

# Child homicide perpetrators worldwide: a systematic review

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## ABSTRACT

**Objective** This study aims to describe child homicide perpetrators and estimate their global and regional proportion to inform prevention strategies to reduce child homicide mortality worldwide.

**Design** A systematic review of 9431 studies derived from 18 databases led to the inclusion of 126 studies after double screening. All included studies reported a number or proportion of child homicides perpetrators. 169 countries and homicide experts were surveyed in addition. The median proportion for each perpetrator category was calculated by region and overall and by age groups and sex.

**Results** Data were obtained for 44 countries. Overall, parents committed 56.5% (IQR 23.7–69.6) of child homicides, 58.4% (0.0–66.7) of female and 46.8% (14.1–63.8) of male child homicides. Acquaintances committed 12.6% (5.9–31.3) of child homicides. Almost a tenth (9.2% (IQR 0.0–21.9) of child homicides had missing information on the perpetrator. The largest proportion of parental homicides of children was found in high-income countries (64.2%; 44.7–71.8) and East Asia and Pacific Region (61.7%; 46.7–78.6). Parents committed the majority (77.8% (61.5–100.0)) of homicides of children under the age of 1 year. For adolescents, acquaintances were the main group of homicide perpetrators (36.9%, 6.6–51.8). There is a notable lack of studies from low-income and middle-income countries and children above the age of 1 year.

**Conclusion** Children face the highest risk of homicide by parents and someone they know. Increased investment into the compilation of routine data on child homicide, and the perpetrators of this homicide is imperative for understanding and ultimately reducing child homicide mortality worldwide.

**Trial registration number** PROSPERO registration number: CRD42015030125.

## INTRODUCTION

Child homicide is the most extreme form of violence against children and a tragic event with serious effects on families and the community. Approximately 95 000 child are murdered each year globally,<sup>1</sup> and the risk of being murdered in childhood is strongly associated with age, gender and geography. The distribution of child homicides by age is U-shaped and skewed towards adolescence.

## What is already known on this topic?

- Child homicide is the most extreme form of violence against children and a tragic event with serious effects on families and the community.
- Approximately 95 000 child are murdered each year globally (UNICEF 2014), and being murdered in childhood is strongly associated with age, gender and geography.
- In many settings, homicide data are incomplete, and information on the victim–perpetrator relationship is lacking, seriously limiting the evidence base needed for devising effective prevention strategies.

## What this study hopes to add?

- Children face the highest risk of homicide by parents, followed by acquaintance.
- The limited availability of data on victim perpetrator relationships of child homicides in many regions, even within countries with well-established homicide monitoring systems, is concerning.

Children aged 15–19 years constitute 57% of the global child homicides, followed by children under the age of 5 years (20%).<sup>1</sup> The majority of child homicide victims (90%) live in low-income and middle-income countries, with the highest child homicide rates found in Latin America.<sup>1</sup> The risk of homicide is particularly high for boys, who account for 70% of all child homicides and for whom homicide rates dramatically increase in late adolescence.<sup>1</sup> Evidence beyond the mere prevalence of child homicide, the sex and age of the victims however remains sparse.

In general, homicides are likely to be under-reported, particularly in countries with poor monitoring systems and suffering from conflict. In many settings, homicide data is often incomplete, and information on the victim–perpetrator relationship is lacking, seriously limiting the evidence base needed for devising effective prevention strategies. Existing studies on child homicide perpetrators often focus on a particular age group or



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type of homicide, for example, filicide or neonaticides; are restricted to high income countries; or rely on small sample sizes or outdated data.<sup>2-5</sup> This systematic review presents a synthesis of existing global data to describe child homicide perpetrators and to estimate their global and regional proportion.

