ARTICLE

The Epidemiology of Adolescent Homicide in North Carolina From 1990 to 1995

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Background: Rates of homicides by adolescents under age 18 years tripled from 1984 to 1994. Most studies report data on urban adolescents and young adults as a single age group (age 15-24 years), but homicide characteristics among adolescents, especially those younger than 15 years, may differ from those of young adults.

Objective: To describe the homicide characteristics among adolescents age 11 to 18 years in North Carolina from 1990 to 1995.

Methods: A retrospective, descriptive analysis of adolescent homicides using the medical examiner database. Police interviews provided additional information for cases from 1993 to 1995.

Results: There were 419 victims from 1990 to 1995 (average annual rate: 9.7 per 100 000 adolescents; 9.9 in urban counties, 7.1 in rural). Victims were mostly ages 15 to 18 years (85%), male (79%), and black (76%); 48% lagged behind in school, and, by police report, 40% had a criminal record. Only 23% of the identified perpetrators were strangers. Firearms (59% were handguns) were used in 83% of homicides. Proportionally more younger adolescents (age 11-14 years) were killed by means other than firearms than 15- to 18-year-olds ($\chi^2 = 24.2$, $P = .007$). Drug-related motives (23%) were most common, followed by non–drug-related altercations (20%) and retaliations (17%).

Conclusions: Proportionally more North Carolina adolescents than urban young adults (ages 15-24 years) were killed by firearms (83% vs 75%). Proportionally fewer adolescents were killed by police, strangers, or intimate partners. Interventions should include reducing access to firearms and drugs, and helping adolescents develop nonviolent strategies to resolve disputes. Efforts should be focused on adolescents who lag behind in school and have criminal records.

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Editor's Note: Here's more data to show the role of guns (handguns!) and drugs in adolescent homicides. Who's going to write the paper on how we get rid of them?

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HOMICIDE IS the twelfth-leading cause of death in the United States, the second-leading cause of death for teenagers and young adults, and the leading cause of death for African American males ages 15 to 34 years,[1] including those in North Carolina.[2] While adult violent crime rates have remained relatively constant, the number of juveniles (individuals less than age 18 years) arrested for murder tripled between 1984 and 1994.[3] Firearms, used in 68% to 75% of homicides of victims ages 15 to 24 years,[4,5] have become widely available to young people. Between 1985 and 1994, the juvenile arrest rate for weapons-law violations increased by 103%,[3] homicides committed with handguns by 418%, and those committed with other firearms by 125%.[6]

Homicide research conducted in states with large urban areas[7-10] may differ importantly from research in a less densely populated, rural state such as North Carolina. In addition, most homicide research has treated adolescents and young adults as a single age group (ages 15-24 or 15-34 years) or included only older adolescents (ages 15-19 years),[11,12] thereby ignoring adolescents less than age 15 years and obscuring possible differences between adolescents and young adults. Despite an abundance of data on adolescent violence and risk-taking behavior in general,[13-16] data on the characteristics (ie, demographics, perpetrators, and motives) of homicides committed against adolescents between the ages of 11 and 18 years are lacking and may differ

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MATERIALS AND METHODS

DATA SOURCES

Medical Examiner Data

We reviewed all homicides listed in the North Carolina Medical Examiner database[18] and case files from 1990 through 1995 for persons ages 11 to 18 years at the time of death. Cases were designated as homicides based on investigations by medical examiners and law enforcement officers, independent of the circumstances or charges to which the perpetrator may have pled guilty. The case files included the death certificate and toxicology report, information provided about the victim, circumstances surrounding the death, and the names of the law enforcement officers involved in the homicide investigation.

Variables abstracted from the medical examiner database included (1) the victim's age, race, sex, and county of residence; (2) the date, time, county, and location of injury/death; and (3) the means of homicide (firearm, sharp instrument, blunt instrument, arson, strangulation, asphyxiation, or fight/brawl). Types of firearms listed were rifles, handguns, and shotguns. The victim's blood alcohol level (from the toxicology report) and highest school grade completed (from the death certificate) were also recorded. The victim's race was obtained from the death certificate, which would have been completed by the funeral director based on information provided by the victim's family.

Police Interviews

For homicides that occurred from 1993 to 1995, additional information was obtained from police interviews, which generally had more detailed information than the medical examiner's case files about the victims' and perpetrators' characteristics, including gang membership, criminal records, weapon accessibility, relationship between victim and perpetrator, and homicide circumstances and motives. For instance, when the medical examiner's files were examined exclusively to determine the motive for the homicides, 36% of the motives were unknown. When police interviews were used, only 4% of the motives were unknown.

