



RESEARCH REPORTS

EMS CLINICIANS IN THE WEST TEXAS AREA FREQUENTLY ENCOUNTER FIREARMS DURING PATIENT ASSESSMENTS WITH LIMITED GUN SAFETY TRAINING

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Recommended Citation: Baker, R., Toppo, A., Rivera, S., DaSilva, S., & Wood, R. (2024). EMS clinicians in the West Texas area frequently encounter firearms during patient assessments with limited gun safety training. *International Journal of Paramedicine*. (8), 125-142. <https://doi.org/10.56068/MFVF2046>. Retrieved from <https://internationaljournalofparamedicine.com/index.php/ijop/article/view/3073>.

Keywords: weapons, paramedic, prehospital, evaluation, education, emergency medical services, EMS, paramedicine

Received: March 5, 2024

Revised: May 9, 2024

Accepted: June 18, 2024

Pre-Issue Release: September 24, 2024

Published: October 8, 2024

Funding: External funding was not used to support this work.

Disclosures: None.

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ABSTRACT

Introduction: Firearms are commonly encountered in the prehospital setting, sometimes with devastating consequences. However, the frequency with which EMS workers find and handle firearms when evaluating patients in the field and the firearm safety training they have received remains largely unstudied.

Objectives: We sought to answer the following questions: 1) How frequently do EMS personnel in West Texas and Southern New Mexico USA encounter and handle firearms when caring for patients? 2) How many of these clinicians are aware of agency policy or have received agency training in the safe handling of firearms? 3) Do these clinicians support integrating firearm training into the EMS curriculum?

Methods: In this observational, cross-sectional study, a survey evaluating weapon and firearm encounters, confidence handling firearms, and formal firearms training was distributed to EMS providers in West Texas and Southern New Mexico between July 1, 2022, and January 1, 2023.

Results: Two hundred forty-seven out of a potential 609 EMS clinicians completed the online survey, representing a 41% response rate. Among respondents, 61% reported encountering firearms at least once per year. These firearms were handled by EMS personnel over a quarter of the time. Sixty-eight percent of prehospital providers were unaware of any agency policy regarding handling firearms. Despite broad personal experience with firearms, 90% of respondents received no agency training in gun safety. Eighty-seven percent of providers reported they would attend an agency training course on firearm safety, and 95% indicated that this topic should be added to the EMS curriculum.

Conclusion: EMS personnel in West Texas and Southern New Mexico routinely encounter and handle guns despite minimal agency firearm safety training. This initial study may demonstrate a potential need for introducing firearm safety didactics and training into the EMS curriculum, and the need for additional research.

INTRODUCTION

Firearm-related violence is a global public health issue that has claimed over 2.75 million lives in the last decade (Collaborators, 2020). In the United States specifically, firearm-related injury is the third leading cause of injury-related death overall and the

leading cause of death among those aged 1-19 years (Goldstick et al., 2022; Marczak et al., 2016; Reddy, 2016). There is a reported \$2.8 billion worth of emergency department (ED) and inpatient charges spent on firearm-related injuries in the United States per year (Ketterer et al., 2019). Current data suggest that 35.3% of patients who present to the ED with an injury related to a firearm suffered those injuries unintentionally (Gani et al., 2017). Another study found that on a daily or weekly basis, guns or knives are introduced into 20% of emergency departments (EDs) in the United States (Kansagra et al., 2007). One survey identified that approximately 20% of attending physicians and 25% of resident physicians had encountered a firearm during their shift in the ED (Gani et al., 2017). Another investigation found that 5.6% of ED physicians experienced an assault involving a firearm or sharp object (Basak et al., 2017).

EMS personnel transport patients to the ED, often from high risk environments. The frequency of weapons encounters during these contacts is unknown. It is also unclear what policies or training may help enhance the safety of EMS personnel and patients when a weapon is unexpectedly encountered during patient care. We sought to answer the following questions: 1) How frequently do EMS personnel in West Texas and Southern New Mexico encounter and handle firearms when caring for patients? 2) How many of these clinicians are aware of an agency policy or have received agency training in the safe handling of firearms? 3) Do these clinicians support integrating firearm training into the EMS curriculum?

METHODS

A standardized questionnaire was developed for this observational, cross-sectional study to evaluate prehospital EMS weapon encounters using Research Electronic Data Capture (REDCap) (Appendix 1). The initial questionnaire underwent beta testing from a convenience sample of 6 EMS providers in west Texas, and a feedback form was used to collect the results. Changes to the initial survey were made, and the final survey was launched to gather feedback and acquire data for the study. A recruitment flyer with a QR code linking respondents to the questionnaire was delivered to a convenience sample of fire and EMS stations within El Paso, Texas, and the surrounding area, including Southern New Mexico, USA. All participants gave informed consent to participate in the research.

Study data were collected and managed using REDCap electronic data capture tools hosted at Texas Tech University of Health Sciences El Paso (Harris et al., 2019; Harris et al., 2009). REDCap is a secure, web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources.

Public, private, and governmental EMS clinicians operating across professional and volunteer agencies were included. EMS practitioners from West Texas and Southern New Mexico who had previously worked in other states were also considered eligible for the study. Voluntary respondents were asked to answer questions regarding their encounters with weapons and patients. Data collection occurred between July 1, 2022, and January 1, 2023. The questionnaire was anonymous, with no identifiers.

Questions were asked about demographics, years of experience, location of weapon and firearm encounters, city size, visibility of the weapons, types of firearm encounters, comfort level in handling firearms, formal firearm training, and desire to add additional firearm training to EMS coursework (Appendix 1).

