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Firearm Homicides of US Children Precipitated by Intimate Partner Violence: 2003–2020

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Abstract

OBJECTIVES: Examine characteristics associated with firearm homicides of children aged 0–17 years precipitated by intimate partner violence (IPV).

METHODS: Data were from the Center for Disease Control and Prevention’s National Violent Death Reporting System (49 states, District of Columbia, Puerto Rico; 2003–2020). Logistic regression was used to examine associations between various characteristics and IPV among child firearm homicides.

RESULTS: From 2003–2020, a total of 11 594 child homicides were captured in the National Violent Death Reporting System, of which 49.3% ($n = 5716$) were firearm homicides; 12.0% ($n = 686$) of child firearm homicides were IPV-related. Among IPV-related child firearm homicides, 86.0% ($n = 590$) were child corollary victims (ie, children whose death was connected to IPV between others); 14.0% ($n = 96$) were teens killed by a current or former dating partner. Child firearm homicides had greater odds of involving IPV when precipitated by conflict, crises, and cooccurring with the perpetrator’s suicide compared with those without these characteristics. Over half of IPV-related firearm homicides of child corollary victims included homicide of the adult intimate partner, of which 94.1% were the child victim’s mother. Child firearm homicides perpetrated by mothers’ male companions (adjusted odds ratio, 6.9; 95% confidence interval, 3.9–12.1) and children’s fathers (adjusted odds ratio, 4.5; 95% confidence interval, 3.0–6.8) had greater odds of involving IPV compared with those perpetrated by mothers.

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CONCLUSIONS: Multiple factors were associated with greater odds of child firearm homicides being IPV-related. Strategies promoting healthy intimate partner relationships starting at a young age; assessment of danger to children in IPV situations; strengthening economic supports for families; creating safe, stable, and nurturing relationships and environments for children; and addressing social and structural inequities are important for preventing firearm homicides of children, including those involving IPV.

In the United States, homicide is the second leading cause of death among children aged 1 to 17 years, and 75% of these deaths are because of firearm injuries.¹ Although firearm homicide disproportionately affects boys and men,² women and children bear the greatest burden of firearm homicides involving family and intimate partner violence (IPV).^{3,4} IPV, sometimes referred to as domestic violence, is defined as physical violence, sexual violence, stalking, and/or psychological aggression, perpetrated by a current or former intimate partner.⁵ An earlier study estimated that 15.5 million (29.4%) of US children are exposed to IPV at home annually.⁶ Relatedly, in 2021, roughly 13.6% of US high school students reported experiencing either physical or sexual violence or both from a dating partner.⁷

The most extreme form of IPV is homicide,⁵ with abusers' access to a firearm significantly associated with increased risk of intimate partner homicide (IPH).⁸ In addition, firearm use in domestic homicides, including IPH, increases risk of multiple homicide victims linked to the intimate partner victim and/or perpetrator (eg, child[ren], family members).⁹ Because of the dangers children and teens face when exposed to IPV in the home and/or in dating relationships, growing attention is being given to IPV and its association with homicides of children and teens.¹⁰⁻¹⁴ Children whose homicides are related to immediate or ongoing conflict between current or former intimate partners, but who are not the intimate partner themselves, called "child corollary victims" from here on, have been found to account for one-quarter of IPV-related homicide victims in previous research.¹² Further findings show around 20% of homicides of children aged 2 to 14 years involved IPV.¹³ In both studies, the majority of child homicide victims were killed with a firearm.^{12,13} A variety of life stressors have been noted as precipitators of these killings, including job problems, relationship dissolution, child custody disputes, IPV, and relationship conflict.^{10,15,16} Other studies show firearms also play a significant role in teen dating violence-related homicides.¹⁷⁻¹⁹ A recent study of IPH among adolescent intimate partner victims found almost two-thirds were killed with a firearm.¹⁷

Understanding the characteristics of firearm violence perpetrated against children, including that which occurs within the context of IPV, is important to prevent firearm homicides of children. The purpose of this study is to examine characteristics associated with firearm homicides of children precipitated by IPV. This study adds to the literature by using multistate data from multiple data sources (death certificates, and law enforcement [LE] and coroner/medical examiner [C/ME] reports), across multiple data years (including the most recent data available), and using a broad age range for children, capturing comprehensive information about firearm homicides of children.

METHODS

We used data from the Centers for Disease Control and Prevention's National Violent Death Reporting System (NVDRS) for 2003 to 2020 from 49 states, the District of Columbia, and Puerto Rico (See Appendix 1 for list of states/jurisdictions included in this study and years of coverage for each). NVDRS is a state-based active surveillance system that captures data on violent deaths in all states/jurisdictions within the United States.⁴ Data from death certificates and LE and C/ME reports are entered into the NVDRS Web-based system by trained abstractors and linked into 1 incident record, using Centers for Disease Control and Prevention guidance.⁴ Extensive details on NVDRS methodology can be found elsewhere.⁴ Child firearm homicides were defined using the World Health Organization's International Classification of Diseases, 10th Revision, underlying cause of death codes X85-Y09, Y87.1²⁰ for children aged 0 to 17 years and with a weapon type of firearm (defined as a weapon that uses a powder charge to fire a projectile; excludes nonpowder guns such as BB or pellet guns and air or gas rifles). IPV-related was defined as a death that is related to immediate or ongoing conflict or violence between current or former intimate partners, including homicides that are associated with IPV that are not deaths of the intimate partners themselves (eg, a father kills his child[ren] because of conflict with his estranged wife).²¹

Procedures

To identify child firearm homicides precipitated by IPV (both within dating relationships [limited to teens] and as child corollary victims), we used the standard NVDRS IPV-related circumstance, which yielded 405 cases. C/ME and LE narratives for non-IPV-related cases were reviewed if they had 1 of the other following characteristics commonly associated with IPV: Jealousy (between intimate partners), the perpetrator was the father of the victim or mother's male companion, the incident was a multiple homicide or homicide-suicide, or >1 person was nonfatally shot in the incident. This yielded an additional $n = 281$ cases. A total of 686 child firearm homicides were identified as IPV-related.

