Preventive Medicine 124 (2019) 29–32

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Pediatric resident firearm-related anticipatory guidance: Why are we still not talking about guns?

Katherine Hoops[a,*], Cassandra Crifasi[b]

[a] Johns Hopkins University School of Medicine, Department of Anesthesiology and Critical Care Medicine, Baltimore, MD, United States of America
[b] Johns Hopkins Bloomberg School of Public Health, Department of Health Policy and Management, Baltimore, MD, United States of America

ARTICLE INFO

Keywords:
Gun injury prevention
Firearm
Pediatric injury prevention

ABSTRACT

This study characterizes the current firearm-related anticipatory guidance practices of pediatricians-in-training and the factors affecting those practices. In this study of Pediatric residents in the Mid-Atlantic region, surveys were distributed to 189 trainees at three hospitals. Eighty-one responses were collected between June 2017 and March 2018. The survey gathered information about the residents' values related to firearms, firearm-specific counseling practices, barriers to providing counseling, and educational needs related to firearms. The residents surveyed overwhelmingly agreed (96%) that physicians have a responsibility to counsel patients on the risks posed by firearms. However, most (63%) never provide firearm-related counseling or do so in only 1–5% of well-child visits. Their unfamiliarity with safe storage devices contributes to a lack of comfort providing counseling. For pediatricians to provide potentially lifesaving counseling on firearm safety, they must be well-versed in the subject and feel comfortable and confident in doing so. Educational interventions addressing physician self-efficacy are necessary to accomplish this. There is an urgent need to develop a comprehensive firearm safety education program for physicians and trainees to improve firearm counseling.

1. Introduction

One in three children in the United States lives in a home with a gun (Schuster et al., 2000). A large body of evidence demonstrates that the presence of firearms in the home is associated with increased likelihood of suicide (Wintemute et al., 1999), homicide (Cummings et al., 1997), and unintentional injuries (Miller et al., 2001). Across the United States in 2016, among individuals 24 years and younger, the three leading causes of death were unintentional injury, suicide, and homicide. According to the Centers for Disease Control and Prevention Web-based Injury Statistics Query and Reporting System, in 2016, firearms were the second-leading mechanism of injury deaths among individuals ages 1 to 24 years, and they accounted for 82.5% of homicides and 46% of suicides in this age group.

Safe storage practices have been shown to be effective in reducing firearm injuries. Case-control studies have examined handgun storage practices and the risks of unintentional and self-inflicted injuries among children and adolescents. In 2005, researchers conducted interviews of gun owners stratified into two groups by whether their gun had been used in an adolescent suicide or suicide attempt or an unintentional shooting (Grossman et al., 2005). This study found that safe storage practices including keeping firearms stored unloaded, locked, separate from ammunition, and/or with an extrinsic safety device were protective against unintentional injuries and suicide attempts (Grossman et al., 2005). Randomized controlled trials have also been conducted that demonstrate the efficacy of anticipatory guidance in encouraging adoption of safe storage practices and the use of trigger locks (Grossman et al., 2000).

It is legally permissible for physicians to counsel patients on firearms. The Patient Protection and Affordable Care Act (ACA) prohibits required collection of firearm information but does not regulate communication between physicians and patients regarding firearms (Patient Protection and Affordable Care Act, 2010). Although other so-called “physician gag laws” were proposed, after the Florida Privacy of Firearm Owners Act was overturned as a violation of physicians' First Amendment rights, no state statute exists that restricts physicians' ability to discuss firearm safety with patients (Wollschlaeger v Governor of Florida et al., 2016; Wintemute et al., 2016).

