

Opportunities and Barriers to Screening and Counseling for Safe Firearm Storage

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Abstract

Objectives: Safety practices such as storing a firearm locked and unloaded are widely promoted although not universally applied. Educating patients about firearm safety practices is effective in increasing safe firearms storage behaviors; however, screening for safe firearm storage in practice remains low. The aim of this study was to evaluate whether our clinic population was at risk for firearm-related injuries and whether opportunities existed to study risk-mitigation interventions in future work.

Methods: The study was conducted at a suburban, midwestern academic family medicine clinic. Patients filled out paper surveys about firearm ownership and willingness to discuss firearms safety with clinicians. Health care personnel filled out paper or electronic surveys about their comfort level in discussing firearm safety with patients. Data then were collated and analyzed.

Results: We surveyed 160 patients (60% female, 80% White), and 40.6% of respondents reported living in a home with a firearm. Respondents who stored their firearm unsafely were more willing to discuss firearm safety than to change their storage behavior. Eighteen health care personnel responded to our health care personnel survey. Perceived barriers to asking about firearms included lack of time, knowledge, or educational materials. Having a screening policy was selected as the best opportunity for improvement.

Conclusions: Firearm owners appear willing to discuss firearm safety with their clinician, potentially representing an opportunity to promote risk-reduction through approaches such as motivational interviewing. In a busy outpatient setting, automating the firearm screening process could lessen the burden on clinicians.

Introduction

In 2020, the United States had 45,222 firearm-related deaths.¹ More than half were suicides.¹ For ages 1 through 44 years, firearms are among the top five leading causes of death in the United States.¹ Although overall suicide rates in the United States are similar to other countries, the use of firearms in suicides is eight times higher in the United States.² Nationally, household firearm ownership rates vary by geographic region from 10% to 60% with a mean of 40%.^{3,4} In the Midwest, 50% of US adults have reported living in a household with a firearm.⁵ Studies have shown that reducing access to lethal means can decrease deaths by suicide, especially among populations at higher risk of suicide, such as children, older White men, and veterans.⁶⁻¹¹

Studies also have indicated that firearm safety screening can be an effective way to increase safe storage.¹²⁻¹⁵ However, in practice, screening rates are low.^{16,17} Additionally, patients' attitudes toward firearm screening range widely.^{16,18}

The aim of this study was to evaluate whether our clinic population was at risk for firearm-related injuries due to unsafe firearm storage and whether an opportunity existed to study risk-mitigation interventions in future work. Therefore, we collected data on patient attitudes and practices around firearm ownership, and health care personnel's attitudes and practices around firearm safety screening and counseling in a primary care setting.

Methods

We invited patients at a suburban, midwestern academic family medicine practice to complete an author-developed paper survey on firearm ownership and willingness to discuss firearms safety with health care personnel. Those living in a firearm household were asked how their firearms were stored (Table 1). Health care personnel in the same office were asked to complete a survey, modified from a published nursing survey,¹⁹ either on paper or via REDCap (Research Electronic Data Capture) about their attitudes toward and familiarity with firearm safety. Data were collated in REDCap and analyzed in SAS version 9.4 (SAS Institute).

Survey participation was voluntary and confidential. We administered the surveys from August to December 2021. This study was determined by the Wright State University Institutional Review Board to be exempt from review. We calculated categorical percentages to quantify responses. We also calculated frequencies and percentages for categorical variables and means and standard deviations for continuous variables to describe the participant's responses. Although the purpose of the study was descriptive in nature, we conducted secondary subgroup analyses using χ^2 , Fisher's exact tests, and analysis of variance (ANOVA).

Results

A total of 160 patient surveys were collected. Eighty percent of respondents identified as White and 60% were female. Forty percent (n=65) of respondents lived in a home with firearms. Approximately 48% of respondents with firearms in the household had the safest storage arrangement (locked and unloaded). We found no differences in storage safety by subgroups, nor any significant differences between groups on the traits we measured (Table 2).