Prior to the interviews, the investigating officer and his or her police chief received a letter that explained the study, asked the officer to review the case for the specified victim(s), and told the officer to expect a telephone call for a 15-minute telephone interview. Interviews were conducted by 2 research assistants trained and supervised by one of us (T.C.B). Police interviews were conducted only for the last 3 years because we wanted to use cases that the officers were most likely to recall.

VARIABLES FOR ANALYSIS

Victim and Perpetrator Characteristics

We defined younger adolescents as age 11 to 14 years (middle-school age) and older adolescents as age 15 to 18 years (high-school age). This was done to determine if there was any difference among the groups in characteristics of homicide (ie, motive, weapons used), particularly since younger adolescents (age 11-14 years) are often not included in descriptive studies. The age subcategorization may also help guide the development of middle-school antiviolence curriculum, since the age distinction is the normal age split between middle school and high school.

Adolescents who were 2 or more years behind their expected completed school grade (based on starting first grade at age 6 years) were classified as "age-grade discrepant." A 2-year difference was used to allow for individuals with birthdays in the middle of the year. Thus, a victim who had completed eighth grade was not considered discrepant unless the victim's age was at least 15 years.

from young adults. While many homicides among adults involve domestic violence and love triangles (R. A. Glasser, MD, E. Bell, MD, S. M. Fakhry, MD, R. Rutledge, MD, and C. C. Baker, MD, unpublished data, January 1998), these motives are less likely to figure prominently in adolescent homicides. Since adolescents and young adults ages 15 to 24 years represent such a large proportion of all homicides (31% in 1991),[17] a more fine-grained examination is needed.

Our study examined the characteristics of adolescent homicides in a largely rural state, with the objective of guiding violence prevention strategies for adolescent homicide prevention outside major urban areas.

RESULTS

The medical examiner database contained a total of 419 adolescent homicide victims (age 11 to 18 years) in North Carolina during the calendar years 1990 to 1995, yielding an average annual homicide rate of 9.7 per 100 000. There were 204 homicides during the first 3 years (1990-1992) and 215 during the second 3 years (1993-1995). Interviews with law enforcement officers were completed for 182 (85%) of the 215 homicides. These interviews provided data on 171 perpetrators (94% had been identified). Reasons for missing interviews included the following: inability to locate the appropriate officer or jurisdiction where the homicide investigation took place (n = 6); an inability to speak with the officer, despite a minimum of 5 attempts, including scheduled appointments (n = 9); officer's refusal because the case was going to trial and disclosures might jeopardize the case (n = 7); and officer's refusal for unknown reasons (n = 11). Turnover of officers did not appear to be a major obstacle, because the case file was always available in the law enforcement agency, and there was usually an officer within the agency who was familiar with the case.

VICTIMS AND PERPETRATORS

Personal Characteristics

Most of the victims were ages 15 to 18 years (85%), male (79%), black (76%), and from urban counties (72%) (**Table 1**). Nearly half (48%) of the victims were age-grade discrepant based on 392 victims (94%) for whom

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Motive

The homicide motives were assigned to 8 different categories.

Drug Related. The homicide directly involved drug sales, trafficking, or turf battles. This category also included retaliations and altercations related to drugs (eg, misallocation of drugs or drug payments). It did not include cases in which drugs may have been found on or near the victim unless obtaining or selling the drugs was the main motivation for the homicide.

Altercations. The homicide took place during the heat of an altercation or argument regarding some issue other than drugs.

Retaliations. The homicide was precipitated by a prior non–drug-related event or injury against the perpetrator (eg, gunshot wound, transmission of a sexually transmitted infection, or altercation). A homicide following an altercation was coded as a retaliation when the victim and perpetrator left one another for a period and the perpetrator returned and killed the victim.

Reckless Behavior. The homicide occurred as a consequence of behavior reflecting reckless disregard for firearm safety and lethality, such as playing Russian roulette or playing with, handling, or showing a loaded firearm to friends or family.

Bystander. The victim was not involved in a confrontation or dispute, but was a random victim or was with someone who was in the dispute. The perpetrator was allegedly trying to harm or injure someone else.

Robbery. The homicide occurred during an act of stealing of personal property (other than drugs, since in that case the homicide was classified as drug related), whether the homicide victim was the robber or his victim.

Broken Relationship. The victim severed a romantic relationship with the perpetrator and was killed for that reason.