In NVDRS, child custody dispute, relationship dissolution between intimate partners (eg, impending or recent divorce, separation), and an existing domestic violence restraining order against the perpetrator are contextual factors subsumed under the circumstance IPV-related.²¹ To separate out these circumstances for IPV-related child homicide victims, we conducted a literal text search using SAS to find words and terms that matched an a priori list (Appendix 2). Each narrative, matching 1 or more terms, was reviewed by the lead author to determine the absence or presence of these additional circumstances.

Measures

Child and perpetrator demographic characteristics, victim-perpetrator relationship, precipitating circumstances (eg, family relationship problems) that initiated the chain of events leading directly to or significantly contributing to the child's death, and other incident characteristics (eg, homicide-suicide [defined as child's homicide cooccurring with the perpetrator's suicide]) were examined. Race is a social construct and not a biological marker

for disparities²²; therefore, we examined child's race and ethnicity as indicators, not drivers, of inequities.

Although the focus of this study was on IPV-related firearm homicides of children aged 0 to 17 years, we included all firearm homicides of children in the analysis to understand how firearm homicides precipitated by IPV compare with non-IPV-related firearm homicides of children.

Statistical Analysis

All analyses were performed using SAS Version 9.4 (SAS Institute Inc). Descriptive analyses of the number and percentage of homicides by demographic characteristics and a range of circumstances were conducted. Bivariable and multivariable logistic regression analyses were used to estimate the crude odds ratios and adjusted odds ratios (aOR) with 95% confidence intervals (CIs) for the association between characteristics and the outcome variable. Each model controlled for child's sex, age, and race/ethnicity. Statistical significance was set at $\alpha = .05$.

RESULTS

Descriptive Statistics

Firearm Homicides of Children—From 2003 to 2020, a total of 11 594 homicides of children aged 0 to 17 years were captured in NVDRS, of which 49.3% ($n = 5716$) were firearm homicides. Most firearm homicides were among boys (80.1%; $n = 4579$) and Black, non-Hispanic children (62.4%; $n = 3568$). IPV was a precipitating circumstance in 12.0% ($n = 686$) of all child firearm homicides. See Tables 1 and 2 for full results.

Intimate Partner Violence-Related Firearm Homicides of Children—Among child firearm homicides precipitated by IPV, the majority (86.0%; $n = 590$) were corollary (nonintimate partner) victims; the other 14.0% ($n = 96$) were among teens aged 13 to 17 years killed by a current or former dating partner (Table 1). Girls accounted for 52.8% ($n = 362$) of all IPV-related child firearm homicide victims (Table 1); this proportion was higher among teens killed by a current or former dating partner (girls [89.6%; $n = 86$] versus boys [10.4%; $n = 10$]; data not shown). Most (92.4%) IPV-related child firearm homicide victims were 1 of 3 racial and ethnic groups: Black non-Hispanic (29.0%; $n = 199$), Hispanic (13.8%; $n = 95$), and White non-Hispanic (49.6%; $n = 340$). IPV-related child firearm homicide victims were statistically, significantly younger (9.7 years; SE, 0.2) than non-IPV-related child firearm homicide victims (14.7 years; SE, 0.1). Males were the predominant perpetrators of IPV-related child firearm homicides (88.3%; $n = 606$). When the perpetrator was known, biological fathers were the most common perpetrators of IPV-related child firearm homicides (46.1%; $n = 316$), followed by mother's male companion (ie, boyfriend, stepfather; 15.5%; $n = 106$) and biological mother (9.6%; $n = 66$). Among IPV-related firearm homicides of child corollary victims, 51.9% ($n = 306$; data not shown) of the incidents included homicide of the adult intimate partner, of which 94.1% (data not shown) were the child victim's mother. Arguments and family relationship problems precipitated 44.0% ($n = 302$) and 22.2% ($n = 92$) of IPV-related child firearm homicides,

respectively (Table 2). Almost two-thirds (62.1%; $n = 426$) of IPV-related child firearm homicides cooccurred with suicide of the perpetrator. See Tables 1 and 2 for full results.

