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RESEARCH ARTICLE

The Role of Intimate Partner Violence in Homicides of Children Aged 2–14 Years

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Introduction: Child victims physically harmed in intimate partner violence incidents are understudied. The U.S. National Violent Death Reporting System abstractors can identify intimate partner violence–related child homicides in part through descriptive narratives from coroner/medical examiner and law enforcement reports. This study characterizes these homicides and assesses how well the coded and narrative data within the National Violent Death Reporting System align in identifying intimate partner violence–related child homicides.

Methods: This study examines homicides of children ages 2–14 years from 16 states for 2005–2014. An existing variable purportedly indicates intimate partner violence–related child homicides where the perpetrator also kills or attempts to kill the intimate partner (Type 1) or intimate partner conflict (e.g., divorce, separation, custody) precedes the homicide (Type 2). The authors read all narratives in 2018 to assess whether the death was intimate partner violence–related and compared this classification to that coded by the National Violent Death Reporting System abstractor.

Results: Of 1,386 child homicide victims, 144 (10.4%) were coded in the National Violent Death Reporting System as intimate partner violence–related. However, from the narratives, an additional 138 were classified as intimate partner violence–related, identifying a total of 280 (20.2%) victims. Of the 280 victims, 54.3% were killed in Type 1 incidents. Compared with other perpetrators of child homicides, intimate partner violence–related perpetrators were more likely to be white, use a firearm, and die by suicide. Type 2 incidents were more likely than Type 1 to be homicide–suicides.

Conclusions: The National Violent Death Reporting System currently understates intimate partner violence–related child homicide cases. Many cases involve immediate intimate partner conflict, suggesting the need for services to help people cope before conflicts lead to deadly incidents. Primary prevention of intimate partner violence may have survival benefits for children.

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INTRODUCTION

The U.S. has the highest rates of child homicide victimization among high-income countries.[1] Children aged 2–14 years in the U.S. are approximately four times more likely to be homicide victims compared with children in other high-income countries,[1] and homicide is the fourth leading cause of death for children in this age group.[2] In 2016, there were an estimated 505 homicides of children aged 2–14 years in the U.S.[3] Research is needed to identify intervention points to prevent this type of violence against children.

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Literature on child homicides is focused largely on filicide (i.e., the killing of one's child)[4–6] and on deaths of newborns and infants (younger than age 2 years).[7] Older adolescents (aged older than 14 years), particularly males, have also received attention in the homicide literature, and these adolescents have relatively high rates of homicide victimization and are largely killed outside the home by their peers.[8] Prior research has also relied on case studies or smaller samples from specific states, correctional/psychiatric units, or arrest cases, whereas studies with larger samples often lack important contextual details for the incidents.[5,9,10] More comprehensive understanding of the circumstances surrounding these homicides is needed. Because more attention has been paid to very young children and older teens, this study focuses on an understudied age group of children aged 2–14 years.

Intimate partner violence (IPV) is a public health problem that affects millions in the U.S. IPV includes physical violence, sexual violence, stalking, and psychological aggression by a current or former intimate partner.[11] Approximately 27% of women and 11% of men in the U.S. experienced IPV during their lifetime and reported an IPV-related impact (e.g., injury, fear, posttraumatic stress disorder symptoms).[12] The most extreme form of IPV is intimate partner homicide. Globally, at least one in seven homicides is perpetrated by an intimate partner.[13] For women, that proportion is even more troubling—a recent study reported that 55% of all homicides of females in the U.S. were IPV-related.[14]

The burden of IPV extends beyond the partners involved—being exposed to IPV in childhood can be detrimental to health outcomes.[15] However, little attention has been paid to other victims who are physically harmed in IPV incidents. One prior study examined IPV-related homicides and found that 20% of victims in these incidents were "corollary" victims (e.g., family, friends whose death is connected to IPV).[16] Few other studies have examined these corollary victims.[17,18] Child victims have been examined in the context of homicide–suicide incidents, where most cases with parent perpetrators were preceded by intimate partner problems.[19,20] Understanding who is at risk of injury is important for systems that interact with IPV victims (e.g., criminal justice, medical care, shelters).