## METHODS

Our systematic review was conducted in accordance with PRISMA guidelines<sup>6</sup> and registered at PROSPERO (Registration number: CRD42015030125) on 9 December 2015. To obtain representative data on the victim-offender relationship of child homicides, we searched the following databases and electronic resources from first record to the 25 April 2017: Medline, Global Health, Embase, PsycINFO, Social Policy, Popline, Pubmed, Web of Science, LILACS, Medcarib, ADOLEC, Cumulative Index to Nursing and Allied Health Literature, Biosis Citation index, KCI-Korean Journal Database, SciELO citation Index, Western Pacific Region Index Medicus, Index Medicus for the WHO Eastern Mediterranean Region and International Bibliography of Social Sciences IBSS. Controlled vocabulary terms specific to each database were used. For each database, terms included those designed to capture 'child homicide' and, where possible, terms to capture perpetrators and to exclude non-relevant article types, such as commentaries. The search strategy is displayed in [box 1](#).

Studies were eligible for inclusion if they stated a number or proportion of children murdered by distinctly stated perpetrator(s). The definition of homicide followed the definitions used in the individual papers or official statistics. The sample could be based on a country, province or town and be derived from national databases, national representative studies, police, court, mortuary or prison data. Studies were excluded if they only reported data collected from newspaper reports or did not differentiate between attempted and completed homicides. Estimates that combined child homicides with adult homicides were excluded. The citations of included articles were also searched. Two authors (HS and AM-G) screened the 6096 abstracts, and the resulting 563 full texts independently and resolved any disagreements by discussion. One hundred twenty-three studies were finally included (see flow chart in [figure 1](#)). HS extracted the data and BD verified each data extraction point for accuracy.

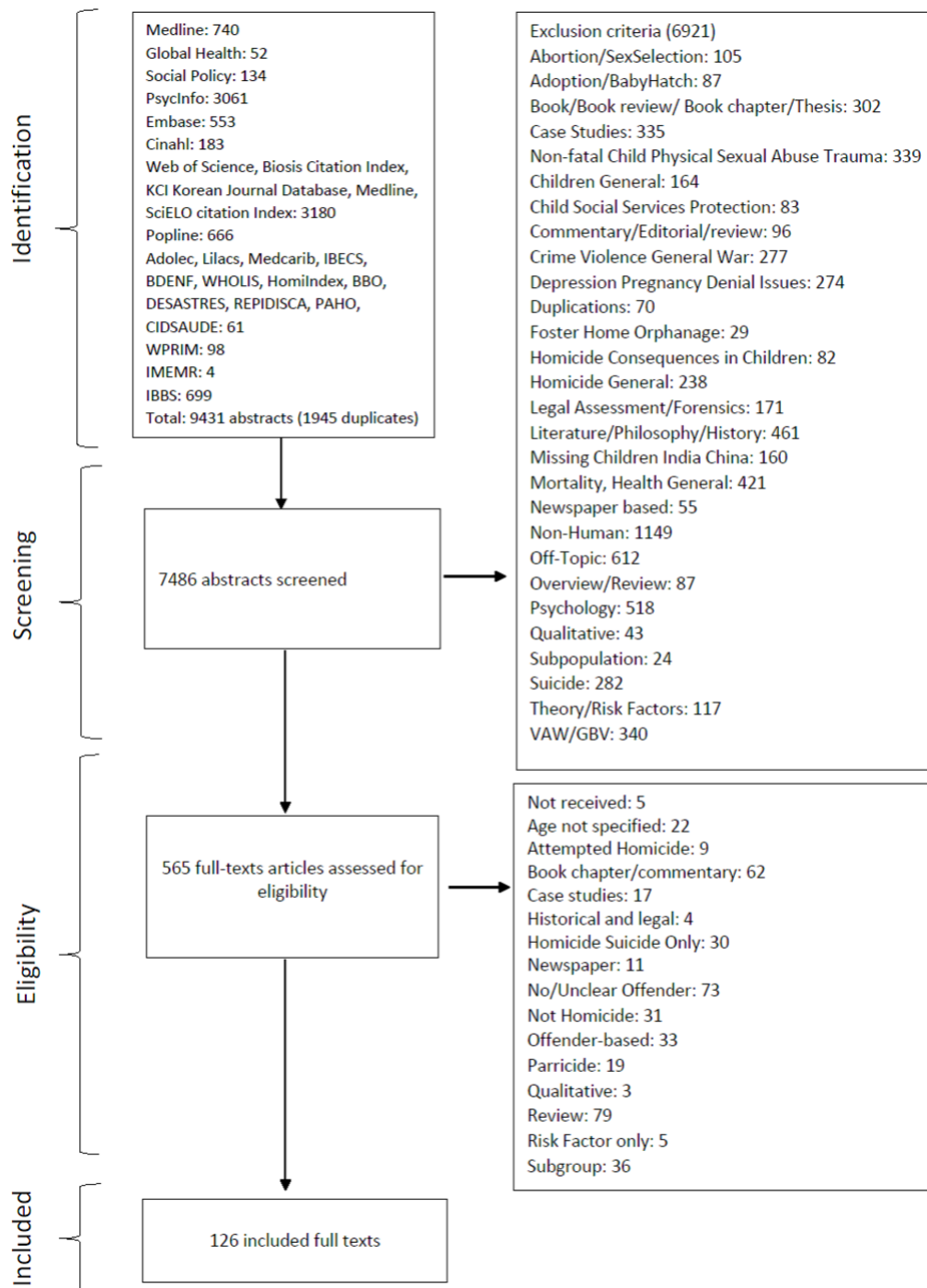
In addition to the systematic review, we surveyed country statistics offices, ministries of justice, home offices or police headquarters of 169 WHO-listed countries to further identify country-level data for child homicide perpetrators and victim-perpetrator relationships. We received responses from 90 countries. Additionally, we made contact with homicide research experts to ask for unpublished data on child homicide perpetrators in their studies. In total, this led to an additional inclusion of data for 24 countries.

