Evaluating the impact of a street barrier on urban crime

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Abstract

***Objectives*—Violence is a major urban public health problem in the United States. The impact of a physical barrier placed across a street in a public housing project to prevent street violence and drug activity was evaluated.**

***Methods*—Hartford Police Department data on violent and drug related crime incidence within the housing project containing the barrier were analyzed by use of a computerized geographic information system.**

***Results*—Violent crime decreased 33% on the intervention street during the 15 month period after erection of the barrier, compared with the 15 month period before erection of the barrier, but there was no change in drug related crime. On adjoining streets and surrounding blocks, violent crime decreased 30%–50% but drug related crimes roughly doubled. A non-adjacent area of the housing project and the entire city experienced 26% and 15% decreases in violent crimes, and 414% and 25% increases in drug crimes, respectively.**

***Conclusions*—The barrier decreased violent crime but displaced drug crimes to surrounding areas of the housing project. These results have important implications for other cities that have erected or are considering erecting similar barriers.**

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Keywords: violence; urban population; wounds and injuries; crime

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Violence is a public health threat and a pressing medical problem, especially in urban areas.[1 2] Patterns of violence among children and adolescents are changing in many cities. The likelihood that the homicide of a child will be committed by a non-relative outside of the home with a firearm increases with the age of the child.[3] In many states, firearms are becoming the leading cause of death and have been projected to surpass deaths due to motor vehicles by 2003.[4]

In response to a drive-by shooting that wounded four adolescents, the Hartford (CT) Housing Authority erected a barrier across a street at the site of the shooting, approximately mid-block, in a large public housing project, thereby creating two dead end streets. The street was the site of frequent violent crime associated with drug activity, often among adolescent gang members. The housing authority hoped to prevent further violence by forcing potential perpetrators in cars to turn around and retrace their path, blocking a fast "get away". The housing authority also sought to deter future drug sales on the street by making it difficult for purchasers to drive in and out of the housing project quickly.

While environmental modification is an accepted method of unintentional injury prevention, the use of a physical barrier to reduce intentional injury has not been evaluated. The purpose of this study is to evaluate the impact of such a barrier in reducing violent and drug related crimes in an urban public housing project.

Methods

Data from Hartford Police Department violent and drug crime reports for 15 months before and after the erection of the barrier were analyzed. Violent crimes include murder, aggravated assault, rape, and robbery; drug crimes include possession and sale of illegal drugs. Although a drive-by shooting was the impetus for erecting the barrier, these shootings are infrequent (although highly publicized) and were not separately coded as such by the police until the end of the study period. Only one police crime report is written per incident, regardless of the numbers of complaints made or police officers responding.

Violent and drug crime incidents in the housing project were plotted by street address, before and after erection of the barrier, using a computerized geographic information system (Arc Info, Version 3.4D software, ESRI). The housing project consists of two story garden apartments in two neighborhoods separated by a small river, functionally forming two projects. The residents of the project are 68% Hispanic and 27% African-American (compared with the City of Hartford which is 32% Hispanic and 40% African-American). One in four Hartford families earns less than the federal poverty standard.[5]

Four geographic areas within the housing project were defined: the "intervention street" containing the barrier, the "adjoining streets" containing the intervention street and those streets abutting it, the "same section of the project" containing all streets in the project lying east of the river including the barrier street, and the "opposite section of the project" with all streets in the project lying west of the river and not including the barrier street. Violent and drug crime incidents were plotted by street address using a computerized geographic information system (as above). The number of drug and violent crime incidents occurring before and after erection of the