Data were compiled, and descriptive statistics of responses to these questions were tabulated. To visually display the frequency of weapon encounters among participants, the different types of weapon encounters, and the frequency with which EMS workers and non-EMS law enforcement removed firearms, figures of this data were created with Microsoft Excel. We also checked for any associations between participant characteristics or prior experience with firearms and interest in participating in EMS-based firearms training or support for integrating firearms safety into the EMS curriculum. Specifically, continuous variables were compared between groups using the Wilcoxon rank-sum test, and categorical variables were compared using the Fisher exact test with statistical significance set at an alpha level of <0.05. No attempt was made to impute missing data. Ethical approval for this study was secured from the Texas Tech University Health Sciences El Paso Institutional Review Board (approval number E22065).

RESULTS

Two hundred forty-seven EMS clinicians completed the survey out of a potential 609 respondents, representing a 41% completion rate. Respondents were 83% male, and mainly practiced in Texas (57%), and New Mexico (38%). The three major types of EMS involvement were through a professional fire department (53%), a private EMS agency (32%), and a volunteer fire department (6%). Personnel reported a range of EMS experience from 0-5 years (20%), 6-10 years (24%), to 30+ years (9%) (Table 1).

Characteristic	Number of Respondents n (%)*
Gender (N = 246)	
Male	204 (83%)
Female	38 (15%)
Prefer Not to Answer	4 (2%)
I currently work in the state of:† (N = 241)	
Texas	138 (56%)
New Mexico	92 (38%)
Arizona	6 (2%)
Other	5 (2%)
I am/was primarily involved in EMS through: (N = 247)	
Professional Fire Department	130 (53%)
Private EMS Agency	79 (32%)
Volunteer Fire Department	14 (6%)
DHS (Federal Law Enforcement, USBP, Coast Guard)	9 (4%)
Government EMS Agency	6 (2%)
Department of Defense (Active or Reserve)	2 (1%)
Local Law Enforcement (Police, Sheriff)	2 (1%)
Tribal	2 (1%)
Other	3 (1%)
How many years have you been involved in EMS for?‡ (N = 247)	
0-5	50 (20%)
6-10	58 (24%)
11-20	72 (29%)
21-29	45 (18%)
30+	22 (9%)
DHS = Department of Homeland Security; USBP = United States Border Patrol. All questions and statements are presented exactly as they appeared in the survey. All potential responses with any ancillary information are also shown unless otherwise specified. *There were 247 participants in total. Categories with sample sizes less than 247 indicate that the remaining participants left the question blank. Percentages may not add to 100 due to rounding error. †Respondents could answer with any US state. Subjects who reported currently working in states other than Texas and New Mexico belonged to EMS stations in these two states but were assigned to work in different locations at the time of the survey. ‡Answer choices included less than 1 year any numerical integer between 1-29 years, and 30 or greater years.	

Table 1. Demographic characteristics of survey respondents.

Sixty-one percent of respondents reported encountering firearms at least once per year. By comparison, non-firearm weapons were encountered at least once per year by 86% of respondents (Figure 1).

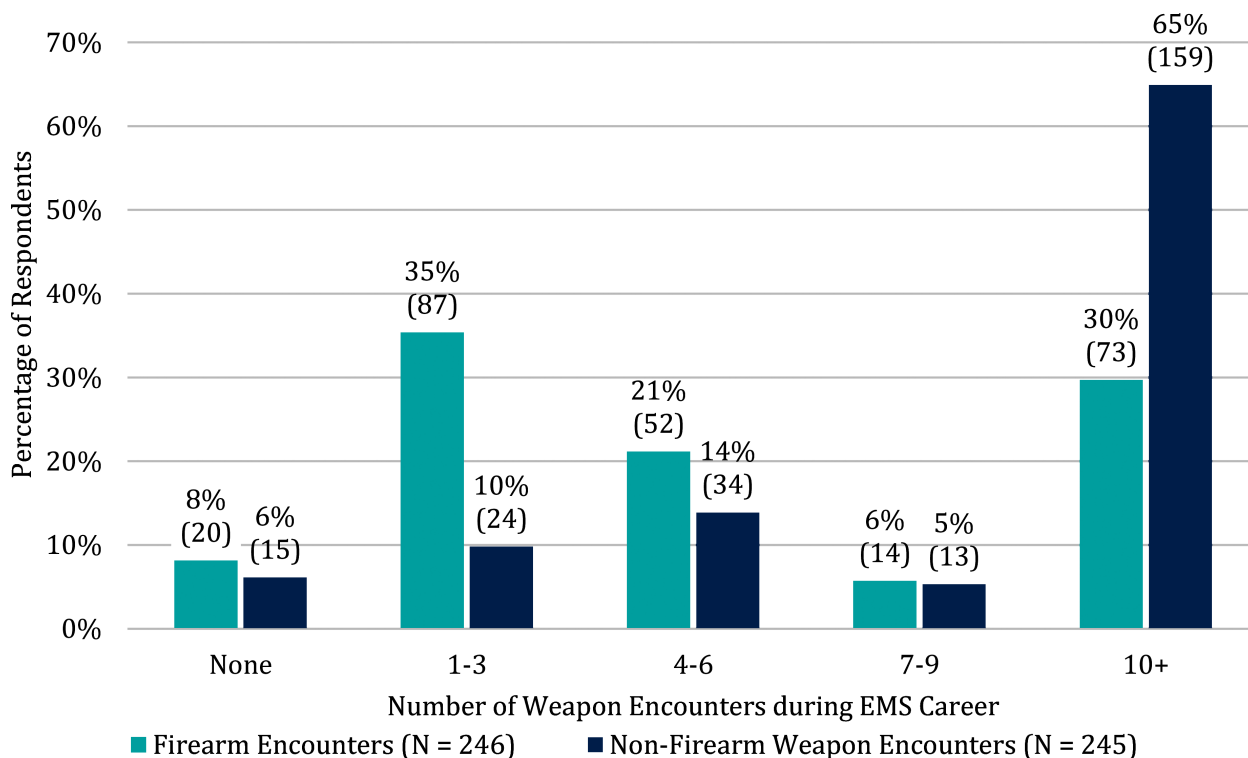


Figure 1. Frequency of firearm and non-firearm weapon encounters for EMS personnel over career.