Gang Related. The homicide victim was a self-identified or police-identified gang member who was killed specifically because of his gang membership or gang-related activity (other than drug-related activities).

Homicide Circumstances

Day and time of the homicidal event were analyzed rather than day and time of death, since several days may have elapsed before a victim died. Counties were designated as urban or rural based on the established metropolitan statistical areas. A metropolitan statistical area is an economically and socially integrated geographic unit centered on an urban area with a population of 50 000 or more residents.[19]

DATA ANALYSIS

Homicide rates by age, race, sex, and urban county were calculated using 1990 census data provided by the Log Into North Carolina database system[20] and the North Carolina State Data System. Population data from 1990 were used for all 6 years, because annual projections were not available for the adolescent age range.

Data were analyzed using the Stata statistical analysis system (version 5, Stata Corp, College Station, Tex). Proportions were compared using Pearson χ^2 or Fisher exact tests, as appropriate. Except where indicated, denominators used to calculate percentages included cases with missing data. The study was approved by the Institutional Review Board at the University of North Carolina School of Public Health, Chapel Hill.

the last school grade completed was available. Only 59 (32%) of the 152 18-year-old victims had graduated from high school (all would have been expected to have graduated). Perpetrators (ages 13-64 years; 55% >18 years) were generally at least 2 years older than their victims and were more likely to be male (92%). Information about the last completed grade in school was unavailable for 50% of perpetrators. Victims were generally killed by perpetrators of the same race/ethnicity. Females (91%) were more commonly killed by a male than by another female. Thirty-seven percent of the identified perpetrators did not act alone and had other individuals, most commonly 1 to 3 others, with them at the time of the homicides. The most common motives for homicides with multiple perpetrators were drug-related problems and retaliations.

Relationship

In most cases with police interviews, the perpetrator was known to the victim as a friend or acquaintance (57%), an intimate partner (8%), or a family member (9%) (most commonly a male sibling, father, or stepfather). In only 23% of the cases was the perpetrator a stranger, which may partly account for the high proportion of identified perpetrators. In 4% of the cases, the relationship was unknown.

Criminal Record

Large proportions of both perpetrators and victims had criminal records. Among the 182 victims and 171 known perpetrators, 40% and 71%, respectively, had criminal records. Many had more than 1 offense prior to the age of 16 years. The most common offenses for both victims and perpetrators were drug related. Victims' offenses included assault, breaking and entering, shoplifting, trespassing, robbery, and burglary. Perpetrators' offenses included those previously listed, but were generally more serious and violent. There were 5 perpetrators who had committed a prior murder and several who had committed rape; none of the victims was known to have committed these offenses. Younger adolescent victims (ages 11-14 years) were less likely to have a criminal record than older adolescents.

Most (81%) of the identified perpetrators had been arrested and charged. Of the 106 for whom the disposi-

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Table 1. Demographic Characteristics of Adolescent (Age 11-18 Years) Homicide Victims in North Carolina From 1990 to 1995 and All North Carolina Adolescents

Characteristics	Homicide Victims, % (n = 419)	North Carolina Population, % (n = 723 245)*	Homicide Rates (per 100 000)†
Age, y			
11-14	15	51	2.7
15-18	85	49	16.7
Sex			
Male	79	51	14.9
Female	21	49	4.3
Race			
Nonwhite	76	30	24.5
White	24	70	3.3
County of residence			
Urban	72	65	9.9
Rural	28	35	7.1

*Population data from 1990 US census.
†Homicide rates are reported as average annual homicide rates over the 6-year period.

Table 2. Location of Adolescent Homicides in North Carolina, 1990 to 1995

Location	Homicides, No. (%)
Residential dwelling	189 (51)
Street or highway	96 (26)
Commercial establishment	22 (6)
Bar or club	18 (5)
Noncommercial establishment	14 (4)
Farm	13 (4)
Outdoor sports area	11 (3)
School	6 (1)
Total	**369 (100)***

*Data available for only 369 cases (88%) in the medical examiner's database.

tion and sentence were known, 3% received the death penalty, 22% received life in prison, 13% were sentenced to either no prison time or less than 1 year, and 62% received between 1 and 90 years, with 20 years being the most common sentence.

