

Characteristics of Childhood Homicide in Ohio, 1974–84

JOSHUA E. MUSCAT, MPH

Abstract: Childhood homicide deaths in Ohio from 1974 to 1984 were examined using Ohio Vital Statistics records and US Census Data. Homicide rates varied from 25/100,000 for Black infant males to 0.8/100,000 for White females ages 5–9. Child battering was the leading cause of death for children <5 years. Firearms accounted for 56 per cent of homicide deaths for children 10–14 years of age. The childhood homicide rates in the four largest Ohio cities were substantially higher in areas with low socioeconomic indicators. (*Am J Public Health* 1988; 78:822–824.)

Introduction

Children who live in areas characterized by low income or poverty have been found to be at greater risk for death from all causes than children living in areas of higher income.¹ The relation between socioeconomic conditions and childhood homicide has not been clearly demonstrated, however, although homicide ranks among the five leading causes of childhood death in the United States.^{2,3}

This study was performed to determine age-, gender- and race-specific rates of homicide for children under the age of 15; describe the methods of assault; and examine the relation between homicide rates and socioeconomic indicators.

Methods

County coroners in Ohio investigate all violent deaths and determine if they are purposely inflicted. Death certificates are forwarded to the Division of Vital Statistics of the Ohio Department of Health and coded onto computer tape. Homicide deaths, listed under the International Classification of Disease (ICD) 8th and 9th revision codes, 960–968, between January 1, 1974 and December 31, 1984 were included in this study. These codes include fights, brawl and rape (960), corrosive or caustic substances (961), poisoning (962), hanging and strangulation (963), submersion (964), firearms and explosives (965), cutting and piercing instruments (966), battering and other maltreatment (967), and other or unspecified causes (968). Race is categorized as either White or Black.* Homicides of children ages 0–4 years usually occur within the home^{4,5} while those of children ages 5–14 often occur outside the home.

Denominators for homicide rates were calculated using the 1970 and 1980 US Census.⁶ Intercensal and post-1980 population counts were estimated using linear interpolation and extrapolation.

The Ohio cities with the greatest number of childhood homicides during the 11-year period were Cleveland (98), Columbus (43), Cincinnati (33), and Dayton (31). Census tracts were known for 179 of the 203 childhood homicide deaths. Socioeconomic data for individual census tracts for each of these cities were abstracted from the 1980 US

Census.^{7–10} The tracts were combined from the four cities and ranked into tertile according to their combined levels of income and education, poverty and unemployment. Race-adjusted rates were determined for the three groups, using the 1980 Ohio population as the standard, and 95 per cent confidence intervals (CIs) computed.¹¹

Results

There were 574 childhood homicides in the 11-year study period. Annual rates fluctuated modestly, rising from 1.85/100,000 in 1974 to 2.5/100,000 in 1980, and declining to 2.3/100,000 in 1984. Table 1 shows the race-sex specific rates by age categories. Rates were highest for all groups under the age of 1 year. Twelve per cent of the children 14 years and younger were Black, and accounted for 42 per cent of the childhood homicide deaths. These children had 3.7 times the rate of homicide deaths of Whites. Black male infants had the highest homicide rate of 25 per 100,000.

Table 2 shows the method of homicide by sex and age-group. Firearms represent a minor cause of death for children under the age of 1 but become increasingly prominent in older age groups. For children ages 5 years and older, firearms are the leading cause of homicide death, and account for over half the homicides in children ages 10 to 14. Males are especially likely to be victims of firearm attacks. Information on specific type of firearm was known for 22 victims. Of these, 15 (68 per cent) were caused by handguns. For children ages 4 years and younger, battering represents the major cause of homicide death. For children under the age of 1, battering accounts for 38 per cent of these deaths. For all children, fire accounted for 22 of 39 "other" causes of homicide (ICD code 968).