Firearm encounters most often took place in Texas (52%), New Mexico (37%), and Arizona (3%). The Arizona encounters represent 8 encounters documented by the Department of Homeland Security United States Border Protection EMS clinicians. Practitioners found these weapons primarily in large cities (46%), and they were either openly visible (50%), or hidden and only discovered during assessment and treatment (41%). Handguns were found most frequently (59%), though rifles (17%), shotguns (16%), and military-style weapons (7%) were also reported (Table 2).

Among all weapon encounters over the last year of active service, knives (38%), firearms (25%), and blunt striking weapons (23%), were found most often (Figure 2).

Some groups include more than 247 as a total denominator due to multiple participant responses. Firearms were removed by EMS clinicians, a mean of 28% (standard deviation [SD]: 25%) of the time, and by law enforcement, a mean of 65% (SD: 30%) of the time (Figure 3).

EMS clinicians were asked if they knew the caliber of the firearm encountered, and 218 responses were documented; 62 respondents knew the caliber, 51 answered they knew the caliber “sometimes” and 105 did not know. When reporting if they knew the type of firearm encountered, 113 respondents reported the caliber or the specific firearm type/make, and 105 did not know (N=218). The most common caliber reported were

54 encounters with a 9 mm caliber firearm, followed by 24 encounters with a .45 automatic Colt pistol (ACP) (11.43x23mm) caliber. There were 13 encounters with shotguns and 7 encounters with weapons that shoot the 5.56 caliber round.

Thirty-two percent of participants reported having a policy for handling firearms discovered during patient care, while 68% either did not have any policy or were unsure. Only 12% of respondents indicated that they received training in the safe handling of firearms through their agency. Although 74% of our cohort stated they had at least moderate (have used firearms many times, comfortable using them safely and effectively) experience with firearms, and 78% said they felt safe handling, clearing, or engaging the safety system of a firearm discovered during patient care, 87% reported they would be interested in taking a firearm safety course. Ninety-five percent of participants believed basic firearm safety should be added to the EMS curriculum.

Among all participants, 78% belonged to a household that owned firearms, and 77% of EMS clinicians who owned firearms reported shooting their firearms several times a year or more.

Participation in a concealed carry/concealed handgun license course was most common (45%), followed by a hunter safety course (26%), and military or law enforcement firearms training (23%). 33% of the cohort reported not participating in any of the firearms training courses

Interest in participating in an EMS firearm safety course was associated with fewer years of EMS experience (median [interquartile range]: 12 [6-20] vs. 20 [9-27], $p = 0.005$) and not having participated in a firearm safety course (36% [76/213] vs. 16% [5/32], $p = 0.027$). Additionally, more personnel interested in participating in an EMS firearm safety course had previously participated in a hunter safety course (23% [49/213] vs. 44% [14/32], $p =$

Encounters	Number of Respondents n (%)*
When I encountered a FIREARM during patient care I was working in (check all that apply):† (N = 262)	
Texas	136 (52%)
New Mexico	97 (37%)
Arizona	8 (3%)
Utah	6 (2%)
New York	3 (1%)
California	2 (<1%)
Tennessee	2 (<1%)
Other	8 (3%)
What was the approximate population or city size when you encountered the FIREARM(s)? (N = 277)	
Large Urban City (>250,000 people)	128 (46%)
Midsize Urban City (100,00-250,000 people)	30 (11%)
Small City (50,000-100,00 people)	30 (11%)
Large Town (25,000-50,000 people)	21 (8%)
Small Town (less than 25,000 people)	27 (10%)
Rural Area	35 (13%)
Wilderness Area	6 (2%)
Of the times you have encountered a FIREARM during your EMS patient activities, was the weapon (select all that apply): (N = 337)	
Openly Visible	167 (50%)
Hidden and Only Discovered During Assessment/Treatment	139 (41%)
Other Location	31 (9%)
If a FIREARM has been discovered, what type was it? (Select all that apply) (N = 362)	
Handgun	213 (59%)
Rifle	63 (17%)
Shotgun	59 (16%)
Military-style	27 (7%)
All questions and statements are presented exactly as they appeared in the survey. All potential responses with any ancillary information are also shown unless otherwise specified. *Percentages may not add to 100 due to rounding error. †Answer choices included any of the 50 US states, a US territory, or outside of the USA.	

Table 2. Firearm encounters among survey respondents.

