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School Handgun Carrying Among Youth Growing Up in Rural Communities

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Abstract

Purpose: To characterize school handgun carrying and violence risk factors among rural youth.

Methods: Using a sample of rural youth ($n = 1995$), we quantified the proportion who carried a handgun to school, carried but not to school, and did not carry across grades 7–12 and endorsed risk factors for violence in individual, peer, school, and community domains.

Results: Overall, 3% (95% confidence interval [CI]: 2%–4%) of youth ever carried to school; 15% (95% CI: 14%–16%) carried but not to school; and 82% (95% CI: 80%–84%) never carried. Violence risk factors (e.g., attacking someone) were more commonly endorsed by youth who carried to school (84%; 95% CI: 73%–95%) than those who carried but not to school (51%; 95% CI: 44%–58%) and did not carry (23%; 95% CI: 20%–26%).

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Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jadohealth.2022.10.033>.

Discussion: Carrying a handgun to school in rural areas is not common; however, it is associated with risk factors for violence. Understanding violence risk factors among youth who carry handguns to school could inform violence prevention programs in rural areas.

Keywords

Firearms; Handgun carrying; School; Rural population; Violence prevention

Understanding risk factors for violence among youth who carry handguns to school could inform violence interventions. Prior evidence suggests youth who carry handguns to school are more likely than youth who have never carried a handgun to experience fighting, engage in substance use, have friends who carry firearms, and feel unsafe in their neighborhoods [1–5]. Youth who carry handguns to school endorse more risk factors for violence than youth who carry but not to school, and both groups experience greater gang involvement and previous arrests compared to youth who do not carry [6,7]. However, almost all such evidence comes from youth in urban settings [8–10], with only one cross-sectional study in rural Texas [1]. Handgun carrying may not only occur in antisocial contexts but also in hunting and shooting sports. Youth in rural areas may therefore have different patterns, motivations, and circumstances for handgun carrying, including to school, compared to youth in urban settings, and need different prevention approaches [11–13]. Because of these cultural differences and the limited research on handgun carrying among rural youth, we sought to quantify risk factors for violence in individual, peer, school, and community domains among youth who carried a handgun to school, carried but not to school, and did not carry in a longitudinal sample of rural youth from 12 communities in 7 states.

Methods

Data are from the Community Youth Development Study (CYDS), a community-randomized controlled trial of the Communities That Care (CTC) prevention system in 24 rural, incorporated towns in 7 states (Colorado, Illinois, Kansas, Maine, Oregon, Utah, and Washington) [14]. We used data from the 12 control communities to avoid confounding by intervention effects [15,16]. Public school students were recruited in fall of 2003 in grade 5–grade 6 for a total of 2,002 participants [17]. CYDS collected survey data from this cohort throughout middle and high school (92% retention through grade 12). The University of Washington Human Subjects Review Committee approved this protocol.

Measures

Handgun carrying.—From grades 7–12, participants were asked, “How many times in the past year (12 months) have you carried a handgun?” and “How many times in the past year (12 months) have you taken a handgun to school?” Response options were ordinal categories: never, 1–2, 3–5, 6–9, 10–19, 20–29, 30–39, or 40 or more times. We created a variable with three mutually exclusive categories of carrying status in each grade: did not carry (never carried a handgun and never took a handgun to school), carried to school (took a handgun to school at least 1 time), and carried but not to school (carried a handgun at least 1 time but never took a handgun to school). We also created variables indicating if youth ever endorsed each carrying type at any time between grades 7 and 12.

Risk factors.—We selected a total of 28 risk factors in individual, peer, school, and community domains identified previously as risk factors for youth violence (Online Supplement for complete questions) [18]. For individual risk factors, participants were asked how many times in the past year they engaged in a behavior. We dichotomized each measure to 0 versus 1 or more times in the past 12 months. For peer risk factors, youth were instructed to think of four of their best friends. Responses were dichotomized to 0 (none) or 1 (at least one of my friends). For school and community factors, participants were asked whether they agreed with two statements: “I feel safe at my school” and “I feel safe in my neighborhood.” Responses were dichotomized as felt unsafe (no) versus felt safe (yes). We created binary variables for each grade and separate variables if a participant ever endorsed the risk factor in any wave between grades 7 and 12.