Multivariable Logistic Regression Analysis

After controlling for child demographics, child firearm homicides perpetrated by mother's male companion (aOR, 6.9; 95% CI, 3.9–12.1) or father (aOR, 4.5; 95% CI, 3.0–6.8) had significantly greater odds of involving IPV compared with homicide perpetrated by mothers of the victim(s) (Table 1). Child firearm homicides perpetrated by those aged 25 to 44 years (aOR, 4.1; 95% CI, 3.1–5.4) and 45 years and older (aOR, 5.1; 95% CI, 3.6–7.3) had significantly greater odds of involving IPV compared with those with perpetrators aged 18 to 24 years. Child firearm homicides precipitated by an argument (aOR, 4.5; 95% CI, 3.6–5.5), family relationship problems (aOR, 2.1; 95% CI, 1.5–3.0), crisis during the previous or upcoming 2 weeks (aOR, 2.4; 95% CI, 1.7–3.5), and/or history of child abuse and/or neglect (aOR, 3.3; 95% CI, 1.4–7.7) had significantly greater odds of involving IPV compared with those without these characteristics (Table 2). Child firearm homicide victims who experienced interpersonal violence in the month preceding their death had 2.8 times greater odds of their deaths involving IPV compared with those without this characteristic (aOR, 2.8; 95% CI, 1.2–6.5). Incidents that cooccurred with the perpetrator's suicide had 16.9 times greater odds of being IPV-related compared with those that did not cooccur with the perpetrator's suicide (aOR, 16.9; 95% CI, 13.1–21.7). See Tables 1 and 2 for full results.

Crises and Stress-Related Circumstances—Family relationship problems and jealousy were crises during the previous or upcoming 2 weeks before the death in 6.8% ($n = 28$) and 1.7% ($n = 7$) IPV-related child firearm homicides, respectively (Table 3). Furthermore, as indicated in the narratives, 38.3% ($n = 261$) of IPV-related child firearm homicides were precipitated by relationship dissolution between intimate partners. A small proportion (4.3%; $n = 29$) of perpetrators of IPV-related child firearm homicides were known to be under a domestic violence restraining order at the time of the fatal incident. Child custody disputes were a precipitating circumstance in 6.7% ($n = 46$) of IPV-related child firearm homicides as indicated in the narratives.

DISCUSSION

This study examined characteristics associated with child firearm homicides precipitated by IPV. The majority (86.0%) of IPV-related child firearm homicides were among child corollary victims whose homicides were related to immediate or ongoing conflict between current or former intimate partners. This finding is consistent with other studies that show IPH often includes additional homicide victims,^{9,11,12} many times with the female intimate partner as the primary target and her child(ren) as corollary victims.^{3,23}

Boys accounted for 80.1% of all child firearm homicide victims, but girls killed with firearms had 6.1 times greater odds of their deaths involving IPV. These findings reflect the disproportionate occurrence of firearm homicides of males in community violence,^{24,25} whereas females bear the greatest burden of firearm homicides involving IPV.^{3,23,26} Furthermore, although child firearm homicide victims across all other racial and ethnic groups had greater odds of their deaths involving IPV compared with Black children, Black

children accounted for almost two-thirds (62.4%; $n = 3568$) of all child firearm homicides in the current study, a finding reflective of the unequal burden of community-related firearm violence on children of color.^{24,25} Taken together, these findings underscore the importance of employing multiple strategies to prevent all child firearm homicides, including, but not limited to: Promoting healthy intimate partner relationships starting at a young age, changing social norms and risk for escalation of violence and retaliatory violence through street outreach and violence interruption, strengthening economic supports for families and youth, and addressing social and structural inequities at the root of youth firearm violence.^{25,27–29}

Perpetrators

Consistent with the extant literature on adult IPH,^{3,9,12,23,26,30} males were the most common perpetrators of IPV-related child firearm homicides in this study. The predominance of males as perpetrators of child firearm homicides involving IPV might largely explain why, compared with mothers, fathers and mothers' male companions (ie, boyfriend, stepfather) had greater odds of being perpetrators of IPV-related child firearm homicides. Previous research found that having perpetrator's nonbiologically-related (step) children in the home increased risk of IPH,⁸ which might partly explain the elevated risk associated with mother's male companions in IPV-related child firearm homicides. In addition, fathers accounted for nearly half of perpetrators of IPV-related firearm homicides of children in the current study. Fathers who kill their own children have been found to more often have a history of family violence,³¹ kill multiple family members,³² and these homicides tend to be motivated by revenge,³³ relationship conflict,³⁴ disproportionately committed with firearms,³⁵ and frequently cooccur with the perpetrator's suicide.^{32,36–38} Teaching fathers about the consequences of IPV for children's well-being has been proposed as an effective strategy in motivating them to increase engagement in services designed to prevent and address IPV in the home.³⁹

Child firearm homicides that cooccurred with suicide of the perpetrator had almost 17 times the odds of being IPV-related compared with those that did not cooccur with perpetrator's suicide. Studies show homicide–suicide is more uniquely associated with IPH than any other type of homicide, with firearms being the primary weapon used in these incidents.^{40,41} One study found that nearly half of male-perpetrated IPH that included child victims also cooccurred with suicide of the perpetrator.⁴¹ Others report homicide–suicide is a characteristic more commonly associated with fathers as perpetrators of IPV-related homicides.^{37,38} Firearms provide limited opportunity for intervention and have high case-fatality rates.⁴² Studies suggest that creating protective environments by reducing access to firearms among persons at risk for harming themselves, their children, and/or their intimate partner might be effective in preventing suicide and IPV-related firearm homicides.^{27,37,43}

IPH Among Teens

In this study, 96 teens aged 13 to 17 years were killed by a current or former dating partner. We did not examine characteristics and circumstances for this group separately from child corollary (nonintimate partner) victims, because others have discussed the circumstances surrounding teen IPHs in detail.¹⁷ A recent study, specific to IPH of adolescents and teens,

found the majority of victims were female and killed with a firearm, with broken desired relationship or jealousy, argument or altercation, reckless firearm behavior, and pregnancy-related factors being noted as the most common precipitators.¹⁷ School-based programs that provide dating violence awareness, prevention, and intervention services to youth, as part of the curriculum, have been recognized as effective in reducing teen dating violence victimization and perpetration.^{27,44,45}