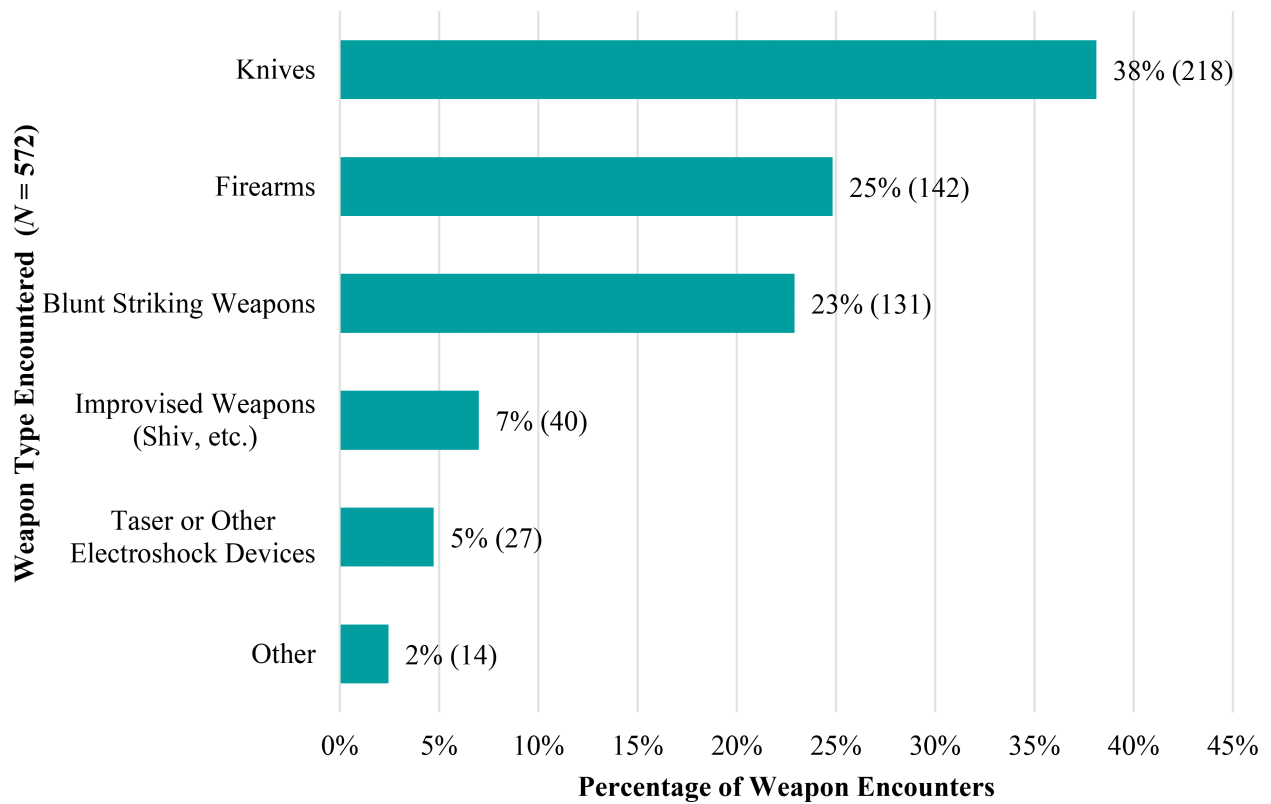


Figure 2. Different types of weapon encounters by ems personnel in the last year of active service.

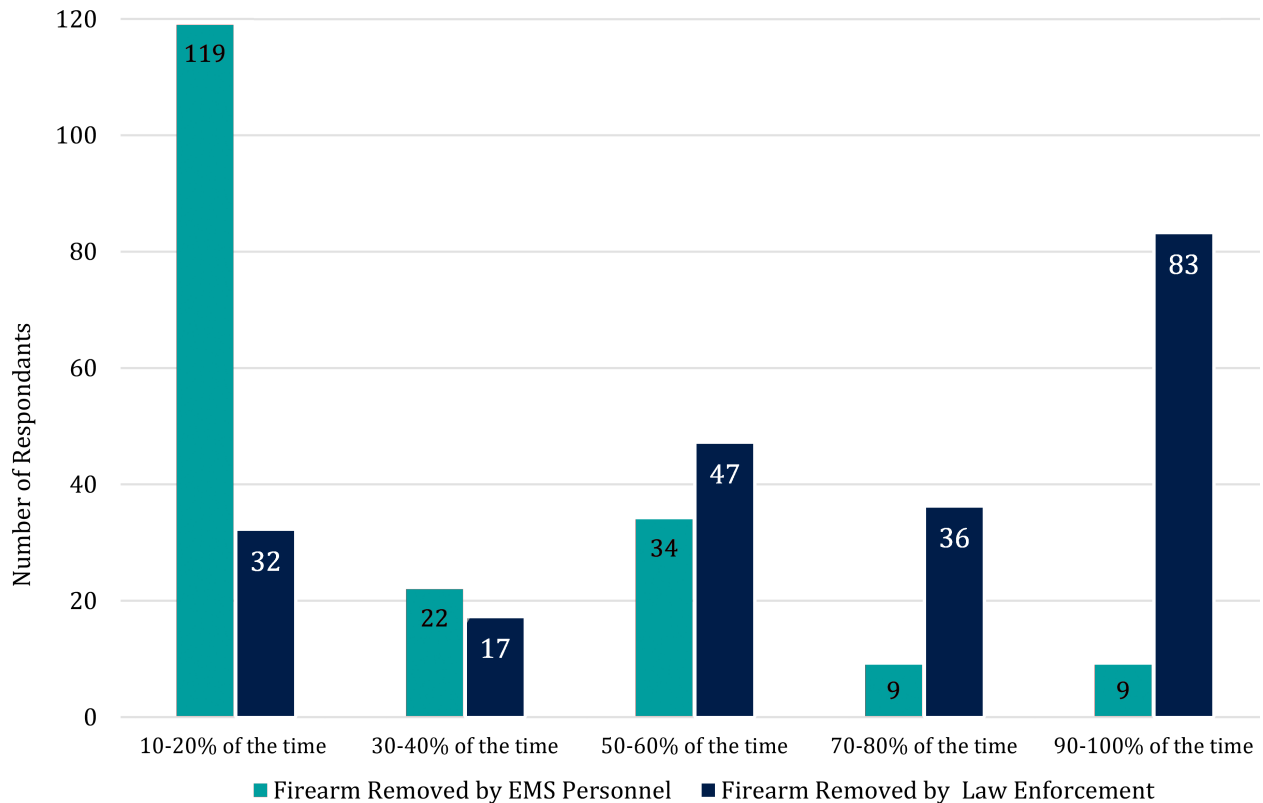


Figure 3. The reported frequency of firearm removal by EMS personnel versus law enforcement. There are gaps in the X-axis ranges because participants responded in intervals of 10 percentage points (i.e., 10%, 20%, 30%, etc.).