This study examines data from the U.S. National Violent Death Reporting System (NVDRS), a state-level surveillance system with detailed coded data and qualitative narratives on violent deaths from medical examiners/coroners, law enforcement, and vital statistics records. With these diverse sources of information, NVDRS contains rich circumstantial information on violent deaths, including whether a homicide involves IPV. In fact, the data system has a code specifically to identify IPV-related homicides. However, the system is still relatively new and far from perfect—previous research has shown classification problems for child homicide perpetration[21] and homicides by police.[22] Understanding the limitations of data systems allows researchers to find ways to improve the data quality.

This study examines the role of IPV in the homicides of U.S. children aged 2–14 years. The primary research question is: how do IPV-related child homicides differ from other child homicides? This study also assesses how well the coded and narrative data within NVDRS align in identifying IPV-related child homicides.

METHODS

Study Sample

NVDRS contains a census of all deaths classified as homicide, suicide, legal intervention (i.e., subtype of homicide where the victim is killed by a law enforcement officer acting in the line of duty), unintentional firearm injury, or firearm injury of undetermined intent.[23] NVDRS data abstractors code detailed information on victims, alleged perpetrators, mechanisms of injury, and circumstances. The abstractors also write two qualitative narratives for each record, summarizing the findings from the coroner/medical examiner reports and law enforcement records, which contain information gathered through interviews conducted with decedents' friends and family, suicide notes, and other available information. Abstractors are trained to include all stressors and life events from the reports that seem to have contributed to the violent death. Data are collected and linked at the state level and forwarded to the Centers for Disease Control and Prevention (CDC) without personal identifiers.

Data for this study come from the NVDRS Restricted Access Dataset. Deaths coded as homicides or legal intervention deaths for children ages 2–14 years for years 2005–2014 were selected from 16 continuously reporting states (Alaska, Colorado, Georgia, Kentucky, Maryland, Massachusetts, New Jersey, New Mexico, North Carolina, Oklahoma, Oregon, Rhode Island, South Carolina, Utah, Virginia, and Wisconsin). All child homicide cases were identified within NVDRS. This study was deemed exempt by the Harvard Human Subjects IRB.

Measures

Demographics included sex, race, and age (years). The perpetrator information reported pertains to the person identified as the primary suspect. Relationship between victim and perpetrator was categorized as: parent (includes stepparent and foster parent because of small sample sizes), boyfriend/girlfriend (of the victim's parent [e.g., child killed by mom's boyfriend]), other family (includes sibling, grandparent, cousin, uncle), acquaintance (includes boyfriend/girlfriend of victim, friend, acquaintance, schoolmate), and stranger (includes law enforcement officer).

An incident was classified as a homicide–suicide if the perpetrator also died by suicide within 24 hours. Method was categorized as: firearm, blunt or sharp instrument (e.g., clubs, rocks, knives, razors), hanging/strangulation/shaking, and other

(e.g., bodily assault, poisoning, drowning, and motor vehicle). Injured at victim's home was coded as yes or no. Geographic location was categorized as rural versus nonrural based on the 2013 National Center for Health Statistics Urban–Rural Classification Scheme for Counties.[24]

NVDRS abstractors have a code for IPV-related homicides. They use this code if the "homicide/legal intervention is related to immediate or ongoing conflict or violence between current or former intimate partners."[25] According to the coding manual, the code represents a fatal incident where both an intimate partner kills their current or former intimate partner and intimate partner conflict contributed to the victims' death.[25] Such conflicts include domestic disputes or domestic violence. If a dispute, the narrative "should indicate the nature of the dispute (e.g., end of relationship, divorce, or custody dispute) and who was involved in the dispute."[25] The analysis followed this definition from the NVDRS manual both for consistency and to understand how the existing variable was coded. Because intimate partner conflict and domestic disputes do not necessarily indicate previous violence, IPV-related child homicide cases were separated into two mutually exclusive types: Type 1 where the perpetrator also kills/attempts to kill the intimate partner (e.g., the mother of the child) in the same incident that resulted in the child's death, and Type 2 where intimate partner conflict (e.g., divorce, separation, custody) immediately precedes the homicide but only the child, not the partner, is killed.

Statistical Analysis

All narratives were read to assess whether the death was IPV-related. After an initial screening by one author, a second author read all narratives where the first author's classification diverged from that coded by the NVDRS abstractor. In the few cases of disagreement, the authors met and reached agreement.