Precipitating Circumstances

Conflict and Relationship Dissolution—Similar to past studies that identified relationship conflict as a common precipitator in adult IPH,^{26,46} we found child firearm homicides precipitated by family relationship problems, crises, and arguments had significantly greater odds of involving IPV compared with those without these characteristics. High levels of conflict and stress between intimate partners can foster violence.⁴⁷ In this regard, the relationship may be characterized by frequent arguments, child custody disputes, relationship or marital discord, and IPV, all known precipitators of both IPH and child homicides.^{15,16,26,31,48} One study found the majority (62.1%) of perpetrators in homicide–suicide incidents with child victims were experiencing intimate partner problems before killing the child.¹⁶ Further findings, specific to adolescents and teens, indicated one-quarter of IPH incidents were precipitated by an argument or altercation.¹⁷

Furthermore, children might also be killed as a form of revenge or retaliation against the intimate partner, often for leaving or attempting to leave the relationship.^{48–50} Some suggest, in these homicides, the perpetrator reacts to the loss of a significant relationship by displacing their feelings of anger for the spouse onto the child.⁵⁰ Others posit anger and a loss of a sense of identity might be the main motivating factors for fathers killing their children, and this anger may stem from a loss of social power caused by the dissolution of a significant relationship.⁵¹ In the current analysis, 38.3% of IPV-related firearm homicides of children were precipitated by relationship dissolution between intimate partners. The most dangerous time for IPV victims is when the victim attempts to leave or has recently ended the relationship with the abuser.^{8,52} Risk to the victim's personal safety and that of their children might influence decisions as to whether to remain in the abusive relationship. This is particularly relevant given that we found in IPV-related firearm homicides of child corollary (nonintimate partner) victims, over half included homicide of the adult intimate partner, with 94.1% of fatal intimate partner victims being the child victim's mother. Taken together, these findings show the safety of the mother is closely linked to that of her children, underscoring the importance of taking the needs of both adult victims and their children into consideration when assessing risk of lethal danger in IPV situations. Multiple tools exist for assessing lethal danger in IPV situations, yet many do not include risk of lethal danger to children living in the household as a central element.^{37,53} Knowledge of the range of risks posed to children exposed to IPV in the home might be useful in court determinations regarding child custody, social services assessments, and the development of a safety plan with adult victims and their children,^{53,54} and in turn might prevent IPV-related firearm homicides of children.

Cooccurrence of IPV and Abuse and Neglect-Related Factors—Firearm homicides of children who had a history of abuse and/or neglect and experienced interpersonal violence in the month preceding their death had greater odds of involving IPV compared with those without these characteristics. Studies show children in homes with IPV are at greater risk of experiencing multiple forms of abuse,^{55,56} with 1 earlier study reporting an estimated 30% to 60% cooccurrence of child abuse and neglect and children's exposure to IPV in the home.⁵⁷ Approaches that target multiple forms of violence in families might aid in preventing harm to children.⁵⁸

Prevention

Firearm violence in all its forms, including that which is IPV-related, is preventable. A broad range of evidence-based programs, policies, and practices have been developed to help prevent IPV in general and that which involves the use of firearms.^{27,59} Evidence from these programs highlights the importance of:

1. teaching safe and healthy relationship skills and conflict resolution;
2. disrupting the developmental pathways toward partner violence;
3. creating safe, stable, and nurturing relationships, environments, and communities for children and youth;
4. creating protective environments; and
5. supporting IPV survivors to increase safety and lessen harms, as strategies to reduce IPV across the lifespan.^{27,58}

Furthermore, a variety of federal and state laws focused on reducing access to firearms for individuals with a history of domestic violence have been implemented.⁵⁹ For example, a recent review of the evidence concluded that prohibitions associated with domestic violence restraining orders have been associated with decreases in total and firearm-related IPH⁵⁹; this may also translate into a reduced risk of harm to children in IPV situations. In addition, assessment of IPV in pediatric settings has been recommended as a practice-based approach to help identify and address child safety issues, including exposure to IPV.⁶⁰ One study that used screening for child safety issues among parents at an outpatient pediatric clinic found that 15% of children screened had been exposed to IPV.⁶¹ These strategies show prevention of IPV-related firearm homicides among children requires a multifaceted approach.

Limitations

This study had several limitations. First, NVDRS data abstractors are limited to information included in investigative reports; there may have been incidents wherein some characteristics were present for the decedent but not captured in NVDRS. Second, in NVDRS, some precipitating circumstances (eg, child custody dispute) are subsumed under the circumstance IPV-related and might have been absent from LE and/or C/ME narratives used in the literal text search. Consequently, there may have been instances wherein these circumstances were not included in the narratives. Third, examining prespecified circumstances via the literal text search may have led to the exclusion of other factors associated with IPV-related child firearm homicides. Fourth, NVDRS does not systematically capture perpetrator motives,

limiting our ability to present this additional context. Finally, states/jurisdictions joined NVDRS in different years, so data were not available from all states/jurisdictions for all years, limiting generalizability. Despite these limitations, our findings provide insights into the role IPV plays in firearm homicides of children, converging with patterns seen in IPH among adults.

