

# Pediatric Injury Resulting From Family Violence

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**ABSTRACT.** *Objective.* Children who live in violent households are at risk for emotional and physical injury. Although recent research has addressed the emotional impact of witnessing family violence, no study has addressed the inadvertent physical injuries that result to children who witness family violence. The objective of this study was to describe the causes, types, and patterns of pediatric injuries resulting from family violence.

*Methods.* We reviewed the medical records of 139 children who presented to the emergency department with injuries resulting from domestic violence for demographic information, mechanism of injury, type, location, and severity of injury, treatment, and disposition.

*Results.* Children who were injured during domestic violence ranged in age from 2 weeks to 17 years. Although the mean age of the children identified was 5 years, 48% of the children were younger than 2 years. Although the most common dyad involved in the fight was the mother and father (57% of cases), extended family members and nonrelated adults were involved in almost one third of the cases. The most common mechanism of injury was a direct hit (36%). Of the injured children who were younger than 2 years, 59% were injured while being held by parents. Thirty-nine percent of the children were injured during attempts to intervene in fights. The majority of injuries were to the head (25%), face (19%), and eyes (18%). Young children sustained more head and facial injuries than older children, who had disproportionately more extremity trauma. Medical intervention was indicated in 43% of patients, of which 9% required hospital admission and 2% required surgical or intensive care intervention. Of the 91% of children discharged from the emergency department, 73% returned home, and 27% went to alternative homes.

*Conclusions.* Children sustain a wide range of physical injuries from family violence. Because the majority of injuries are minor, specific inquiry into the causes of all pediatric injuries may help further identify children living among family violence. *Pediatrics* 1997;99(2). URL: <http://www.pediatrics.org/cgi/content/full/99/2/e8>; *domestic violence, child abuse, family violence, physical injury.*

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ABBREVIATION. CPS, Child Protective Services.

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Family violence, traditionally defined as child and spousal abuse,<sup>1</sup> is prevalent in American society. In 1993, more than 1 million children were the victims of substantiated maltreatment,<sup>2</sup> and each year, approximately 2 million women are severely assaulted by male partners.<sup>3</sup> Intrafamilial violence not only affects the physical health and emotional well-being of the victim, it also affects those of all family members. It is estimated that more than 3.3 million American children between 3 and 17 years of age are at risk of exposure to parental violence each year.<sup>4</sup> Recent work has highlighted the emotional impact on children who witness domestic violence. Studies suggest that children who witness family violence have increased behavior problems,<sup>5</sup> poor adaptive and social skills,<sup>6</sup> and aggressiveness.<sup>7</sup> Children who live in violent households are also at risk for physical injuries, although little empiric data exist describing the physical injuries children sustain secondary to violence between adults in the family. To date, no study has systematically described the range and severity of physical injuries sustained by children secondary to adults fighting in the household. This article describes the causes, types, and patterns of pediatric injuries that result from family violence.

## METHODS

### Patient Population

A retrospective review of children seen in the emergency department at Children's Hospital of Philadelphia with injuries resulting from family violence between 1984 and 1994 was undertaken. Patients were identified by a search of the hospital's child abuse reporting logs for the period under study. For many years, including all the years of this study, the hospital has reported children injured during family violence to the Child Protective Services (CPS) system for investigation and intervention. The medical records of children identified in the emergency department as being injured during household adult violence and reported to CPS were obtained, and data were abstracted. Children who were victims of direct physical abuse were excluded.

### Procedures

The following data were abstracted from the medical records using a standardized form for data collection: (1) demographic information, (2) date of initial visit and age of the child, (3) the adult accompanying the child to the hospital, (4) individuals involved in the fight, (5) individual who actually injured the child, (6) the use of drugs and/or alcohol by adults involved in the incident, (7) history of events leading to the injury, (8) the location, type, and severity of injury, (9) the mechanism of the injury, (10) treatment required for the injury, and (11) disposition of the child.

### Definitions

Family violence is defined as violence between two or more household members: parents, relatives, intimate partners, or close family friends. Injury severity was stratified a priori as mild,

moderate, or severe. Mild injuries were defined as those that did not require laboratory tests or medical treatment; moderate injuries were defined as those that required medical intervention (eg, suture placement or fracture reduction) or hospitalization for observation or medical treatment; and severe injuries were defined as those that required hospital admission to the intensive care unit or surgical intervention.

### Statistical Analysis

Data were analyzed using EpiInfo version 6 statistical software. All data are reported as means for continuous variables, medians  $\pm$  SD, or frequencies for categorical variables. Chi square, Fisher's exact test, and the Student's *t* test were used when appropriate.  $P < .05$  was considered statistically significant. Odds ratios with 95% confidence intervals are also reported.