Perspectives	Number of Respondents n (%)*
Does your agency have a policy for handling firearms discovered during patient care? (N = 238)	
Yes	77 (32%)
No	107 (45%)
I don't know	54 (23%)
Have you received training in the safe handling of firearms through your agency? (N = 240)	
Yes	28 (12%)
No	214 (89%)
Do you feel safe handling, clearing, or engaging the safety system of a firearm discovered during patient care? (N = 240)	
Yes	186 (78%)
No	54 (23%)
How would you describe your personal experience with firearms? (N = 241)	
None; have never handled or fired a gun	17 (7%)
Minimal; have handled or been around guns, but never fired them	11 (5%)
A little; have fired guns once or possibly a few times	34 (14%)
Moderate; have used firearms many times, comfortable using them safely and effectively	98 (41%)
Significant; extensive background with firearms, comfortable teaching safe use to others	81 (34%)
Would you be interested in participating in a firearm safety course? (N = 245)	
Yes	213 (87%)
No	32 (13%)
Do you believe basic firearm safety should be added to the EMS curriculum? (N = 242)	
Yes	231 (95%)
No	11 (5%)
All questions and statements are presented exactly as they appeared in the survey. All potential responses with any ancillary information are also shown unless otherwise specified.	
*There were 247 participants in total. Categories with sample sizes less than 247 indicate that the remaining participants left the question blank. Percentages may not add to 100 due to rounding error.	

Table 3. EMS personnel perspectives on firearm training.

0.017). However, gender, state of practice, EMS involvement, personal experience with firearms, or other training in the safe handling of firearms were not associated with willingness to engage in a training course.

Respondents who believed that firearm safety should be added to the EMS curriculum reported encountering firearms more frequently on average (median [interquartile range (IQR)]: once a year [once every 5 years to once every 6 months] vs. once every five years [never to once a year], $p = 0.006$) and that their agency had a policy for handling firearms more often (33% [75/225] vs. 0% [0/11], $p = 0.008$). Although firearm ownership was the

Ownership and Training	Number of Respondents n (%)*
Do you or anyone in your household own firearms? (N = 236)	
Yes	185 (78%)
No	51 (22%)
If you own firearms, how often do you shoot them? (N = 184)	
Never	9 (5%)
Less than once a year	16 (9%)
About once a year	17 (9%)
Several times a year	71 (39%)
About once a month	50 (27%)
About once a week	16 (9%)
More than once a week	5 (3%)
Have you participated in any of the following? (N = 247)	
Concealed carry/concealed handgun license permit course	112 (45%)
Hunter safety course	63 (26%)
Military or law enforcement firearms training	58 (23%)
Formal gun safety course (i.e., NRA basic pistol, Boy Scout camp, etc.)	47 (19%)
Professional firearms training	34 (14%)
Competitive shooting (i.e., IPSC, Cowboy Action, etc.)	19 (8%)
None	81 (33%)
All questions and statements are presented exactly as they appeared in the survey. All potential responses with any ancillary information are also shown unless otherwise specified.	
*There were 247 participants in total. Categories with sample sizes less than 247 or less than the total number of participants to which the question pertained indicate that the remaining participants left the question blank. Percentages may not add to 100 due to rounding error.	

Table 4. Firearm ownership and non-EMS agency firearm training among ems personnel.

same between groups, gun owners who believed that firearm safety training should be integrated into the EMS curriculum shot their guns more frequently (median [IQR]: several times a year [several times a year to about once a month] vs. about once a year [about once a year to several times a year], $p = 0.038$). Otherwise, those who did and did not support the introduction of firearms safety into the EMS curriculum did not differ in any demographic characteristics, years of EMS experience, prior participation in gun safety training courses, or self-reported comfort with firearms.

DISCUSSION

Although firearm safety remains a significant concern among emergency providers, research is very scarce on firearms found in prehospital settings. In our study of prehospital personnel perspectives on firearms in the southwest United States, we found that EMS clinicians regularly encounter firearms when evaluating patients in the field. Furthermore, respondents reported that EMS personnel handled or removed firearms more than 25% of the time. Only 33% of respondents were aware of any agency policy regarding firearms handling. Despite broad personal experience with firearms among our cohort, there was considerable support for the development of formal EMS firearm training and the integration of firearm safety into the EMS curriculum. The addition of gun safety to prehospital education and policy may help protect EMS personnel and decrease potential injury to bystanders, patients, and equipment.

Violence is a significant prehospital problem (Maguire et al., 2018; Murray et al., 2020; Pourshaikhian et al., 2016). Up to 83% of EMS clinicians report experiencing some form of workplace violence annually (Xing et al., 2015). The rate of occupational fatalities among EMS workers matches that of firefighters and police, and the rate of non-fatal injuries is three to five times greater than the average for all US workers (Maguire et al., 2005; Maguire et al., 2002; Maguire & Smith, 2013). Although most episodes of workplace violence do not involve weapons, the presence of weapons and firearms magnifies the potential for significant trauma.

Firearms are encountered in the emergency department and sometimes with devastating consequences. One in five attending physicians and one in four residents will encounter a firearm in the emergency department annually (Gani et al., 2017; Ketterer et al., 2019). Studies of hospital shootings over the past several decades have shown that these events most often occur in the ED, with 154 hospital-related shootings resulting in at least one injured victim occurring between 2000 and 2011 (Kelen et al., 2012; Wax et al., 2019). Notwithstanding the dearth of research on the topic, it logically follows that guns are often found in prehospital settings where many ED patients are evaluated and originate. EMS personnel frequently arrive on the scene before law enforcement or when law enforcement is unavailable, and EMS must determine how to best deal with firearms. EMS perspectives on firearms encountered in the field and their knowledge of existing guidelines or appropriate training on handling these weapons have remained largely unstudied.