Within NVDRS, coded IPV-related child homicide cases were compared to the additional cases identified by reading the narratives (i.e., uncoded IPV cases). All identified IPV-related child homicides were compared to non–IPV-related child homicides. Finally, Type 1 and Type 2 IPV-related cases were compared and example narratives of these two types of cases (with some slight alterations to protect privacy) were provided. Percentages reported do not include missing data; the amount of missing data is noted in the tables. Chi-square tests were used to test for significant differences. All analyses were conducted in 2018 using Stata, version 15.1.

RESULTS

There were 1,386 total victims of child homicide aged 2–14 years in NVDRS from 2005 to 2014 in 16 states. Of these, 144 (10.4%) were coded in NVDRS as IPV-related. By reading all of the qualitative narratives from the 1,386 child homicides, another 138 were classified as IPV-related (i.e., uncoded cases). Of the 144 cases that were coded in NVDRS as IPV-related, there were two that could not be classified as IPV-related, based on the narratives alone. In total, 280 IPV-related child homicides (20.2% of all child homicides) were identified. Comparing the 144 cases coded in NVDRS to the 138 cases identified from the narratives as IPV-related, there were no significant differences in most victim, perpetrator, and incident characteristics. However, perpetrators of the uncoded IPV-related cases were more likely to be female, be older, and die by suicide (Appendix Table 1, available online). At the state level, the percentage of IPV-related cases not coded in NVDRS varied substantially—for states with ten or more IPV-related child homicide cases based on the narrative review, anywhere from 15% to 89% of the IPV-related homicides were not coded (not shown).

The 280 child victims of IPV-related homicides were killed in 202 unique incidents. Incidents had between one and four child victims. Compared with other child homicides, victims of IPV-related homicides were more likely to be white (53.6% vs 33.1%, $p<0.001$) and were slightly older (mean age 7.3 vs 6.6 years, $p=0.03$; Table 1). Compared with other perpetrators of child homicides, perpetrators of IPV-related child homicides were more likely to be male (85.1% vs 73.5%, $p<0.001$), white (56.8% vs 39.1%, $p<0.001$), older (mean age 36.7 vs 27.9 years, $p<0.001$), a parent of the victim (79.5% vs 41.4%, $p<0.001$), die by suicide (59.3% vs 5.4%, $p<0.001$), use a firearm (61.7% vs 32.6%, $p<0.001$), and kill at the victim's home (78.5% vs 63.7%, $p<0.001$). Table 1 shows 1,106 (79.8%) non–IPV-related cases (e.g., child abuse, babysitter-inflicted, gang-related deaths).

Examples of IPV-related child homicides by type are provided in Table 2. Of the 138 victims not coded as IPV-related in NVDRS, 44.2% ($n=61$) were killed in Type 1 incidents where the perpetrator also completed or attempted intimate partner homicide. Approximately 56% ($n=77$) of the victims were killed in Type 2 incidents precipitated by intimate partner conflict. Of the total 280 victims of IPV-related homicides, over half (54.3%, $n=152$) were killed in Type 1 incidents, and another 45.7% ($n=128$) were killed in Type 2 incidents. Example narratives from the uncoded cases were very similar to those from the coded cases.

When comparing Type 1 and Type 2 incidents (Table 3), victims involved in Type 1 incidents were less likely to be white (55.9% vs 74.2%, $p=0.001$). Perpetrators of Type 1 incidents were more likely to be male (96.6% vs 71.9%, $p<0.001$), less likely to be a parent of the victim (70.6% vs 90.4%, $p<0.001$), and less likely to die by suicide (49.3% vs 71.1%, $p<0.001$) compared with perpetrators of Type 2 incidents.

DISCUSSION

This study suggests that as many as one in five cases of homicides of children aged 2 to 14 years in the U.S. may be related to IPV. Although few studies examine this

Table 1. Characteristics of Child (Ages 2–14 Years) Homicides by IPV Status, NVDRS, 2005–2014