## Box 1 Detailed search terms

- ▶ ('perpetrators' or 'perpetrator' or 'offender' or 'offenders' or 'aggressor' or 'aggressors' or 'father' or 'fathers' or 'mother' or 'mothers' or 'parent' or 'parents' or 'brother' or 'brothers' or 'sister' or 'sisters' or 'aunt' or 'aunts' or 'uncle' or 'uncles' or 'grandmother' or 'grandmothers' or 'grandfather' or 'grandfathers' or 'grandparent' or 'grandparents' or 'stranger' or 'strangers' or 'acquaintance' or 'acquaintances' or 'friends' or 'friend' or 'partner' or 'partners' or 'victim-offender relationship' or 'victim offender relationship' or 'victim-offender relationships' or 'victim offender relationships' or 'ex-partners' or 'ex-partner' or 'husband' or 'husbands' or 'wife' or 'wives' or 'couple' or 'couples' or 'boyfriend' or 'girlfriend' or 'spouse' or 'spouses' or 'lover' or 'spousal' or 'boyfriends' or 'girlfriends' or 'relative' or 'relatives' or 'family member' or 'family members' or 'maternal' or 'parental')
- ▶ AND ('siblicide' or 'neonaticide' or 'infanticide' or 'fratricide' or 'victim-perpetrator relationship' or 'victim perpetrator relationship' or 'sororicide' or 'family homicide' or 'familicide' or 'filicide' or 'fratricides' or 'family murder' or 'family homicide suicide' or 'family' or 'family suicide' or 'fatal child abuse' or 'infant baby dumping' or 'child abuse murders' or 'child abuse fatalities' or 'child abuse fatality' or 'parental homicide' or 'parental homicides' or 'parents who kill' or 'mothers who kill' or 'fathers who kill' or 'grandparents who kill' or 'uncles who kill' or 'siblings who kill' or 'aunts who kill' or 'brothers who kill' or 'sisters who kill' or 'family murder' or 'family killing' or 'adolescent homicide' or 'adolescence homicide' or 'adolescent murder' or 'adolescence murder' or 'adolescent killing' or 'adolescence killing' or 'child murder' or 'child homicide' or 'child killing' or 'children murder' or 'children killing' or 'children homicide' or 'sibling murder' or 'sibling killing' or 'sibling homicide' or 'infant murder' or 'infant killing' or 'infant homicide' or 'toddler killing' or 'toddler murder' or 'toddler homicide' or 'young adult murder' or 'young adult killing' or 'young adult homicide' or 'sister murder' or 'sister killing' or 'sister homicide' or 'brother murder' or 'brother homicide' or 'brother killing' or 'boy murder' or 'boy killing' or 'boy homicide' or 'girl murder' or 'girl killing' or 'girl homicide' or 'child abandonment' or 'infant abandonment' or 'toddler abandonment' or 'girl abandonment' or 'baby abandonment' or 'homicide death rates in childhood' or 'unnatural sudden infant death' or 'unnatural sudden infant deaths' or 'childhood homicide' or 'childhood homicides' or 'child killers' or 'fatal maltreatment')

The analysis consisted of two main steps—the selection of one estimate per country year and the calculation of the proportion of child homicides committed by different perpetrator categories for different age groups and by gender separately.