This study investigates how often EMS practitioners encounter weapons and firearms in the field. In a separate study of weapon encounters among EMS personnel in Boston and Los Angeles, 42% of EMS surveyed participants searched patients for weapons, and 62% found one (Thomsen et al., 2000). The number of times that personnel found a weapon

on a patient ranged from less than 5 (33% of the cohort) to greater than 10 (13% of the cohort), though practitioners had different levels of experience and no time domain was reported. Eighty-six percent of our participants reported finding non-firearm weapons in the field at least once per year, and 61% reported finding firearms in prehospital settings as or more frequently. This suggests that weapon encounters by prehospital clinicians may be a relatively common and regular occurrence.

The frequency with which our cohort reported encountering firearms may be related to the fact that most of our respondents were from Texas and New Mexico, two states with high gun ownership. 35.5% of households in Texas and 35.9% of households in New Mexico own firearms. Furthermore, these states rank 15th and 5th, respectively, in the rate of registered guns per 1000 people compared to the rest of the US (Gun Ownership by State, 2023). It also must be noted that within these states, most firearms were found in large urban cities, and prehospital firearm encounters have only been studied in this setting (Thomsen et al., 2000). Further research is needed to determine when prehospital practitioners routinely encounter firearms in areas of lower gun ownership and whether these encounters occur in large cities or other settings.

A significant number of prehospital clinicians reported they handled weapons during patient evaluation. There is a misconception that law enforcement is the only personnel to handle weapons found on patients; our findings show that EMS responders may be the first to arrive on the scene and be faced with the choice of whether to secure a firearm and to provide medical care or wait for law enforcement to arrive. A delay in care can often be life-threatening to the patient. Although prehospital practitioners are trained to ensure that they are safe before treating patients (Klein & Tadi, 2023), whether personnel feel comfortable securing weapons and firearms may depend on personal experience. Almost three-quarters of our cohort reported having at least moderate (have used firearms many times, comfortable using them safely and effectively) experience with firearms. For this reason, they may feel more comfortable safely securing these weapons when needed.

Clear agency policies and procedures should exist to help prehospital clinicians navigate weapon and firearm situations safely. We found that for most participants, this was not the case. Roughly 66% of respondents were unaware of any agency policy regarding firearm safety, and 90% received no agency training in handling firearms. This is consistent with earlier literature showing a deficiency of formal weapons training among EMS personnel. EMS weapon encounters in Boston and Los Angeles showed that 62% of prehospital responders have found weapons on a patient, yet 80% of participants stated that the firearm safety training they received was inadequate (Thomsen et al., 2000). There is also evidence to suggest that EMS personnel are poorly trained for facing violence in the field. A study assessing prehospital violence showed that over 50% of EMS clinicians have no protocol or guideline for handling violence when arriving on the scene (Tintinalli & McCoy, 1993). Another more recent study showed that 79% of prehospital clinicians had seen a weapon on a patient, and only 33% of clinicians had a known guideline for dealing with violence (Corbett et al., 1998). It is unclear whether job-specific training would be needed to mitigate the risk of firearm discharge when treating these patients. There is evidence to suggest that prehospital responders encounter high percentages of patients armed with different weapons. Most of these responders have not received formal weapons training, which may compromise their safety.

EMS responders in our study overwhelmingly supported adding firearm safety training to the prehospital curriculum. This support was seen in almost all participants regardless of their years of job experience or comfort level with firearms. Most personnel reported that they would be interested in participating in a firearms safety course. This seems to suggest that EMS clinicians see benefit in job-specific firearms training irrespective of background. These individuals may feel that specific knowledge of handling and securing different types of firearms or how to remove a firearm safely will keep them safer while on shift. Hospital ED personnel also benefit from additional training because this may lower the rate of armed patients in the emergency department (Goetz et al., 1991).

LIMITATIONS

Our study comprised a convenience sample of EMS personnel primarily from West Texas and Southern New Mexico USA, limiting our findings' generalizability to the EMS population nationwide. This investigation is the first to evaluate the perspective of prehospital clinicians on firearms, primarily in the southwest US. The small sample size of our study must also be acknowledged despite the novelty of this work. The response rate of 41% must also be noted, as this is below average for the typical survey response study and may lead to sampling bias. The national EMS workforce is primarily male, with females comprising 35% of those earning their National EMS Certification from 2008 to 2017 (Crowe et al., 2020); however, the National Fire Protection Association in 2020 reported of 89,600 firefighters in the USA, only 9% were female (Fahy, 2022). Our number of female respondents was 15%, below the female gender profile for EMS certifications earned, but above the firefighter employment profile. The exact female EMS workforce practicing in West Texas and Southern New Mexico is unknown. It is possible that those who had encountered more weapons while on the job or had stronger opinions about firearm safety were more likely to participate. It must be noted though, that a proportion of respondents reported never encountering a firearm while working. Using a QR code may have made it more difficult for those with less technological familiarity to complete the survey. Recall bias may have undermined the accuracy of the results reported herein. To combat this, weapon encounters over more recent periods were explored. Currently, the agencies involved in the study do not have an electronic patient care reporting system that utilizes a data collection instrument for firearm encounters requiring a survey for data collection. Similarly, the National Emergency Medical Services Information System (NEMESIS) does not have a data element that tracks EMS firearms encounters (C. F. Gregor, NEMESIS data analyst, personal communication March 26, 2024).

Although we reported the demographic characteristics and experience with firearms of EMS clinicians who would and would not participate in EMS-sponsored firearm safety training and who did or did not support introducing firearm safety training into the EMS curriculum, this study was not designed to compare differences between these two groups.