Analytic strategy

We cross-tabulated each binary risk factor by handgun carrying status across grades 7–12 cumulatively (Table 1) and at each grade (Figure 1) cross-sectionally to compare risk for violence among those who carried a handgun to school, those who carried but not to school, and those who did not carry. We excluded seven participants for whom handgun carrying was missing from all grades. The final analysis sample consisted of $n = 1,995$ participants.

Results

At each grade, a small proportion of participants indicated they had taken a handgun to school (range = 0.3%–1.1%), (Online Supplement). Across grades, 3% (95% confidence interval [CI]: 2%–4%) of participants reported carrying to school in at least one grade, 15% (95% CI: 14%–16%) carried but not to school in at least one grade, and 82% (95% CI: 80%–84%) did not carry a handgun in any grade. Across all grades cumulatively, a greater proportion of youth who carried to school endorsed violence risk factors compared with both youth who did not carry and youth who carried but not to school (Table 1). The proportion endorsing risk factors was greatest among youth who carried to school and lowest among youth who did not carry. A few risk factors were exceptions to this pattern. The prevalence of having been bullied was similar among all three groups: did not carry (66%; 95% CI: 63%–68%); carried but not to school (71%; 95% CI: 66%–77%); carried to school (70%; 95% CI: 55%–84%). Two risk factors showed similar prevalence between the carried but not to school and carried to school groups: having at least one best friend suspended from school (90%; 95% CI: 87%–94% and 95%; 95% CI: 89%–100%, respectively) and feeling unsafe at school (49%; 95% CI: 41%–56% and 54%; 95% CI: 37%–70%, respectively).

A greater proportion of youth who carried to school consistently endorsed risk factors at each grade compared to youth who did not carry and to youth who carried but not to school. For example, at each grade, an average of 73% (95% CI: 49%–96%) of youth who carried to school reported attacking someone compared to 38% (95% CI: 26%–50%) of those who carried but not to school, and 9% (95% CI: 7%–11%) of those who never carried (Figure 1; Online Supplement for all risk factors).

Discussion

Among a large, multistate sample of youth who grew up in rural communities, a notably greater proportion of youth who carried to school endorsed individual, peer, school, and community risk factors for violence than their peers who did not carry and those who carried a handgun but not to school. These findings held across middle and high school, at each grade. Carrying a handgun to school in rural areas is not common; however, it is associated with several risk factors for violence. Universal school-based programs addressing these shared risk behaviors, such as Life Skills Training, may impact school handgun carrying and could consider incorporating modules specifically for handgun carrying [14,19]. Carrying a handgun to school may represent a subgroup of adolescents who are at elevated risk for violence even compared to adolescents who carry a handgun but not to school [13]. Future research should examine the motivations and reasons why youth growing up in rural areas carry handguns to school.

This study had limitations. The present study asked about handgun carrying without explicitly inquiring about whether it was legal or illegal. Federal law prohibits handgun possession for people under 18 years of age though there are permissible exemptions that were not measured in this study. The prevalence of risk factors may differ among youth who carry other types of firearms such as those more commonly used in hunting and shooting sports. Youth may not carry a handgun or carry to school at the same time they engaged in risk behaviors; while we used a longitudinal cohort to describe patterns over grades 7–12, we did not assess the temporal order of handgun carrying and these risk factors. Additionally, this study included youth who were in 12th grade in 2012. Handgun carrying trends among adolescents may have changed since then. We a priori dichotomized handgun carrying and the risk factors for violence; however, the frequency of these behaviors may be important to consider. Finally, all risk factors were self-reported by the youth; future research could examine other indicators at the school or community level.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Funding Sources

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IMPLICATIONS AND CONTRIBUTION

Using a sample of 1,995 rural youth from multiple states, this study found that youth who carried a handgun to school had elevated levels of violence risk factors and violence involvement. This information could be used to inform youth violence prevention programs in rural settings.

