	217 (50%)
Decreased total number of required skills, freq (%)	127 (29%)
Decreased number of clinical sites, freq (%)	339 (78%)
Increased online didactic education, freq (%)	402 (92%)

Abbreviations: freq, frequency; IQR, interquartile range; PPE, personal protective equipment.

not to enroll a cohort of students due to the challenges created by the pandemic. Furthermore, misclassification by year could occur for programs that are longer than 12 months. We are also unable to ascertain causality behind programs having no 2020 graduating cohort. Lastly, as programs may have changed their curriculum or response plan as the COVID-19 pandemic developed over 2021 and onward, only 2020 is observed to capture the initial response by initial EMS educational programs.

5 | DISCUSSION

In this study, we conducted a national evaluation of paramedic educational program's response to a large-scale interruption in educational delivery (i.e., COVID-19). We observed large changes in EMS educational delivery in 2020 to include decreased in-person education sessions, decreased traditional classroom lectures, decreased number of clinical sites, and increased online didactic education. Compared to 2019, significant differences were observed in 2020 among hours of clinical experience with pass rates, attrition, and positive placement remaining similar. This work allows for future EMS educational system planning for responding to potential large-scale interruptions.

The decrease in total hours of clinical experiences for paramedics in 2020 is consistent with other global educational responses that occurred due to the COVID-19 pandemic. These decreases may be

TABLE 3 Comparison of key program components and outcomes between 2019 and 2020 Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions annual report paramedic educational programs with at least one graduating cohort.

Characteristic	2019	2020	p-value
Total months to completion (median, IQR)	12 (12–16)	12 (12–16)	0.57
Total hours of instruction (median, IQR)	1175 (1069–1305)	1189 (1080–1320)	0.16
Total hours of clinical experience	219 (168–272)	200.5 (157–261)	<0.01
Total hours of field experience	160 (90–240)	158 (96–250)	0.75
Total hours of capstone field internship	180 (100–250)	168 (100–243)	0.71
Total number of full-time faculty, freq (%)			
One or less	221 (35%)	207 (34%)	0.854
Two	195 (30%)	183 (30%)	
Three	97 (15%)	104 (17%)	
Four or more	127 (20%)	118 (19%)	
Meets 80% RAM minimum, freq (%)			
Yes	487 (76%)	457 (75%)	0.59
No	153 (24%)	154 (25%)	
Examination pass rates (%)			
First attempt, median (IQR)	75% (64%–90%)	75% (57%–90%)	0.36
Cumulative third attempt, median (IQR)	93% (82%–100%)	92% (80%–100%)	0.50
Positive placement upon graduation (>90%), freq (%)	440 (64%)	422 (69%)	0.93
Total attrition, median (IQR)	19% (11–28)	18% (10–29)	0.35

Abbreviations: freq, frequency; IQR, interquartile range; RAM, resource assessment matrix.

in response to demonstrated concerns for clinical and pre-hospital internship access, as well as student health and safety at the height of pandemic activity.¹⁰ This was expected considering most clinical experiences require in person close contact and did not have obvious equivalent replacements. Programs faced a dilemma having to ensure students gained the skills required for program completion, most of which are practiced during their clinical experiences. This could explain why 29% of programs decreased the number of required skills for graduation to compensate for the loss of clinical experience hours. Only 20% of programs decreased laboratory simulation hours, showing that some programs may have chosen to use simulation to meet entry-level competency in absence of clinical experiences. Additionally, the observed increased use of online didactic education to decrease potential exposure occurred in 86% of programs, although we do not know if this was synchronous or asynchronous. Advantages of this approach may include increased access to educational content and broader availability of experts to provide instruction that may not be locally available.

Importantly, key performance outcomes such as examination pass rates, total attrition, and positive placement were not significantly different between years. This supports previous work that demonstrated a decrease in number of examinations administered in 2020, but no change in certification examination first-attempt pass rate success.⁸ Interestingly, a greater percentage of programs were able to place the large majority of their 2020 graduates as compared to the preceding year. This could be due to the increased need for EMS services,

decreased agency employees, or a combination of these factors as well as others. Front-line employees faced similar hardships as students, facing direct contact with COVID-19-positive patients and their environments, resulting in the exposure of employees. This may have led to agencies hiring more people in 2020 to cover possible shortages. EMS call volume also increased exponentially in 2020, which led to a need for a greater number of staff at EMS agencies.¹⁴

Previous studies have demonstrated relationships between program performance and components of paramedic programs.¹⁵ Prior to the COVID-19 pandemic, paramedic educational programs never faced the necessity to suddenly change and adapt to a public health emergency. Operationally adhering to state-mandated health requirements, with initially no guidelines on how to best respond, likely created several challenges. As seen in this analysis, some programs were forced to quickly adapt and often faced conflicting policies among partners as well. For example, hospitals were not allowing students to clinically shadow and EMS agencies were not accepting students for field experience or capstone internships, considered critical to educate competent paramedics.¹⁶ Programs who chose not to shutdown followed CoAEMSP guidance on the ability to use simulation experiences in place of these requirements.¹⁷ The National Registry of Emergency Medical Technicians also approved provisional certifications, allowing students to practice without taking the psychomotor examination until safe to do so.¹⁸ To safely continue didactic education, programs also reduced in-person education and increased online education. Studies have shown a similar increase in online education among other areas

of EMS education since the onset of the COVID-19 pandemic.¹⁰ This evaluation provides further evidence that paramedic programs were resilient throughout the pandemic and changes implemented did not influence the production of competent, entry-level paramedics.¹⁶

In summary, this study shows the ability of EMS educational programs to continue to produce competent, entry-level paramedics throughout a large-scale, unplanned interruption. Common curricular changes were decreased in-person education, decreased traditional classroom lectures, decreased clinical sites, and increased use of online didactic education. These changes, and their continued use or disuse after the initial COVID-19 pandemic, should continue to be evaluated. Identifying key curricular changes and best practices for long-term implementation may be necessary to better optimize future educational delivery.

