

# Characterization of Interpersonal Violence Events Involving Young Adolescent Girls vs Events Involving Young Adolescent Boys

Cynthia J. Mollen, MD, MSCE; Joel A. Fein, MD; A. Russell Localio, JD, MPH, MS; Dennis R. Durbin, MD, MSCE

**Background:** Multiple studies have demonstrated that girls are engaging in interpersonal violence. However, little is known about the potentially unique aspects of violent events involving girls.

**Objectives:** To describe characteristics of interpersonal violence events in preadolescents and young adolescents and to determine if events involving any girl are different than those involving only boys.

**Design:** A cross-sectional survey of 8- to 14-year-old patients who were being evaluated at an urban children's hospital emergency department for injuries caused by interpersonal violence was conducted between September 2000 and August 2001. The survey asked the patient to describe details about event circumstances, opponents, weapon use, and injury severity.

**Results:** We enrolled 190 patients into the study; 58 (31%) were girls. Seventy-four events (39%) had a girl involved, 156 (82%) occurred on a weekday, 127 (67%) were classified as fights, 140 (74%) were with a known

opponent, and 93 (49%) occurred at school. Events involving girls were more likely than events involving all boys to occur at home (relative risk [RR], 1.6; 95% confidence interval [CI], 1.0-2.5). Both boys and girls reported "being disrespected" and "teasing" as popular reasons for a fight. Events involving girls were more commonly related to a "recurrence of a previous fight" (RR, 6.4; 95% CI, 1.9-21.5), were more likely to end because of adult intervention (RR, 1.7; 95% CI, 1.1-2.6), and have a family member try to physically break up the fight (RR, 3.7; 95% CI, 1.5-9.1).

**Conclusion:** Violent events involving preadolescent and early adolescent girls are more likely to be in response to a previous event and to involve the home environment and family member intervention. Health care professionals should screen violently injured girls for safety concerns and retaliation plans and consider engaging the family in efforts to prevent future events.

*Arch Pediatr Adolesc Med.* 2004;158:545-550

From the Department of Pediatrics, Division of Emergency Medicine, The Children's Hospital of Philadelphia, Philadelphia, Pa (Drs Mollen, Fein, and Durbin); and the Division of Biostatistics, Department of Biostatistics and Epidemiology, Center for Clinical Epidemiology and Biostatistics, The University of Pennsylvania School of Medicine, Philadelphia (Mr Localio).

**N**ATIONALLY, INTERPERSONAL violence accounted for approximately 2200 deaths in children aged 5 to 19 years in 2001.<sup>1</sup>

However, fatality statistics describe only a small portion of the epidemic. Nonfatal firearm injuries occur at least twice as often as fatal firearm injuries.<sup>2,3</sup> According to the Centers for Disease Control and Prevention, Atlanta, Ga, and the Consumer Product Safety Commission (Bethesda, Md) National Electronic Injury Surveillance System, in 2000, approximately 385 000 patients between the ages of 10 and 19 years were treated in hospital emergency departments (EDs) for nonfatal injuries from physical assaults.<sup>4</sup>

Although boys are involved in interpersonal violence events more often than girls,<sup>5-7</sup> girls are also at risk for violent injury. The 2001 Youth Risk Behavior Sur-

veillance Survey found that 24% of high school girls reported being in a physical fight at least once in the prior year.<sup>8</sup> In addition, while older adolescents are at higher risk of violent injury than younger children,<sup>1,4,5</sup> younger children are also affected by interpersonal violence. In some studies, 50% of middle school students reported a history of physical fights,<sup>9</sup> and 20% admitted to carrying a weapon.<sup>10,11</sup> In an urban public middle school, 54% of students were involved in physical fighting or weapon carrying.<sup>12</sup> Sege et al<sup>13</sup> found that in a population of adolescents seeking primary care, a history of physical fighting tripled the risk of injury due to interpersonal violence, and one recent study identified physical fighting as a risk factor for future violent injury among 7th through 12th graders who have been held back in school.<sup>14</sup> Fully one third of the more than 380 000 patients aged 10 to 19

years treated in EDs for interpersonal violence injury in 2000 were aged 10 to 14 years.<sup>4</sup>