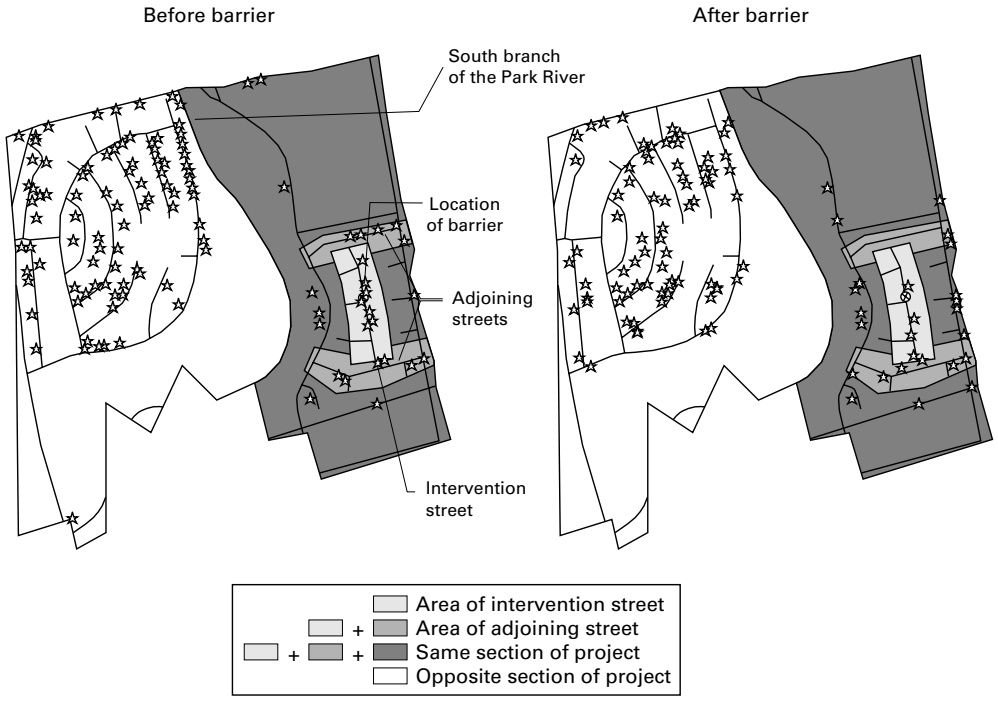

Figure 1 Distribution of violent crimes before and after erection of the barrier.

barrier were tabulated, along with per cent change, for the four geographic areas and for the City of Hartford as a whole.

Results

The maps in fig 1 show the distribution of violent crimes, 15 months before and after erection of the barrier respectively, in and around the area with the barrier and in the separate part of the housing project. Figure 2 contains similar maps for drug crimes. After erection of the barrier, violent crime incidence decreased 33% on the intervention street, but there was no change in drug crimes. On adjoining streets, violent crimes decreased 50% but drug crimes increased 100%. Overall, the section of the housing project containing the barrier had a 30% decrease in violent crimes and 109% increase in drug crimes. In comparison, the other section of the housing project experienced a 26% decrease in violent crimes, and a 414% increase in drug crimes. The decrease in violent crime in the four geographic areas studied is generally consistent