## RESULTS

We identified 159 children by review of the child abuse reporting logs between July 1984 and June 1994 who were identified for review. Of these 159 records, 139 (87.4%) met the criteria for the study and were reviewed. The 20 charts not included for analysis were either not available from medical records, or review of the medical records revealed that the children were victims of child abuse. Victims ranged in age from 2 weeks to 16.9 years. Although the mean age of the victims was 5 years, the median age was 2 years. Of the total children seen, 10% were younger than 1 month, 33% were younger than 1 year, and 48% were younger than 2 years. Seventy-five percent of the children were younger than 9 years (Figure). Seventy-seven (55%) of the children were boys. In 77% of cases, the mother brought the child for medical care, whereas in only 2% of cases was the child accompanied by the father.

### Individuals Involved in the Conflict

The mother of the child was involved in the conflict 81% of the time. In 68% of cases the fight involved the child's father, in 13% the mother's boyfriend, and in 16% another relative (grandmother, uncle, aunt, or adult sibling). In 12 cases (9%), more than two adults were involved in the fight. The most common dyad involved in the fight was the mother and father (57% of cases). In 115 (83%) of charts, the person who injured the child was identified. The father was responsible for the injury in 50% of the cases, the mother's boyfriend in 10%. The mother was responsible for the injury in 13% of cases and another adult relative in 9% of cases. Alcohol or drug use by at least one of the fighting adults was present in 27% of cases. In 36% of cases, there was a denial of substance use, and in 37% of cases this information was unknown.

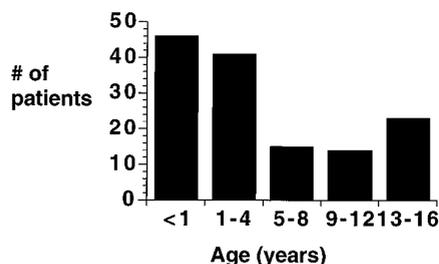


Figure. Age distribution of children in the study.

### Mechanism of Injury

Specific mechanisms of injury are outlined in Table 1. In 9% of cases, the child was injured by another mechanism, including burns ( $n = 4$ ) or penetrating injuries, ie stabbing ( $n = 3$ ) or a gunshot wound ( $n = 1$ ). In 29% of cases ( $n = 40$ ), the child was held in the arms of the parent during the fight, leading to the child's injury. Of the injured children who were younger than 2 years, 59% were injured while being held by a parent. Twenty-four percent of the children ( $n = 33$ ) were injured during an attempt to intervene in the fight. Of the adolescents, 18 (78%) were injured during an attempt to intervene. Injuries during attempts to intervene were noted in 9 children between 9 and 12 years old, 5 children between 2 and 8 years old, and 1 child younger than 2 years.

### Type and Location of Injury

Of the children identified by the CPS reporting logs, 137 of 139 sustained identifiable injuries. The majority of the 197 injuries identified were isolated to one location (Table 2). Of the children injured, 33% incurred injuries to two locations, and 10% of children were injured in more than two locations. Children younger than 5 years were five times more likely to sustain head or facial injuries than children 5 years and older (odds ratio, 5.0; 95% confidence interval, 2.5 to 9.7). Older children (older than 4 years) sustained disproportionately more extremity trauma than younger children ( $P < .05$ ). Half of the injuries were contusions, and another 29% were lacerations or abrasions. Four children sustained fractured bones, and 4 children were burned. Thirty-two percent of children sustained two types of injuries, and 10% had three types of injuries.

### Severity of Injury

Minor injuries were noted in 57% of patients. Forty percent of children required medical intervention and were considered to have moderate injury severity. Of the total children seen, 9% required hospital admission: 7 infants, 3 children between 2 and 7 years of age, and 3 adolescents. Surgical and/or intensive care was required for 2% of children: a 1-month-old girl who was hit in the head with a set of keys, resulting in a complex skull fracture, subdural hematoma and retinal hemorrhages; a 2.5-year-old child who sustained a gunshot wound to the head, resulting in severe brain injury; and a 13-month-old boy who sustained a penetrating injury to

TABLE 1. Mechanism of Injury

Mechanism	Patients, n (%)	% (95% Confidence Interval)
Direct hit	50 (36)	36.0 (28.0–44.5)
Hit by an object	38 (27)	27.3 (20.1–35.5)
Thrown/pushed	21 (15)	15.1 (9.6–22.2)
Dropped	15 (11)	10.8 (6.2–17.2)
Other	12 (9)	8.6 (4.5–14.6)
Burned	4 (3)	2.9 (0.8–7.2)
Stabbed	3 (2)	2.2 (0.4–6.2)
Gunshot	1 (0.7)	0.7 (0.02–3.9)
Unknown	3 (2)	2.2 (0.4–6.2)

**TABLE 2.** Location of Injuries

Location	No. of Injuries (%)	% (95% Confidence Interval)
Head	50 (25.4)	25.4 (19.5–32.0)
Face	37 (18.8)	18.8 (13.6–24.9)
Mouth	10 (5)	5.1 (2.5–9.1)
Eye	35 (17.8)	17.8 (12.7–23.8)
Neck	5 (2.5)	2.5 (0.8–5.8)
Genital	1 (0.5)	0.5 (0.01–2.8)
Trunk	24 (12)	12.2 (8.0–17.6)
Extremity	32 (16.2)	16.2 (11.4–22.2)
Unknown	3 (1.5)	1.5 (0.3–4.4)

the eye when a glass object shattered when thrown by his mother.