CONCLUSIONS

This study adds to the existing literature on IPH involving adult intimate partners, providing additional evidence that IPV threatens the safety and well-being of children, including teens in dating relationships. In this study, conflict, crises, and other contributors emerged as factors associated with greater odds of IPV being a precipitator in firearm homicides of children. Furthermore, although the focus of this study was on children, over half of IPV-related firearm homicides of child corollary (nonintimate partner) victims included homicide of the adult intimate partner, mostly the child victim's mother. Consequently, it is important to consider results from this study in combination with findings that emerge from studies on adult IPH. Moreover, although this study included teen IPH victims, most IPV-related child firearm homicides were corollary victims; future studies might consider disaggregating firearm homicides among child corollary victims and teen IPH victims. Firearm violence is a preventable public health crisis affecting countless children, families, and communities in the United States. Addressing multiple contributors of firearm violence, and those specific to IPV, is important for preventing firearm homicides of children.^{27,28}

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Dr Wilson conceptualized and designed the study, coordinated statistical analyses, drafted the initial manuscript, manually reviewed narratives for a subset of circumstance variables, and revised and critically reviewed the manuscript for important intellectual content; Dr Xu created the SAS data set, conducted the initial and final statistical analyses, contributed to the initial draft of the manuscript, and reviewed and revised the manuscript; Mr Betz created the SAS data set, reviewed data for accuracy and completeness, conducted the initial descriptive analysis, and reviewed and revised the manuscript; Drs Sheats and Blair, and Ms Nguyen contributed to the initial manuscript draft, and reviewed and revised the manuscript; Ms Yue conducted verification analyses of initial and final results, contributed to the initial draft of the manuscript, and reviewed and revised the manuscript; Dr Fowler conceptualized and designed the study, and revised and critically reviewed the manuscript for important intellectual content; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

ABBREVIATIONS

aOR	adjusted odds ratio
CI	confidence interval
C/ME	coroner or medical examiner
IPH	intimate partner homicide

IPV	intimate partner violence
LE	law enforcement
NVDRS	National Violent Death Reporting System
SE	Standard error

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WHAT'S KNOWN ON THIS SUBJECT:

Firearm access in intimate partner violence (IPV)-related situations is associated with increased risk of homicide to intimate partners and additional persons (eg, children). Various life stressors (eg, relationship dissolution) are known precipitators of IPV-related firearm homicide.

WHAT THIS STUDY ADDS:

This study provides insight into the role IPV plays in the overall scope of firearm violence perpetrated against children, converging with patterns seen in intimate partner homicide among adults.

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Bivariable and Multivariable Analysis of Firearm Homicides of Children Involving Intimate Partner Violence, Ages 0 to 17 Years, by Child Victim and Perpetrator Characteristics and Location of Injury: National Violent Death Reporting System, 49 States, the District of Columbia, and Puerto Rico, 2003 to 2020

TABLE 1

Characteristics	Non-IPV-Related (N = 5030) n (%) ^e	IPV-Related (N = 686) n (%) ^e	Total (N = 5716) n (%) ^e	Crude OR ^f (95% CI)	P ⁱ	aOR ^f (95% CI)	P ⁱ
Child's age (y): Mean (SE) ^a	14.7 (0.1 SE)	9.7 (0.2 SE)	14.1 (0.1 SE)	0.8 (0.8–0.8) ^g	<.001	N/A	N/A
Child's sex							
Boys	4255 (84.6)	324 (47.2)	4579 (80.1)	1.0 (reference)	N/A	N/A	N/A
Girls	775 (15.4)	362 (52.8)	1137 (19.9)	6.1 (5.2–7.3)	<.001	N/A	N/A
Child's race and ethnicity							
American Indian or Alaska Native non-Hispanic, Asian American or Pacific Islander non-Hispanic ^b	84 (1.7)	28 (4.1)	112 (2.0)	5.6 (3.6–8.9)	<.001	N/A	N/A
Black non-Hispanic	3369 (67.0)	199 (29.0)	3568 (62.4)	1.0 (reference)	N/A	N/A	N/A
Hispanic	779 (15.5)	95 (13.8)	874 (15.3)	2.1 (1.6–2.7)	<.001	N/A	N/A
2 or more races, other race, unspecified race, non-Hispanic	85 (1.7)	24 (3.5)	109 (1.9)	4.8 (3.0–7.7)	<.001	N/A	N/A
White non-Hispanic	713 (14.2)	340 (49.6)	1053 (18.4)	8.1 (6.7–9.8)	<.001	N/A	N/A
Location of injury							
House or apartment	1982 (39.4)	572 (83.4)	2554 (44.7)	1.0 (reference)	N/A	1.0 (reference)	N/A
Street, road, sidewalk, alley, highway, freeway	1672 (33.2)	25 (3.6)	1697 (29.7)	0.1 (0.0–0.1) ^h	<.001	0.1 (0.1–0.2) ^h	<.001
Motor vehicle, public transportation or station, railroad tracks, bridge	463 (9.2)	34 (5.0)	497 (8.7)	0.3 (0.2–0.4) ^h	<.001	0.3 (0.2–0.5) ^h	<.001
Park, playground, sports or athletic area, natural area	228 (4.5)	29 (4.2)	257 (4.5)	0.4 (0.3–0.7)	<.001	0.7 (0.4–1.1)	.095
Other public location (eg, service station, parking lot, public parking garage)	376 (7.5)	12 (1.7)	388 (6.8)	0.1 (0.1–0.2) ^g	<.001	0.2 (0.1–0.4)	<.001
School (eg, middle school, high school) ^c	30 (0.6)	3 (0.4)	33 (0.6)	—	—	—	—
Other location (eg, office building, abandoned house, building, or warehouse)	135 (2.7)	5 (0.7)	140 (2.4)	0.1 (0.1–0.3) ^g	<.001	0.2 (0.1–0.5)	<.001
Unknown ^c	144 (2.9)	6 (0.9)	150 (2.6)	—	—	—	—
Injury occurred at the victim's residence							
Yes	970 (19.3)	484 (70.6)	1454 (25.4)	10.0 (8.4–12.0)	<.001	4.2 (3.4–5.1)	<.001
No	3837 (76.3)	191 (27.8)	4028 (70.5)	1.0 (reference)	N/A	1.0 (reference)	N/A

