Continuing Medical Education and Firearm Violence Counseling

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Abstract

Firearm violence is a significant and increasing cause of mortality. Although physicians view firearm counseling as their professional obligation, few engage in the practice. This study examines medical education and firearm counseling among physicians in North Carolina. While 65 percent of physicians reported knowing how to counsel patients about gun safety, only 25 percent reported having conversations with patients about firearms or firearm safety often or very often. Physicians reporting continuing medical education (CME) attendance on gun safety, however, were more likely to report providing patients with firearm safety counseling and asking patients with depression about firearms. Increasing availability of and physician participation in firearm violence prevention CME could significantly increase physicians' knowledge of and engagement in firearm counseling.

Introduction

Firearm violence is a significant cause of mortality that has increased as an important ethical and public health issue. Data from 2014 revealed over 33,000 firearm-related deaths in the United States, accounting for 16.8 percent of all injury-related deaths, 49.6 percent of all completed suicides, and 69.2 percent of homicides [1]. In 2014, North Carolina, the state in which the authors reside, ranked seventh among states [2], with 1,146 firearm deaths, representing 59.3 percent of all violent death in the state that year [3].

Many medical organizations and physicians have discussed the <u>roles clinicians should</u> <u>play</u> in preventing firearm injury and deaths [4-13]. Surveys of family physicians, internists, psychiatrists, pediatricians, and surgeons have revealed that between 65 to 93 percent believe gun safety counseling is within a physician's scope of practice [14-20]. Many physicians also believe firearm safety counseling is effective at reducing rates of firearm-related suicides and homicides [21, 22].

Although physicians view such counseling as part of their professional obligations, few appear to engage in the practice. Chart reviews from internal medicine and pediatric

emergency departments demonstrate that 3 percent or less document gun access or <u>firearm safety counseling</u> [23, 24]. While chart review may not capture every service delivered, documentation likely serves as proxy for what physicians believe is important from treatment planning and medical-legal perspectives [24]. A survey of 573 internists revealed that 58 percent had never asked patients about gun ownership, and 77 percent had never counseled patients on risks of firearm-related injury or death [20]. Similarly, less than half of surveyed pediatricians reported regularly providing firearm safety screening or counseling [18, 25-27]. At the medical student level, 66 percent of 1,469 seniors across 16 schools reported counseling patients about firearm safety "never" or "rarely,", with only 4 percent reporting doing so "usually" or "always" [16].

Discrepancies between medical professional beliefs and behaviors with respect to firearm safety counseling signal an opportunity for intervention should their cause be identified. Existing literature suggests that physician training in firearm safety education is woefully inadequate [16, 18, 20-22, 28]. When asked directly whether there was a need for physician education on firearm injury prevention counseling, 74 percent of 573 internists answered "somewhat" or "to a great extent" [20]. While two-thirds of 1658 medical students reported receiving any training on firearm safety counseling, only 12 percent considered the training "extensive" [16]. At the residency level, a survey of pediatric residency programs revealed that only one-third include formal training on firearm safety counseling [18]. Similarly, among psychiatric residency directors, 79 percent of respondents had not considered including training to address firearm injury prevention, citing lack of standardized material, faculty expertise, and training guidelines as key barriers [21], echoing the sentiments of preventive medicine programs [22]. A recent review found that only four firearm safety training programs report targeting medical education, none of which targeted psychiatrists or psychiatry residents [28].

While the existing literature addresses the need for firearm safety training in undergraduate and graduate medical education, little research has been conducted on the role of continuing medical education (CME) for physicians about firearm violence prevention counseling. This survey-based study of North Carolina internists, psychiatrists, and family medicine physicians examines how various criteria, including CME, affect firearm safety counseling confidence and behaviors for clinicians in practice. Other questions that examined physician experiences with and attitudes toward concealed weapon permits, which showed that physicians were often unsure of and had little confidence in determining competence for concealed weapons' permitting, were previously published [29, 30].

Methods

Survey. The survey questions addressed physician attitudes, beliefs, and behaviors about various issues related to firearm safety, including patient counseling and self-reported CME on firearm safety education. Physician attitudes and beliefs were assessed by four

categories of response (strongly agree, agree, disagree, and strongly disagree), and physician behaviors were assessed by five categories of response (never, rarely, sometimes, often, and very often). Respondent demographic information included age, sex, specialty, political affiliation, years in practice, gun ownership, and experience shooting a gun.