As several countries had more than one estimate available, an algorithm was used to develop a single estimate per country for each of the types of homicide and age group or gender analysed, to avoid potential double counting and to ensure to use the best quality estimates available. Where possible, comparable, non-overlapping data were combined. Otherwise, we chose an estimate according to the following hierarchical order: (1) nationally representative estimates were preferred to provincial estimates, which in turn were prioritised over estimates representing a single town or mortuary, as national studies or larger regional samples would be more generalisable



**Figure 1** Flow chart of the systematic review.

to a country and even out local differences across regions or towns; (2) we chose estimates with more detailed information on the victim–perpetrator relationship, estimates that captured children of varied age groups as this would allow us to group them in a way that would allow comparisons with data from countries that had few perpetrator categories and age groupings; (3) studies that were more recent as it is unknown whether child homicide perpetration trends changed over time across the world; (4) estimates directly from statistics offices were preferred as we assumed that they would have received more checks

than data from other sources; and (5) we preferred estimates that covered more years to estimates based on a few years as we assumed they would also be more generalisable and not be influenced by single events.

Approximately two-thirds of the studies only reported combined estimates for up to 20 years on the proportions of child homicide perpetrators, starting with 1970 onwards. The included estimates yielded 51 different victim–perpetrator categories. To facilitate comparisons across countries, we grouped the perpetrators of child homicide into distinct, broad categories: parents, other

family members, acquaintances (meaning someone they knew), strangers (capturing people they had no prior contact with) and unknown (not documented perpetrators). As countries used different age categories, countries that only considered children up to age 12 years are also included, if no age category up to 18 years was available.

To calculate the percentage of child homicide perpetrators by country, we divided the total number of homicides in each perpetrator category by the total number of child homicides in that country. To establish the global and regional estimates, the relevant available national percentages were added and divided by the number of countries with available data. For the regional estimates, we grouped countries as per the six WHO regions (Africa, Americas, Eastern Mediterranean, low-income and middle-income Europe, Southeast Asia and Western Pacific). A seventh region was made of the high-income countries from all regions.

After conducting the primary descriptive analysis, secondary analyses investigated parental homicides separately to explore how many children murdered by parents were murdered by their mother or father. Additional analyses investigated the child homicide perpetrators of children below the age of 1 year, neonaticides, adolescents and by gender.

Data were analysed with Stata V.12. Traditional meta-analysis techniques could not be used because nearly all studies were representative of the whole population and not restricted to population samples. Details on individual studies are reported in the supplement (see online supplementary file 1). Because the percentages were skewed, we report the median percentage and the IQR.

## RESULTS

Overall, 9431 abstracts and 565 full texts were screened, and 126 studies were included into the study (see flow chart). In addition to information received from statistical offices and experts, 1031 estimates on perpetrators of child homicides across 44 countries informed our estimates, 22 countries in the high-income countries, 6 countries in the Western Pacific region, 5 countries in the low-income and middle-income European region, 4 countries in the African region and the Americas and 3 countries in the Mediterranean region. No data were found for the South Asia region. Information on perpetrators of all child homicides of children under 18 years was available for 35 countries, compiling data for 73 242 homicides. Data on parental homicides, distinguishing between mothers and fathers, were available for 33 countries, for children under 1 year including neonaticides for 20 countries and for adolescents for 10 countries only. Few data were available for the Americas, the Eastern Mediterranean and the African region. Most data outside high-income countries came from cities or individual mortuaries and were therefore based on small numbers of child homicides.

