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Risk Factors for Child Death During an Intimate Partner Homicide: A Case-Control Study

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Abstract

Corollary victims represent approximately 20% of all intimate partner homicides (IPH), and many are children. We used National Violent Death Reporting System (NVDRS) data (2003–2017) to compare all IPH incidents with a child corollary victim (n = 227) to all IPH incidents where a child was present but not killed (n = 350). We examined risk factors for child fatality during an IPH. For each risk factor, we calculated the odds ratio for child death during the IPH, adjusting for multiple comparisons. Perpetrator history of suicidal behavior, rape of the intimate partner victim, a non-biological child of the perpetrator living in the home, and perpetrator job stressors increased odds while prior separation of the IPV victim from the perpetrator decreased the odds of a child death during an IPH incident. To our knowledge, this is the first case-control study using live-controls within NVDRS and can help direct prevention efforts for child death during IPH.

Keywords

child maltreatment; homicide; intimate partner violence; risk factors

An estimated 10 million people are physically abused by an intimate partner each year in the United States (Black et al., 2011). The most severe form of intimate partner violence (IPV) is intimate partner homicide (IPH). While the majority of all homicide victims in the United States are male, approximately 70%–80% of IPH victims are female (Fridel & Fox, 2019; Velopulos et al., 2019). A prior study using national data to examine IPH found that over half (54%) of IPH victims died by firearms (Smith et al., 2014). This study also highlighted

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that IPH victims are not limited to intimate partners of the perpetrator and can also include corollary victims, such as friends, family members, neighbors, children and law enforcement personnel who are present during the incident or attempt to intervene (Smith et al., 2014). Corollary victims of IPH represented approximately 20% of all IPH-related deaths; of those who were family members, almost half were under 18 years old (Smith et al., 2014).

Prior research has identified several risk factors for IPH. One of the strongest predictors of IPH is prior IPV, including the perpetrator's previous rape of the victim, threats to harm the victim, threats with a weapon, controlling behaviors, and non-fatal strangulation (Campbell et al., 2007; Spencer & Stith, 2018). In addition, access to firearms greatly increases the risk of IPH. Perpetrator's access to a firearm can increase the risk of homicide for women in abusive relationships as much as five-fold (Campbell et al., 2003). Other risk factors for IPH consistently identified in the literature include unemployment, estrangement, a non-biological child of the perpetrator in the home, and previous mental health problems of the perpetrator (Capaldi et al., 2012; Spencer & Stith, 2018; Stith et al., 2004).

While extant literature has focused on risk factors for IPH, less is known about risk factors for the death of other (here called corollary) victims during an IPH despite research showing that multiple victims, including children, are not uncommon in IPH incidents (Adhia et al., 2019; Hamilton et al., 2013; Smith et al., 2014). A recent nationally representative study highlighted that the use of firearms in a domestic homicide event increases the risk of multiple victims, particularly for male perpetrators (Kivisto & Porter, 2020). Identifying risk factors for child corollary victim death during an IPH offers important screening and intervention opportunities as domestic violence advocates, child protective services, and courts can offer additional protections when children are present and may also be at risk of death. We sought to address this gap in the literature on risk factors for child corollary deaths by conducting a case-control study of IPH incidents where children were killed compared to IPH incidents where children were present but not killed. We used a novel approach within the National Violent Death Reporting System (NVDRS) to identify live controls where children were present but not killed in IPH incidents (Lyons et al., 2020).

Methods

Sample

NVDRS is a state-based active surveillance system for violent deaths (e.g., homicides, suicides, unintentional firearm deaths) in the United States. NVDRS links data from several sources including death certificates, coroner/medical examiner reports, and law enforcement reports into a single report with information on all victims and perpetrators associated with a given incident (Paulozzi et al., 2004). Trained abstractors code detailed information from the various sources on victims, perpetrators, mechanisms of injury, and incident circumstances. For each incident, the abstractors also summarize the findings from the coroner/medical examiner report and the law enforcement report into two qualitative narratives to describe the circumstances that precipitated the death.