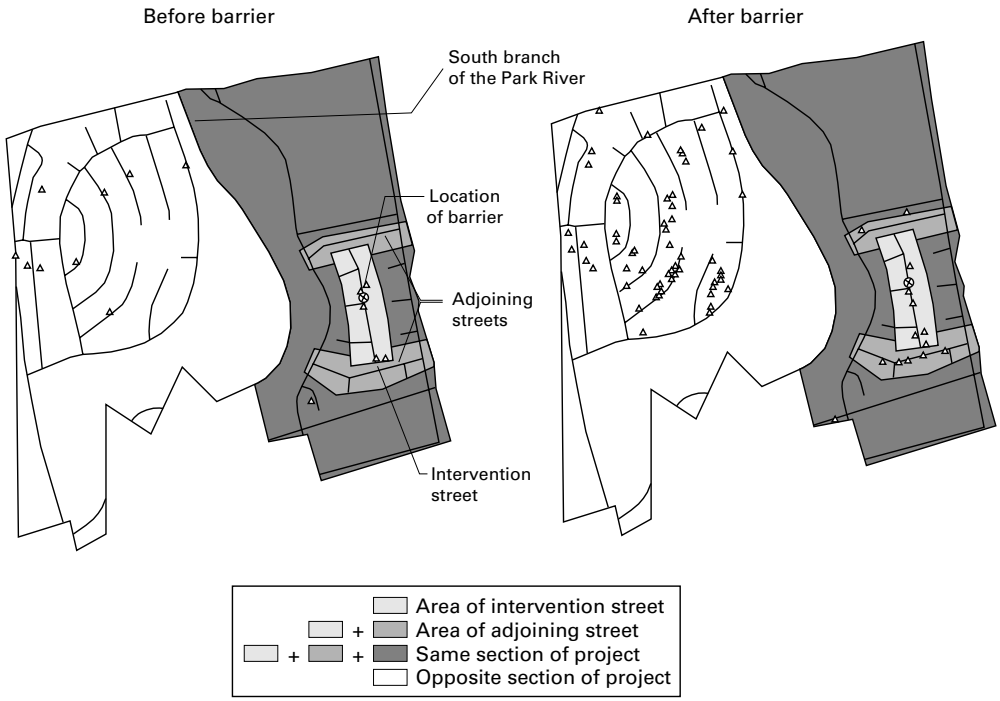

Figure 2 Distribution of drug crimes before and after erection of the barrier.

Table 1 Changes in crime frequency, by area and type of crime, before and after erection of the barrier

	Violent crimes			*Drug crimes*		
Area	*Before*	*After*	*% Change*	*Before*	*After*	*% Change*
Intervention street	9	6	(−33)	7	7	(0)
Adjoining streets	24	12	(−50)	8	16	(+100)
Same section of project	47	33	(−30)	11	23	(+109)
Opposite section of project	116	86	(−26)	14	72	(+414)
Entire city	4428	3777	(−15)	2272	2850	(+25)

with the trend observed in the city as a whole (15% decrease). For drug crimes, the city wide data showed a 25% increase; the intervention street showed no change while sharp increases were seen in the adjoining streets, same section, and opposite sections of the housing project (table 1). This suggests that the presence of the barrier displaced drug crimes previously occurring on the intervention street to other areas of the housing project.

Discussion

We evaluated the effect of a physical barrier in reducing violent injury and drug related crime. Environmental modification using physical barriers to separate potential victims of injury from injury agents is an accepted method of unintentional injury control.[6] Examples include highway median barriers, swimming pool fences, and window guards. Accepted environmental measures to prevent intentional injury include metal detectors in schools and better lighting in high crime areas.[7 8] Physical barriers to prevent violent street injury have not been evaluated.

Environmental change at the community level has been used as a crime deterrent with variable success. A crime prevention program altering vehicular and pedestrian traffic, implemented in a Hartford neighborhood in 1976, produced only short term decreases in the neighborhood's crime rates.[9] Barriers are becoming popular as a new strategy to control violence and crime. Several cities erected or considered erecting similar barriers[10–13] or gates across public roads.[14] One city erecting multiple barriers in a neighborhood beset by high rates of violent and drug related crime found they seemed to reduce crime rates, but the barriers' effect on business and quality of life in the neighborhood met with mixed reviews.[15] Our analysis of a barrier found it may have reduced violent crime but appeared to displace drug crimes to surrounding streets and the other section of the housing project. Despite the reason for erecting the barrier, the numbers of violent crimes on the intervention street were too low to embrace street barriers as a method of preventing street violence without further study of other barriers in different settings.

The barrier's limited success may be in part due to the geography of the housing project itself. Focused drug enforcement operations are more successful in relatively isolated neighborhoods with physically distinct boundaries and few exits.[16] Limiting exits limits drug dealer's ability to move their activities and makes neighborhoods easier for police to patrol. This particular housing project, because it has limited access roads, distinct boundaries, and is without major thoroughfares, is more amenable to focused crime control interventions.