Across all 35 countries with data on homicide perpetrators for all children under the age of 18 years, we found that more than half (median percentage 56.5, IQR 23.7–69.6) were murdered by a parent, 3.0% (IQR 0.0–7.1) by another family member, 12.6% (5.–31.3) by an acquaintance, for example, a neighbour or friends, 2.1% (0.0–11.1) by a stranger and perpetrator remained unknown for 9.2% (0.0–21.9). The percentage of girls murdered by their parents was 58.4 (IQR 0.0–66.7) versus 46.8 for boys (IQR 14.1–63.8), while the median percentage for boys murdered by strangers was 9.2 (IQR 4.2–38.6) versus 6.5 (IQR 3.6–6.7) for girls. The total number of child homicides reported and the prevalence by perpetrator categories across region is reported in [table 1](#). The largest proportion of parental homicides among all child homicides was found in high-income countries (64.2%; 44.7–71.8) and the East Asia and Pacific region (61.7%; 46.7–78.6).

Data from 33 countries distinguishing the perpetrators of parental homicides of children under the age of 18 years showed that mothers committed just over half of all parental homicides (median 54.7%, IQR 36.7–68.8); in high-income countries, the median percentage was 44.4% (IQR 36.7–66.7), in the East Asia and Pacific region, 64.6% (IQR 59.0–69.3), in the Americas, 15.4% (IQR 13.3–17.4), in Africa, 88.6% (IQR 71.1–100.0), in low-income and middle-income Europe, 60.4% (IQR 45.8–75.0) and in the Mediterranean region, 7.4% (IQR 0.0–14.8). Only 12 countries had available data on how many parental homicides were committed by step-parents, with 7.2% (IQR: 5.7–14.5) of parental homicides committed by step-parents. Out of them, nine studies reported a breakdown, with the median percentage of stepmothers committing homicides among parental homicides being 1.0% (IQR: 0.7–3.3) and for stepfathers 7.4% (IQR: 3.1–17.4).

Only 14 countries have data on homicide perpetrators of children under 1 year of age, excluding studies investigating neonaticides only. These show that parents are the most common perpetrators of homicides of children under 1 year (77.8, IQR: 61.5–100), followed by unknown perpetrators with 7.5% (IQR: 0.0–24.0). The 12 countries with detailed data on parent as perpetrators showed mothers commit the majority of parental homicides of children under 1 year (71.7% (IQR: 50.2–75.7)). Seven studies investigated perpetrators of neonaticides (defined as the murder of an infant within 24 hours of giving birth with the exception of a study in France and Denmark, which extended it to 1 month after birth), without considering the mother as the default perpetrator. They found that parents committed 100% of neonaticides (IQR 62.0–100.0). If studies only considering parents were examined, 13 countries had data and the vast majority of neonaticides are committed by mothers (100%, IQR 92.9–100). Fathers committed very few neonaticides (0.00%, IQR: 0.0–6.7).

Data on homicide perpetrators of adolescents, aged 10–17 years, was only available for 10 countries, with only

