Physician Firearm Ownership as a Predictor of Firearm Injury Prevention Practice

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A B S T R A C T

Objectives. This study explored the relation between physicians' gun ownership and their attitudes and practices regarding firearm injury prevention.

Methods. Internists and surgeons were surveyed, and logistic regression models were developed with physicians' personal involvement with firearms (in the form of a gun score) as the primary independent variable.

Results. Higher gun scores were associated with less agreement that firearm injury is a public health issue and that physicians should be involved in firearm injury prevention but with a greater likelihood of reporting the inclusion of firearm ownership and storage as part of patient safety counseling.

Conclusions. Despite being less likely to say that doctors should participate in firearm injury prevention, physician gun owners are more likely than nonowners to report counseling patients about firearm safety. (*Am J Public Health.* 2000;90:1626–1628)

Between 30% and 50% of American households contain at least one firearm.[1–7] Presence of a firearm in the home is associated with increased risks of homicide, suicide, and unintentional injury,[8–17] and hazards increase with unsafe storage practices.[13,15,18] Several medical specialty societies have therefore recommended that physicians counsel patients about firearm injury prevention.[19–22] Nonetheless, the majority of physicians (75%–90%) do not discuss firearm ownership and safe storage with patients or their families.[1,23–25] Previous reports suggested that physicians feel they do not have enough time, do not know what to say, and underestimate the possibility that their patients may be gun owners.[24–26]

We conducted a telephone survey of members of the American College of Physicians and the American College of Surgeons to assess factors, such as personal choices about gun ownership, that might be associated with physicians' attitudes and practices regarding firearm injury prevention.

Methods

Survey

A detailed description of the techniques used in the survey, conducted in 1996, has been published elsewhere.[1] In brief, we used a 2-phase sampling strategy to select a nationally representative, stratified, systematic random sample of American College of Physicians and American College of Surgeons members, and we conducted telephone interviews with a computer-assisted interview instrument. The participation rate for the study was 82% (915 completed interviews/1108 physicians contacted [193 refused]), and the response rate was 45% (915 completed interviews from the original sample of 2019 potential participants).

Variable Design

In developing logistic regression models, we constructed 2 scaled variables. For the first scaled variable, we asked respondents whether they had any guns in their homes and whether they were "members of any firearms clubs or organizations." We used these questions to construct an additive gun-score scale reflecting personal involvement with firearms. Each respondent received 1 point if he or she owned a gun and 1 point if he or she was a member of any firearms clubs or organizations.

We also constructed a 4-item additive scale (range of possible scores: 0 to 4) that we used in our logistic regression models to control for physicians' general propensity to provide injury prevention counseling. The "propensity to counsel" scale items (seat belts, smoke detectors, falls, storage of drugs and poisons) were taken from a series of questions inquiring about topics physicians might routinely include as part of their injury prevention counseling.

Analyses

Stata 5.0 was used in conducting all analyses. Unstandardized weights for members of our 8 geographic sample strata varied; therefore, all estimates of population parameters were made with these sampling weights taken into account. For bivariate analyses, we used Pearson χ^2 tests. We created logistic regression models to determine physician characteristics associated with increased rates of firearm injury prevention counseling, and we assessed the adequacy of the propensity to counsel scale with the Cronbach α statistic. We used the Hosmer–Lemeshow goodness-of-fit test to assess the calibration of our final regression model.

Results

A total of 915 physicians (457 internists and 458 surgeons) completed the interview. The basic characteristics of respondents, adjusted for sampling weights, were representative of the memberships of the American College of Physicians and the American College

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of Surgeons.[1] Almost one third (29%) of the survey population owned at least 1 gun, and 64% of gun owners had at least 1 handgun. Forty-three percent of the survey population overall and 78% of the gun owners grew up in homes that contained at least 1 gun. Almost one fifth (18%) of the gun owners were members of a "firearms club or organization." On the basis of reports of gun ownership and membership in gun-related organizations, 70% of the respondents were assigned a gun score of 0, 25% were assigned a score of 1, and 5% were assigned a score of 2.

Survey participants believed that it is appropriate for doctors to provide safety counseling to patients. Ninety-three percent of the survey population agreed that "safety counseling is appropriate provider behavior." This agreement existed equally among physicians who were gun owners and members of firearms clubs and those who were not.

Despite the broad support among physicians for providing general safety counseling, attitudes toward safety counseling directed specifically at reducing firearm injury were less uniform. Support was inversely related to gun ownership and to membership in firearms clubs or organizations. Overall, 83% of physician respondents agreed that doctors "should be involved in firearm injury prevention." Of the respondents who did not own guns and were not members of a firearms club or organization (gun score=0), 87% agreed with this statement; however, only 49% of those who were gun owners and members of firearms clubs or organizations (gun score=2) agreed.

