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Title

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Journal

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 7(3)

ISSN

1936-900X

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Publication Date

2006

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Original Research

ACCESS TO FIREARMS AMONG ORANGE COUNTY YOUTH: A SCHOOL-BASED STUDY

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ABSTRACT - Objective: School-associated firearm violence among children and adolescents is a national public concern. The objective of this study was to determine the accessibility of firearms, methods of firearm access and firearm safety knowledge among middle and high school students in Orange County, California.

Methods: After permission from school officials and parents was obtained, a 24-question survey was distributed to 176 students in grades 6 through 12 at four schools in Orange County. Data was collected over a 12-month period beginning in February 2003. Data analysis was presented in proportions. In addition, cross tabulations were performed to determine which factors were associated with access to guns, having fired a gun, and firearm possession at school.

Results: The mean age of participants was 16.1 years. Seventy-seven (45%) were male, 121 (69%) Hispanic, and 171 (94%) were of middle income. Four participants (2.3%) admitted to gang involvement, 47 (26.7%) had fired a gun. Those more likely to have fired a gun appeared to be non-Hispanic males ($p=0.001$). Seventy-five (43%) reported access to a gun. Older students and those in grades 9 to 12 were more likely to have access to a gun ($p=0.01$), which they stated could be obtained from their homes, friends or relatives (4.5% to 22%). No students admitted to bringing a gun to school. Two (1.1%) students stated that they had thought of using a gun at school. One hundred one students (62%) were taught firearm safety by their parent(s).

Conclusion: Almost half of the students in this study acknowledged that they could gain access to a gun and two students had thought about using a gun at

school. Firearm education, safety and counseling are of paramount importance to ensure safety among school youths.

INTRODUCTION

School-associated firearm violence among children and adolescents is a national public concern. The CDC reported 358 school-associated deaths from violent events in the U.S. from 1992-1999.¹

Anderson et al reported that between 1994 and 1999, 0.9% of homicides and suicides in children and adolescents were school-associated as defined by the following criteria: the homicide perpetrator or suicide victim was an elementary or secondary school student, and the fatal injury occurred either (1) on the campus, (2) while the victim was on the way to or from a regular school session, or (3) while the victim was attending or traveling to or from a school-sponsored event.² Studies of firearms and youths demonstrate that a school setting is a common location for violence among students 12 to 19 years of age.⁷ The majority of the firearms used in the incidents were obtained from the students' homes, friends or relatives.¹ The objective of this study was to determine the accessibility of firearms, methods of firearm access and the level of firearm safety knowledge among middle and high school students in Orange County, California.

METHODS & MATERIALS

Approval for research was obtained from the IRB of the University of California Irvine and the survey was distributed to students at four schools in Orange County, CA. A permission letter from a school official and parental

consent were required for school/student participation. The survey consisted of 24 questions with no identifying personal information recorded on the survey form. A total of 177 students in grades 6 through 12 participated in the study. Participant number 170 neglected to fill in most survey questions and was excluded from the study. All surveys were distributed and collected by Orange County school officials. Following the survey the teachers informally discussed firearm safety and firearm education with the students. The data was collected between February 2003 and February 2004. Data analysis was presented in terms of proportions. Cross tabulations were performed to determine which factors, if any, were associated with access to guns, having fired a gun, and gun possession at school. Percentages were calculated for the total sample and by groups (gender, ethnicity, and school grade). Exact confidence limits were calculated using a binomial distribution. Responses for groups were compared using chi-square test for independence or, in the case of school grade, a chi-square test for linear association.

TABLE 1. Demographic Characteristics

Characteristic	N (%)
Sex	
Male	77 (44.5)
Female	96 (55.5)
Age (years)	
12	6 (3.5)
13	12 (6.9)
14	16 (9.2)
15	18 (10.4)
16	46 (26.6)
17	31 (17.9)
18	40 (23.1)
19	4 (2.3)
School grade	
7	13 (7.4)
8	9 (5.1)
9	16 (9.1)
10	20 (11.4)
11	62 (35.2)
12	56 (31.8)
Ethnicity	
Hispanic	121 (68.8)
White non-Hispanic	32 (18.2)
African American	7 (4.0)
Asian	3 (1.7)
Other	13 (7.3)

to allow distribution of the survey. The mean age of the participants was 16.1 +/- 1.7 years (range 12 to 19 years), 45% (77/176) were males and 55% (96/176) females. Ninety-eight percent (171/176) were of middle income, 69% (121/176) Hispanic, 18% White non-Hispanic, 4% (7/176) African American, 2% (3/176) Asian and 7% (13/176) other. Sixty-seven percent (118/176) were in the 11th and 12th grade and the remainder (33/176) were evenly distributed between grades 7 to 10 (Table 1).