For this analysis, we obtained data on IPH from the NVDRS Restricted Access Database for the years 2003 to 2017. States contributing at least 1 year of data in this time

range included: Alaska, Arizona, California, Colorado, Connecticut, Delaware, District of Columbia, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin (Centers for Disease Control and Prevention, 2018). We included incidents that were classified as a homicide and attributed to an intimate partner or ex-partner of at least one of the homicide victims. We considered intimate partnerships included the following NVDRS-coded perpetrator-victim relationships: spouse, ex-spouse, girlfriend or boyfriend (whether current, former or unspecified) and included both opposite and same sex partners. As NVDRS links together all victims from a single incident, we coded all corollary (i.e., non-intimate partner) victims from an IPH incident as IPH-related. There were 8,456 unique IPH incidents that involved a total of 9,212 victims.

Case and Control Definitions

Cases were defined as an IPH incident with at least one child corollary victim who was less than 18 years old and not the intimate partner of the perpetrator. Controls were defined as an IPH incident during which no corollary child victim was killed, but for which a child was present at the time of the IPH. From the IPH incidents without a child corollary victim, we first used the language processing function in JMP software to narrow down potential incidents where a child may have been present by searching for child-related words. JMP displays the most common words found in the narratives, so we could also identify common misspelling of child-related words. We included the following search terms: “child,” “children,” “children’s,” “childrlen,” “chidren’s,” “child’s,” “childrens,” “childres,” “childs,” “daughter,” “daugher,” “daughter’s, “daugter,” “daugther,” “daughthers,” “daughther’s,” “son,” “sons,” “son’s,” “stepdaughter,” “stepdaughters,” “stepdaughter’s,” “stepson,” “stepchildren,” “foster,” “grandchild,” “grandchildren,” “granddaughter,” “grandaughter,” “granddaughters,” “grandson.” Using these search terms, we identified 2,250 unique incidents and next conducted a manual review to determine if a child under the age of 18 was mentioned as being physically present during the IPH. Children needed to be in the same general location (e.g., in the house where the IPH occurred) but did not need to be in the specific location where the IPH incident occurred (e.g., room). We excluded incidents where the child’s age was unclear (i.e., could have been a child over 18 years old).

Measures

We used NVDRS-coded victim and perpetrator age, sex, race/ethnicity (White non-Hispanic, Black non-Hispanic, Hispanic, other) relationship between the victim and perpetrator (biological child of perpetrator, other child, other family member, acquaintance, stranger or missing), intimate partner status (current, former or other), incident location (victim’s home, other home or apartment, or other), weapon (firearm, sharp or blunt instrument, hanging or strangulation, or other) and whether or not it was a homicide-suicide. Incidents were classified as firearm-related when a firearm was used as the weapon for at least one death in the incident. In the IPH incidents where a firearm was used for at least one death, the vast majority of all victims for these incidents were killed with a firearm; only 0.5% (n = 4) of

firearm-related IPH victims were killed by another weapon. After cases and controls were identified, we conducted narrative review to identify ages of any children present during the incident who were not killed and if any children present were injured but not killed.

We then coded narratives for pre-specified potential risk factors for child death based on review articles that identified risk factors for IPV and IPH (Campbell et al., 2007; Capaldi et al., 2012; Spencer & Stith, 2018; Stith et al., 2004). We focused on identification of these risk factors that existed prior to the incident itself, although it could have also occurred during the incident, as something that occurred only during the incident cannot be used in screening. These potential risk factors included perpetrator characteristics (history of suicidal behavior, depression, and substance misuse), relationship characteristics (stalking, rape, separation, threats to the child, protection order violations, pregnant intimate partner, and presence of a non-biological child of the perpetrator in home), and external stressors (financial, legal, child custody or perpetrator job-related stressors). Our goal was to determine which of these documented risk factors for IPV and IPH were also risk factors for corollary child death during an IPH. To focus our study on risk factors which could be used in screening and preventive intervention for IPH, we documented the presence of these risk factors any time prior to the incident. The initial 50 incidents were coded as a group by four team members with robust discussions to align coding practices and ensure consistency. Following the initial group-based coding, two coders divided the remaining narratives to code. Any questions or ambiguity about coding a specific incident were discussed during weekly meetings with the four team members and the incident was reviewed by another trained coder to confirm agreement with the codes applied. Clarifications and disagreements about coding were discussed until we reached a consensus.