It also must be emphasized that firearm violence is a global public health issue. In the past decade alone, injury related to firearms has claimed over 2.75 million lives (Collaborators, 2020). Firearm injury accounts for over 250,000 preventable deaths and 46,000 disability-adjusted life years lost annually (Naghavi et al., 2018). The burden of disease is highest in low- and middle-income countries, with Central and South American coun-

tries such as Guatemala, Venezuela, and El Salvador exhibiting mortality rates of 40 per 100,000 compared to an international average of 6 per 100,000 (Naghavi et al., 2018). As only 10% of these deaths occur in military conflict, civilian patients' prehospital clinicians experience and treat the majority of firearm-related injuries (Werbick et al., 2021). Emergency medical services in many low- and middle-income countries remain underdeveloped, and the level of training that prehospital practitioners receive in these countries is unclear (Suryanto et al., 2017). Further investigation can explore these clinicians' experiences and perspectives on firearm encounters in the prehospital setting.

CONCLUSION

EMS personnel in West Texas and Southern New Mexico may frequently encounter firearms when evaluating patients in the prehospital setting and not infrequently handle these weapons. 68% of surveyed prehospital clinicians are not aware of any agency policy for handling firearms discovered during patient care, and only 10% have received agency training in firearms safety. There may be potential support among prehospital personnel for incorporating firearm safety training into the EMS curriculum. Based on these preliminary data, agencies may consider integrating firearm training in prehospital clinician education and simulation to adequately prepare personnel for the field.

There is a need for improved data collection mechanisms to accurately track encounters between EMS and firearms. The current lack of comprehensive data limits our ability to understand the frequency, circumstances, and outcomes of such encounters on a larger scale, hindering efforts to develop targeted interventions and policies to improve safety for both EMS personnel and their communities.

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APPENDIX 1

EMS Weapon Encounters Survey

We are interested in anonymously assessing how often EMS providers encounter firearms in the prehospital environment. This survey will take approximately 3-5 minutes to complete. Your participation is voluntary, and your responses are completely anonymous. You may skip any question you are not comfortable answering. If you are an employee, your participation in this study will not affect your employment status. By responding to the survey questions, you are consenting to participate in this research study.

Please complete the survey below.

Thank you!

Date

[MM-DD-YYYY]

Gender

- Male
 - Female
 - Prefer not to answer
-

I am currently:

- Active in EMS
 - Involved in EMS administratively
 - Retired from EMS
-

I currently work in the state of:

- | | | | |
|-----------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| <input type="radio"/> Alabama | <input type="radio"/> Indiana | <input type="radio"/> Nebraska | <input type="radio"/> South Carolina |
| <input type="radio"/> Alaska | <input type="radio"/> Iowa | <input type="radio"/> Nevada | <input type="radio"/> South Dakota |
| <input type="radio"/> Arizona | <input type="radio"/> Kansas | <input type="radio"/> New Hampshire | <input type="radio"/> Tennessee |
| <input type="radio"/> Arkansas | <input type="radio"/> Kentucky | <input type="radio"/> New Jersey | <input type="radio"/> Texas |
| <input type="radio"/> California | <input type="radio"/> Louisiana | <input type="radio"/> New Mexico | <input type="radio"/> Utah |
| <input type="radio"/> Colorado | <input type="radio"/> Maine | <input type="radio"/> New York | <input type="radio"/> Vermont |
| <input type="radio"/> Connecticut | <input type="radio"/> Maryland | <input type="radio"/> North Carolina | <input type="radio"/> Virginia |
| <input type="radio"/> Delaware | <input type="radio"/> Massachusetts | <input type="radio"/> North Dakota | <input type="radio"/> Washington |
| <input type="radio"/> Florida | <input type="radio"/> Michigan | <input type="radio"/> Ohio | <input type="radio"/> West |
| <input type="radio"/> Georgia | <input type="radio"/> Minnesota | <input type="radio"/> Oklahoma | <input type="radio"/> Virginia |
| <input type="radio"/> Hawaii | <input type="radio"/> Mississippi | <input type="radio"/> Oregon | <input type="radio"/> Wisconsin |
| <input type="radio"/> Idaho | <input type="radio"/> Missouri | <input type="radio"/> Pennsylvania | <input type="radio"/> Wyoming |
| <input type="radio"/> Illinois | <input type="radio"/> Montana | <input type="radio"/> Rhode Island | |

I am / was primarily involved in EMS through:

- Professional Fire Department
- Volunteer Fire Department
- Private EMS Agency
- Government EMS Agency
- Local Law Enforcement (PD, Sheriff)
- DHS (Federal Law Enforcement, USBP, Coast Guard)
- DoD (Active duty or Reserve)
- Industrial Fire Department (aerospace, private industry)
- Interfacility Transfer Company
- Other (describe)

How many years have you been involved in EMS for?

- less than 1 year
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30 or greater year

How many times have you encountered a FIREARM during patient care over the last 5 (FIVE) years?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- greater than 10

How many times do you estimate you have encountered a FIREARM during patient care over the course of your EMS career?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- greater than 10

How many times do you estimate you have encountered a NON-FIREARM WEAPON (knives, bats, etc.) during patient care over the last 5 (FIVE) years?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- greater than 10

How many times do you estimate you have encountered a NON-FIREARM WEAPON over the course of your EMS career during patient care?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- greater than 10

When I encountered a FIREARM during patient care I was working in (check all that apply):