As shown in Table 3, homicide rates are computed for the three socioeconomic (SES) groups in four Ohio cities. For both subgroups, the medium and low socioeconomic groups had substantially higher adjusted rates than the high SES group. There is very little difference in race-specific rates in the 5–14 year-old group after stratification for SES.

Discussion

Blacks as a whole had higher rates than White children, but the difference tends to fade when SES is taken into consideration, especially for older children. In Atlanta, Centerwall found similar relations for domestic homicides.⁵ Our findings are also consistent with other studies.^{12–14}

Evidence showing associations between homicide in children and poor socioeconomic conditions is sparse. Nersesian showed an elevated homicide rate for children in families participating in welfare programs in Maine¹; and Abel found that areas in Buffalo, NY with three or more childhood homicide deaths had higher levels of unemployment and poverty.¹

Distinct typologies of childhood homicide have been suggested based on children's changing risk of vulnerability as they age.⁴ These subtypes include infanticide, fatal child abuse and neglect after infancy, and homicide in the community. This approach emphasizes a risk for young children at home, and older children outside the home from non-relatives with firearms. While this study did not have infor-

Address reprint requests to Joshua E. Muscat, MPH, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021. This paper, submitted to the *Journal* January 27, 1987, was revised and accepted for publication January 7, 1988.

© 1988 American Journal of Public Health 0090-0036/88\$1.50

*Blacks comprise 90 per cent of this category, for children 0–14 years of age; other racial minorities comprise 10 per cent.

TABLE 1—Homicides among Children Younger than Age 15, According to Age, Race, and Sex, 1974–84*

Age Group (years)	White Males		White Females		Black Males		Black Females		Total	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
0 to 1	39	4.7	37	4.7	32	25.0	12	9.6	120	6.4
1 to 4	71	2.3	62	2.2	51	10.0	36	7.2	220	3.2
5 to 9	35	1.0	27	0.8	18	2.8	16	2.9	96	1.2
10 to 14	56	1.4	38	1.0	24	3.9	20	3.3	138	1.7
Total	201	1.8	164	1.6	125	6.6	84	4.7	574	2.2

*Rates per 100,000

TABLE 2—Method of Homicide by Age Group and Sex of Victim

Homicide Method	Age Groups				Total
	0 to 1	1 to 4	5 to 9	10 to 14	
	Males				
Poisoning	2 (3)	3 (2)	5 (9)	0 (0)	10 (3)
Hanging	8 (11)	3 (2)	3 (6)	9 (11)	23 (7)
Drowning	5 (7)	2 (2)	1 (2)	2 (3)	10 (3)
Firearms	2 (3)	21 (17)	18 (34)	55 (69)	96 (29)
Cutting	2 (3)	7 (6)	6 (11)	6 (8)	21 (6)
Battering	24 (34)	27 (22)	4 (8)	0 (0)	55 (17)
Other and Unspecified	28 (39)	59 (48)	16 (30)	8 (10)	111 (34)
	Females				
Poisoning	1 (2)	5 (5)	0 (0)	3 (5)	9 (4)
Hanging	3 (6)	8 (8)	6 (14)	9 (16)	26 (10)
Drowning	3 (6)	5 (5)	1 (2)	0 (0)	9 (4)
Firearms	3 (6)	16 (16)	17 (40)	23 (40)	59 (24)
Cutting	3 (6)	6 (6)	5 (12)	10 (17)	24 (10)
Battering	22 (46)	24 (24)	2 (5)	1 (2)	49 (20)
Other and Unspecified	14 (28)	34 (35)	12 (28)	12 (21)	72 (29)

Percentages are shown in parentheses.