Analysis

We used descriptive statistics to summarize victim, incident and perpetrator characteristics comparing case incidents (IPH incidents where children were killed) and control incidents (IPH incidents where children were present but not killed). For the risk factors assessed, we present those coded in at least five incidents. For each risk factors, we calculated odds ratios (OR) and 95% confidence intervals (CI) using logistic regression and Holm's step-down method to account for multiple comparisons. Analyses were completed with Stata 14 (StataCorp, 2015). This study was determined to be exempt from Institutional Review Board approval since all data were deidentified.

Results

The analytic sample included a total of 577 unique IPH incidents that involved 968 victims (644 adults, 324 children). There were 227 case incidents with 597 victims (273 adults, 324 children) and 350 control incidents with 371 adult victims and a child present but not killed. The 227 cases accounted for 2.7% of the 8,456 IPH incidents in NVDRS, and the 324 child victims accounted for 3.5% of the total 9,212 victims in IPH incidents. The majority of IPH adult victims in the total sample (cases and controls) were female (n = 568, 88.2%) and were current intimate partners of the perpetrator (n = 456, 78.9%). Of the 365 corollary victims who were not intimate partners of the perpetrator, 324 were children (88.8%). Intimate

partner victims in the case and control incidents were similar with regard to sex, age and intimate partner status. A greater proportion of intimate partner victims in case incidents were White compared to those in control incidents (57.9% vs 44.5%) (Table 1).

The majority of perpetrators were male (n = 535, 92.7%). The average age of perpetrators was 36.8 (SD = 10.1) years, and perpetrators of case and control incidents were similar in average age. A greater proportion of perpetrators in case incidents were white compared to perpetrators in control incidents (52.7% vs. 34.8%). A greater proportion of case incidents were homicide-suicides (the perpetrator killed the intimate partner and the child(ren) and then died by suicide) compared to control incidents (55.1% vs. 36.9%). Most IPH incidents overall occurred at the victim's home (n = 468, 81.2%) and the majority of perpetrators used a firearm (n = 368, 63.8%), and these proportions were similar between case and control incidents. Children were rarely the first person killed in case incidents (n = 11, 8.5%). Children in control incidents were older on average than children in case incidents (e.g., 23.3% vs. 4.0%, respectively, were aged 12 to 17 years). It was uncommon for a child to be present and injured, but not killed (n = 44, 7.6% overall) (Table 2).

Perpetrator history of suicidal behavior (OR: 2.4; 95% CI: 1.2–4.6), prior rape of the intimate partner victim (OR: 8.9; 95% CI: 2.0–40.4), presence of a non-biological child of the perpetrator in the home (OR: 2.0; 95% CI: 1.2–3.1) and perpetrator job stressors (OR: 3.0; 95% CI: 1.4–6.3) were significantly associated with increased odds of child death during an IPH incident, after accounting for multiple comparisons. Relationship separation (at any time prior to the IPH) was associated with decreased odds of child death during an IPH incident (OR: 0.51; 95% CI: 0.34–0.75) (Table 3).