Characteristics	Non-IPV-Related (N = 5030) n (%) ^e	IPV-Related (N = 686) n (%) ^e	Total (N = 5716) n (%) ^e	Crude OR/ (95% CI)	P i	aOR/ (95% CI)	P i
Unknown ^c	223 (4.4)	11 (1.6)	234 (4.1)	—	—	—	—
Perpetrator							
Child's biological father	92 (1.8)	316 (46.1)	408 (7.1)	4.4 (2.9–6.5)	<.001	4.5 (3.0–6.8)	<.001
Child's biological mother	84 (1.7)	66 (9.6)	150 (2.6)	1.0 (reference)	N/A	1.0 (reference)	N/A
Mother's male companion (ie, boyfriend, stepfather)	30 (0.6)	106 (15.5)	136 (2.4)	4.5 (2.7–7.5)	<.001	6.9 (3.9–12.1)	<.001
Dating partner (current or former) ^{c,d}	0 (0.0)	96 (14.0)	96 (1.7)	—	—	—	—
Acquaintance, friend	621 (12.3)	21 (3.1)	642 (11.2)	0.0 (0.0–0.1) ^h	<.001	0.1 (0.1–0.2) ^h	<.001
Family member, including foster parent (eg, grandparent, sibling)	209 (4.2)	7 (1.0)	216 (3.8)	0.0 (0.0–0.1) ^h	<.001	0.1 (0.0–0.1) ^h	<.001
Rival gang member ^c	121 (2.4)	2 (0.3)	123 (2.2)	—	—	—	—
Stranger ^c	393 (7.8)	4 (0.6)	397 (6.9)	—	—	—	—
Other person known to victim	309 (6.1)	34 (5.0)	343 (6.0)	0.1 (0.1–0.2) ^g	<.001	0.3 (0.2–0.5)	<.001
Relationship unknown ^c	3171 (63.0)	34 (5.0)	3205 (56.1)	—	—	—	—
Perpetrator sex							
Males	2931 (58.3)	606 (88.3)	3537 (61.9)	0.4 (0.3–0.6)	<.001	1.2 (0.8–1.7)	.340
Females	165 (3.3)	78 (11.4)	243 (4.3)	1.0 (reference)	N/A	1.0 (reference)	N/A
Unknown ^c	1934 (38.4)	2 (0.3)	1936 (33.9)	—	—	—	—
Perpetrator's age (y)							
<18	667 (13.3)	37 (5.4)	704 (12.3)	0.6 (0.4–0.9) ^h	.006	0.6 (0.4–0.9) ^h	.008
18–24	1032 (20.5)	99 (14.4)	1131 (19.8)	1.0 (reference)	N/A	1.0 (reference)	N/A
25–44	511 (10.2)	372 (54.2)	883 (15.4)	7.6 (5.9–9.7)	<.001	4.1 (3.1–5.4)	<.001
45	142 (2.8)	119 (17.3)	261 (4.6)	8.7 (6.3–12.0)	<.001	5.1 (3.6–7.3)	<.001
Unknown ^c	2678 (53.2)	59 (8.6)	2737 (47.9)	—	—	—	—

IPV-related is defined as a homicide that is related to immediate or ongoing conflict or violence between current or former intimate partners, and also includes homicides that are associated with IPV that are not deaths of the intimate partners themselves (eg, a father kills his child[ren] because of conflict with his estranged wife). A total of 686 child firearm homicides were IPV-related, of which $n = 590$ (86.0%) were child corollary (nonintimate partner) victims; the other 14.0% ($n = 96$) were among teens aged 13 to 17 years killed by a current or former dating partner. Coroner or medical examiner and law enforcement narratives were reviewed to enhance data completeness and accuracy of IPV-related child firearm homicides. Data for this study come from the following states/jurisdictions: Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia (2003–2020); Colorado, Georgia, North Carolina, Rhode Island, and Wisconsin (2004–2020); Kentucky, New Mexico, and Utah (2005–2020); Ohio (2011–2020) and Michigan (2014–2020); New York (2015–2018; 2020); Hawaii (2015, 2016, 2019); Arizona, Connecticut, Kansas, Maine, Minnesota, New Hampshire, and

Vermont (2015–2020); Illinois, Indiana, Iowa, Pennsylvania, and Washington (2016–2020); California, Delaware, District of Columbia, Nevada, Puerto Rico, and West Virginia (2017–2020); Alabama, Louisiana, Missouri, and Nebraska (2018–2020); Montana, North Dakota, and Wyoming (2019–2020); and Arkansas, Idaho, Mississippi, South Dakota, Tennessee, and Texas (2020). A total of 11 597 homicides of children aged 0 to 17 years were captured in these jurisdictions during 2003 to 2020; 3 child firearm homicides were excluded because of missing child's race and ethnicity, bringing the total number to $N = 11\ 594$. N/A, not applicable. —, Denotes victim and perpetrator characteristics with a cell count of ≤ 5 or unknown or missing responses and, thus, these were excluded from bivariable and multivariable analyses.