Medical associations, including the American Academy of Pediatrics (AAP), have recognized the risks posed by firearms in the home as well

* Corresponding author at: Department of Anesthesiology and Critical Care Medicine, Charlotte R. Bloomberg Children's Center, 1800 Orleans St Suite 6349, Baltimore, MD 21287, United States of America.
E-mail address: khoops1@jhmi.edu (K. Hoops).
@KatherineHoops (K. Hoops)

https://doi.org/10.1016/j.ypmed.2019.04.020
Received 3 December 2018; Received in revised form 8 March 2019; Accepted 28 April 2019
Available online 29 April 2019

as the life-saving potential of safe storage (Dowd and Sege, 2012). The AAP advises pediatricians to counsel patients and families about the dangers posed by guns in the home (Dowd and Sege, 2012). Pediatricians are recommended to counsel that the safest home is one without firearms; all firearms kept in the home should be stored safely (unloaded, in a locked box or with a locking device, separate from ammunition); and parents are to be advised on asking about firearms in the homes their children visit (Dowd and Sege, 2012). While most pediatricians believe that they have a "responsibility to counsel families about firearms," prior research found that only about 20% of pediatricians asked > 5% of their patients about gun ownership (Grossman et al., 1995). Furthermore, a recent nationally representative survey of U.S. gun owners revealed that < 20% rated physicians as effective messengers about safe storage practices (Crifasi et al., 2018). These findings suggest a need for additional research to explore the role of physicians in providing anticipatory guidance on safe gun storage, especially since the same study found that fewer than half of gun owners store all their guns safely (Crifasi et al., 2018). The goal of this study was to fill a gap in knowledge regarding current anticipatory guidance practices of pediatricians-in-training and the factors affecting their counseling.

2. Methods

We used a convenience sampling methodology to distribute the survey to pediatric residents in three hospital training programs in the Mid-Atlantic region of the United States. The survey was distributed to 189 pediatric residents and survey data was collected through anonymous paper and online surveys. Participation was voluntary, and completion of the survey signified consent to participate. This study was deemed exempt by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

The survey instrument was developed by the authors and pilot tested with pediatricians to ensure face validity. The survey asked pediatricians about their anticipatory guidance practices around gun ownership and gun storage and consisted of a total of 32 questions. Responses were collected via multiple choice questions, Likert scales, and narrative text boxes. The data were analyzed using Stata SE version 14.2 to generate descriptive statistics of anticipatory guidance practices and factors that influenced those behaviors.

3. Results

Surveys were completed by 81 pediatric residents to the survey for a response rate of 43%. One survey was submitted incomplete and excluded from analysis for the unanswered questions. Table 1 presents demographic information on respondents. In general, survey respondents were categorical pediatrics residents ages 26 to 30 years. In their primary care clinics, a routine clinical activity required by all accredited residency-training programs, residents saw mostly well children for routine wellness exams and generally spend 10 min or fewer on anticipatory guidance.

Table 2 presents the findings related to Pediatric resident behaviors related to anticipatory guidance for firearms. The residents surveyed overwhelmingly agreed (96.3%) that physicians have a responsibility to counsel patients on the risks posed by firearms. However, they were evenly divided (51.3% agreeing and 46.3% disagreeing) as to whether providing that counseling was a high priority in their practice. Furthermore, most (62.6%) never provide firearm-related counseling or do so in only 1–5% of well-child visits. The most common reason residents selected for engaging in anticipatory guidance on firearms was when parents or patients asked questions (33.8%). Almost 14% of residents surveyed reported never asking about gun ownership. Survey respondents also reported a range of advice given to families when counseling on safe storage. Removing guns from the home was the standard advice of 19% of the trainees, 50% recommended storing guns unloaded and separate from ammunition, and only 14% recommended storing guns in a locked safe or box.

Table 1
Survey participant demographics.

	n = 81 (%)
Age	
20–25	1 (1.2%)
26–30	59 (73.8%)
31–40	20 (24.7%)
No response	1 (1.2%)
Specialty	
Pediatrics	64 (79%)
Medicine-Pediatrics	8 (9.9%)
Combined[a]	9 (11.1%)
Year of training	
1	23 (28.4%)
2	31 (38.3%)
3	24 (29.6%)
4	2 (2.5%)
5	1 (1.2%)
Post-residency career plans	
Fellowship (non primary care)	39 (48.2%)
Fellowship (primary care)	8 (9.9%)
General inpatient pediatrics	5 (6.2%)
General outpatient pediatrics	18 (22.2%)
Unsure	11 (13.6%)
Well child exams as a percentage of clinical practice	
< 10%	3 (3.8%)
10–25%	12 (15.2%)
26–50%	13 (16.5%)
> 50%	51 (64.6%)
Time spent on anticipatory guidance in each well child exam	
< 5 min	31 (38.3%)
5–10 min	32 (39.5%)
10–15 min	15 (18.5%)
> 15 min	3 (3.7%)

[a] Combined denotes combined residency programs in Pediatrics and Neurology, Pediatrics and Anesthesiology, and Pediatrics and Genetics.