Despite the prevalence of interpersonal violence among girls and younger adolescents, little research has focused specifically on female youth. Furthermore, few studies describe detailed characteristics of the events in which this group is involved, and we found no studies that specifically compare the motivations, weapons used, and injuries sustained for events involving girls with those involving only boys. The objective of this study was to describe characteristics of interpersonal violence events involving preadolescents and young adolescents seeking care in the ED after the event. We hypothesized that events involving at least 1 girl would have unique characteristics, such as location, motivation for the altercation, and weapon use. A secondary objective was to describe the injuries and individual characteristics of young adolescents seen in the ED after a violent event.

## METHODS

### PARTICIPANTS

We administered a cross-sectional survey to consecutive eligible patients seeking care in an urban children's hospital ED between September 1, 2000, and August 31, 2001. We enrolled a consecutive sample of patients who were aged 8 through 14 years, resided in the local catchment area of the hospital (as defined by the 8 zip codes immediately surrounding the hospital), and sought care after a violent event. Participation was limited to patients who resided in the area surrounding the hospital to minimize potential bias associated with referral to a tertiary care hospital. Previously published data demonstrated that most (90%-95%) pediatric patients living in this area use the study hospital for emergency care related to injuries.<sup>15</sup> There is sufficient cause to believe that the referral patterns for our hospital have remained stable, because the area in which the hospital is located is one of the few that have been under a Medicaid managed care capitation system since 1986. No new hospitals have been added to the area, no new insurers have entered the market, and our hospital has stable and predictable contracts with existing insurers. At the time of this study, the ED saw approximately 65 000 patients each year.

We identified potential subjects through an ongoing surveillance system that is part of a university violence intervention project. The violence intervention project identifies and assesses violently injured youth and young adults from 2 urban academic EDs and refers them to appropriate community organizations. We included children 14 years and younger to exclude most cases of dating violence, which may represent a different subset of patients. Although there is a lack of consensus of an operational definition of dating violence, it is generally felt to involve teenagers and young adults.<sup>16</sup> As a consequence, many authors limit research on dating violence to adolescents in high school or older than 13 years.<sup>17-19</sup>

We defined a violent event as a situation of conflict involving 2 or more people, in which at least 1 had intent to harm. Inclusion was based on the historical information provided by the patient. Patients were excluded if the injury was unintentional, self-inflicted, or due to child abuse. Child abuse was defined as injury to a patient by his or her parent, guardian, or caretaker. We excluded patients who were in high school because they have daily experiences and exposures that are likely to be very different from those of elementary and middle school students.

Participants were recruited during the times that research assistants (RAs) staffed the EDs, typically between 8 AM

and midnight, 7 days per week. These RAs underwent initial training in interview techniques and study-specific issues, as well as monthly retraining sessions. The RAs obtained verbal consent for interview from the parent or guardian of the patient after the child's initial medical evaluation was completed and the treating physician indicated that the patient was stable enough to interview. Patient assent was also obtained. The RA then requested that the parent leave the room and administered the survey verbally to the patient. We attempted to contact all eligible patients who did not complete the survey during the ED visit and administered the survey over the telephone using similar consent/assent procedures.

### SURVEY DEVELOPMENT

We developed and refined an initial draft survey using focus groups with urban youth. Two community-based youth, aged 18 to 19 years, facilitated the focus groups at a local community center. These youth were specifically oriented to the goals and processes of the sessions. The groups were run separately for boys and girls, with same-sex group leaders. A total of 9 children participated in the sessions; all of them lived in the neighborhoods surrounding the hospital and were identified, through ED and project records, as having been involved in at least 1 episode of interpersonal violence. We separated the children into 2 age groups: 10 to 12 year olds and 13 and 14 year olds. Most of the sessions consisted of 2 or 3 children in each age group, and a single session involved only 1 participant. The major topics covered in the session were motivation for fighting, weapon use, and retaliation. We provided transportation for focus group participants when needed; a gift card worth \$20 was given to each participant at the end of the session for their participation. The principal investigator, with the help of an RA, transcribed and reviewed each focus group session.