^a Age distribution for IPV-related child firearm homicide victims: (aged <1 year [infants; $n = 31$; 4.5%]; aged 1–5 years [$n = 163$; 23.8%]; aged 6–10 years [$n = 169$; 24.6%]; aged 11–12 years [$n = 49$; 7.1%]; and aged 13–17 years [$n = 274$; 39.9%]). Age distribution for non-IPV-related child firearm homicide victims (aged <1 year [infants; $n = 38$; 0.8%]; aged 1–5 years [$n = 248$; 4.9%]; aged 6–10 years [$n = 249$; 5.0%]; aged 11–12 years [$n = 167$; 3.3%]; and aged 13–17 years [$n = 4328$; 86.0%]).

^b Percentages might not total 100% because of rounding.

^c Crude ORs measure the association between each characteristic and IPV-related. Models for aOR were adjusted for child's sex, age, and race and ethnicity. aORs for child's age, sex, and race and ethnicity are not presented.

^d Statistical significance is at an α level of .05.

^e The crude OR and CI for these variables appear to be the same because of rounding to the first decimal place. When these estimates are presented in additional decimal places, they are different: Child victim's age (OR, 0.825; 95% CI, 0.813–0.838), other public location (OR, 0.111; 95% CI, 0.062–0.198), other location (OR, 0.128; 95% CI, 0.052–0.315), and other person known to victim (OR, 0.140; 95% CI, 0.087–0.226).

^f American Indian/Alaska Native non-Hispanic and Asian American/Pacific Islander non-Hispanic children were combined because of low frequency for children in these 2 racial and ethnicity groups.

^g The crude OR, aOR, and/or CI for these variables appear to be the same because of rounding to the first decimal place. When these estimates are presented in additional decimal places, they are different: Street, road, sidewalk, alley, highway, freeway (OR, 0.052; 95% CI, 0.035–0.078 and aOR, 0.148; 95% CI, 0.097–0.226); motor vehicle, public transportation (OR, 0.255; 95% CI, 0.177–0.365 and aOR, 0.327; 95% CI, 0.222–0.483); acquaintance, friend (OR, 0.043; 95% CI, 0.025–0.074 and aOR, 0.099; 95% CI, 0.054–0.180); family member (OR, 0.043; 95% CI, 0.019–0.097 and aOR, 0.058; 95% CI, 0.025–0.134); and perpetrators aged <18 years (OR, 0.578; 95% CI, 0.392–0.854 and aOR, 0.579; 95% CI, 0.385–0.870).

^h Crude ORs and aOR are not presented because of cell count of ≤ 5 or unknown response. Victim and perpetrator characteristics with missing or unknown data were excluded from bivariable and multivariable analyses.

ⁱ Includes teens aged 13 to 17 years killed by a current or former dating partner.

TABLE 2
 Bivariable and Multivariable Analysis of Firearm Homicides of Children Involving Intimate Partner Violence, Ages 0 to 17 Years, by Precipitating Circumstances: National Violent Death Reporting System, 49 States, the District of Columbia, and Puerto Rico, 2003 to 2020

Precipitating Circumstances ^a	Non-IPV-Related (N = 5030) n (%)	IPV-Related (N = 686) ^f n (%)	Total (N = 5716) n (%)	Crude OR ^g (95% CI)	P ^h	aOR ^g (95% CI)	P ^h
Family relationship problem ^b							
Yes	115 (4.4)	92 (22.2)	207 (6.8)	6.3 (4.7–8.5)	<.001	2.1 (1.5–3.0)	<.001
No/unknown	2528 (95.6)	322 (77.8)	2850 (93.2)	1.0 (reference)	N/A	1.0 (reference)	N/A
Victim of interpersonal violence during past mo ^c							
Yes	19 (0.6)	13 (2.4)	32 (0.9)	4.0 (1.9–8.1)	<.001	2.8 (1.2–6.5)	.018
No/unknown	3027 (99.4)	525 (97.6)	3551 (99.1)	1.0 (reference)	N/A	1.0 (reference)	N/A
Argument ^d							
Yes	995 (19.8)	302 (44.0)	1297 (22.7)	3.2 (2.7–3.8)	<.001	4.5 (3.6–5.5)	<.001
No/unknown	4035 (80.2)	384 (56.0)	4419 (77.3)	1.0 (reference)	N/A	1.0 (reference)	N/A
Crisis during previous or upcoming 2 wk							
Yes	125 (2.5)	71 (10.4)	196 (3.4)	4.5 (3.3–6.1)	<.001	2.4 (1.7–3.5)	<.001
No/unknown	4905 (97.5)	615 (89.7)	5520 (96.6)	1.0 (reference)	N/A	1.0 (reference)	N/A
History of child abuse and/or neglect ^e							
Yes	17 (0.4)	11 (2.0)	28 (0.6)	5.0 (2.3–10.7)	<.001	3.3 (1.4–7.7)	.006
No/unknown	4054 (99.6)	527 (98.0)	4581 (99.4)	1.0 (reference)	N/A	1.0 (reference)	N/A
Homicide–suicide incident ^e							
Yes	193 (3.8)	426 (62.1)	619 (10.8)	41.1 (33.2–50.7)	<.001	16.9 (13.1–21.7)	<.001
No/unknown	4837 (96.2)	260 (37.9)	5097 (89.2)	1.0 (reference)	N/A	1.0 (reference)	N/A