Table 3 presents the findings related to comfort in providing firearm-related counseling and any perceived barriers. Most residents were comfortable counseling on the risks of firearm ownership (69.6%), but they were less comfortable providing counseling on safe storage and on the use of safe storage devices. Few residents (15.4%) felt confident in their ability to counsel families on the use of trigger locks, safes, and other storage devices. Most often, they reported a lack of confidence in their ability to counsel families on their use because they themselves were unfamiliar with these devices. Only 13.8% agreed that they were afraid of damaging relationships with families by counseling on firearms, and a majority (67.6%) said they rarely or never experienced resistance from families when providing firearm-related counseling. Furthermore, 67.6% reported that politics had affected their counseling practices related to firearms "very little" or "not at all." Only 22.1% of respondents indicated that they had received didactic education on firearm safety, and all endorsed an interest in firearm-related education. Most commonly, they requested education on technical aspects of firearms and locking devices and specific language to use when talking to families.

4. Discussion

This study provides important insight into current firearm anticipatory guidance practices among pediatric residents, barriers to counseling, and opportunities for additional training. Nearly all residents surveyed agreed that providing firearm-related counseling is important, but few felt comfortable discussing specific safe storage devices. Training on the technical aspects of firearms, how to properly use safe storage devices, and guidance on the appropriate language to use in these discussions were the most commonly cited educational needs.

Table 2
Survey participant beliefs about firearm counseling and routine practices.

	n = 81 (%)
Physicians have a responsibility to counsel patients on risks posed by firearms.	
Strongly agree	35 (43.8%)
Agree	42 (52.5%)
Disagree	1 (1.3%)
Strongly disagree	1 (1.3%)
No response	1 (1.3%)
Counseling families on gun safety is a high priority in my practice	
Strongly agree	8 (10%)
Agree	33 (41.3%)
Disagree	33 (41.3%)
Strongly disagree	4 (5%)
No response	2 (2.5%)
How often to you provide counseling on firearm safety?	
Never	13 (16.3%)
1–5% of well child visits	37 (46.3%)
6–25% of well child visits	13 (16.3%)
26–50% of well child visits	2 (2.5%)
51–75% of well child visits	5 (6.3%)
> 75% of well child visits	10 (12.5%)
What circumstances lead you to ask about gun ownership?	
Parents or patients ask questions	27 (33.8%)
Age of child	19 (23.8%)
Concern for that patient's level of risk	16 (20%)
I always ask about gun ownership	26 (32.5%)
I do not ask about gun ownership	11 (13.8%)
Other	12 (15%)
No response	1 (1.3%)
What advice do you typically give?	
I recommend removing guns from the home	15 (18.8%)
I recommend that guns are stored separate from ammunition in a location that children cannot access	40 (50%)
I recommend that guns are secured with a trigger lock or internal/barrel lock	0 (0%)
I recommend that guns are stored in a locked gun safe.	11 (13.8%)
I do not talk to families about gun storage.	14 (17.5%)

Table 3
Survey participants' self assessment of barriers to firearm counseling.

	n = 81 (%)
Comfortable counseling on the risks of firearm ownership?	
Yes	55 (69.6%)
No	24 (30.4%)
Comfortable counseling on safe gun storage?	
Yes	47 (59.5%)
No	32 (40.5%)
Comfortable counseling on the use of trigger locks, safes, and other storage devices?	
Yes	12 (15.4%)
No	66 (84.6%)
I have too little time allotted to each patient to counsel effectively.	
Strongly agree	15 (18.8%)
Agree	40 (50%)
Disagree	20 (25%)
Strongly disagree	2 (2.5%)
No response	3 (3.8%)
I am afraid of damaging my relationship with a family by providing gun-related counseling.	
Strongly agree	0 (0%)
Agree	11 (13.8%)
Disagree	44 (55%)
Strongly disagree	18 (22.5%)
No response	8 (10%)
How often do you encounter resistance from families when you provide gun-related counseling?	
Often	3 (3.8%)
Sometimes	14 (17.5%)
Rarely	23 (28.8%)
Never	31 (38.8%)
No response	13 (16.3%)
How much have politics affected your anticipatory guidance practices related to firearms?	
Significantly	3 (3.8%)
Somewhat	14 (17.5%)
Very little	23 (28.8%)
Not at all	31 (38.8%)
No response	9 (11.3%)