Characteristics	Total (*n*=1,386)	IPV-related[a] (*n*=280)	Non–IPV-related (*n*=1,106)	*p*-value[b]
Victim				
Sex, % (*n*)				0.18
Male	58.6 (811)	55.0 (154)	59.5 (657)	
Female	41.4 (574)	45.0 (126)	40.5 (448)	
Race/ethnicity, % (*n*)				**<0.001**
White	48.2 (663)	64.3 (180)	44.1 (483)	
Black	40.2 (553)	22.1 (62)	44.8 (491)	
All other races[c]	11.6 (159)	13.6 (38)	11.1 (121)	
Age, years, M (SD)	6.8 (3.8)	7.3 (3.8)	6.6 (4.5)	**0.03**
Perpetrator				
Sex, % (*n*)				**<0.001**
Male	76.2 (888)	85.1 (235)	73.5 (653)	
Female	23.8 (277)	14.9 (41)	26.5 (236)	
Race/ethnicity, % (*n*)				**<0.001**
White	50.3 (532)	67.0 (177)	44.7 (355)	
Black	37.8 (400)	22.7 (60)	42.8 (340)	
All other races[c]	11.9 (126)	10.2 (27)	12.5 (99)	
Age, years, M (SD)	30.1 (11.2)	36.7 (8.9)	27.9 (11.0)	**<0.001**
Relationship to victim, % (*n*)				**<0.001**
Parent	50.9 (550)	79.9 (214)	41.4 (336)	
Boyfriend/girlfriend of parent	16.9 (183)	13.2 (38)	17.9 (145)	
Other family	10.6 (114)	1.9 (5)	13.4 (109)	
Acquaintance	16.2 (179)	4.1 (11)	20.2 (164)	
Stranger	5.4 (58)	0.0 (0)	7.1 (58)	
Incident, % (*n*)				
Homicide–suicide				**<0.001**
Yes	16.3 (226)	59.3 (166)	5.4 (60)	
No	83.7 (1,160)	40.7 (114)	94.6 (1,046)	
Method				**<0.001**
Firearm	38.8 (506)	61.7 (171)	32.6 (335)	
Blunt or sharp instrument	21.6 (282)	13.7 (38)	24.8 (244)	
Hanging, strangulation, shaking	12.2 (159)	11.9 (33)	12.3 (126)	
Other	27.4 (357)	12.6 (35)	31.4 (322)	
Injured at victim's home				**<0.001**
Yes	66.8 (871)	78.5 (216)	63.7 (655)	
No	33.2 (432)	21.5 (59)	36.3 (373)	
Geographic location				0.55
Rural	17.8 (242)	19.1 (53)	17.5 (189)	
Nonrural	82.2 (1,115)	80.9 (225)	82.5 (890)	

Note: Boldface indicates statistical significance ($p<0.05$). Missing data: victim sex (*n*=1, <1%), victim race (*n*=11, <1%), perpetrator sex (*n*=221, 16%), perpetrator race (*n*=328, 24%), perpetrator age (*n*=399, 29%), relationship (*n*=306, 22%), method (*n*=82, 6%), victim's home (*n*=83, 6%), geographic location (*n*=29, 2%).

[a]IPV-related cases include all cases identified by the authors' reading of the qualitative narratives, which summarize the findings from the coroner/medical examiner reports and law enforcement records, for each child homicide.

[b]*p*-values based on χ^2 tests.

[c]All other races includes American Indian/Alaska Native, Asian/Pacific Islander, other, and two or more races.

IPV, intimate partner violence; NVDRS, National Violent Death Reporting System.

exact age group or all child homicide victims, these findings generally align with prior research. Two studies on homicide–suicide incidents involving child victims (aged less than 18 years) found that the majority of incidents were preceded by parental intimate partner problems.[19,20] In addition, among the homicide–suicide incidents that involved parental problems, approximately half involved one parent killing or severely injuring the other.[19] Results from the current study add to the evidence that the burden of IPV extends beyond the

Table 2. Examples of Two Types of IPV-Related Child (Ages 2–14 Years) Homicide Cases, NVDRS, 2005–2014