There are several limitations to this study. First, violent and drug related crime reports are imperfect measures of the barrier's effect. Drug arrests may reflect actual drug activity, or merely police and/or resident's interest in halting this activity. The relative severity of violent crime is a better measure of the barrier's effect because it is more likely to be consistently reported by residents and responded to by police. Second, the barrier may cause decreased police patrols on the intervention street (and consequently fewer crime reports) due to the reluctance of policemen in a patrol car to enter a street that requires their turning around to exit. Third, we could not measure the barrier's effect on resident's sense of wellbeing or their sense of isolation in their neighborhood. Finally, confounding events, such as other targeted police activities or changes in street gang activities in the area might also have influenced the effect of the barrier. To our knowledge, there were no police activities targeting this area nor changes in gang activities during the study period.

Implications for prevention

This study adds to our knowledge about preventing urban violence through environmental alteration. A physical barrier erected across a thoroughfare in a public housing project to prevent street crime decreased violent crime on the intervention street and surrounding streets to a moderate extent, but appeared to displace drug related crimes to surrounding areas. Its effect was enhanced by the geographic characteristics of the neighborhood. Such barriers, whether erected individually or as multiple barriers in a neighborhood, should be evaluated in other settings before their use becomes more widespread.

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Risk of upper limb injury in left handed children: a study in Greece

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Abstract

***Objectives*—To investigate whether left handed children are at increased risk for injuries, particularly upper limb injuries.**

***Setting*—Athens, Greece, during a six month period in 1995–96.**

***Methods*—Cases were 129 children 4–14 years old with unintentional upper limb injuries from a population based injury database. Two control children matched for gender and age were selected from among those seen at the same medical institution for minor, non-injury ailments. On the basis of information provided by the children and their guardians, sociodemographic variables were recorded, hand preference was assessed, and each child's activity score was calculated through an abbreviated version of Achenbach's scale.**

***Results*—Left handed children have a moderately increased upper limb injury risk with a tendency of recurrence of this injury. The risk of upper limb injury is also raised among children of young fathers, whereas it appears to be inversely related to crowding index and activity score—three variables that were controlled for as potential confounders.**

***Conclusions*—This study provides limited support for the hypothesis that left handed children are at increased risk for injury. The excess risk, if genuine, is likely to be limited to cultural settings in which right handedness is perceived as the norm.**

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Keywords: handedness; activity score; upper limb injury; crowding index

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Accident proneness is a concept that was popular in early injury research[1 2] but gradually fell out of favour, because it came to be identified with the discredited "blaming the victim" philosophy. Second thoughts, however, have been recently expressed,[3 4] albeit in a different context. An inherently increased injury hazard is now being linked, not to psychological predisposition, but to personal traits acting in conjunction with environmental conditions.

Recent reports pointed out that left handed children may be at increased injury risk.[5–7] This could be attributed either to psychological reasons, reflecting developmental processes, or more likely, to structures and functions in our daily lives that have a built-in bias in favour of the right handed. Studies of upper limb injuries, rather than of injuries in general, could be more powerful in documenting an increased injury hazard of left handed persons, because any hand dexterity-related functional irregularity would be more likely reflected in injuries of the upper limbs. We have, thus, undertaken an epidemiological investigation of risk factors, including handedness, for upper limb injuries.

Methods

Data were derived from the Emergency Department Injury Surveillance System (EDISS) database developed by the Centre for Research and Prevention of Injuries among the Young in Greece. In EDISS, data are recorded for individuals who seek medical attention at any of a network of hospitals for an injury of any nature.

In this study, children who were over 4 years old and, therefore, had already developed hand preference, were enrolled if they were seen at

Table 1 Distribution of 122 cases of upper limb injuries by anatomic location, mechanism, and type of injury

Variable	*No (%)*
Anatomic location	
Shoulder, upper arm, elbow	16 (13.1)
Forearm, wrist	58 (47.5)
Hand, fingers	48 (39.4)
Mechanism	
Fall on same level	62 (50.8)
Fall from stairs or higher level	8 (6.6)
Struck by object or person	29 (23.8)
Injury caused by cutting and piercing object	9 (7.4)
Road traffic	5 (4.0)
Other	9 (7.4)
Type of injury	
Fracture	68 (55.7)
Dislocation and sprain	10 (8.2)
Open wound	12 (9.8)
Contusion	25 (20.6)
Other	7 (5.7)