Parents take their children to pediatricians because they are experts on children. Pediatricians provide guidance on avoidance of injury by a wide range of mechanisms as a routine part of their daily practice: bicycle helmets, car seats, smoke detectors, pool safety. The same should be true of firearm safety; however, pediatric trainees are not regularly providing firearm-related anticipatory guidance. This may be a direct result of not receiving training on firearm-related injuries and injury prevention strategies; less than one-quarter of respondents indicated they had received such training. Our study results are comparable to those from a survey of pediatric clinicians in 1995 which showed that just 25% of pediatricians counsel > 5% of their patients on firearm safety (Grossman et al., 1995). They are also consistent with the current practices of adult providers, as indicated by a survey of American College of Physicians members wherein 58% of respondents indicated they never ask about the presence of guns in the home (Butkus and Weissman, 2014). In 2014 the American Academy of Pediatrics released results of a periodic survey of 654 members which indicates that 20% of respondents “always” identify families with firearms in the home and 53% sometimes do so (Anon, 2014). Some of this contrast may be due to differences in the survey questions. It is possible that increased attention over the past several years may have slightly improved rates of counseling, but there is still room for significant improvement.

It is possible that counseling practices are affected by the political climate around gun safety as well as the perception of a lack of responsiveness to this type of counseling; however, respondents to our survey did not indicate that politics had affected their practice nor had fears of damaging relationships with patients and families. Their perception of receptiveness is supported by a recent national survey showing that more than half of gun owners believe that it is appropriate for physicians to counsel on firearm safety at least sometimes (Betz et al., 2016). Nonetheless, this issue is potentially more divisive than many other subjects of anticipatory guidance.

Training on firearm injury prevention should be happening throughout medical school and residency using similar strategies for other injury prevention topics. This training should be designed to increase knowledge of firearms, the associated injury burden among children, and the use of safe storage devices. The need for education on safe storage best practices was highlighted by the failure of trainees to counsel based on American Academy of Pediatrics guidelines: firearms should to stored unloaded, separate from ammunition, with a locking device or in a locked safe (Dowd and Sege, 2012). It is not adequate to recommend unlocked guns are stored in locations that are believed to be inaccessible to children as prior research has demonstrated even when parents believe children do not have access to the guns in the home, about 75% of children report knowing the location of the guns and over one third report handling the guns (Baxley and Miller, 2006). Simulation-based training could be used to practice message-framing and develop comfort in describing safe storage practices with the goal of increasing provider self-efficacy. The lack of comfort providing firearm-related anticipatory guidance could also provide context for why physicians were not rated as effective messengers by > 80% of current gun owners (Crifasi et al., 2018). This further supports the necessity of developing educational modules for medical students and residents to better equip them to provide important and potentially life-saving counseling. Future research should explore perceptions among parents regarding the style and content of firearm-related counseling that is more desirable. Additionally, new educational modules should be assessed to ensure they are meeting the needs of trainees and achieving the goal of increasing self-efficacy in delivery firearm-related

counseling.