Type	Uncoded IPV-related cases,[a] % (*n*) (*n*=138)	Total IPV-related cases, % (*n*) (*n*=280)	Example narratives from uncoded cases[a]	Example narratives from coded cases
Type 1: Completed or attempted homicide of intimate partner (e.g., mother of children) (includes cases perpetrated directly by partner/ex-partner of victim)	44.2 (61)	54.3 (152)	• 7-year-old victim discovered strangled in bed; victim's mother also found deceased in residence with head trauma, and the suspect, victim's stepfather, found hanging from a stairway • 35-year-old and 2 children (11- and 13-year-old) shot and killed by estranged husband, who then shot and killed himself • 14-year-old victim was found in her bedroom with multiple stab wounds. Perpetrator and the victim had been dating but broke up the night before the incident.	• 39-year-old wife and 4 stepchildren shot by husband. Shooting was the result of a domestic dispute between the mother of the children and the perpetrator • 29-year-old victim and 2 children (11- and 8-year-old) shot and killed by husband, who then shot and killed himself • 14-year-old female died of a stab wound to the head and torso. Victim had broken up with her boyfriend, the perpetrator, the day before and had started dating another person. The last text on the victim's phone was from her former boyfriend.
Type 2: Precipitated by intimate partner conflict (e.g., divorce, separation or breakup, custody issues)	55.8 (77)	45.7 (128)	• Two 5-year-olds found with father in father's residence. Father and wife were in divorce proceedings and had a settlement meeting the day before. Father shot both victims and shot himself. • 5-year-old found deceased with single gunshot wound. Father became upset during discussions with mother about dividing possessions/assets because they were ending their marriage. Father also shot himself. • 5-year-old and 9-year-old both found at house with gunshot wounds to head. Father set house on fire after shooting the victims because he wanted to get back together with wife and had given her an ultimatum that he was either going to kill himself or the kids if they did not get back together by a deadline. • 4-year-old killed by drug overdose and 8-year-old killed by firearm by father, who then killed himself. Father scheduled to have a final divorce hearing 2 days after he killed his children. Victim/suspect left a rancorous suicide note for his wife. • 2-year-old and 6-year-old shot by father in driveway of mother's home. Father then turned the gun on himself. He was separated from his wife, and on the day of the incident, he was supposed to attend a mediation session regarding the custody of the kids. • 5-year-old killed in a vehicle that had a hose running from the exhaust pipe into the interior of the vehicle by father. Estranged wife was threatening to leave the state and take child with her.	• 7-year-old victim shot and killed by father while she was in bed at his residence. The father then set the house on fire, and shot himself under his chin. The father was in the process of a divorce from the girl's mother. He had warned his wife that she would be a widow before she was a divorcee. • 4-year-old child and his sister and father died of conflagration injuries. The father and his two children were inside a vehicle that he had sprayed gasoline into the interior of the vehicle and ignited the vehicle on fire. The father and his wife were separated and having custody issues with their children. • 6-year-old shot by father who then shot himself. Perpetrator and his wife were in the process of separating at the time. The mother had threatened to take custody of their daughter. • 10-year-old and his brother shot in bed by father who then shot himself. Perpetrator was upset because his wife was planning on leaving him. • 1-year-old and 2-year-old hanged by father who then hanged himself. He killed the children because their mother (his girlfriend) left him. All three were found hanging from a tree in the woods under their home. • 6-year-old and 5-year-old drowned to death by father who then hanged himself. He was having marital issues with his wife (the children's mother). She had filed a restraining order against him and was scheduled to do a custody exchange with him in the early evening the day of the incident. When she arrived, they were all found dead.

Note: These two types of IPV-related child homicide cases are mutually exclusive.
[a]Uncoded cases are those that were not coded as IPV-related by the NVDRS abstractors but that the authors identified as IPV-related by reading the qualitative narratives.
IPV, intimate partner violence; NVDRS, National Violent Death Reporting System.

Table 3. Characteristics of Child (Ages 2–14 Years) Homicides by IPV-Related Type, NVDRS, 2005–2014