- | | | | |
|-----------------------------------|-------------------------------------|--------------------------------------|---|
| <input type="radio"/> Alabama | <input type="radio"/> Iowa | <input type="radio"/> New Hampshire | <input type="radio"/> Texas |
| <input type="radio"/> Alaska | <input type="radio"/> Kansas | <input type="radio"/> New Jersey | <input type="radio"/> Utah |
| <input type="radio"/> Arizona | <input type="radio"/> Kentucky | <input type="radio"/> New Mexico | <input type="radio"/> Vermont |
| <input type="radio"/> Arkansas | <input type="radio"/> Louisiana | <input type="radio"/> New York | <input type="radio"/> Virginia |
| <input type="radio"/> California | <input type="radio"/> Maine | <input type="radio"/> North Carolina | <input type="radio"/> Washington |
| <input type="radio"/> Colorado | <input type="radio"/> Maryland | <input type="radio"/> North Dakota | <input type="radio"/> West |
| <input type="radio"/> Connecticut | <input type="radio"/> Massachusetts | <input type="radio"/> Ohio | <input type="radio"/> Virginia |
| <input type="radio"/> Delaware | <input type="radio"/> Michigan | <input type="radio"/> Oklahoma | <input type="radio"/> Wisconsin |
| <input type="radio"/> Florida | <input type="radio"/> Minnesota | <input type="radio"/> Oregon | <input type="radio"/> Wyoming |
| <input type="radio"/> Georgia | <input type="radio"/> Mississippi | <input type="radio"/> Pennsylvania | <input type="radio"/> US territory |
| <input type="radio"/> Hawaii | <input type="radio"/> Missouri | <input type="radio"/> Rhode Island | <input type="radio"/> Outside of the US |
| <input type="radio"/> Idaho | <input type="radio"/> Montana | <input type="radio"/> South Carolina | |
| <input type="radio"/> Illinois | <input type="radio"/> Nebraska | <input type="radio"/> South Dakota | |
| <input type="radio"/> Indiana | <input type="radio"/> Nevada | <input type="radio"/> Tennessee | |

What was the approximate population or city size when you encountered the FIREARM(s)?

- Large Urban City (>250,000 people)
- Midsize Urban City (100,00-250,000 people)
- Small City (50,000-100,00 people)
- Large Town (25,000-50,000 people) Small Town (less than 25,000 people) Rural area Wilderness area

In what city(s), town(s), village(s) etc., did you encounter the patient(s) with the FIREARM(s)?
[Free text answer]

On average, how often do you find FIREARM(S) during patient encounters?

- | | | |
|--------------------------------------|---|---|
| <input type="radio"/> Once per shift | <input type="radio"/> Once every 6 months | <input type="radio"/> Once every 10 years |
| <input type="radio"/> Once a week | <input type="radio"/> Once a year | <input type="radio"/> Never |
| <input type="radio"/> Once a month | <input type="radio"/> Once every 5 years | <input type="radio"/> Other |

Of the times you have encountered a FIREARM during your EMS patient activities, was the weapon (select all that apply):

- Openly visible
- Hidden and only discovered during your assessment/treatment
- Hidden and only discovered after your assessment/treatment
- Other location (describe)

On average, how often do you find NON-FIREARM weapon(s) during patient encounters?

- | | | |
|--------------------------------------|---|---|
| <input type="radio"/> Once per shift | <input type="radio"/> Once every 6 months | <input type="radio"/> Once every 10 years |
| <input type="radio"/> Once a week | <input type="radio"/> Once a year | <input type="radio"/> Never |
| <input type="radio"/> Once a month | <input type="radio"/> Once every 5 years | <input type="radio"/> Other |

Over the last 12 months or the last year you were active in EMS, have you found any of the following on or with patients: (Select all that apply):

- | | |
|--|---|
| <input type="radio"/> Knives | <input type="radio"/> Improvised weapons (shiv, etc.) |
| <input type="radio"/> Firearms | <input type="radio"/> Taser or other electroshock devices |
| <input type="radio"/> Blunt striking weapons | <input type="radio"/> Other (describe) |
| <input type="radio"/> Explosives | |

If a FIREARM has been discovered, what type was it? (Select all that apply)

- Handgun
- Shotgun
- Rifle
- Military-style rifle
- Other (describe)

Did you know the caliber or brand of FIREARM(s) found?

- Yes
- No
- Sometimes

What percentage of the time have FIREARM weapons been removed from the patient by EMS personnel? (0-100%)

- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

What percentage of the time have FIREARM weapons been removed from the patient by Law Enforcement (non-EMS) (0-100%)?

- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

When you encountered the firearm(s) in what capacity were you working? (check all that apply)

- Professional Fire Department
- Volunteer Fire Department
- Private EMS Agency
- Government EMS Agency
- Local Law Enforcement (PD, Sheriff)
- DHS (Federal Law Enforcement, USBP, Coast Guard)
- DoD (Active duty or Reserve)
- Industrial Fire Department (aerospace, private industry)
- Interfacility Transfer Agency
- Other (describe)

Does your agency have a policy for handling firearms discovered during patient care?

- Yes
- No
- I don't know

Have you received training in the safe handling of firearms through your agency?

- Yes
- No

Do you feel safe handling, clearing, or engaging the safety system of a firearm discovered during patient care?

- Yes
- No

How would you describe your personal experience with firearms?

- None; have never handled or fired a gun
- Minimal; have handled or been around guns, but never fired them
- A little: have fired guns once or possibly a few times
- Moderate; have used firearms many times, comfortable using them safely and effectively
- Significant; extensive background with firearms, comfortable teaching safe use to others

Do you or anyone in your household own firearms?

- Yes
- No

If you own firearms, how often do you shoot them?

- Never
- Less than once a year
- About once a year
- Several times a year
- About once a month
- About once a week
- More than once a week

Have you participated in any of the following? (Select all that apply)

- Hunter safety course
- Concealed carry/Concealed Handgun License permit course
- Formal gun safety course (i.e. NRA basic pistol, Boy Scout camp, etc.)
- Military or Law Enforcement firearms training
- Professional firearms training
- Competitive shooting (i.e. IPSC, Cowboy Action, etc.)
- None

Would you be interested in participating in a firearm safety course?

- Yes
- No

Do you believe basic firearm safety should be added to the EMS curriculum?

- Yes
- No

Thank you for completing the survey any comments or additional information you would like to provide?

[Free text answer]