HOMICIDE CHARACTERISTICS

Geography

Seventy of North Carolina's 100 counties were represented among the homicide cases. Metropolitan statistical area urban counties had both the highest adolescent homicide rates (excluding counties with fewer than 20 deaths) and the greatest numbers of adolescent homicides. Only 28% of the victims (excluding the 24 from out of state) resided in rural counties, but the average annual homicide rate for rural counties as a group (7.1 per 100 000) was only 29% less than that for urban counties as a group (9.9 per 100 000). There was no significant difference in the age of the adolescents killed in rural vs urban counties. Eighty-six percent of the victims were killed in the county where they resided. Places of residence for the 24 victims (5.7%) who did not reside in North Carolina were Alabama, Barbados, District of Columbia, Louisiana, Maryland, Mexico, New Jersey, New York, South Carolina, and Virginia.

Location

The medical examiner database indicated the homicide location within each county in 369 cases (88%). Approximately half of homicides (51%) occurred on residential property. Very few (1%) took place on school property. The distribution of homicide locations is shown in **Table 2**.

Police interviews helped us determine the ownership of the residence for the 84 victims (47%) killed in a residence; however, the most common place for homicides among this subset was a nonresidential public place (98 homicides [53%]). Forty-four deaths (24%) occurred on the victim's residential property, 18 (10%) on the perpetrator's residential property, and 22 (12%) on residential property belonging to a third party. One victim was killed at work. All of the arsons and strangulations occurred in homes.

Month, Day, and Time of Day

The month with the most homicides was September (44 deaths), followed by November (41 deaths) and August (39 deaths), making autumn the most common season for homicides (September-November, 114 deaths), followed by summer (101 deaths). The most common days and times for homicidal events (consistent with other studies[17,21]) were weekends (Friday evening through Monday morning) between 10 PM and 2 AM. In younger adolescents (age 11-14 years), the 2 most common intervals were from 2 PM to 6 PM and from 6 PM to 10 PM, with 10 deaths each. Since the exact day and/or time could not be determined in victims whose bodies had been moribund for several hours or whose bodies were decomposed after several days, percentages are based on the cases for which the exact day (n = 387 [92%]) and/or time (n = 320 [76%]) were known.

Means

Adolescent homicide victims were most commonly killed with firearms (83%). Sharp objects, most commonly knives, were the next most common weapon (10%). Two percent of the adolescent homicide victims were killed with a blunt object, either a club or wooden object. Other means of adolescent homicide deaths included arson, strangulation, asphyxia, fight, and unknown (1% each). When the means of adolescent homicides were compared by age group (**Table 3**), older adolescent victims (ages 15-18 years) were more likely to have been killed by firearms than were younger adolescents (ages 11-14 years) ($\chi^2 = 24.2$, $P = .007$).

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Table 3. Means Used in Adolescent Homicides in North Carolina From 1990 to 1995

Homicide Type	Age 11-14 Years, %	Age 15-18 Years, %*
Firearm	70	85
Sharp object	14	9
Strangle	4	1
Blunt object	4	2

*P = .007. Fisher exact test was used to calculate the use of firearms in homicides committed against younger and older adolescents.

Firearms

Handguns (59%) were the most common category of firearm, followed by shotguns (13%) and rifles (10%), with 18% unknown because the firearm or bullet was not recovered. Although in rural areas there was more use of long guns, rifles (12% rural vs 8% urban), and shotguns (18% vs 11%), this difference was not statistically significant. The most commonly reported gun calibers were 0.38 (51 cases) and 0.22 (46 cases). Information on the caliber of firearm was not available for 47% of the cases; however, there did not appear to be significant use of high-power weaponry. Most victims (67%) were killed by a single gunshot. The overall data were insufficient to determine how many firearms were legally obtained with the proper permit and registration, stolen from homes or stores, or illegally traded through drug or street markets.

Alcohol

Alcohol was found in the blood of 20% of victims whose bodies were not decomposed or severely burned (97%). Levels ranged from 0.4 to 65 mmol/L (mean, 17 mmol/L; quartiles, 7, 13, and 24 mmol/L). Only 2 of the younger adolescent victims had a positive alcohol level; the rest were age 15 to 18 years. There was no significant difference in alcohol use by race, sex, or urban/rural county residence. Positive alcohol levels were most commonly found in victims whose homicide motives were drug related (25%) or retaliations (18%).

MOTIVE

The principal motives listed in the medical examiner case files were altercation (26%), followed by reckless behavior (12%), drug related (6%), and retaliations (5%), but 36% of the files lacked information to establish a motive. For the 1993 to 1995 cases that had police interviews, only 4% lacked information about the motive, usually where no perpetrator had been identified. In addition, further investigation by law enforcement officers revealed drug-related motives in many of the cases listed in the medical examiner files as altercations, retaliations, and unknown. Based on the police interview data, the 3 most common motives were drug related, altercation, and retaliations (**Table 4**).