IPV-related is defined as a homicide that is related to immediate or ongoing conflict or violence between current or former intimate partners, and also includes homicides that are associated with IPV that are not deaths of the intimate partners themselves (eg, a father kills his child[ren] because of conflict with his estranged wife). Data for this study come from the following states/jurisdictions: Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia (2003–2020); Colorado, Georgia, North Carolina, Rhode Island, and Wisconsin (2004–2020); Kentucky, New Mexico, and Utah (2005–2020); Ohio (2011–2020) and Michigan (2014–2020); New York (2015–2018; 2020); Hawaii (2015, 2016, 2019); Arizona, Connecticut, Kansas, Maine, Minnesota, New Hampshire, and Vermont (2015–2020); Illinois, Indiana, Iowa, Pennsylvania, and Washington (2016–2020); California, Delaware, District of Columbia, Nevada, Puerto Rico, and West Virginia (2017–2020); Alabama, Louisiana, Missouri, and Nebraska (2018–2020); Montana, North Dakota, and Wyoming (2019–2020); and Arkansas, Idaho, Mississippi, South Dakota, Tennessee, and Texas (2020). N/A, not applicable.

^aPrecipitating circumstances are not mutually exclusive; thus, child firearm homicide victims may have 1 or more circumstances.

^aThis represents the overall number of IPV-related child firearm homicides; however, the denominator for precipitating circumstances varied depending on when the circumstance was added to the NVDRS.

^cCrude ORs measure the association between each characteristic and IPV-related. Models for aORs were adjusted for child's sex, age, and race and ethnicity. aORs for child's age, sex, and race and ethnicity are not presented.

^dStatistical significance is at an α level of .05.

^eData collected for homicides since 2013. Denominator is firearm homicides of children with known circumstances during 2013 to 2020 ($n = 3057$).

^fData collected for homicides since 2009. Denominator is firearm homicides of children with known circumstances during 2009 to 2020 ($n = 3583$).

^gCoroner or medical examiner and law enforcement narratives were reviewed to enhance data completeness and accuracy of this circumstance.

^hHomicide-suicide refers to cases where the suspect perpetrated the child homicide and then died by suicide.

TABLE 3

Number and Percentage of Type of Crisis and Stress-Related Circumstances Among Firearm Homicides of Children Involving Intimate Partner Violence, Ages 0 to 17 Years: National Violent Death Reporting System, 49 States, the District of Columbia, and Puerto Rico, 2003 to 2020

Types of Crises and Stress-Related Circumstances	Number (%)
Relationship dissolution ^{a,b}	261 (38.3)
Child custody dispute	46 (6.7)
Incident directly related to perpetrator’s mental illness ^{a,c}	41 (6.0)
Domestic violence restraining order ^{a,d}	29 (4.3)
Family relationship problem was crisis ^e	28 (6.8)
Other circumstance was crisis ^e	14 (3.4)
Jealousy (lovers’ triangle) was crisis ^e	7 (1.7)

Crises and stress-related circumstances are not mutually exclusive; thus, child homicide victims may have 1 or more crises or stress-related circumstances. IPV-related is defined as a homicide that is related to immediate or ongoing conflict or violence between current or former intimate partners, and also includes homicides that are associated with IPV that are not deaths of the intimate partners themselves (eg, a father kills his child[ren] because of conflict with his estranged wife). Data for this study come from the following states/jurisdictions: Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia (2003–2020); Colorado, Georgia, North Carolina, Oklahoma, Rhode Island, and Wisconsin (2004–2020); Kentucky, New Mexico, and Utah (2005–2020); Ohio (2011–2020) and Michigan (2014–2020); New York (2015–2018; 2020); Hawaii (2015, 2016, 2019); Arizona, Connecticut, Kansas, Maine, Minnesota, New Hampshire, and Vermont (2015–2020); Illinois, Indiana, Iowa, Pennsylvania, and Washington (2016–2020); California, Delaware, District of Columbia, Nevada, Puerto Rico, and West Virginia (2017–2020); Alabama, Louisiana, Missouri, and Nebraska (2018–2020); Montana, North Dakota, and Wyoming (2019–2020); and Arkansas, Idaho, Mississippi, South Dakota, Tennessee, and Texas (2020).

^aDenominator is firearm homicides of children with IPV-related circumstance during 2003 to 2020 (*n* = 686).

^bRelationship dissolution includes impending divorce, recent divorce, recent separation or breakup, or dissolving relationship (eg, intimate partner attempted or expressed a desire to end the relationship with the perpetrator) between intimate partners.

^cThe perpetrator’s attack on the child victim was believed to be the direct result of a mental health problem (eg, schizophrenia or other psychotic condition, depression, or posttraumatic stress disorder).

^dThe perpetrator was under a domestic violence restraining order at the time of the fatal incident.

^eData collected for homicides since 2013. Denominator is IPV-related firearm homicides of children with known crisis during 2013 to 2020 (*n* = 415).

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