More than half (55%) of patients who lived in a home with a firearm reported willingness to discuss firearm safety with their clinician. For patients that did not store their firearm either locked or unloaded, only 35% and 23%, respectively, were willing to change their storage practice. Only 18% of respondents with firearms reported willingness to remove their firearms from their home for safety, and 64% were unwilling to remove their firearms.

A total of 20 health care personnel surveys were collected. Five were physicians, advanced practice providers, or behavioralists. Thirteen were nurses, medical assistants, or other staff. We excluded two respondents because they had no direct patient care. Only 33% of health care personnel asked patients about firearms. However, 61% of health care personnel were comfortable with the idea of asking about firearms in the home. Table 3 provides a summary of health care personnel's perceived barriers to firearms screening as well as their preferences for improving screening rates.

Conclusions

More than 50% of our patient population in firearm households indicated willingness to engage in a

conversation about firearm safety with their clinician, a largely positive result that aligns with studies done in pediatric populations¹⁶ and with a recent study in the veteran population,¹⁸ suggesting that our patient population may be receptive to further safe firearm storage interventions. However, our data also suggested that even though patients reported being willing to have a conversation with a clinician about firearm storage, their preconversation willingness to change their storage method was low. This unwillingness possibly is related to the reasons patients choose to own guns. The primary reasons for firearm ownership are first safety and then recreation, and firearms are viewed as a symbol of freedom and safety.²⁰ This deeply held belief persists despite multiple studies that have shown that living in a household without a gun or where a firearm is safely stored reduces the likelihood of death by firearms.^{6-9,21}

In spite of this low willingness to change, studies that have included counseling, motivational interviewing principles, or support aids such as gun locks or cabinets have shown promising results for behavior change in firearm safety, especially in pediatrics.¹⁴ Using motivational interviewing as a tool to support behavioral change has a history of positive outcomes for other high-risk behaviors.²² Future studies could explore motivational interviewing as an intervention to increase firearm safety practices.

Another avenue for improving screening and interventions is focusing on reducing barriers for health care personnel. Educational information, directed toward either the public or health care setting, is continuing to be developed.²³ With more information and tools, clinicians may feel more comfortable directing risk identification and intervention around firearm access and lethal means safety.²⁴ As advocacy for this important initiative continues, clinicians may continue to recognize its importance and dedicate time to address this topic during office visits.

A strength of our study was using a previously developed survey tool and assessing the views and opinions of multiple stakeholders, namely patients as well as health care personnel in a diverse range of clinical roles, in a single clinic setting. However, because patients and health care personnel self-selected to participate in the surveys, the results may be skewed. Forty percent of our self-selected patient population reported living in a household with firearms, which reflects the national average for household firearm ownership but is likely lower than the expected mean for a clinic in a suburb of a midwestern city with a high military and veteran population. Because our sample was not random, our results are possibly skewed toward a population of firearm owners more favorable to conversations with clinicians about firearm safety. Additionally, our sample sizes were small, limiting subgroup analyses; current analyses should therefore be interpreted with caution. The patient survey did not differentiate between firearm owners and those living in a household with firearms; these two populations may have different views.

Overall, our study suggests that further research in the primary care setting about screening and interventions for safe firearm storage is warranted. Such research should include the development of appropriate and effective screening and intervention strategies, and how to best incorporate these processes given the barriers that health care personnel face. Many factors have been identified that affect the choices individuals make regarding firearm ownership and how firearms are stored, as well as perceptions of risk.^{25,26} Therefore, patient-centered approaches (eg, motivational interviewing) that consider individuals' own reasons for their choices deserve particular attention in future studies.

Tables and Figures

Table 1. Firearm Storage Methods Safety Categories

Firearm storage method	Safety level
Locked and unloaded	Most safe
Either locked or unloaded	Partially safe
Unlocked and loaded	Least safe