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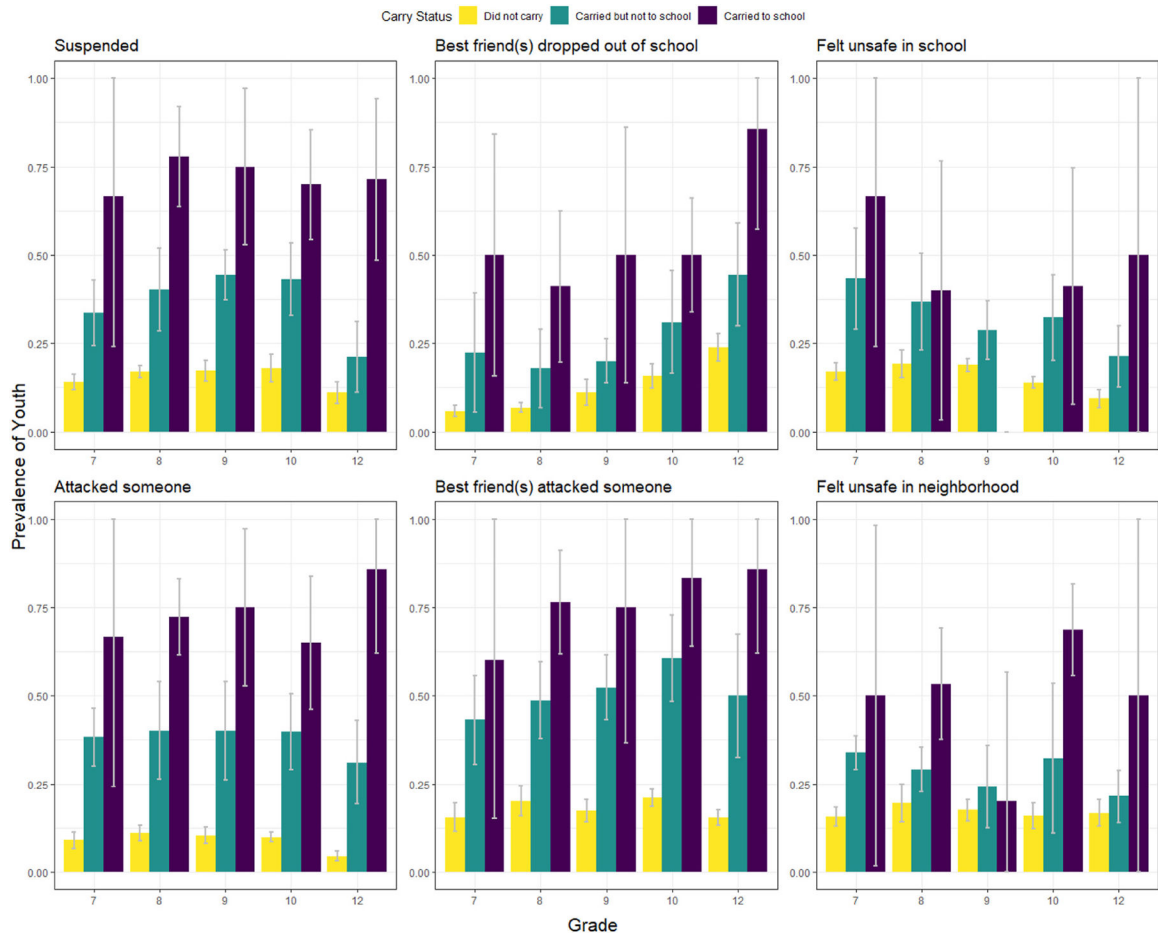


Figure 1. Proportion of youth endorsing individual (left column), peer (middle column), and community (right column) risk factors at each grade by handgun carrying status with 95% CI. CI = confidence interval.

Table 1

Demographic and risk factors for violence by handgun carrying status across grades 7–12, n = 1995