Physicians with higher gun scores were also less likely to agree with the following statements: "Safety training should be required for anyone wanting to buy a gun"; "The American College of [Physicians/Surgeons] should make violence prevention a priority"; and "Firearm injury is a public health issue." We developed logistic regression models in which responses to these statements served as dependent variables and physicians' gun scores served as a predictor variable. In each of these regression models, the physician's gun score was a significant predictor of nonsupport for the idea of physician involvement in firearm injury prevention and nonagreement with the view that firearm injury is a public health problem (Table 1).

TABLE 1—Unadjusted Odds Ratios for Association Between Increasing Gun Score and Agreement With Attitude Statements: US Physicians, 1996

Attitude Statement	Odds Ratio	95% Confidence Interval
Safety counseling in general		
Safety counseling is appropriate provider behavior	1.02	0.66, 1.60
Firearms and firearm injury		
Safety training should be required for anyone wanting to buy a gun	0.43	0.29, 0.65
Violence prevention should be a priority	0.45	0.33, 0.61
Doctors should be involved in firearm injury prevention	0.40	0.30, 0.53
Firearm injury is a public health issue	0.30	0.21, 0.43

Note. Each row represents a separate regression with the affirmative statement as the dependent variable and gun score as the predictor variable. The odds ratios listed correspond to a 1-unit increase in gun score. These are unadjusted odds ratios. Adjusted odds ratios did not differ significantly (data not shown).

Approximately 19% of our survey respondents reported that they usually include discussions about firearm ownership or storage, or both, as part of patient safety counseling. In logistic regression models involving physician self-reports of providing such counseling to patients as our dependent variable, both the gun-score variable and the scaled propensity to counsel variable were predictors of higher reported rates of firearm injury prevention counseling (Table 2). A variety of covariates were included to control for potential sources of confounding in these regression models. We used the Hosmer–Lemeshow goodness-of-fit test to evaluate the fit of our model to the data.

TABLE 2—Odds Ratios for Factors Contributing to Self-Reports of Providing Firearm Injury Prevention Counseling to Patients: US Physicians, 1996

Predictor	Adjusted Odds Ratio[a]	95% Confidence Interval
Increasing gun score[b]	1.98	1.34, 2.93
Increasing propensity to counsel[c]	2.41	2.00, 2.90
Membership in a gun control organization	2.97	1.19, 7.43
Belief that physicians should be involved in firearm injury prevention	2.26	1.25, 4.09
Previous participation in domestic violence prevention training/instruction	1.57	1.01, 2.44

[a]Covariates included to control for potential sources of confounding: age, sex, race, and specialty (internist vs surgeon) of physician respondent; population density and geographic region of practice location; respondent's propensity-to-counsel score; presence of gun(s) in the respondent's childhood home(s); and respondent's belief about whether doctors should participate in firearm injury prevention.
[b]Odds ratio corresponds to a 1-unit increase in gun score.
[c]Scored 0–4 for each respondent. The odds ratio corresponds to a 1-unit increase in the scale. The Cronbach α coefficient for the scale was .61.

Discussion

Ownership of guns in the United States is commonplace,[1–7] and relatively few physicians discuss firearm safety with patients. Our findings show that while physicians who own guns are less likely to express support for the idea of counseling, they are more likely to report that they actually counsel their patients about firearm safety.

Our study has limitations. First, all attitudes and behaviors were self-reported. Second, we were unable, in the limited time available, to explore the content of discussions about firearm safety. It is unclear whether the physicians who reported providing counseling recommended safer storage of firearms, removal of firearms from the home, or some other alternative. Recommendations made by physicians who own guns may differ from recommendations made by physicians who do not own guns. Additional studies are needed to investigate the content of counseling. Third, although previously published studies have indicated that families would at least consider following physicians' advice about firearm ownership and storage, we do not yet know the extent to which firearm injury prevention counseling by physicians is effective.[2,3,26] Studies documenting behavioral changes or lower rates of death and injury have not yet, to our knowledge, been published.

Why might physicians who own guns be less likely to express support for the idea of counseling yet more likely to report that they actually counsel their patients? Perhaps physicians who own guns are reluctant to say that

the medical profession should participate in firearm injury prevention, because they do not want to be interpreted as endorsing regulations on firearm ownership. At the same time, however, physicians who own guns may be more likely to counsel, because they might be more aware of the prevalence of firearm ownership, more aware of the hazards involved, more likely to think about guns, or simply more comfortable talking about them. Educating physicians, especially those who do not own guns, about the prevalence of firearm ownership and about what they can do to promote firearm safety may assist them in helping patients decrease their risks of firearm injury and death. □

Contributors

E. C. Becher generated the study hypotheses, analyzed the data, and wrote the manuscript. C. K. Cassel and E. A. Nelson supervised the design and administration of the survey, assisted with hypothesis generation, and contributed to the writing of the manuscript.