Table 2. Patient Demographics and Firearm Storage Data

	Total (N=160) n(%)	Storage safety (N=65)			Tests*
		Most safe n=31 n (%)	Partially safe, n=24 n (%)	Least safe, n=10 n (%)	
Sex					.38
Female	95 (59.7)	20 (64.5)	14 (60.9)	4 (40.0)	
Male	64 (40.3)	11 (35.5)	9 (39.1)	6 (60.0)	
Race/ethnicity					.27
White	122 (79.7)	28 (90.3)	19 (79.2)	7 (70.0)	
Non-White	31 (20.3)	3 (9.7)	5 (20.8)	3 (30.0)	
Age in years (SD)	47.3 (16.6)	47.4 (16.2)	48.3 (17.8)	44.5 (15.6)	.83
Persons living in your household					
Children under the age of 18 years					.20
Yes	21 (13.1)	10 (32.3)	10 (41.7)	1 (10.0)	
No	139 (86.9)	21 (67.7)	14 (58.3)	9 (90.0)	
Male over age 65 years					.76
Yes	17 (10.6)	9 (29.0)	5 (20.8)	3 (30.0)	
No	143 (89.4)	22 (71.0)	19 (79.2)	7 (70.0)	
History of depression or suicide/homicide attempt					.43
Yes	14 (8.7)	6 (19.4)	7 (29.2)	1 (10.0)	
No	146 (91.3)	25 (80.7)	17 (70.8)	9 (90.0)	
Firearms in the household					
Yes	65 (40.6)				
No	95 (59.4)				
Firearms are secured with gunlocks or stored in locked containers					
Yes	50 (76.9)				
No	15 (23.1)				
Firearms are stored unloaded with ammunition stored in a separate, secure location					
Yes	36 (56.3)				
No	28 (43.7)				

Note: Storage condition and storage by safety categories percentages are reported as a subset of households with firearms. Storage with risk factors percentages is reported as a subset of the risk factor category. One patient with a firearm, male > 65 years, and history of depression/suicide in the household did not report whether the firearm was locked.

*Tests conducted were χ^2 or Fischer's exact tests for categorical variables and ANOVA for continuous.

Abbreviations: SD, standard deviation; ANOVA, analysis of variance

Missing values were not included in calculation of percentages.

Table 3. Opportunities and Barriers to Screening for Firearm Safety Reported by Health Care Personnel

	Clinicians* N=5 n (%)	Support staff* N=13 n (%)	Tests**
Opportunities for screening			
Having a screening policy in place	5 (100)	9 (69)	.28
Having educational information I can hand to the patient for them to read	4 (80)	7 (54)	.60
Receiving education about firearm safety and safe gun storage	2 (40)	6(46)	.99
Having a protocol in place in case the situation becomes uncomfortable	2 (40)	6 (46)	.99
Having educational information I can hand to the patient and review with them	1 (20)	7 (54)	.31
Other: "Add to social history screening workflow."	1 (20)	0	.28
Barriers to screening			
Not having educational information to share with patients on this topic	1 (20)	8 (62)	.29
Lacking knowledge about firearm safety and safe gun storage	1 (20)	6 (46)	.60
Not having time	2 (40)	2 (15)	.53
Not knowing what to do with the information I collect	1 (20)	1 (8)	.49
Other: "I'm not certain physician's office is the best place." "Time during a visit, so many things to cover." "I just never have."	2 (40)	3 (23)	.58

Note: The health care personnel survey contained lists of opportunities for and barriers to screening. Survey participants were directed to check all that apply.
 *Clinicians = physicians, advanced practice providers, behavioralists; support staff = nurses, medical assistants, or other staff.
 **Tests conducted were Fisher's exact tests.

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Presentations:

Nguyen A, Owens G, Conway K, Hershberger P, Crawford T. Prevalence of firearm ownership in Wright State Physicians patients and attitude toward firearm safety screening. Poster presented at: First Annual Boonshoft School of Medicine Research Symposium; April 6, 2022; Dayton, OH.

Nguyen A, Owens G, Conway K, Hershberger P, Crawford T. Prevalence of firearm ownership in Wright State Physicians patients and attitude toward firearm safety screening. Poster presented at: American Medical Student Association Annual Convention & Exposition; April 9, 2022; Alexandria, VA.

Nguyen, A, Owens, G, Conway, K, Hershberger, P, Crawford, T. Primary care office staff's attitudes toward firearm safety screening. Poster presented at: 2022 Ohio/Air Force Scientific Meeting; October 21, 2022; Columbus, OH.

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