	<u>Did not carry (N = 1639)</u>		<u>Carried but not to school (N = 300)</u>		<u>Carried to school (N = 56)</u>		<i>p</i> -value ^c
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	
Demographics-gender							
Male	753	45.9 (42.9–49.0)	240	80.0 (75.8–84.2)	46	82.1 (71.8–92.5)	<.001
Individual							
Damaged or destroyed property	605	36.9 (32.6–41.2)	197	65.7 (58.1–73.3)	53	94.6 (88.9–100)	<.001
Suspended from school	549	33.5 (29.3–37.7)	174	58.0 (48.0–68.0)	52	92.9 (87.9–97.8)	<.001
Stolen something worth \$5	611	37.3 (32.9–41.7)	188	62.7 (53.0–72.4)	52	92.9 (87.4–98.4)	<.001
Taken something without paying	677	41.3 (36.1–46.6)	192	64.0 (53.6–74.4)	51	91.1 (81.0–100)	<.001
Fight on school property	660	40.3 (37.5–43.1)	207	69.0 (60.9–77.1)	50	89.3 (83.5–95.1)	<.001
Attacked someone with idea of hurting them	380	23.2 (20.1–26.2)	154	51.3 (44.2–58.4)	47	83.9 (72.8–95.0)	<.001
Drunk or high at school	395	24.1 (20.5–27.7)	135	45.0 (35.7–54.3)	46	82.1 (73.6–90.7)	<.001
Sold illegal drugs	142	8.7 (7.0–10.3)	99	33.0 (22.6–43.4)	46	82.1 (72.8–91.5)	<.001
Arrested	256	15.6 (12.2–19.0)	116	38.7 (28.0–49.3)	45	80.4 (69.8–90.9)	<.001
Beat someone badly	201	12.3 (10.6–13.7)	115	38.3 (28.3–48.4)	44	78.6 (66.0–91.1)	<.001
Bullied another student ^a	747	45.6 (41.4–49.8)	195	65.0 (57.5–72.5)	43	76.8 (64.8–88.8)	<.001
Been bullied ^a	1073	65.5 (63.1–67.8)	214	71.3 (65.8–76.9)	39	69.6 (55.0–84.3)	.11
Stolen a motor vehicle	67	4.1 (2.9–5.3)	55	18.3 (13.5–23.2)	39	69.6 (61.9–77.4)	<.001
Gang	217	13.2 (11.5–15.0)	105	35.0 (26.9–43.1)	26	46.4 (29.4–63.4)	<.001
Hit parent ^b	122	7.4 (6.2–8.7)	43	14.3 (8.1–20.6)	20	35.7 (23.2–48.2)	<.001
Hit a teacher ^b	14	0.9 (0.5–1.2)	15	5.0 (1.3–8.7)	19	33.9 (21.5–46.3)	<.001
Used a weapon or force to get money	8	0.5 (0.2–0.8)	23	7.7 (4.4–10.9)	19	33.9 (23.8–44.0)	<.001
Peers							
Best friends suspended from school	1258	76.8 (72.4–81.1)	271	90.3 (86.9–93.7)	53	94.6 (88.9–100)	<.001
Best friends stolen something	1015	61.9 (55.3–68.6)	234	78.0 (69.6–86.4)	51	91.1 (82.6–99.6)	<.001
Best friends arrested	761	46.4 (40.9–52.0)	204	68.0 (55.5–80.5)	49	87.5 (79.2–95.8)	<.001
Best friends attacked someone	659	40.2 (34.4–46.0)	194	64.7 (53.6–75.7)	47	83.9 (73.5–94.3)	<.001
Best friends carried a handgun	263	16.0 (11.8–20.3)	192	64.0 (59.4–68.6)	43	76.8 (64.6–89.0)	<.001
Best friends sold illegal drugs	597	36.4 (32.6–40.3)	185	61.7 (48.9–74.5)	43	76.8 (64.1–89.4)	<.001
Best friends stolen a motor vehicle	363	22.1 (18.2–26.0)	121	40.3 (30.6–50.1)	43	76.8 (64.1–89.5)	<.001
Best friends dropped out of school	584	35.6 (30.1–41.2)	159	53.0 (42.8–63.2)	41	73.2 (60.2–86.2)	<.001
Best friends member of a gang	432	26.4 (16.5–36.2)	153	51.0 (36.3–65.7)	40	71.4 (58.7–84.2)	<.001
School							
Felt unsafe at school	531	32.4 (29.4–35.4)	146	48.7 (41.1–56.2)	30	53.6 (37.4–69.7)	<.001
Community							

	<u>Did not carry (N = 1639)</u>		<u>Carried but not to school (N = 300)</u>		<u>Carried to school (N = 56)</u>		<i>p</i> -value ^c
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	
Felt unsafe in neighborhood	559	34.1 (28.9–39.3)	137	45.7 (35.6–55.7)	38	67.9 (58.1–77.6)	<.001

CI = confidence interval.

^aNot asked in grade 12.

^bNot asked in grades 7 and 8.

^cWald test with standard errors clustered by community.

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