Participants. The survey was mailed to 600 physicians registered with the North Carolina Medical Board and in active practice at the time of the survey (September and October of 2013), including 200 physicians identified as family physicians, psychiatrists, and internists who were randomly selected to receive the survey. Participants in the second and third of three survey waves received nominal incentives (<\$1) to participate. Of the 600 surveys mailed, 45 were returned because of incorrect addresses and 223 were completed, for an adjusted response rate of 40.2 percent. The pool of respondents included psychiatrists (38 percent), family physicians (35 percent), and internists (27 percent). The majority of respondents were men (66 percent), over age 51 (55 percent), and had been in practice more than 15 years (64 percent). Most self-described as Democrat (47 percent), with the remaining being Republican (20 percent), Independent (25 percent), or "other," including libertarian (8 percent). Seventy-six percent of physicians in the sample reported having shot a gun, and 36 percent identified as gun owners.

Analyses. The Pearson chi-square test was used to examine the relationships between survey response variables and responses to three of the attitude and behavior questions, with significance judged by Bonferroni corrected alpha levels of 0.006 (0.05/9) or 0.005 (0.05/10). For attitude and belief questions, agree/strongly agree and disagree/strongly disagree were combined to yield two response categories. Similarly, for behavior questions, never/rarely and often/very often were combined to yield three responses categories. Logistic regression was used to estimate the odds of associations between CME and aspects of gun safety counseling.

Results

Descriptive statistics. Most physicians agreed or strongly agreed that gun violence was a major public health issue that should be part of medical training (80 percent). Almost two-thirds (65 percent) of physicians reported knowing how to counsel patients about gun safety, but only 25 percent reported having conversations with patients about firearms or firearm safety often or very often. With regard to suicide prevention, only 52 percent of physicians reported asking depressed patients if they had a firearm in their home. Furthermore, only 12 percent of physicians reported having attended any continuing medical education (CME) seminars or lectures on gun violence in the last five years. CME attendance was not related to political party affiliation.

Factors associated with knowledge of gun safety counseling. As shown in Table 1, physicians' self-reported knowledge of how to counsel patients about gun safety was significantly related to physician specialty, with psychiatrists most likely to report knowledge of how to counsel about gun safety compared to family physicians and internists (78.6 percent vs. 66.7 percent vs. 45.0 percent respectively; p < 0.001). Those who reported attending CME on gun safety were more likely to say they knew how to counsel about gun safety, but this was of borderline significance (88.9 percent vs. 61.7 percent; p = 0.006). Sex, age, years in practice, political affiliation, gun ownership, and having shot a gun were not significantly associated with knowledge of gun safety counseling.

Variable	Agree/strongly agree	<i>p</i> -value ^a	
	(%)		
Sex (N = 222) Male Female	68.5 59.2	0.17	
Specialty (N = 222) Family medicine Psychiatry Internal medicine	66.7 78.6 45.0	< 0.001	
Age (N = 222) < 35 36-50 > 51	51.2 74.0 63.1	0.09	
Years in practice (<i>N</i> = 222) < 5 5-15 > 15	55.2 68.2 66.4	0.46	
Political affiliation (N = 220) Democrat Republican Independent Other	56.7 70.5 78.3 70.6	0.04	
Shot a gun (<i>N</i> = 222) Yes No	65.7 64.2	0.84	

Table 1. Bivariate associations for "knowing how to counsel patients about gun safety"

Owns a gun (<i>N</i> = 222) Yes No	75.0 59.9	0.02
Gun violence should be part of medical student training (<i>N</i> = 219) Agree/strongly agree Disagree/strongly disagree	67.4 61.4	0.45
CME attendance (N = 223) Yes No	88.9 61.7	0.006

^a Bonferroni corrected alpha level = 0.006.

Factors associated with counseling frequency. As shown in Table 2, reported knowledge of gun safety counseling was significantly related to reported frequency of counseling about gun safety (33.1 percent vs. 10.3 percent counseling very often/often; p < 0.001). Frequency of counseling differed significantly by specialty, with psychiatrists reporting higher rates of counseling "very often or often" compared to family physicians and internists (48.8 percent vs. 15.0 percent vs. 7.7 percent; p < 0.001). Those who reported attending CME on gun safety counseling were more likely to say they counseled patients often or very often compared to those who did not attend CME (59.3 percent vs. 20.4 percent; p < 0.001). Reports on counseling frequency were not associated with sex, age, years in practice, political affiliation, gun ownership, or having shot a gun.