The investigators reviewed transcripts of the audiotapes from each focus group and revised the survey by consensus using this information. The information from the focus groups confirmed that the main categories of data collection were appropriate and provided several ideas for answer categories that were previously not included in the study. For example, "recurrence of a previous fight" was added to the question, "what caused the event?"; in addition, the choice of "razor" was added to the questions involving weapons. Finally, we changed the wording of several questions to help make the survey more appropriate for the local youth. We then pilot tested the revised survey on eligible ED subjects to ensure its comprehension and ease of administration.

### DATA COLLECTION

The RAs asked the subjects about the timing, location, and circumstances leading to the event. In addition, they asked about who encouraged or discouraged the fight; why and how the fight ended; the number, sex, and relationships of others involved in the fight; a history of previous fighting with these individuals; weapon involvement; and injuries sustained during the fight. We considered individuals "involved" in an event if they were physically engaged in the event. The RAs used preprinted survey forms with multiple-choice answers to record their findings. Spaces were provided for the RA to write comments about any question or answer. All data analysis was done using the survey data. As an assessment of the verity of the survey responses, the primary investigator (C.M.) compared a sample of the responses with the circumstances and injuries described in the medical record; we encountered no discrepancies.

We classified injuries using the Abbreviated Injury Scale (AIS), an anatomically based system that categorizes injuries by body region on a 6-point scale.<sup>20</sup> Injuries classified as AIS 1

are minor injuries, including most abrasions and lacerations; AIS 2 are moderate injuries, including concussions and most extremity fractures. Information about weapons at the scene and about the object causing the most serious injury was noted. We included both powder and nonpowder firearms, such as air rifles and BB guns, in the "firearm" category. We categorized the 2 types of firearms together because of the potential for severe injury from both types of weapons.<sup>21</sup> Some objects used to inflict injury were not classified as weapons by the patient. For example, a patient may report that a boot caused the most serious injury but not report the boot as a weapon. We classified injuries as being caused by "no weapon" when the only injury resulted from a body part, such as being punched, or from direct impact of being pushed against a wall.

The RAs reviewed ED records weekly to identify all eligible patients seen for interpersonal violent injury during the study period. We also reviewed these medical records to obtain demographic and injury information about eligible participants who were not interviewed in the ED or by phone or who refused to be interviewed. We stored and treated the information from these record reviews as aggregate data that contained no unique identifying information on any subject. The hospital institutional review board's Committee for Protection of Human Subjects approved the study and the conduct of the focus groups used in survey development. The National Institute of Mental Health, Bethesda, Md, issued a certificate of confidentiality to protect the identities of all research subjects.

## ANALYSIS

We performed descriptive analyses to determine the frequencies of categorical variables and means, standard deviations, and ranges of all continuous variables. We analyzed the data by the sex of those involved in the event. For most analyses, we compared events involving at least 1 girl ("female-involved") to those involving only boys ("all-male"). This analysis was consistent with the primary objective of the project: to characterize and compare events involving any girl with those involving boys. We performed similar analyses within 2 age categories: 8 through 11 year olds and 12 through 14 year olds (roughly approximating elementary-school and middle-school ages). Because the stratified analysis did not differ from the overall analysis in most cases, only several key findings from this stratified analysis are presented. For analysis of patient-level data, specifically the relationship to the opponent and injuries sustained, we compared male and female patients rather than female-involved and all-male events, resulting in different categorization of the data. To determine whether event characteristics varied by the sex of the participants, we conducted bivariate analyses using the Pearson  $\chi^2$  test or Fisher exact test. The study was powered to detect relative risks (RRs) of 1.4 to 2.4, using  $\alpha = .05$ ,  $\beta = 0.2$ , and a baseline prevalence range of 10% to 50% for any given event characteristic.