Table 4. Motives of Adolescent Homicides in North Carolina From 1993 to 1995 as Reported in Police Interviews

Motive	Homicides, No. (%)
Drug related	42 (23)
Altercation	37 (20)
Retaliation	31 (17)
Reckless behavior	25 (14)
Bystander	17 (9)
Robbery	12 (7)
Unknown	8 (4)
Broken relationship	7 (4)
Other*	3 (2)
Total	**182 (100)**

*Includes rape and gang activity. Although rape/sexual assault was the primary motive in 1 case, it occurred in 5 other cases. For instance, it occurred in 1 case after a female was robbed and in 1 case in which the victim was male.

Drug Related

In 19 (45%) of the 42 drug-related cases, the event that precipitated the homicide was a robbery for drugs or drug money. Eight drug-related homicides occurred as retaliation for coming up short with drug money or drugs that the victim had been given to sell. Seven homicides were caused by disputes over drug territory. Another 7 homicides were due to unspecified drug altercations. One homicide occurred when a victim attempted to prevent the sale of drugs to his girlfriend.

Altercations

There were 37 altercations. Reasons for altercations included trying to act tough, boys arguing over girls, girls arguing over boys, adolescents intervening in domestic disputes, keeping another's personal property, telling on the perpetrator for smoking in school, resisting arrest, fighting with a police officer, calling a female a "bitch," talking negatively about the perpetrator's friend, and trying to break up a fight.

Parties, bars, and clubs were locales for altercations. Two adolescents were killed for unknown words exchanged at a party. Two adolescents were killed while trying to enter a bar. Alcohol did not appear to be in use by the adolescent victims in these instances. In 3 cases drunk victims were involved in altercations. It was believed by law enforcement officers that the drunk victims initiated the altercation.

Reflecting their important role as a cause of homicide, altercations were also a feature of the homicides coded in the retaliation and bystander categories.

Retaliations

There were 31 homicides committed as retaliations. Eleven of these related to altercations that had occurred several hours or days prior to the homicide.

Retaliations also occurred because of previous harm inflicted against the perpetrator by the victim, such as bruises from fistfights, nonfatal gunshot wounds, and sexually transmitted infections. Other reasons included

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the following: a victim did not get off the street when he was told to, a victim would not buy a gun from the perpetrator, a victim drank some of the perpetrator's beer, a victim would not go out on a date with the perpetrator, a victim agreed to testify against a perpetrator, and a victim's niece died of sudden infant death syndrome while the victim was babysitting.

Reckless Behavior

Seventeen (68%) of the 25 deaths in this category resulted from individuals showing guns to or pointing guns at friends or relatives, allegedly not realizing that the gun was loaded. Forty percent of these guns were owned legally by the perpetrator or perpetrator's parent and were not appropriately stored and locked up. All of these events took place inside a residence.

Russian roulette, the second most common activity, accounted for 20% of the deaths. One death occurred as a result of a hunting accident.

Bystander

In 7 of the 17 bystander cases, the victim was killed by a stray bullet fired during an altercation, even though the victim was not personally involved in the altercation or with anyone who was. In 4 cases the victim was with someone who was involved in an altercation. Three adolescents died when a fire spread to their apartment from a neighboring one that was set on fire by an adult man engaged in a domestic dispute with his wife. Another case occurred because of mistaken identity when the perpetrators mistook the victim for the person they meant to kill.

Robbery

Twelve victims died during a (non–drug-related) robbery. Nine were killed while being robbed and 3 were killed in the home or store of the people they were attempting to rob.

Gang Related

Two cases were coded as gang related because they involved persons who identified themselves or were identified by law enforcement as gang members. One homicide occurred because 1 member of a gang did not like the way a person in a different gang looked at him. The other case occurred because one gang was trying to move into another gang's territory.

Motive Summary

Homicides committed by acquaintances and friends were most commonly drug related, retaliations, and altercations; among family members, reckless behavior, and retaliations. Homicides between intimate partners were distributed equally between broken relationships and altercations. Homicides by strangers were equally distributed among drug related, robbery, and bystander. Homicides against females were primarily the result of altercations (27%) and broken relationships (19%); against males, drug related (28%) and retaliations (17%). The largest category of homicides of older adolescent victims was drug related (26%), whereas the largest category among young adolescent victims was reckless behavior (27%).