None of the participants admitted that they had brought a gun to school and 3% (5/176) did not answer the question. One percent (2/176) admitted that they had thought about using a gun in school (1 male and 1 female). Two percent (4/176) reported that bringing a gun to school would make them feel safer (3 males and 1 female).

Two percent (4/176) admitted to gang involvement, 27% (47/176) had fired a gun, and 43% (75/176) had a friend with a gun. Forty-three percent (75/176) reported access to a gun. Of those, 7% (12/75) could get a gun from their home, 22% (39/75) from a friend or 5% (8/75) from family members. Eighty-eight percent (66/75) of those students reported that they could get a gun within a few hours to weeks. Fifty-seven percent (99/171) of the participants knew someone who had been shot with a gun. Two individuals claimed to have been wounded and treated for a gunshot wound in a hospital.

Sixty-two percent (106/171) of the students had been taught about gun safety by their parent(s). Seventy percent (114/163) reported that their parent(s) were against owning a gun. Twenty-four percent (37/154) reported that there was a gun at home, 2.6% (4/154) did not know if there was a gun at home and 74% (113/154) of the participants did not answer the question. Fifty-four percent (20/37) reported that the gun at home was in a gun safe. Sixty-five percent (24/37) of the guns at home had trigger locks or safety devices. Fifty-seven percent (21/37) of the guns at home were not loaded with bullets and 5.4% (2/37) of the guns at home were loaded with bullets. Cross tabulations were performed for most survey questions comparing proportions between gender, ethnicity and school grade (Table 2).

LIMITATIONS

The small sample population limited any definitive statements regarding the three study objectives of firearm accessibility, methods of firearm access and firearm safety knowledge. This study can only report that more males than females had fired a gun and that there may be an increase in gun accessibility with increased age and increased grade level. It is concerning that there were two students from such a small sample population that had thought about using a gun in school.

RESULTS

Only 4 of 24 schools that were contacted agreed

TABLE 2. Cross tabulations with confidence limits and p-values for specific questions

<u>Have you ever fired a gun?</u>				
Characteristic		N	(%) 95% CI	P
Ethnicity	White, non-Hispanic	10	31;19-50	0.67
	Hispanic	33	27; 20-35	
	Other	4	20;9-44	
Gender	Male	31	40;30-52	0.001
	Female	16	17;11-26	
Grade	7	3	23;9-54	0.74
	8	3	33;14-70	
	9	4	25;11-52	
	10	7	35;19-59	
	11	17	27;18-40	
	12	13	23;14-36	
<u>Do you have access to a gun?</u>				
Characteristic		N	(%) 95% CI	P
Ethnicity	White, non-Hispanic	10	31;19-50	0.20
	Hispanic	58	47;39-56	
	Other	7	35;19-59	
Gender	Male	34	45;35-57	0.69
	Female	40	42;33-53	
Grade	7	3	23;9-54	0.01
	8	1	11;3-48	
	9	7	47;27-73	
	10	6	30;15-54	
	11	29	47;35-60	
	12	29	56;40-65	

Because of the limited number of participating schools, the reported data may not represent the population of school youths of Orange County. The data cannot be used to establish a relationship between access to firearms, methods of firearm access or firearm safety knowledge and school-associated firearms events. Nor could we report any meaningful data on any factors that may be associated with firearms and school-associated violent events such as male gender, increasing age, minority ethnicity, and gang involvement as reported by recent studies.^{2,3,5,10} Methods by which students in the study could obtain a firearm appeared to be consistent with that of other youth offenders with most participants reporting that they could get a gun from the family home, family members, or friends.¹

DISCUSSION

We attempted to collect and report data on firearms and school youths in Orange County. We contacted all 24 Orange County school superintendents or principals for their support, but only 4 of the 24 schools participated in the study. The reasons cited by school authorities for inability to participate included invasion of family privacy, standard school-board prohibition of any non-federal or

state mandated surveys, cutting into educational time, or parental fear of study results. Some even admitted to an “ignorance is bliss” attitude on the part of the school board or parents.