AUTHOR CONTRIBUTIONS

Jonathan R. Powell, Christopher B. Gage, Kathryn R. Crawford, Lisa Collard, Michael G. Miller, and Ashish R. Panchal conceived and designed the study. Kathryn R. Crawford, Lisa Collard, and Michael G. Miller collected the data. Shea L. van den Bergh, Lakeshia T. Logan, Jonathan R. Powell, Christopher B. Gage, and Ashish R. Panchal interpreted the data and drafted the manuscript. All authors contributed substantially to the revision of the manuscript. Ashish R. Panchal takes responsibility for the paper as a whole.

CONFLICT OF INTEREST STATEMENT

This data were presented as an oral presentation at the 202 NAEMSP Annual Meeting (January 11, 2024; Austin, TX, USA). The authors declare they have no additional conflicts of interest.

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REFERENCES

1. National Association of State EMS Officials. National EMS Scope of Practice Model 2019. Report no. DOT HS 812-666. National Highway Traffic Safety Administration. Accessed May, 2022. https://www.ems.gov/pdf/National_EMS_Scope_of_Practice_Model_2019.pdf
2. Panchal AR, Rivard MK, Cash RE, et al. Methods and implementation of the 2019 EMS practice analysis. *Prehosp Emerg Care*. 2022;26(2):212-222. doi:10.1080/10903127.2020.1856985
3. Committee on Accreditation of Educational Programs for the EMS Professions. Accessed March 16, 2023. <https://coaemsp.org/>
4. Committee on Accreditation of Educational Programs for the EMS Professions. *Interpretations of the Commission on Accreditation of Allied Health Education Programs Standards and Guidelines*. Accessed March 5, 2021. <https://coaemsp.org/caahep-standards-and-guidelines>
5. Ball MT, Powell JR, Collard L, York DK, Panchal AR. Administrative and educational characteristics of paramedic programs in the United States. *Prehosp Disaster Med*. 2022;1-5. doi:10.1017/S1049023X22000115
6. Moreland A, Herlihy C, Tynan MA, et al. Timing of state and territorial COVID-19 stay-at-home orders and changes in population movement—United States, March 1–May 31, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(35):1198-1203. doi:10.15585/mmwr.mm6935a2
7. Committee on Accreditation of Educational Programs for the EMS Professions. *CoAEMSP's Statement on COVID-19 (February 5, 2021)*. Accessed April 2, 2021. <https://coaemsp.org/resource-library>
8. Powell JR, Cotto J, Kurth JD, Cash RE, Gugiu MR, Panchal AR. Impact of COVID-19 on initial emergency medical services certification in the United States. *J Am Coll Emerg Phys Open*. 2022;3(4):e12808. doi:10.1002/emp2.12808
9. Gage CB, Powell JR, Cash RE, Panchal AR. Prehospital workforce changes: 10-year evaluation of National Registry Certifications. *Prehosp Emerg Care*. 2023;28:333-334. doi:10.1080/10903127.2023.2249566
10. Cash RE, Leggio WJ, Powell JR, et al. Emergency medical services education research priorities during COVID-19: a modified Delphi study. *J Am Coll Emerg Phys Open*. 2021;2(4):e12543. doi:10.1002/emp2.12543
11. March JA, Scott J, Camarillo N, Bailey S, Holley JE, Taylor SE. Effects of COVID-19 on EMS refresher course completion and delivery. *Prehosp Emerg Care*. 2022;26(5):617-622. doi:10.1080/10903127.2021.1977876
12. Commission on Accreditation of Allied Health Education Programs. *Standards and Guidelines for the Accreditation of Educational Programs in the Emergency Medical Services Professions*. Accessed February 22, 2021. <https://coaemsp.org/caahep-standards-and-guidelines>
13. National Association of State EMS Officials. *State Agencies & Regions*. Accessed March 5, 2021. <https://nasemso.org/about/state-agencies/>
14. Al Amiry A, Maguire BJ. Emergency medical services (EMS) calls during COVID-19: early lessons learned for systems planning (a narrative review). *Open Access Emerg Med*. 2021;13:407-414. doi:10.2147/OAEM.S324568
15. Ball M, Powell JR, Gage CB, et al. Paramedic educational program attrition accounts for significant loss of potential EMS workforce. *J Am Coll Emerg Phys Open*. 2023;4(2):e12917. doi:10.1002/emp2.12917
16. Amato V. *EMS Education in the Age of COVID-19*. <https://www.hmpgloballearningnetwork.com/site/emsworld/article/1225057/ems-education-age-covid-19>
17. Mitchell J. *Moving Forward with EMS Education During Coronavirus*. 2020. Accessed November, 16 2021. <https://www.jems.com/training/moving-forward-with-ems-education-during-coronavirus/>
18. National Registry of Emergency Medical Technicians. *National Registry Extends Provisional Certification Deadline*. <https://my.nremt.org/rwd/public/document/covid-19#recertification-deadline-extension>

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