The findings of our study should be considered in the context of some limitations. The response rate for the study was only 43% (81/189). Across the three institutions, there were varying response rates (16%, 46%, and 68%); however, the results did not differ across institutions. We did not have access to any data from non-responders, and we are, therefore, unable to discern differences in baseline characteristics among the responders and non-responders such as age. The anticipatory guidance practices of those who did not complete the survey may have differed from those who did, limiting our ability to generalize to a broader trainee population. Our study also took place over a broad time period. The majority of the responses (71/81) were collected in June through August of 2017 which was not in close proximity to major mass shootings. However, ten responses were collected in the four weeks following the Parkland, Florida school shooting; subgroup analysis revealed no difference in rates of counseling provision or other characteristics. Finally, this study also only reflects the practices of resident pediatricians training in Baltimore, Maryland. Baltimore is significantly affected by gun violence which may lead trainees to be more likely to provide counseling on gun safety or have increased desire for training. The geographic restriction of our sample limits the ability to generalize our results to other training programs; however, urban areas tend to experience higher rates of gun violence so these findings may be most relevant for academic hospitals in urban areas.

Pediatricians are experts on children and regularly provide effective counseling to reduce a range of childhood and adolescent injury risks. Efforts are needed to increase the self-efficacy of pediatricians so they can more effectively communicate with parents to improve safe gun storage practices in the home and reduce pediatric gun injury. Pediatricians and pediatricians-in-training must be as well-versed on the risks posed by firearms as other topics so they feel comfortable and confident in their provision of counseling. It is, therefore, imperative that educational programs are designed and implemented to improve physicians' self-efficacy in providing firearm-related anticipatory guidance.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ypmed.2019.04.020.

References

Anon, 2014. Executive Summary: Firearm Injury Prevention, AAP Periodic Survey #86. American Academy of Pediatrics, Itasca, IL.
Baxley, F., Miller, M., 2006. Parental misperceptions about children and firearms. Arch. Pediatr. Adolesc. Med 160 (5), 542–547.
Betz, M.E., Azrael, D., Barber, C., Miller, M., 2016. Public opinion regarding whether speaking with patients about firearms is appropriate: results of a National Survey. Ann. Intern. Med. 165 (8), 543–550.
Butkus, R., Weissman, A., 2014. Internists' attitudes toward prevention of firearm injury. Ann. Intern. Med. 160 (12), 821–827.
Crifasi, C.K., Doucette, M.L., McGinty, E.E., Webster, D.W., Barry, C.L., 2018. Storage practices of US gun owners in 2016. Am. J. Public Health 108 (4), 532–537.
Cummings, P., Koepsell, T.D., Grossman, D.C., Savarino, J., Thompson, R.S., 1997. The association between the purchase of a handgun and homicide or suicide. Am. J. Public Health 87 (6), 974–978.
Dowd, M.D., Sege, R.D., Council on Injury V, Poison Prevention Executive C, American Academy of P, 2012. Firearm-related injuries affecting the pediatric population. Pediatrics 130 (5), e1416–e1423.
Grossman, D.C., Mang, K., Rivara, F.P., 1995. Firearm injury prevention counseling by pediatricians and family physicians. Practices and beliefs. Arch. Pediatr. Adolesc. Med. 149 (9), 973–977.
Grossman, D.C., Cummings, P., Koepsell, T.D., et al., 2000. Firearm safety counseling in primary care pediatrics: a randomized, controlled trial. Pediatrics 106 (1), 22–26 Pt 1.
Grossman, D.C., Mueller, B.A., Riedy, C., et al., 2005. Gun storage practices and risk of youth suicide and unintentional firearm injuries. JAMA 293 (6), 707–714.
Miller, M., Azrael, D., Hemenway, D., 2001. Firearm availability and unintentional firearm deaths. Accid. Anal. Prev. 33 (4), 477–484.
Patient Protection and Affordable Care Act. 42 U.S.C. § 18001 (2010).
Schuster, M.A., Franke, T.M., Bastian, A.M., Sor, S., Halfon, N., 2000. Firearm storage patterns in US homes with children. Am. J. Public Health 90 (4), 588–594.
Wintemute, G.J., Parham, C.A., Beaumont, J.J., Wright, M., Drake, C., 1999. Mortality among recent purchasers of handguns. N. Engl. J. Med. 341 (21), 1583–1589.
Wintemute, G.J., Betz, M.E., Ranney, M.L., 2016. Yes, you can: physicians, patients, and firearms. Ann. Intern. Med. 165 (3), 205–213.
Wollschlaeger v Governor of Florida et al. (797 F3d 859 11th Cir 2016).