TABLE 3—Race- and Age-Adjusted Homicide Rates per 100,000 by Socioeconomic Group, in Four Ohio Cities*

Socioeconomic Group/Ages	No.		Rate		Adjusted Rate Ratio	
	Whites	Black	Whites	Black	Rate	(95% CI)
<i>Age 0–4 years</i>						
High	6	3	15.5	35.6	18.4	1.0
Medium	9	14	40.5	71.8	44.9	2.4 (1.1–5.2)
Lo	14	44	81.4	154.3	91.7	5.0 (2.6–9.7)
<i>Ages 5–14 years</i>						
High	8	1	12.1	5.5	11.2	1.0
Medium	10	12	26.5	28.9	26.8	2.4 (1.1–5.1)
#						5.6 (3.0–10.3)
Lo	18	40	61.9	71.0	63.1	

*Cleveland, Columbus, Cincinnati, Dayton.

mation on perpetrators, the methods of violence presented support such typologies.

ACKNOWLEDGEMENT

The author thanks John O. Paulson of the Ohio Department of Health for his assistance in this study.

REFERENCES

- Nersesian WS, Petit MR, Shaper R, *et al*: Childhood death and poverty: A study of all childhood deaths in Maine, 1976 to 1980. *Pediatrics* 1985; 75:41–49.
- Centers for Disease Control: Child homicide—United States. *MMWR* 1982; 31:292–294.
- US Bureau of the Census: Characteristics of American Children and Youth: 1980. Current Population Reports, P-23.
- Christoffel KK: Homicide in childhood: A public health problem in need of attention. *Am J Public Health* 1984; 74:68–70.
- Centerwall BS: Race, socioeconomic status, and domestic homicide, Atlanta, 1971–72. *Am J Public Health* 1984; 74:813–815.
- US Bureau of the Census: General Population Characteristics, Ohio, US Department of Commerce. Washington, DC: Govt Printing Office, 1983.
- US Bureau of the Census: Census Tracts, Cleveland, Ohio, US Department of Commerce. Washington, DC: Govt Printing Office, 1983.

8. US Bureau of the Census: Census Tracts, Columbus, Ohio, US Department of Commerce. Washington, DC: Govt Printing Office, 1983.
 9. US Bureau of the Census: Census Tracts, Dayton, Ohio, US Department of Commerce. Washington, DC: Govt Printing Office, 1983.
 10. US Bureau of the Census: Census Tracts, Cincinnati, Ohio, US Department of Commerce. Washington, DC: Govt Printing Office, 1983.
 11. Rothman K: Modern Epidemiology. Boston: Little, Brown, and Company, 1986; 173-175.

12. Paulson JA, Rushforth NB: Violent death in a metropolitan county, 1958-1985:II. Children less than 1 year of age. *Am J Dis Child* 1986; 140:309.
 13. Abel EL: Childhood homicide in Erie County, New York. *Pediatrics* 1986; 77:709-713.
 14. Paulson JA, Rushforth NB: Violent death in a metropolitan county: Changing patterns of homicide, 1958 to 1982. *Pediatrics* 1986; 78:1013-1020.

The Choice of Weapons in Firearm Suicides

GAREN J. WINTEMUTE, MD, MPH, STEPHEN P. TERET, JD, MPH, JESS F. KRAUS, MPH, PHD, AND MONA W. WRIGHT, BS

Abstract: We report on the firearms used in 235 suicides in Sacramento County, California, during 1983-85. Handguns were used in 69 per cent of firearm suicides—65 per cent for males, 88 per cent for females—and in all such deaths among women ages 35 and older. We tested the hypothesis that the choice of firearms by persons committing suicide at home would passively reflect the reported prevalence of firearms by type in households in the region. Handguns were used more frequently (rate ratio 2.00; 95% CI = 1.68, 2.39), and rifles and shotguns less frequently than expected. (*Am J Public Health* 1988; 78:824-826.)