Discussion

This study examined risk factors for child death in IPH incidents and, to our knowledge, is one of the first case-control studies with live controls using NVDRS. Among the examined risk factors which increase risk of IPH, we found perpetrator history of suicidal behavior, prior rape of the intimate partner victim, the presence of a non-biological child of the perpetrator living in the home, and perpetrator job stressors all increased odds of a child being killed during an IPH incident. While it is critical to remember that all case and control incidents in this study included the homicide of an intimate partner, this study provides additional insight into general IPH risk factors that increase risk of child death during an IPH. Perpetrators of IPH, particularly men, often display violent and controlling behaviors when they feel a loss of control (e.g. resulting from job stress) or jealousy (e.g., from having non-biological child in the home) (Serran & Firestone, 2004). The risk factors we identified may be important for preventing the death of child victims in an IPH. The findings underscore the need for professionals who are in contact with IPV victims (e.g., law enforcement, victim advocates, mental health professionals, primary care physicians, child protective services) to understand the potential risks to children when these risk factors are present and to allow for appropriate safety planning. Future research should seek to better understand the interactions these agencies and professionals have with victims and their children and examine their use of screening and safety planning tools.

Separation of the partners was associated with a decreased odds of a child fatality during an IPH incident. It has been well established in the literature that separation or relationship estrangement, including physical leaving or the start of a legal separation process, is a risk factor for IPH (Campbell et al., 2007; Spencer & Stith, 2018). Studies have shown that the time period shortly after a separation (e.g. the day of or within the first 3 months) poses the highest risk of homicide for IPV victims (Wilson & Daly, 1993). It may be the case that the perpetrator killed the intimate partner victim out of revenge for the separation or as a way to keep or get custody of the children if the partner left with the children. It is also possible that the children were more able to hide, flee, or get away during the incident if the perpetrator was not living with them in their residence.

As this study relied on NVDRS and ascertained risk factors through narrative review, we were dependent on the level of detail included in the NVDRS narrative summaries of the coroner/medical examiner and law enforcement reports. Consequently, important victim, perpetrator, and incident characteristics may not have been collected for all incidents and may result in under-ascertainment of these risk factors (e.g., strangulation was only coded as present prior to the IPH in four incidents (0.7%) compared to 27% among IPH incidents in a 7 year, 11 city study (Glass et al., 2008)). It is not possible to ascertain the degree of missingness in the narrative data, although we are unable to hypothesize why there would be significant differences in narrative summary detail of risk factors by whether or not a child was killed. The narrative review importantly allowed us to restrict control incidents to those in which a child was physically present but not killed, which improves the reliability and specificity of our findings by excluding potential control incidents where a child was not physically present. However, the narratives did not contain the same level of demographic detail for the children who were present but not killed. Although the coroner/medical examiner and law enforcement reports in NVDRS are the only narratives currently released to researchers, some states also complete optional IPV and Child Fatality Review modules which contain further details on these types of homicides. Encouraging states to complete the modules and providing access to the data may provide valuable additional information on children present or killed in the context of IPV and IPH. In addition to the IPH victim risk factors, future research should collect and examine more detailed information on the children to identify child-related risk factors that may distinguish them from becoming fatalities. Additionally, our study did not differentiate between types of intimate partners (e.g., current or former spouses, someone with a shared child, or current or former dating partners). While differentiating between these groups has important policy implications with respect to protection order filing eligibility and custody agreements, we did not have the sample size necessary to assess legal standing or ties between the IP victim and perpetrator a potential risk factor. Finally, our study was limited to states that reported to NVDRS, and as such, is not nationally representative. However, to our knowledge it is the one of the first and largest studies to examine risk factors of child death during an IPH, and includes data over a 16 year period from 37 states that contributed at least 1 year of data each. As NVDRS expands data collection, future research examining whether risk factors differ by geography or over time will be informative

Conclusion

While we should strive to prevent all IPH, IPH incidents involving children are especially heinous. The findings of this study highlight the contribution of certain IPV risk factors (perpetrator history of suicidal behavior, rape of the intimate partner victim, the presence of a non-biological child of the perpetrator living in the home and perpetrator job stressors) to the death of child victims in an IPH incident. The use of using live controls identified through narrative review highlights the potential and utility of NVDRS to conduct case-control studies (Lyons et al., 2020). These results add to a greater understanding of child death within the context of IPH that can help direct prevention efforts. While reducing child deaths in IPH incidents will require a multi-faceted approach, additional screening by IPV and child protective service agencies and greater policy protections for IPV victims with children whose partner exhibits some of the identified risk factors in this study may be important avenues to reduce child deaths in IPH.