Vittes et al reported that most high school students are in favor of more stringent and restrictive policies on firearms control.⁹ Efforts to decrease firearms violence in schools should focus on education and counseling about handgun safety and ownership. In this study 62% (106/171) of the students were taught about handgun safety by their parents(s). Parental education on handgun safety is important, as is firearm education from local law enforcement. To ensure greater safety for all school youths firearm education should be included in the school core curriculum.

Ninety-seven percent (171/176) of the students reported that they had never brought a gun to school. One reason for this high number may be that the majority of the participants are aware of the California gun laws, (California penal code [Section 12078(p) and 12101(a) and (b)]). An alternative reason is that the question regarding possession of a firearm at school may not have been answered truthfully. Therefore, the proportion of students have actually brought a gun to school may be artificially

suppressed in this study. The inherent limitation of all survey studies is that the data is based on participants answering all questions truthfully. Data regarding the true incidence of firearms among school youth and school-associated firearms-related injury and death may be unreliable and difficult to collect and interpret.^{4,6} Consequently, the current recommendations support the implementation of a nationwide school-associated, firearm-related injury surveillance system.^{4,6} Given the high degree of exposure to firearms-related injury, emergency physicians (EPs) are in a unique position to play a key role in this data gathering and reporting process. Mace et al.⁸ expanded on the EP's roles in firearm injury prevention. These roles include (1) educating the public, (2) serving as a resource for community and government agencies, (3) increasing support of EMS activities in injury prevention, (4) working with government agencies and advocacy groups, (5) promoting legislative activity, (6) improving and expanding data collection and reporting, (7) encouraging research, (8) joining community coalitions, (9) screening for violence and drug/alcohol abuse, and (10) violence prevention. All 24 of the Orange County schools declined our offer for the opportunity to have an emergency medicine physician from the UCI Department of Emergency Medicine discuss with the students firearm injury prevention, firearm education and safety.

Acknowledgements: Ivan Wu, MD for assistance with the research study narrative for the Institutional Review Board. Emergency Medicine Research Associates Program: Amir Otarodifard, Isabelle Pamart, Deeba Sultani, Alice Tsai, and Brenda Tsai for data entry. Orange County school officials Elaine Findley, Steven J. Rosenbaum, Robert Montenegro, and Richard Guerrero for their permission for and assistance in distribution of surveys.

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Corrections

Below are two images that appeared on page 9 in the Winter *CalJEM*, Vol. VII, Number 1, 2006, in "Ultrasound Guidance of Thrombolytic Therapy in Pulseless Electrical Activity: A Case Report" by M Lambert et al. The images are being reprinted here for clarity. We apologize for any inconvenience.

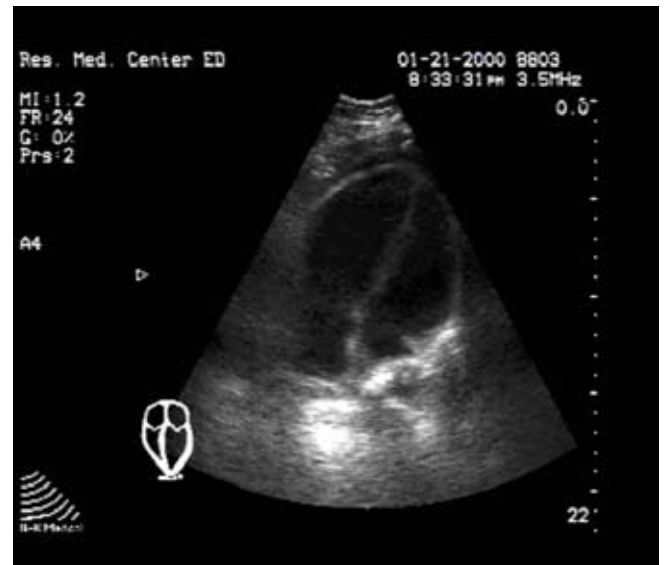


Figure 1. Subcostal four-chamber view taken at time of initial cardiac arrest.



Figure 2. Apical four-chamber view taken at approximately 2 1/2 hours after cardiac arrest.