## RESULTS

### DEMOGRAPHICS

Two hundred ninety-eight patients between the ages of 8 and 14 years from the 8 surrounding zip codes were seen in the ED after an interpersonal violence event during the 12-month study period; 190 (64%) were included in the study. Of the 108 patients (36%) who were not included, 85 were missed (not approached in the ED or reached by telephone) and 23 refused to participate. There were no significant differences in age, sex, or in-

**Table 1. Setting of Interpersonal Violence Events\***

Location	Event With Any Girl (n = 74)	Event With All Boys (n = 116)	Relative Risk (95% Confidence Interval)†
School	36 (49)	57 (49)	1.0 (0.7-1.3)
Home	26 (35)	25 (22)	1.6 (1.0-2.5)
Public place (including street)	9 (12)	19 (16)	1.2 (0.6-2.3)
Other	3 (4)	12 (10)	NA
Data missing	0	3 (3)	NA

Abbreviation: NA, not applicable.

\*Values are expressed as number (percentage) of individuals unless otherwise indicated.

†Relative risk pertains to the characteristic of female-involved vs all-male events.

jury severity between the enrolled and the nonparticipating patients. Only 3 missed patients were seriously injured; all 3 were boys who sustained gunshot wounds. The enrolled patients included 142 (75%) who were interviewed in the ED and 48 (25%), by telephone. Of the 142 interviewed in the ED, 104 (73%) were interviewed without a parent or guardian in the room.

Among the 190 patients in the study sample, 58 (31%) were girls and 132 (69%) were boys. The mean age of the participants was 11.5 years and was similar for both sexes. Seventy-eight (40%) were younger than 12 years. Seventy-four (39%) of the events involved at least 1 girl (female-involved), and 116 events involved all boys. Twenty-seven (47%) of the female patients were involved in an event in which at least 1 boy was physically involved in the altercation.

### SETTING AND CIRCUMSTANCES

Analyses regarding the setting and circumstances of the events in both groups compared the 74 events involving at least 1 girl with the 116 events that involved all boys. Almost all (82%) of the violent events took place on a weekday. Overall, the most common location for an event was school (**Table 1**). Female-involved events were more likely than events involving all boys to occur at home (RR, 1.6; 95% confidence interval [CI], 1.0-2.5); after stratified analysis, this result remained significant for the older group (aged 12-14 years) (RR, 2.0; 95% CI, 1.1-3.6) but not for the younger group.

Two thirds of all events were self-classified as fights (all parties were actively involved in the instigation or escalation of the event), 30% were classified as assaults (the patient was injured unexpectedly and did not respond physically to the attack), and 3% were bystander events, with no significant difference between sexes. The most common reasons for the event differed between sexes (**Table 2**). Although both boys and girls reported "being disrespected" and "teasing" as popular reasons for a fight, female-involved events were more commonly related to a "recurrence of a previous fight" (RR, 6.4; 95% CI, 1.9-21.5). Other reasons for fighting included jealousy, boredom, escalation of "roughhousing," and peer pressure.

**Table 2. Event Type, Causes, and Reasons for Concluding Interpersonal Violence Events\***

	Event With Any Girl (n = 74)	Event With All Boys (n = 116)	Relative Risk (95% Confidence Interval)†
<b>Event type</b>			
Assault	19 (26)	39 (35)	0.7 (0.5-1.2)
Fight	55 (74)	72 (65)	1.2 (1.0-1.5)
Bystander	0	5 (4)	NA
<b>Reason for event‡§</b>			
Being disrespected	20 (27)	21 (18)	1.4 (0.8-2.4)
Recurrence of previous fight	13 (18)	3 (3)	6.4 (1.9-21.5)
Teasing	12 (16)	21 (18)	0.8 (0.4-1.6)
No reason	9 (12)	24 (21)	0.5 (0.3-1.1)
<b>Person(s) who tried to physically break up the event‡§</b>			
Friend/acquaintance	23 (31)	25 (22)	1.4 (0.9-2.2)
Family member	14 (19)	6 (5)	3.7 (1.5-9.1)
Police/school official	15 (20)	15 (13)	1.5 (0.8-2.9)
No one	22 (30)	49 (42)	0.7 (0.4-1.0)
<b>Reason the event ended§</b>			
Adult intervened	32 (43)	29 (25)	1.7 (1.1-2.6)
Too hurt	14 (19)	29 (25)	0.8 (0.4-1.3)
Peer broke it up	9 (12)	19 (16)	0.7 (0.4-1.6)
Someone ran away	5 (7)	11 (9)	0.7 (0.3-2.0)
Other	12 (16)	25 (22)	NA
Data missing	2 (3)	3 (3)	NA

Abbreviation: NA, not applicable.