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Table 1.

Victim Characteristics.

		Cases 227 IPH Incidents Where Children Were Killed (n of Victims = 597)		Controls 350 IPH Incidents Where Children Were Present But Not Killed (n of Victims = 371)
	Total Victims (n = 968)	**Child Victims (n = 324)**	**Adult Victims (n = 273)**	**Adult Victims (n = 371)**
Victim				
Sex, no. (%)				
Female	736 (76.0)	168 (51.9)	247 (90.5)	321 (86.5)
Male	232 (24.0)	156 (48.1)	26 (9.5)	50 (13.5)
Race/ethnicity, no. (%)				
White, non-Hispanic	488 (50.4)	165 (50.6)	158 (57.9)	165 (44.5)
Black, non-Hispanic	256 (26.4)	88 (27.2)	65 (23.8)	103 (27.8)
Hispanic	144 (14.9)	46 (14.2)	32 (11.7)	66 (17.8)
All other races[a]	80 (8.3)	25 (7.7)	18 (6.6)	37 (10.0)
Age (years), mean (SD)	25.4 (15.6)	7.4 (5.3)	35.6 (11.8)	33.5 (9.0)
Relationship of Corollary Victims to the Perpetrator,[b, c] no. (%)				
Biological child of perpetrator	163 (47.7)	163 (52.2)	0 (0.0)	0 (0.0)
Other child	129 (35.3)	129 (41.3)	0 (0.0)	0 (0.0)
Other family member	32 (8.8)	4 (1.3)	21 (63.6)	7 (35.0)
Acquaintance	37 (10.1)	14 (4.5)	11 (33.3)	12 (60.0)
Stranger	4 (1.1)	2 (0.6)	1 (3.0)	1 (5.0)
Missing	25	12	12	1
Intimate Partner Status,[c] no. (%)				
Current	456 (78.9)	——	181 (79.7)	275 (78.6)
Former	102 (17.6)	——	36 (15.9)	66 (18.9)
Unspecified	20 (3.5)	——	11 (4.8)	9 (2.6)

Missing data: victim age (n = 2).

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

[b] Adult children (18 years or older) of the perpetrator were classified as other family members.

[c] Victim relationship to the perpetrator for corollary victims and intimate partners is shown only for the 365 corollary victims and 578 intimate partners.

Table 2.

Perpetrator and Incident Characteristics (Note: Denominator Is Unique Incidents).

	Total Incidents (n = 577)	Cases IPH Incidents Where Children Were Killed (n = 227)	Controls IPH Incidents Where Children Were Present but Not Killed (n = 350)
Perpetrator			
Sex, no. (%)			35 (10.0)
Female	42 (7.3)	7 (3.l)	315 (90.0)
Male	535 (92.7)	2l8 (96.9)	
Race/ethnicity, no. (%)			117 (34.8)
White, non-Hispanic	236 (42.1)	117 (52.7)	112 (33.3)
Black, non-Hispanic	181 (32.3)	69 (31.1)	63 (18.8)
Hispanic	87 (15.5)	23 (10.4)	14 (13.1)
All other races[a]	56 (10.0)	13 (5.9)	
Age (years), mean (SD)	36.8 (10.1)	37.4 (10.4)	36.4 (10.0)
Incident			
Homicide-suicide, no. (%)			
Yes	254 (44.0)	125 (55.1)	129 (36.9)
No	323 (56.0)	102 (44.9)	221 (63.1)
Location, no. (%)			
Victim’s home	468 (81.2)	189 (83.6)	279 (79.7)
Other home or apt	54 (9.4)	18 (8.0)	36 (10.3)
Other	54 (9.4)	19 (8.4)	35 (10.0)
Weapon, no. (%)			
Firearm	368 (63.8)	145 (63.9)	223 (63.7)
Sharp or blunt instrument	130 (22.2)	49 (21.6)	81 (23.1)
Hanging or strangulation	64 (11.1)	24 (10.6)	40 (11.4)
Other	15 (2.6)	9 (4.0)	6 (1.7)
Children present who were not killed,* no. (%)			
Children 0–1 years old	50 (7.4)	2 (0.9)	48 (10.6)
Children 2–3 years old	79 (11.7)	5 (2.2)	74 (16.4)
Children 4–5 years old	85 (12.5)	3 (1.3)	82 (18.2)