**table 1** Distribution of child homicide perpetrator proportions by perpetrator and region

	Total homicides	Parents	Family no parents	Acquaintances	Stranger	Unknown
<b>All children &lt;18 (n=35)</b>	<b>75 496</b>	<b>59.7</b>	<b>3.0</b>	<b>12.6</b> <b>(5.9–31.3)</b>	<b>2.1</b> <b>(0.0–11.1)</b>	<b>9.2</b> <b>(0.0–21.9)</b>
High-income countries(n=19)	73 242	64.2 (56.2–71.8)	2.4 (0.0–7.0)	10.3 (5.4–13.7)	2.0 (0.0–10.6)	8.7 (0.0–17.7)
East Asia and Pacific (n=5)	559	61.7 (46.7–78.6)	5.9 (3.3–7.1)	14.3 (10.0–26.9)	8.3 (0.0–13.1)	1.6 (0.0–11.9)
Americas (n=3)	121	27.6 (25.0–30.3)	21.7 (0.0–43.4)	44.4 (26.3–62.5)	6.3 (0.0–12.5)	31.1 (0.0–43.4)
LMIC Europe (n=3)	71	16.7 (14.3–69.6)	0.0 (0.0–4.4)	14.3 (0.0–44.4)	8.7 (0.0–27.8)	15.2 (11.1–71.4)
Africa (n=3)	1042	23.6 (8.3–38.8)	3.9 (0.0–7.8)	19.1 (0.0–38.1)	8.2 (3.8–12.5)	11.5 (0.0–79.2)
Mediterranean (n=2)	461	17.8 (10.5–25.0)	25.6 (1.1–50.0)	69.7 (64.3–75.0)	0.4 (0.0–0.9)	4.4 (0.0–8.8)
<b>Girls (n=9)</b>	<b>21 800</b>	<b>58.4</b> <b>(0.0–66.7)</b>	<b>5.3</b> <b>(0.0–6.5)</b>	<b>15.5</b> <b>(0.0–24.4)</b>	<b>6.5</b> <b>(3.6–6.7)</b>	<b>8.8</b> <b>(0.0–9.8)</b>
<b>Boys (n=8)</b>	<b>44 714</b>	<b>46.8</b> <b>(14.1–63.8)</b>	<b>5.8</b> <b>(3.1–8.0)</b>	<b>11.2</b> <b>(3.6–28.3)</b>	<b>9.2</b> <b>(4.2–38.6)</b>	<b>11.4</b> <b>(4.8–16.8)</b>
<b>Under 1 year (n=12)</b>	<b>5 529</b>	<b>77.8</b> <b>(61.5–100.0)</b>	<b>0.0</b> <b>(0.0–13.0)</b>	<b>0.0</b> <b>(0.0–0.0)</b>	<b>0.0</b> <b>(0.0–0.0)</b>	<b>7.3</b> <b>(0.0–24.0)</b>
High-income countries (n=10)	5131	77.9 (61.5–100.0)	1.8 (0.0–7.3)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	3.6 (0.0–13.4)
East Asia and Pacific (n=2)	40	96.3 (92.7–100.0)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	0.0 (0.0–0.0)	4.0 (0.0–7.9)
Americas (n=0)	–	–	–	–	–	–
LMIC Europe (n=0)	–	–	–	–	–	–
Africa (n=2)	358	40.7 (9.5–71.8)	1.5 (0.0–3.0)	0.6 (0.0–1.9)	0.0 (0.0–0.0)	57.3 (24.0–90.5)
Mediterranean(n=0)	–	–	–	–	–	–
<b>Adolescents (n=12)</b>	<b>34 599</b>	<b>11.0</b> <b>(0.0–33.3)</b>	<b>1.5</b> <b>(0.0–6.1)</b>	<b>36.9</b> <b>(6.6–51.8)</b>	<b>6.6</b> <b>(0.0–25.0)</b>	<b>9.6</b> <b>(1.0–32.8)</b>
High-income countries (n=6)	34 280	19.0 (0.0–40.0)	2.1 (0.0–7.9)	34.7 (0.0–37.6)	14.5 (0.0–20.8)	17.4 (5.6–37.9)
East Asia and Pacific (n=2)	50	3.1 (0.0–6.3)	0.0 (0.0–0.0)	80.2 (60.4–100.0)	14.6 (0.0–29.2)	1.0 (0.0–2.1)
Americas (n=1)	68	0.0 (0.0–0.0)	4.41 (4.1–4.4)	13.2 (13.2–13.2)	0.0 (0.0–0.0)	13.2 (13.2–13.2)
LMIC Europe (n=0)	–	–	–	–	–	–
Africa (n=1)	195	0.0 (0.0–0.0)	3.1 (3.1–3.1)	43.1 (43.1–43.1)	41.5 (41.5–41.5)	12.3 (12.3–12.3)
Mediterranean (n=2)	6	16.7 (0.0–33.3)	16.7 (0.0–33.3)	33.3 (0.0–66.7)	0.0 (0.0–0.0)	33.3 (0.0–66.7)

Data are number of homicides or median (IQR).

n=number of countries with existing data.

\*The high-income countries (classified by the World Bank<sup>15</sup>) included Australia, Austria, Canada, Chile, Denmark, England and Wales, Estonia, Finland, France, Germany, Hungary, Iceland, Isle of Man, Japan, Korea Rep., Netherlands, New Zealand, Norway, Portugal, Scotland, Sweden, Switzerland, the UK and the USA.