\*Values are expressed as number (percentage) of individuals unless otherwise indicated.

†Relative risk pertains to the characteristic in female-involved vs all-male events.

‡Patients could select more than 1 answer.

§Top 4 reasons listed in table. Other reasons for event included jealousy, peer pressure, and drug possession; other people attempting to break up event included neighbors and strangers; other reasons for event ending included police broke it up and "it just ended."

**Table 3. Weapons Present at Interpersonal Violence Events\***

	Event With Any Girl (n = 74)	Event With All Boys (n = 116)	Relative Risk (95% Confidence Interval)†
No weapon	49 (66)	89 (77)	0.9 (0.7-1.0)
Weapon present	24 (32)	24 (21)	1.5 (1.0-2.5)
Blunt object	13 (54)	13 (54)	1.0 (0.6-1.6)
Knife/piercing object	10 (42)	6 (25)	1.6 (0.7-3.7)
Firearm	1 (4)	6 (25)	0.2 (0.02-1.2)
Razor	0	0	NA
Data missing	1 (1)	3 (3)	NA

Abbreviation: NA, not applicable.

\*Values are expressed as number (percentage) of individuals unless otherwise indicated. Patients could select more than 1 answer.

†Relative risk pertains to the characteristic in female-involved vs all-male events.

One half of the events involved more than 2 people, and 18% involved more than 4 participants. This did not differ between female-involved and all-male events. Friends or acquaintances encouraged the incident in 16% of events, and a stranger encouraged it in 5% of events. Again, no differences existed between all-male and female-

involved events in this regard. Female-involved events were more likely to end because of adult intervention (RR, 1.7; 95% CI, 1.1-2.6). In 62% of the events, someone tried to physically stop the fight; this occurred more commonly in female-involved events (RR, 1.3; 95% CI, 1.0-1.6). This was primarily owing to the involvement of a family member (RR, 3.7; 95% CI, 1.5-9.1). Stratified analysis revealed that the difference related to family member involvement was attributable to differences among older children (RR, 3.5; 95% CI, 1.2-10.2).

## WEAPONS

Overall, 48 patients (25%) reported that there was a weapon (including blunt objects and other implementations) at the scene (**Table 3**). Weapons were more often present in events involving at least 1 girl (RR, 1.5; 95% CI, 1.0-2.5). For all events, the most common weapon present was a blunt object, such as a bat, stick, or rock. Only 7 events had a gun present, including nonpowder firearms; in the 1 event involving a girl, the gun was seen but not used.

The analyses of opponent characteristics and patient injuries, presented next, refer to individual patient-related data and compare female (n=58) and male (n=132) patients.

## OPPONENTS

Girls (27 [47%]) were more likely than boys (16 [12%]) to report being involved in an event with the opposite sex (RR, 3.7; 95% CI, 2.2-6.5). This difference was primarily due to differences in the younger age group; for the 8 through 11 year olds, 3 (85%) of 19 female patients reported being in an event with a boy, whereas only 7 (12%) of 58 male patients reported events that included a girl (RR, 7.1; 95% CI, 3.5-14.6). In contrast, similar percentages of 12 to 14 year olds (28 [74%] of 38 girls, 60 [86%] of 70 boys) fought with same-sex opponents. One hundred forty patients (76%) in the study recognized at least 1 of the opponents in the event. The majority (131 [69%]) reported that a friend or acquaintance caused their injury. Only 1 patient, a girl, reported an injury that was caused by a boyfriend. One quarter of patients reported a history of a prior fight with the same opponent.

## INJURIES

Female patients were more likely to be injured by a weapon than were boys and were twice as likely to be injured by a blunt object (RR, 2.1; 95% CI, 1.08-4.25) (**Table 4**). Some of the objects used to cause injury were not classified as weapons by the patient, such as clothes hangers and in-line skates. The majority of injuries (167 [88%]) were classified as AIS 1, or minor, injuries. A greater proportion of male patients suffered AIS 2 (moderate) injuries, which were mostly fractures. Almost all (19 [86%] of 22) of the AIS 2 injuries in boys were caused by male opponents. All 5 patients injured by firearms sustained gunshot wounds; 2 of these were caused by non-powder firearms, including 1 serious head injury.