Of the children discharged from the emergency department, 73% returned to their homes, and 27% were discharged to alternative homes.

### DISCUSSION

Recent studies examining the effects of domestic violence on children have stressed the emotional, behavioral, and developmental consequences of witnessing family violence. Few articles have specifically addressed the physical danger to children who witness family violence.<sup>8</sup> Nelson<sup>8</sup> describes three children who inadvertently sustained injuries from deadly weapons (guns or knives) during domestic violence disputes.

Our study indicates that children are at risk for sustaining a wide variety of injuries as the result of family violence. Although a few of the children sustained life-threatening trauma, most of the injuries were minor injuries to the head or extremities. Unlike the injury patterns that help identify child abuse, such as multiple or patterned injuries and injuries of different ages, the majority of children who were injured during domestic violence had no such identifiable patterns. They were recognized as being victims of family violence either because they presented with such histories or, less commonly, because probing histories were obtained by the health care provider. Without a disclosure from either the children or adults who accompanied the children to the hospital, the causes of many of these injuries might not have been recognized. Because minor injuries to the head or extremities are so common in children, physicians may not question the causes of isolated, minor injuries and, hence, may fail to recognize subtle physical indicators of family violence.

With the awareness that living among adult violence is detrimental to the psychological development of children, physicians need to recognize all of the indicators of family violence so that appropriate intervention can be offered to families. Minor physical injuries to a child may represent overlooked evidence of family violence. In fact, the injury of a child during adult violence may serve as an immediate precipitant to seeking help. Investigators have reported that the physical abuse of children often is the impetus for women to leave abusive relationships.<sup>9,10</sup> A few of the children in the present study sought care in a hospital emergency department but had no identifiable injuries. This may either reflect a

parent's concern about potential injuries or may represent a family's reaching out for help at a time of crisis. Although the setting for this study was an urban emergency department, children with similar injuries are likely to be seen in the primary care setting. In any medical setting, the fact that a single, minor injury may be the result of intrafamilial violence should encourage physicians to ask about the cause of any newly identified injury.

The major limitation of this study is that we were only able to review the medical records of those children who were recognized and reported as victims of family violence. The 139 children may not be representative of the larger population of children who are victims of intrafamilial violence. Although the majority of children brought for care were young, children of all ages were seen. It is possible that minor injuries to young children are more easily identified as not resulting from normal play. If this is true, we are likely to underestimate and underrecognize the problem in older children. Many additional children were likely to have been seen at the hospital during the study period with injuries from family violence but were not identified as such. Although we cannot estimate the incidence of pediatric injuries that result from domestic violence, this study identifies the wide range of injury type and severity that can result from intrafamilial violence.

Because this was a retrospective study, the data were not always available from the records. Additionally, we were not able to verify the reliability of the information provided in the medical records regarding the causes of the injuries. It is possible that a few of the children were not injured indirectly but were abused children. However, the majority of injuries in our series were minor, and in our experience, abused children with minor injuries are not routinely brought for medical care. Parents who do seek medical care for abused children often identify accidental mechanisms as the causes of the injuries, not domestic or family violence. The history provided by the parents of an abused child is often inconsistent with the injuries identified.<sup>11</sup> In our series the injuries identified were consistent with the mechanisms provided by either the parents or the children. Few of the children had skeletal surveys or laboratory evaluations done to search for occult injuries. Although these procedures might have identified abused children, we reviewed each medical record carefully and eliminated those that clearly represented direct child abuse. Although it is still possible that some of the children in this series were the victims of direct child abuse, we think that the majority of injuries were correctly identified as resulting from adult violence.

It is notable that the vast majority of children were brought for medical care by the mothers alone. The possibility of reporting bias is therefore significant. However, we think it is unlikely that mothers would abuse their children and claim domestic violence as the "accidental" mechanism of injury. In addition, 37% of the children were at least 5 years of age and were able to provide their own reports of the incidents.

From the findings of this study, we can appreciate the need to broaden the definition of family violence.

Research related to the psychological and developmental effects of witnessing domestic violence on the child has focused on parental violence or violence between intimate adult partners. Additionally, the present data suggest that although the most common dyads are mother and father and mother and boyfriend, intrafamilial violence extends beyond parent figures to extended family members and even friends. Despite little data that have specifically addressed the effects of witnessing intrafamilial violence between adults other than parents or parent figures, attention should be paid to all forms of intrafamilial violence rather than what has historically been defined as child abuse or domestic violence.

In conclusion, the present study indicates that children sustain a wide range of physical injuries from family violence. Because the majority of the injuries are minor, routine inquiry into the causes of all pediatric injuries in both primary care and emergency settings may help identify families experiencing violence.

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