Characteristics	Total IPV-related (*n*=280)	Type 1 (*n*=152)	Type 2 (*n*=128)	*p*-value[a]
Victim				
Sex, % (*n*)				0.53
Male	55.0 (154)	53.3 (81)	57.0 (73)	
Female	45.0 (126)	46.7 (71)	43.0 (55)	
Race/ethnicity, % (*n*)				**0.01**
White	64.3 (180)	55.9 (85)	74.2 (95)	
Black	22.1 (62)	27.6 (42)	15.6 (20)	
All other races[b]	13.6 (38)	16.4 (25)	10.2 (13)	
Age, years, M (SD)	7.3 (3.8)	7.7 (4.0)	6.8 (3.6)	0.05
Perpetrator				
Sex, % (*n*)				**<0.001**
Male	85.1 (235)	96.6 (143)	71.9 (92)	
Female	14.9 (41)	3.4 (5)	28.1 (36)	
Race/ethnicity, % (*n*)				0.22
White	67.0 (177)	62.8 (86)	71.7 (91)	
Black	22.7 (60)	27.0 (37)	18.1 (23)	
All other races[b]	10.2 (27)	10.2 (14)	10.2 (13)	
Age, years, M (SD)	36.7 (8.9)	36.2 (9.6)	37.3 (8.0)	0.32
Relationship to victim, % (*n*)				**<0.001**
Parent	79.9 (214)	70.6 (101)	90.4 (113)	
Boyfriend/girlfriend of parent	14.2 (38)	21.0 (30)	6.4 (8)	
Other family, acquaintance[c]	6.0 (16)	8.4 (12)	—[d]	
Incident, % (*n*)				
Homicide-suicide				**<0.001**
Yes	59.3 (166)	49.3 (75)	71.1 (91)	
No	40.7 (114)	50.7 (77)	28.9 (37)	
Method				**0.004**
Firearm	61.7 (171)	61.3 (92)	62.2 (79)	
Blunt or sharp instrument	13.7 (38)	18.7 (28)	7.9 (10)	
Hanging, strangulation, shaking	11.9 (33)	12.7 (19)	11.0 (14)	
Other	12.6 (35)	7.3 (11)	18.9 (24)	
Injured at victim's home				0.52
Yes	78.5 (216)	80.0 (120)	76.8 (96)	
No	21.5 (59)	20.0 (30)	23.2 (29)	
Geographic location				0.27
Rural	19.1 (53)	16.7 (25)	21.9 (28)	
Nonrural	80.9 (225)	83.3 (125)	78.1 (100)	

Note: Boldface indicates statistical significance ($p<0.05$). Type 1 cases include the completed or attempted homicide of the intimate partner (e.g., mother of children); Type 2 cases are precipitated by intimate partner conflict (e.g., divorce, separation, breakup, or custody issues), but the intimate partner is not killed in the incident. Missing data: perpetrator sex (*n*=4, 1%), perpetrator race (*n*=16, 6%), perpetrator age (*n*=29, 10%), relationship (*n*=12, 4%), method (*n*=3, 1%), victim's home (*n*=5, 2%), geographic location (*n*=2, 1%).
[a]*p*-values based on χ^2 tests.
[b]All other races includes American Indian/Alaska Native, Asian/Pacific Islander, other, and two or more races.
[c]Other family and acquaintance combined due to small cell sizes.
[d]Cell sizes <5 not shown.
IPV, intimate partner violence; NVDRS, National Violent Death Reporting System.

intimate partners involved[16]—indeed, intimate partner conflict and violence has substantial spillover effects that can lead to the death of children.

Nearly double the number of IPV-related child homicides were identified through the narratives compared with the existing variable in NVDRS. Because over 40% of the uncoded cases involved the murder or attempted murder of the perpetrator's intimate partner (e.g., the mother of the children), it is surprising that so many were not recorded as IPV-related in NVDRS. The uncoded IPV-related cases generally shared similar characteristics with cases that were identified, which seems to

indicate an oversight by the NVDRS abstractors rather than a deliberate decision about these cases not being related to IPV. CDC routinely runs quality-control analyses to check the abstractor-assigned variables in addition to providing a detailed coding manual and ongoing coding support.[26] However, there may be variations in abstractor coding based on the level of experience or training, and the collection of the circumstances preceding death can vary across jurisdictions and among law enforcement personnel and coroners/medical examiners.[27] As NVDRS data are used to guide prevention programs and few surveillance systems provide the same level of circumstantial details, it is important that these data are accurate. At a minimum, abstractors should indicate IPV-related for all victims in incidents where the intimate partner is killed. Additionally, key words, such as *divorce*, *separation*, *breakup*, *custody*, or *affair*, may function as useful flags for investigating IPV involvement. The undercount of IPV-related cases may also be relevant for other corollary victims (e.g., other family, bystanders) in addition to children. Future research may better illuminate how NVDRS abstractors code variables from the narratives and whether more comprehensive training is needed.