A substantial number of elementary and middle school-aged children engage in interpersonal violence resulting in a visit to an ED. We hypothesized that if a girl was involved in a violent event, the motivations for and characteristics of the event would differ from all-male events. Several differences were noted. Female-involved events were more likely to be motivated by retaliation for a previous event. Furthermore, a weapon was more likely to be present at the scene of female-involved events. This latter finding is contrary to other published studies<sup>22-24</sup> and may be owing to our use of a less restrictive definition of a weapon. Further qualitative research is necessary to determine if the other event participants in the female-involved events are older boys who are more likely to have weapons. In addition, in the older group, compared with all-male events, female-involved events were more likely to occur in the home and involve another person trying to break up the fight, most likely a family member.

There were also some striking similarities between female-involved and all-male events. Both types were often motivated by disrespect or teasing, which accounted for 40% of the event precipitants. Similar percentages of events were classified as "assaults," which may be contrary to the popular belief that girls who are violently injured are more likely to be assaulted rather than actively participate in a fight.

The results of this study support previous studies that speak to the universal problem of violence in pre-adolescent and adolescent girls. Because only 1 event involved a romantic partner, our data describe events that are distinct from teen dating violence. Of note, almost half of our study sample was younger than 12 years and still in elementary school. National surveillance data estimate that in 2000, 25% of ED patients with injuries from nonfatal physical (nonsexual) assaults were aged 10 to 14 years, and 35% of these patients were female.<sup>4</sup> Hausman et al<sup>25</sup> found that 23% of teenage girls contacted randomly for a telephone survey reported ever fighting. Sege et al<sup>24</sup> reported that girls represented 40% of patients reporting to a pediatric primary care center after an intentional injury. A recent report of an ED surveillance program of violence-related injury in pediatric patients showed that girls were more likely than boys to report an event with friends, schoolmates, or family members.<sup>26</sup> Another study noted that girls were more likely than boys to be involved in an event in the home.<sup>27</sup>

A unique aspect of our study is that it describes the characteristics of the events themselves, in addition to the characteristics of the involved parties. Our data offer detailed event circumstances that are difficult to ascertain from medical record review or other surveillance data. In addition, the temporal proximity of our survey to the actual violent event may reduce recall bias and "reinventing" of the narrative.

There are several potential limitations to this study. There may be differential use of the ED by similarly injured girls and boys, leading to selection bias and an unrepresentative community sample. For example,

**Table 4. Characteristics of Injuries Sustained by Study Subjects\***

	Female Patient (n = 58)	Male Patient (n = 132)	Relative Risk (95% Confidence Interval)†
Cause of injury			
Object (ie, blunt, knife, gun)	20 (36)	27 (21)	1.7 (1.05-2.77)
Specific causes of injury			
No weapon	34 (59)	99 (75)	0.8 (0.62-0.99)
Blunt object	13 (22)	14 (11)	2.1 (1.08-4.25)
Knife/piercing object	8 (14)	8 (6)	2.3 (0.91-5.83)
Gun	0	5 (4)	NA
Other	1 (2)	3 (2)	NA
Data missing	2 (3)	3 (2)	NA
Injury classification			
AIS 1	57 (98)	110 (83)	1.2 (1.08-1.28)
AIS 2	1 (2)	22 (17)	0.1 (0.01-0.75)

Abbreviations: AIS, Abbreviated Injury Scale; NA, not applicable.  
\*Values are expressed as number (percentage) of patients unless otherwise indicated.