Variable	Never/ rarely (%)	Some- times (%)	Often/very often (%)	<i>p</i> -value ^a
Sex (N = 222) Male Female	50.7 36.8	27.4 31.6	21.9 31.6	0.12
Specialty (N = 222) Family medicine Psychiatry Internal medicine	59.0 25.0 58.3	33.3 26.2 26.7	7.7 48.8 15.0	< 0.001
Age (N = 222) < 35 36-50 > 51	62.9 32.9 50.0	18.5 37.0 26.2	18.5 30.1 23.8	0.06

Table 2. Bivariate associations for "counseling frequency about gun safety"

Years in practice (<i>N</i> = 222) < 5 5-15 > 15	55.2 32.0 49.0	20.7 38.0 27.3	24.1 30.0 23.8	0.22
Political affiliation (N = 220) Democrat Republican Independent Other	46.2 54.6 38.2 41.2	28.9 22.7 32.7 35.3	25.0 22.7 29.1 23.5	0.80
Shot a gun (<i>N</i> = 222) Yes No	46.8 43.4	30.8 22.6	22.5 34.0	0.21
Owns a gun (<i>N</i> = 222) Yes No	46.3 45.8	33.8 26.1	20.0 28.2	0.30
Gun violence should be part of medical student training (<i>N</i> = 219) Agree/strongly agree Disagree/strongly disagree	41.7 63.6	29.7 22.7	28.6 13.6	0.03
I know how to counsel patients about gun safety (<i>N</i> = 223) Yes No	36.6 64.1	30.3 25.6	33.1 10.3	< 0.001
CME attendance (<i>N</i> = 223) Yes No	14.8 50.5	25.9 29.1	59.3 20.4	< 0.001

^a Bonferroni corrected alpha level = 0.005.

Factors associated with asking depressed patients about firearm access. Factors associated with reports on the frequency of asking depressed patients about access to firearms are shown in Table 3. Asking depressed patients about access to firearms was positively associated with reported knowledge of how to counsel (58.6 percent vs. 39.7 percent; p < 0.001), specialty (72.6 percent vs. 41.0 percent vs. 38.3 percent; p < 0.001), and CME attendance on gun counseling (85.2 percent vs. 47.5 percent; p < 0.001). Reports on counseling frequency were not associated with sex, age, years in practice, political affiliation, gun ownership, or having shot a gun.

Variable	Never/ rarely (%)	Some- times (%)	Often/very often (%)	<i>p</i> -valueª
Sex (N = 222) Male Female	28.8 23.7	19.2 23.7	52.1 52.6	0.62
Specialty (N = 222) Family medicine Psychiatry Internal medicine	32.1 9.5 45.0	26.9 17.9 16.7	41.0 72.6 38.3	< 0.001
Age (N = 222) < 35 36-50 > 51	25.9 27.4 27.1	29.6 17.8 20.5	44.4 54.8 52.5	0.78
Years in practice (<i>N</i> = 222) < 5 5-15 > 15	27.6 20.0 29.4	27.6 14.0 21.7	44.8 66.0 49.0	0.25
Political affiliation (N = 220) Democrat Republican Independent Other	25.0 36.4 23.6 17.7	23.1 18.2 21.8 11.8	51.9 45.5 54.6 70.6	0.54
Shot a gun (<i>N</i> = 222) Yes No	26.6 28.3	18.3 28.3	55.0 43.4	0.22
Owns a gun (<i>N</i> = 222) Yes No	28.8 26.1	22.5 19.7	48.8 54.2	0.73
Gun violence should be part of medical student training (N = 219) Agree/strongly agree Disagree/strongly disagree	22.3 45.5	21.7 18.2	56.0 36.4	0.007

Table 3. Bivariate associations for "asking depressed patients about access to firearms"

I know how to counsel patients about gun safety (<i>N</i> = 223) Yes No	19.3 42.3	22.0 18.0	58.6 39.7	0.001
CME attendance (N = 223) Yes No	3.7 30.6	11.1 21.9	85.2 47.5	0.001

^a Bonferroni corrected alpha level = 0.005.