There were differences between IPV-related and non–IPV-related child homicides. IPV-related homicides were overwhelmingly perpetrated by males, corroborating previous research that most perpetrators of IPV that inflict serious injury on a partner are male.[28] This finding also aligns with the fact that perpetrators of IPV-related child homicides are also much more likely to die by suicide, a phenomenon that appears largely specific to males.[16,29] In addition, most IPV-related homicides occurred in the home and were perpetrated with a firearm. Limiting access to firearms, particularly around stressful family events, may limit the number of deaths. Laws restricting access to firearms by abusers under restraining orders have been found to reduce intimate partner homicides[30]; policies restricting access to firearms for IPV abusers should be expanded to nonmarried intimate partners,[31] given that boyfriends and girlfriends of the victim's parent are among the perpetrators of child homicides.

Prior research shows a strong association between having a gun in the home and increased risk of firearm suicide.[32] Given that IPV-related child homicides often occur in the home, using firearms, it makes sense that these cases are likely to result in the suicide of the perpetrator.[33] This study found that nearly 60% of IPV-related child homicides were homicide–suicides compared with only 5% of non–IPV-related child homicides. Suicide is a common characteristic of filicide and familicides.[34,35]

More than half of all IPV-related child homicides involved the perpetrator also killing or attempting to kill the intimate partner. Males perpetrated nearly all of these Type 1 incidents but only two thirds of the Type 2 incidents, consistent with the previous finding that males tend to kill their children and spouse, whereas females kill their children only.[35] Many of the Type 1 and Type 2 incidents involved a divorce, breakup, separation, or custody issues, a finding consistent with existing evidence that triggering events lead perpetrators to experience anger, jealousy, or rage over the abandonment or taking away of the children, ultimately resulting in extreme violence and the death of their children.[4,6] Previous research has identified separation as an important risk factor for intimate partner homicide,[36] and divorce and child custody issues as risk factors in homicide–suicides involving children.[20] Given that exiting the relationship is thought to be the solution for women in abusive relationships, there is a need to more carefully consider how to protect against the danger in doing so for women—and their children.

These findings point to the need for services around divorce and custody cases to ensure that individuals can cope with these conflicts without harming themselves or others. Integrating these services into court/legal systems may be particularly important.[20] There are several instruments that courts and agencies use to make decisions in IPV cases.[37,38] Tools like the Danger Assessment[39] or Domestic Violence Evaluation (to manage risk during and after divorce mediation)[40] have been shown to be predictive of violence against women, allowing for safety planning and referrals to appropriate services.

Limitations

This study uses data for only 16 states for the years 2005–2014, so results may have limited generalizability. The states are not randomly selected but appear to be fairly representative of the U.S. in terms of characteristics, such as geographic location and levels of household gun ownership. NVDRS is expanding and as of 2016, 42 states are funded by CDC to contribute data[27]; future research using expanded data will be informative, particularly to examine specific categories that were collapsed due to sample size (e.g., focusing on mothers versus fathers and biological versus nonbiological parents as perpetrators). There is substantial missing data, particularly in the coded perpetrator variables. In addition, although most cases are accompanied by narratives with qualitative data (only 2% of the victims had no narrative information at all), the amount of detail contained varies greatly between incidents. An IPV-related case could only be identified based on the detail provided in the

narratives, so these results are likely underestimating the true number of IPV-related cases.

CONCLUSIONS

These findings highlight the need to improve the identification of IPV-related child homicide cases in NVDRS. Effective prevention of child homicide requires a clear understanding of how and why children are being killed so that accurate information about the circumstances surrounding these deaths can help direct prevention efforts. Many IPV-related child homicides involved conflicts like divorce or custody issues, suggesting the need for services that help people cope with these conflicts before they lead to violent and deadly incidents. IPV is a well-established public health problem; this study provides additional urgency to focus attention and resources on the primary prevention of IPV, as such efforts may have also substantial survival benefits for children.

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AA conceptualized and designed the study, conducted the data analysis, read all the narratives, helped to interpret the data, drafted the initial manuscript, and revised the manuscript. SBA and GF assisted in the conceptualization and design of the study, reviewed results, and critically reviewed the manuscript. DH assisted in the conceptualization and design of the study, supervised analyses, read narratives where AA's classification diverged from NVDRS, reviewed results, helped to interpret the data, and critically reviewed the manuscript. All authors approved the final manuscript as submitted.

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SUPPLEMENTAL MATERIAL

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