Introduction

Suicides accounted for 55 per cent of the 31,091 firearm deaths in the United States in 1984.* Firearm suicides outnumbered firearm homicides in 40 of the 50 years between 1933 and 1982.¹

Conversely, firearms accounted for 58 per cent of the 29,453 suicides in 1984;* this percentage has been growing at least since 1900.^{2,3} Firearms have supplanted poisonings in the US as the most common method of suicide among women.³ Among adolescents and young adults, firearm suicide rates have increased substantially since 1970, while rates by other methods either have shown only small increases, remained stable, or declined.^{4,5} In 1982, firearms were used in 64 per cent of male suicides, and 57 per cent of female suicides, among persons ages 15-24.⁶

Yet little is known about the characteristics of the firearms used in suicides. Death certificates describe suicide firearms in only 20 per cent of cases. Two special studies have yielded conflicting results: handguns were used in 83 per cent of firearm suicides committed in a four-month period in one Ohio county in the early 1970s,⁷ but long guns (rifles or shotguns) were used in 64 per cent of firearm suicides of persons ages 12-24 in two Minnesota counties during 1980-81.⁸ Each study assessed fewer than 40 firearm suicides, however.

*Unpublished data, National Center for Health Statistics.

Address reprint requests to Garen J. Wintemute, MD, MPH, Assistant Professor, Department of Family Practice, University of California at Davis Medical Center, 2221 Stockton Blvd., Room 2111, Sacramento, CA 95817. Ms. Wright is also with that department; Mr. Teret is Associate Professor, Department of Health Policy & Management, Johns Hopkins School of Hygiene and Public Health, Baltimore; Dr. Kraus is Professor, Department of Epidemiology, School of Public Health, University of California, Los Angeles. This paper, submitted to the *Journal* October 14, 1987, was revised and accepted for publication January 28, 1987.

We report on the characteristics of firearms used in 235 firearm suicides occurring in Sacramento County, California, during 1983-85. We also test the hypothesis that the observed frequency of use of handguns, rifles, and shotguns in firearm suicides committed at home passively reflects the measured prevalence of each of these firearms in a representative sample of households in the region. If so, then weapon choice may simply reflect weapon availability.

Methods

Cases were identified using a log of autopsy and cause-of-death determinations maintained by the county coroner. There were 237 firearm suicides in 1983-85; two records could not be located. All but seven records specified the manufacturer, firearm type (handgun, rifle, or shotgun), caliber (for rifles and handguns) or gauge (for shotguns), and handgun type (revolver—carrying ammunition in a cylinder which rotates as the gun is fired; or pistol—carrying ammunition in the gun's handgrip).

Data on the prevalence of handguns, rifles, and shotguns in households in the Pacific census division (California, Oregon, Washington, Alaska, Hawaii) were provided by the National Opinion Research Center, University of Chicago (NORC) from their General Social Surveys database. Surveys conducted in 1983, 1984, and 1987 were combined; results are based on data from 545 households. Respondents were asked, "Do you happen to have in your home (IF HOUSE; or garage) any guns or revolvers?" Those answering "yes" were then asked, "Is it a pistol, shotgun, rifle, or what?"⁹ Altogether, 324 guns were reported: 35 per cent were handguns, 40 per cent rifles, and 26 per cent shotguns.

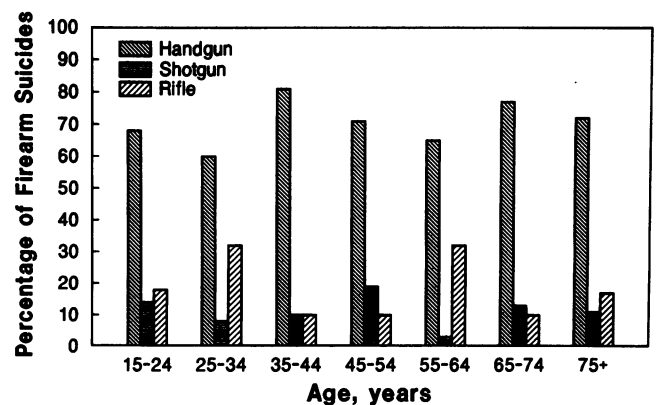


FIGURE 1—Firearms Used in 232 Suicides in Which the Firearm Was Identified, by Age of Victim, Sacramento County 1983-85