	Total Incidents (n = 577)	Cases IPH Incidents Where Children Were Killed (n = 227)	Controls IPH Incidents Where Children Were Present but Not Killed (n = 350)
Children 6–11 years old	171 (25.2)	7 (3.1)	164 (36.4)
Children 12–17 years old	114 (16.8)	9 (4.0)	105 (23.3)
Unknown exact age (<18)	57 (8.4)	15 (6.6)	42 (9.3)
Child present who was injured but not killed, no. (%)	44 (7.6)	13 (5.7)	31 (8.9)

Missing data: perpetrator race (n = 17), perpetrator age (n = 44), location (n = 1).

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

[*]These are not mutually exclusive, and percentages are for any child within a given age group, not of the total number of children within a given age group.

Table 3.

Hypothesized Risk Factors for Child Death During an Intimate Partner Homicide (Note: Denominator Is Unique Incidents).

Risk Factors	Total Incidents (n = 577)	Cases IPH Incidents Where Children Were Killed (n = 227)	Controls IPH Incidents Where Children Were Present but Not Killed (n = 350)	Odds Ratio (95% CI)	p-Value[a]
Perpetrator Characteristics	N (%)	N (%)	N (%)		
History of suicidal behavior	39 (6.8)	23 (10.1)	16 (4.6)	2.4 (1.2, 4.6)	0.010*
Depression	66 (11.4)	32 (14.1)	34 (9.7)	1.5 (0.9, 2.6)	0.109
Substance misuse	61 (10.6)	21 (9.3)	40 (11.4)	0.8 (0.5, 1.4)	0.403
Relationship Characteristics					
Stalking	13 (2.3)	7 (3.1)	6 (1.7)	1.8 (0.6, 5.5)	0.285
Rape[b]	13 (2.3)	11 (4.9)	2 (0.6)	8.9 (2.0, 40.4)	<0.001*
Separation	160 (27.7)	45 (19.8)	115 (32.9)	0.5 (0.3, 0.8)	<0.001*
Threats to the child	21 (3.6)	9 (4.0)	12 (3.4)	1.2 (0.5, 2.8)	0.738
Protection order violations	7 (1.2)	1 (0.4)	6 (1.7)	0.3 (0.0, 2.1)	0.143
Pregnant intimate partner victim	18 (3.1)	5 (2.2)	13 (3.7)	0.6 (0.2, 1.7)	0.297
Non-biological child of perpetrator in home	86 (14.9)	46 (20.3)	40 (11.4)	2.0 (1.2, 3.1)	0.004*
External Stressors					
Financial stressors	55 (9.5)	23 (10.1)	32 (9.1)	1.1 (0.6, 2.0)	0.694
Legal stressors	46 (8.0)	21 (9.3)	25 (7.1)	1.3 (0.7, 2.4)	0.365
Child custody stressors	59 (10.3)	19 (8.4)	40 (11.4)	0.7 (0.4, 1.3)	0.231
Perpetrator job stressors	31 (5.4)	20 (8.8)	11 (3.1)	3.0 (1.4, 6.3)	0.004*

Note: We focused on identification of risk factors that existed prior to the IPH incident (although some could have also occurring during the incident).

[a]Star indicates estimate was significant after adjusting for multiple comparisons using Holm's step-down method.