†Relative risk pertains to the characteristic for female patients compared with male patients.

although both boys and girls knew at least 1 of their opponents, younger female patients were more likely to report an opponent of a different sex. Girls who fight with girls in the younger age group may not be injured enough to seek care in the ED; older girls may avoid events with boys owing to their developmental and size differences. Alternatively, boys may be less likely to come to the ED for an injury after a fight with a girl, particularly in the younger group. Refusal bias is still a possibility despite the fact that the majority of the missed and refused patients had injuries similar to those patients who were enrolled, and only 3 patients were severely injured. Recall bias is minimized by the small interval between event and survey; there is no clear reason why this bias would differ by sex. The verity of the survey responses is supported by consistency of our results to those of previous studies and by the similarity of survey answers to information available in the medical records. The person administering the survey was distinct from the medical team caring for the patient, and in most cases, these interviews were conducted away from parents to increase the adolescent's comfort in providing truthful responses. Moreover, the focus groups used to design the survey took into consideration the concern about the potential bias resulting from systematic differences in how boys and girls describe events. Our analysis of the groups suggested that both boys and girls were willing to honestly describe the events and that their descriptions of the events would not be systematically different. Finally, several male patients injured by gunshot wounds were eligible but missed for the study. If boys had injured all of these patients, then the all-male events would have been more likely than the female-involved events to have a firearm present. However, the direction of the results related to injuries would have been unchanged.

School-based and community interventions aimed at preadolescents and early adolescents should take into

### What This Study Adds

Interpersonal violence is a major public health concern in the United States. Although young girls are involved in a significant portion of interpersonal violence events, little is known about the specifics of the events involving girls. We provide detailed information about the circumstances and setting of interpersonal violence events that result in visits to an ED, gathered from the patients directly after the event. This study highlights key differences between events involving girls and events involving boys, including reasons for engaging in physical fights, type of opponent, weapon use, and injuries. Knowledge of these differences can guide community and school violence prevention efforts and can substantiate health care professionals' screening and counseling of young, violently injured girls.

consideration sex issues related to traditional and non-traditional weapon use, potential location of events, and differences in adult involvement in encouraging or ending the altercation. In addition, children and their parents might benefit from learning how to handle "disrespect" issues in a larger contextual and nonviolent manner. Prior research has demonstrated an association between parental attitude toward appropriate triggers for fighting and actual fighting behavior in middle school students.<sup>9</sup> Health care practitioners may also have preconceived notions regarding girls and violence. It is important to recognize that, for preadolescents and young adolescents, girls are more likely to offer retaliation as a reason for a violent altercation. This suggests that there is just as much reason, if not more, to screen girls for safety concerns and retaliation plans. In addition, as a means of engaging the family in potential interventions, it may be beneficial to determine if a parent was involved in or tried to stop the event.

Accepted for publication February 24, 2003.

This study was funded in part by the Ken Graff Young Investigator Award through the Section on Emergency Medicine of the American Academy of Pediatrics, Elk Grove Village, Ill, and The William Penn Foundation, Philadelphia, Pa.

We thank Maureen Gavin, MPH, for oversight and database management during the study period; Rex Huang, BA, for assistance with data entry; the Academic Associates Program and the University of Pennsylvania for assistance with survey administration; and Frances Nelson, BA, for general guidance during this study. We also acknowledge the contribution of the social workers at both participating hospitals.

Corresponding author: Cynthia J. Mollen, MD, MSCE, Division of Emergency Medicine, The Children's Hospital of Philadelphia, 34th St and Civic Center Blvd, Philadelphia, PA 19104 (e-mail: mollenc@e-mail.chop.edu).