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References

1. Cassel CK, Nelson EA, Smith TW, Schwab CW, Barlow B, Gary NE. Internists' and surgeons' attitudes toward guns and firearm injury prevention. *Ann Intern Med.* 1998;128:224–230.
2. Webster DW, Wilson ME, Duggan AK, Pakula LC. Parents' beliefs about preventing gun injuries to children. *Pediatrics*. 1992;89:908–914.
3. Haught K, Grossman D, Connell F. Parents' attitudes toward firearm injury prevention counseling in urban pediatric clinics. *Pediatrics.* 1995; 96:649–653.
4. Senturia YD, Christoffel KK, Donovan M. Gun storage patterns in US homes with children. A pediatric practice-based survey. *Arch Pediatr Adolesc Med.* 1996;150:265–269.
5. Senturia YD, Christoffel KK, Donovan M. Children's household exposure to guns: a pediatric practice-based survey. *Pediatrics.* 1994;93: 469–475.
6. Nelson DE, Grant-Worley JA, Powell K, Mercy J, Holtzman D. Population estimates of household firearm storage practices and firearm carrying in Oregon. *JAMA*. 1996;275:1744–1748.
7. *Sourcebook of Criminal Justice Statistics 1998*. Washington, DC: US Dept of Justice; 1999.
8. Wintemute GJ, Teret SP, Kraus JF, Wright MA, Bradfield G. When children shoot children: 88 unintended deaths in California. *JAMA*. 1987; 257:3107–3109.
9. Patterson PJ, Smith LR. Firearms in the home and child safety. *Am J Dis Child*. 1987;141: 221–223.
10. Brent DA, Perper JA, Allman CJ, Moritz GM, Wartella ME, Zelenak JP. The presence and accessibility of firearms in the homes of adolescent suicides: a case control study. *JAMA*. 1991; 266:2989–2995.
11. Brent DA, Perper JA, Goldstein CE, et al. Risk factors for adolescent suicide. A comparison of adolescent suicide victims with suicidal inpatients. *Arch Gen Psychiatry*. 1988;45:581–588.
12. Kellermann AL, Rivara FP, Rushforth NB, et al. Gun ownership as a risk factor for homicide in the home. *N Engl J Med.* 1993;329:1084–1091.
13. Kellermann AL, Rivara FP, Somes G, et al. Suicide in the home in relation to gun ownership. *N Engl J Med*. 1992;327:467–472.
14. Kellermann AL, Reay DT. Protection or peril? An analysis of firearm-related deaths in the home. *N Engl J Med.* 1986;314:1557–1560.
15. Martin JR, Sklar DP, McFeeley P. Accidental firearm fatalities among New Mexico children. *Ann Emerg Med*. 1991;20:58–61.
16. Cummings P, Koepsell TD, Grossman DC, Savarino J, Thompson RS. The association between the purchase of a handgun and homicide or suicide. *Am J Public Health*. 1997;87: 974–978.
17. Rivara FP, Grossman DC, Cummings P. Injury prevention. Second of two parts. *N Engl J Med*. 1997;337:613–618.
18. Cummings P, Grossman DC, Rivara FP, Koepsell TD. State gun safe storage laws and child mortality due to firearms. *JAMA*. 1997;278: 1084–1086.
19. American Academy of Pediatrics Committee on Injury and Poison Prevention. Office-based counseling for injury prevention. *Pediatrics.* 1994;94: 566–567.
20. *Compendium of AAFP Positions on Selected Health Issues: Firearm Safety*. Kansas City, Mo: American Academy of Family Physicians; 1995.
21. Violence Prevention Task Force of the Eastern Association for the Surgery of Trauma. Violence in America: a public health crisis. The role of firearms. *J Trauma*. 1995;38:163–168.
22. American College of Physicians. Firearm injury prevention. *Ann Intern Med*. 1998;128: 236–241.
23. Olson LM, Christoffel KK, O'Connor KG. Pediatricians' experience with and attitudes toward firearms. Results of a national survey. *Arch Pediatr Adolesc Med*. 1997;151:352–359.
24. Webster DW, Wilson ME, Duggan AK, Pakula LC. Firearm injury prevention counseling: a study of pediatricians' beliefs and practices. *Pediatrics*. 1992;89:902–907.
25. Grossman DC, Mang K, Rivara FP. Firearm injury prevention counseling by pediatricians and family physicians. Practices and beliefs. *Arch Pediatr Adolesc Med*. 1995;149:973–977.
26. Becher EC, Christakis NA. Firearm injury prevention counseling: are we missing the mark? *Pediatrics*. 1999;104:530–535.