LMIC, low-income and middle-income countries.

three presenting data for the whole age group of 10–18. The most common perpetrators among adolescent homicides were acquaintances (36.9%, IQR 6.6–51.8),

followed by family members (17.5%, IQR 4.3–33.3) and strangers (6.6%, IQR 0.0–25.0). A percentage of 9.6 (IQR 1.0–32.8) of perpetrators of adolescents were unknown.

This trend was supported by one study each in Latin America or Africa, the two areas with the highest prevalence of male adolescent homicides worldwide.

## DISCUSSION

This systematic review and survey of statistical offices found that contrary to media portrayal and therefore public perception, children face the highest risk of homicide by parents. The limited availability of data on victim–perpetrator relationships of child homicides in many regions, even within countries with well-established homicide monitoring systems, is concerning. The poor state of data is of particular concern in regions that have among the highest child homicide rates and the highest rate of homicides among adolescents. Where countries collect data on the perpetrator, often this is not disaggregated by sex and age. This is an important omission, as studies suggest that child abuse-related homicides have a distinct gender pattern.<sup>7,8</sup> Lack of disaggregation by age and varying age ranges also prevented a meaningful analysis of perpetrators of murdered children aged between 1 and 10 years.

There are many reasons for the identified data gaps. Homicide data are generally collected by the police, mortuaries or court statistics, and there is a lack of collaboration between those institutions. A separate homicide analysis for homicides involving victims under the age of 18 years is rarely conducted or published in most official statistical reports. With increased investment into administrative data systems, including systems to facilitate improved linkage of different data sources, it would be feasible to address these issues. Internationally agreed standards of documentation of age and victim–perpetrator categories would further facilitate cross-country comparisons. Future studies on child homicide should also not be restricted by default to a certain type of victim–perpetrator relationship, for example, filicide or homicides by mothers only as our systematic review found studies showing that other family members might also be involved in neonaticides.

The regional differences found in this study might represent real differences in patterns of child homicide<sup>9</sup> or be a product of differences in the existence, completeness and quality of data for homicides among countries and regions. Data on the victim–perpetrator relationship is often only available if the information is reported. Some murders will never be resolved, which is strongly correlated with the quality of police investigations. In the case of child homicides, in particular, it is estimated that a significant number of child homicides are not recognised as homicides and therefore do not appear in official statistics. Studies on neonaticides, in particular, show that nearly all of them follow concealed pregnancies and lone births<sup>10</sup> and that there often are difficulties in distinguishing death due to natural disorders from non-natural causes, especially in cases labelled sudden infant death syndrome.<sup>11</sup> Routine surveillance systems

have a poor record to capture homicides due to omission of care or deliberate neglect. Abrahams *et al.*, for example, found in their South African study that a number of mothers abandoned their babies with the intention that they would die or with the hope that they would be found alive. As the motive behind this kind of abandonment is often not known, official statistics often do not capture them as homicides.<sup>10</sup> There are also other limitations to this study. Averaging the proportion of perpetrators of child homicides across years to generate one estimate by country could have led to an overestimation or underestimation of certain types of perpetrator.<sup>10,12</sup> Vast differences in the definitions of perpetrator categories only allowed crude comparisons across countries. Categorisation of perpetrators into parents, other family members, acquaintances, strangers and unknown did not capture nuances such as, for example, mothers' boyfriends, who were considered as acquaintances as there was a lack of information on whether they were solid family members or casual relationships. The restricted availability of data and age breakdowns also meant that the analysis could not be done for every age group or by gender.

Our study is the first to provide global evidence on the perpetrators of child homicide. Our findings highlight the gaps in data on child homicide that need to be addressed. Contrary to common perceptions that risk lies outside the household, the findings underscore that parents commit a high proportion of child homicides. The reasons for each are likely to be complex and relate to broader family, community and cultural contexts.<sup>13,14</sup> In all contexts, the murder of children needs to be better documented, prevented and addressed.

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**Contributors** HS and NA conceived the study. HS, BD and AM-G searched the literature and screened the abstracts and full-texts. HS and BD extracted the data. HS, NA and CW wrote the final draft. All authors approved the final manuscript.

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