### REFERENCES

1. Arias E, MacDorman MF, Strobino DM, Guyer B. Annual summary of vital statistics: 2002. *Pediatrics*. 2003;112:1215-1230.
2. Annett JL, Mercy JA, Gibson DR, Ryan GW. National estimates of nonfatal firearm-related injuries: beyond the tip of the iceberg. *JAMA*. 1995;273:1749-1754.
3. Gotsch KE, Annett JL, Mercy JA, Ryan GW. Surveillance for fatal and nonfatal firearm-related injuries—United States, 1993-1998. *MMWR*. 2001;50:1-32.
4. Simon TR, Saltzman LE, Swahn JA, et al. Nonfatal physical assault-related injuries treated in hospital emergency departments—United States, 2000. *MMWR*. 2002;51:460-463.
5. Cotten NU, Resnick J, Browne DC, Martin SL, McCraher DR, Woods J. Aggression and fighting behavior among African-American adolescents: individual and family factors. *Am J Public Health*. 1994;84:618-622.
6. Saner H, Ellickson P. Concurrent risk factors for adolescent violence. *J Adolesc Health*. 1996;19:94-103.
7. Ellickson P, Saner H, McGuigan KA. Profiles of violent youth: substance use and other concurrent problems. *Am J Public Health*. 1997;87:985-991.
8. Grunbaum JA, Kann L, Kinchen SA, et al. Youth risk behavior surveillance—United States, 2001. *MMWR Surveill Summ*. 2002;51:1-21.
9. Malek MK, Chang BH, Davis TC. Self-reported characterization of seventh-grade students' fights. *J Adolesc Health*. 1998;23:103-109.
10. Arria A, Borges G, Anthony JC. Fears and other suspected risk factors for carrying lethal weapons among urban youths of middle-school age. *Arch Pediatr Adolesc Med*. 1997;151:555-560.
11. Vaughan RD, McCarthy JF, Armstrong B, Walter, HJ, Waterman PD, Tietzi L. Carrying and using weapons: a survey of minority junior high school students in New York City. *Am J Public Health*. 1996;86:568-572.
12. Vanderschmidt HF, Lang JM, Knight-Williams V, Vanderschmidt GF. Risks among inner-city young teens: the prevalence of sexual activity, violence, drugs, and smoking. *J Adolesc Health*. 1993;14:282-288.
13. Sege R, Stringham P, Short SM, Griffith J. Ten years after: examination of adolescent screening questions that predict future violence-related injury. *J Adolesc Health*. 1999;24:395-402.
14. Borowsky IW, Ireland M, Resnick MD. Violence risk and protective factors among youth held back in school. *Ambul Pediatr*. 2002;2:475-484.
15. Schwarz DF, Grisso JA, Miles CG, Holmes JH, Wisher AR, Sutton RL. A longitudinal study of injury morbidity in an African-American population. *JAMA*. 1994;271:755-760.
16. Lewis SF, Fremouw W. Dating violence: a critical review of the literature. *Clin Psychol Rev*. 2001;21:105-127.
17. Howard DE, Wang MQ. Risk profiles of adolescent girls who were victims of dating violence. *Adolescence*. 2003;38:1-14.
18. Silverman JG, Ray A, Mucci LA, Hathaway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *JAMA*. 2001;286:572-579.
19. Spencer GA, Bryant SA. Dating violence: a comparison of rural, suburban, and urban teens. *J Adolesc Health*. 2000;27:302-305.
20. Association for the Advancement of Automotive Medicine. *The Abbreviated Injury Scale 1990 Revision, Update 98*. Des Plaines, Ill: Association for the Advancement of Automotive Medicine; 1998.
21. Naude GP, Bongard FS. From deadly weapon to toy and back again: the danger of air rifles. *J Trauma*. 1996;41:1039-1043.
22. Clubb PA, Browne DC, Humphrey AD, Schoenbach V, Meyer B, Jackson M. Violent behaviors in early adolescent minority youth: results from a "middle school youth risk behavior survey." *Matern Child Health J*. 2001;5:225-235.
23. Dukarm CP, Byrd RS, Auinger P, Weitzman M. Illicit substance use, gender, and the risk of violent behavior among adolescents. *Arch Pediatr Adolesc Med*. 1996;150:797-801.
24. Sege R, Stigol LC, Perry C, Goldstein R, Spivak H. Intentional injury surveillance in a primary care pediatric setting. *Arch Pediatr Adolesc Med*. 1996;150:277-283.
25. Hausman AJ, Spivak H, Prothrow-Stith D. Adolescents' knowledge and attitudes about and experience with violence. *J Adolesc Health*. 1994;15:400-406.
26. Sege RD, Kharasch S, Perron C, et al. Pediatric violence-related injuries in Boston: results of a city-wide emergency department surveillance program. *Arch Pediatr Adolesc Med*. 2002;156:73-76.
27. Moskowitz H, Griffith JL, DiScala C, Sege RD. Serious injuries and deaths of adolescent girls resulting from interpersonal violence. *Arch Pediatr Adolesc Med*. 2001;155:903-908.