Association between CME attendance and outcomes. After adjustment for specialty, gun ownership, and political party, physicians reporting CME attendance had 3.2 times the odds of reporting providing patients with gun safety counseling (aOR 3.23; 95 percent Cl 1.2-8.5; p = 0.018) and 4.4 times the odds of reporting asking depressed patients about firearms (aOR 4.37; 95 percent Cl 1.38-13.8; p = 0.012). CME attendees also had 3 times the odds of reporting knowledge of how to counsel (aOR 3.01; 95 percent Cl 0.84-10.8; p = 0.092), although this last result had a wide confidence interval and was not statistically significant.

Discussion

It is increasingly clear that addressing firearm safety in clinical situations constitutes an ethical imperative that physicians should satisfy, particularly as physician skills in counseling patients about firearm violence prevention are increasingly considered key to helping prevent firearm deaths [12, 31]. Fulfilling this imperative requires the cultural competence and nuance necessary to have dedicated and respectful conversations with patients [13]. While low rates of gun safety counseling and lack of physician training to provide counseling are established [6, 12, 28, 30, 32], the present research is the first to illuminate the potent role that CME may play in increasing counseling. CME was strongly associated with providing firearm counseling often or very often, including asking patients with depression about their firearm access as well as increased knowledge of how to counsel.

Just as educational experiences have been shown to positively impact physician knowledge of addressing adolescent violence or geriatric suicide risk [15, 33-35], CME likely provides a critical opportunity for practicing physicians to acquire ongoing practical skills that significantly improve their firearm counseling behaviors. While the causal relationship could be reversed, with physicians who already prioritize gun safety seeking related CME, it seems unlikely that physicians who already have significant gun safety knowledge and counseling skills would invest in CME on that topic. Furthermore, since 80 percent of respondents in the current study agreed or strongly agreed that gun violence is a major public health problem that should be part of medical education, a large gap exists in skill levels between the minority of respondents who do regularly provide gun safety counseling and the great majority of respondents who do not do so.

Our findings extend the literature on physicians' role in addressing firearm violence spanning individual specialties and geographic locations [18, 20, 29, 30, 32], providing a glimpse of the current landscape on primary care and specialty involvement in firearm counseling practices. Psychiatrists in our sample appeared to report higher knowledge of how to counsel, higher frequency of counseling, and asking patients with depression more often about access to firearms. Three-quarters of psychiatrists did endorse that they possessed knowledge of how to counsel patients, indicating that psychiatrist training or practice breeds more knowledge of counseling behaviors.

The ethical imperative to not neglect firearm safety in clinical situations is particularly relevant to suicide prevention, as suicide by firearms accounts for one-half of recorded suicides, and depression is strongly linked with suicidality [2]. Intra-specialty analysis reveals that few family physicians (7.7 percent) or internists (15 percent) reported asking patients with depression about firearm access either very often or often. Even among psychiatrists, who were significantly more likely to report asking their depressed patients about firearm access, less than half reported counseling patients with depression about their firearm access.

Physicians' provision of gun safety counseling is often highlighted as a polarizing political issue, particularly in light of legislative attempts to block physicians from discussing firearm violence prevention with patients [36]. However, our research counters this narrative, as neither political party nor gun ownership was significantly associated with self-reported counseling knowledge, counseling frequency, or rates of asking patients with depression about firearm access. These findings are promising, as they suggest that the provision of firearm safety counseling need not be a partisan issue; instead, our findings provide an opportunity for physicians across party lines to sensibly unite behind the need to provide accurate and effective firearm counseling to patients, as has been done before with safety issues like domestic violence, seatbelts, biking helmets, and smoking cessation. Perhaps the disparity between belief and low CME attendance rate is not driven by a lack of interest or perceived benefit but by the paucity of available CME firearm safety opportunities [28].

Conclusion

While research to replicate and extend our findings to other physician populations and states is needed, our study suggests that increasing availability of, and physician enrollment in, firearm safety-focused CME could impact knowledge of and counseling on firearm violence prevention. Firearm safety educational interventions could empower the great majority of physicians who have not had exposure to this type of training to

provide vital safety counseling for their patients, ultimately contributing to fulfilment of physicians' obligations to help reduce firearm injury and death.

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