COMMENT

Although most homicides against younger adolescents (ages 11-14 years) were committed with firearms, younger adolescents were more likely than older adolescents to have fatal injuries that did not involve a firearm, that occurred before 10 PM in a home, and/or that resulted from recklessness rather than homicidal intent. This highlights the importance of ensuring that guns are stored unloaded in secret, locked compartments away from adolescents, particularly young adolescents. Compared with adults, the adolescent homicides in our study were more likely to have been committed with a firearm by a friend or acquaintance rather than a stranger,[22] and less likely to have resulted from a domestic dispute; however, nondomestic disputes or altercations were common motives. If the altercation category was expanded to include those drug-related, retaliation, bystander, and broken relationship homicides in which an altercation was a prominent feature, then this category could cover 36% of these adolescent homicides.

Adolescent homicides in North Carolina appeared to be much less associated with gang activity than has been reported for major urban areas, such as Boston, Chicago, New York, or Los Angeles[7,23]; however, our study may have underestimated the role of gang activity, since gangs in small cities and towns may be less readily identifiable by regalia, colors, types of clothing, graffiti, or high degrees of organization (eg, the Bloods and the Crips). Additionally, some of the drug-related homicides, altercations, and retaliations may have been the result of unrecognized gang activity.

STUDY STRENGTHS AND LIMITATIONS

Because the state medical examiner's office investigates all homicides and conducts an autopsy on the victim, the data on blood alcohol and homicide means should be highly accurate. Information obtained from the police about location, circumstances, and relationship between perpetrator and victim is also likely to be correct; however, classification of deaths as homicides, identification of perpetrators, and decisions about motive may involve judgment without complete information, with potential for errors and inconsistency. This information might be related to victim or perpetrator characteristics (eg, race or social class), causing a systematic bias.

POSSIBLE FACILITATIVE AND PREVENTIVE FACTORS

The much higher adolescent homicide (average annual) rate for blacks (24.5/100 000) than for whites (3.3/

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100 000) is a striking but familiar feature of homicide data in the United States.[1,10] Neighborhood and community characteristics have been shown to be predictive of an individual's risk for violence and injury,[24] as has poverty.[25] In North Carolina, as elsewhere in America, this dramatic difference most likely results largely from the very different life circumstances of blacks and whites in regard to poverty, housing patterns, economic opportunities, municipal services, political influence, and the myriad of other factors that affect community well-being.[26,27]

The most common scenarios for homicide were drug-related problems and altercations. Drug use and dealing are deeply embedded in contemporary American society, part of a global industry with a size, market penetration, distribution network, and workforce comparable to those of major consumer products.[28] Thus, there are powerful economic forces that reinforce both recruitment of sellers and distributors and aggressive marketing in vulnerable populations.[27] Drug policy deserves serious and dispassionate scrutiny, with policies designed to eliminate easy access to drugs. Also, the fact that 83% of adolescent homicides resulted from gunshot wounds highlights the importance of firearms in this public health problem, particularly since increased access to firearms and drugs has been linked to the violence epidemic.[29]

CONCLUSIONS

Setting higher priorities on improving the health, education, and economic opportunities of low-income minority adolescents and young adults could help to reduce vulnerability among the young people who become perpetrators and victims. Even relatively low-cost programs, such as Night Flight basketball, to productively occupy and supervise adolescents and young adults during the hours and days (10 PM–2 AM, weekends) when most homicides occur could have an immediate impact. Programs should be community based as well as school based since many vulnerable adolescents are not in school. More diligent efforts should be exerted toward adolescents who are truant or delinquent, particularly if they are involved in drugs; this may involve mentoring and job training programs.

The predominance of altercations in adolescent homicide constitutes a strong argument for research and programs directed at improving anger management, conflict resolution, peer mediation, and social bonding prior to middle school. Adolescents should be instructed on how to avoid fights as participants and spectators, since they could be injured as bystanders. Harm-reduction measures, such as enforced legislation for stricter regulation of gun dealers,[30,31] safe gun storage, firearm safety devices (eg, gun locks, personalized guns), and extended waiting periods for firearm purchase, could reduce unauthorized youth access to firearms.[32-35]

Research and interventions are appropriate at both the proximate (family, church, and community) and societal (policies and programs related to firearm safety; illegal drugs; violence in professional sports and in the media; educational, training, and employment opportunities; and racial equality) levels.[9] A multidisciplinary approach to adolescent violence prevention will require cooperation and collaboration from multiple sectors of the society, which should include family-, church-, and community-based interventions.

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