

# The epidemiology of child homicides in South Africa

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**Objective** To describe age- and sex-specific rates of child homicide in South Africa.

**Methods** A cross-sectional mortuary-based study was conducted in a national sample of 38 medicolegal laboratories operating in 2009. These were sampled in inverse proportion to the number that were operational in each of three strata defined by autopsy volume: < 500, 500–1499 or > 1499 annual autopsies. Child homicide data were collected from mortuary files, autopsy reports and police interviews. Cause of death, evidence of abuse and neglect or of sexual assault, perpetrator characteristics and circumstances surrounding the death were investigated.

**Findings** An estimated 1018 (95% confidence interval, CI: 843–1187) child homicides occurred in 2009, for a rate of 5.5 (95% CI: 4.6–6.4) homicides per 100 000 children younger than 18 years. The homicide rate was much higher in boys (6.9 per 100 000; 95% CI: 5.6–8.3) than in girls (3.9 per 100 000; 95% CI: 3.2–4.7). Child abuse and neglect had preceded nearly half (44.5%) of all homicides, but three times more often among girls than among boys. In children aged 15 to 17 years, the homicide rate among boys (21.7 per 100 000; 95% CI: 14.2–29.2) was nearly five times higher than the homicide rate among girls (4.6 per 100 000; 95% CI: 2.4–6.8).

**Conclusion** South Africa's child homicide rate is more than twice the global estimate. Since a background of child abuse and neglect is common, improvement of parenting skills should be part of primary prevention efforts.

Abstracts in **عربي**, **中文**, **Français**, **Русский** and **Español** at the end of each article.

## Introduction

Thousands of children are victims of homicide annually, despite the right to protection and care afforded under the United Nations Convention on the Rights of the Child.<sup>1</sup> Child homicides receive relatively little attention in terms of public health and policy in most countries and research on the subject is seldom conducted, especially in low- and middle-income settings. An increasing evidence base shows that homicides contribute substantially to the burden of premature death among males between the ages of 15 and 24 years.<sup>2</sup> Mortality trends observed in 50 countries belonging to all income categories over a 50-year period (1955 to 2004) clearly point to a progressive rise in violent deaths among young men, a trend that is expected to continue in developing countries.<sup>3</sup> In 2002, an estimated 53 000 child homicides took place in the world and the highest child homicide rates were observed in sub-Saharan Africa, although the data from this region was scarce and of questionable quality.<sup>3</sup>

Young children are at greater risk of being killed as a result of child abuse than adolescents, who are most commonly killed during episodes of interpersonal violence.<sup>1,3,4</sup> Although a large proportion of child homicide deaths result from child abuse, many are thought to be under-detected in routine surveillance systems,<sup>5</sup> largely owing to under-reporting and concealment. Only one third of all child deaths resulting from child abuse are classified as homicides.<sup>5</sup> Children in the first year of life are the most vulnerable to becoming victims of homicide,<sup>6,7</sup> including maternal infanticide.<sup>8,9</sup> The killing of female infants is a recognized problem in some patriarchal societies where girls are less valued than boys and viewed as a financial liability.<sup>10</sup> A homicide study in Dar-es-Salaam, in the United Republic of Tanzania, showed a very high rate of early infanticide (27.7 per 100 000 infants less than 1 week old) but an overall homicide rate among children younger than 15 years of 0.54 per 100 000.<sup>11</sup>

Older children are much less likely to experience fatal abuse or neglect, but homicide patterns among young men mirror those in adult males, with the crime often committed by friends, acquaintances or strangers.<sup>12,13</sup>

Little is known about child homicide in South Africa. According to one study in four cities among children younger than 15 years, homicide rates in the country resemble global rates.<sup>14</sup> Even less is known about child abuse and neglect leading to death, but child maltreatment is believed to be common. In South Africa rape, including child rape, has a high incidence, as do all forms of sexual abuse. Physical punishment, often severe, has been reported as ubiquitous and emotional abuse and neglect are common.<sup>15</sup> The need for child protection services far outweighs the ability of existing services to respond.<sup>16</sup> Understanding the epidemiology of child abuse that culminates in death is critical for developing and monitoring interventions to prevent it. To explore this problem in South Africa we conducted a nationwide study of child homicide as part of a broader study of female homicide, whose findings are reported elsewhere.<sup>17</sup> In this article we describe the incidence of child homicide and of fatal child abuse and neglect (defined in the section that follows), by age and sex.

## Methods

We conducted a retrospective, national mortuary-based study of the female and child homicide cases that were brought before a sample of South Africa's state-run medicolegal laboratories (mortuaries) between 1 January and 31 December 2009. Under the Inquest Act of 1959, anyone who dies from a non-natural cause in South Africa has to undergo a post-mortem examination.<sup>18,19</sup> Hence, we sampled the country's medicolegal laboratories to identify deaths from homicide in children aged younger than 18 years. To obtain a nationally-representative sample of

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homicides, we included in the sampling frame all 123 medicolegal laboratories that were operating in South Africa in 2009. We stratified these facilities by size in accordance with the annual number of post-mortem examinations they performed: small, < 500; medium, 500–1499; large, > 1499. We selected a sample of 38 of the 123 facilities in proportion to the number operating in each of these three strata (Table 1).

Ethics approval for the study was granted by the Ethics Committee of the South African Medical Research Council (EC09–021, 12 October 2009) and further approval and access to data were obtained from the National Department of Health and the South African Police Service. We identified the child homicide cases in the 2009 death registers at the sampled facilities and abstracted onto a data capture sheet the victim's demographic characteristics and cause of death as indicated in the mortuary files and post-mortem reports. Since each homicide had to undergo a police investigation, we interviewed each investigating officer by telephone or face to face to obtain information on the following: whether a homicide had been committed; the circumstances surrounding the death; the relationship of the perpetrator (or suspect) to the victim; the characteristics of the perpetrator (or main suspect) and any suspicion of child abuse.

In this study we defined a "child" as a person under the age of 18 years, in keeping with the definition in the UN Convention on the Rights of the Child.<sup>1</sup> We defined "child homicide" as the death of a child at the hands of a person other than the victim, with responsibility for the death having been determined through police investigation and a judicial enquiry based on the Inquest Act of 1959.<sup>18</sup> Four cases of abandonment shortly after birth were excluded from the subgroup analysis because the sex and cause of death could not be determined owing to the decomposition of the body. In addition, all natural deaths and deaths resulting from motor vehicle accidents were excluded so that only deaths due to non-accidental injuries remained. We also excluded cases that were identified as accidental during the police interview. Cases in which the evidence pointed to two or more causes of death, such as blunt force trauma and strangulation, were defined as deaths from "multiple injuries". For this study we defined "fatal child abuse and neglect" as physically

Table 1. Number and percentage of operating medicolegal laboratories (MLLs) from which child homicide cases were drawn, by number of autopsies performed annually in each laboratory, South Africa, 2009

Autopsies performed	Total no. of MLLs	No. (%) MLLs sampled
< 500	81	20 (24.7)
500–1499	33	13 (39.4)
> 1 499	9	5 (55.5)
<b>Total</b>	<b>123</b>	<b>38 (30.9)</b>

injurious treatment or physical neglect or negligence culminating in the death of a child within the context of a relationship of presumed responsibility and care by a parent or other caregiver, based on the outcome of a police investigation. In South Africa, physical neglect or negligence, construed as the omission of care resulting in the death of a child, is very seldom ruled as a child homicide by the courts. Hence, very few cases of this nature, such as deaths during household fires erupting while children were left unattended, were included in this study. In two cases we found forensic evidence pointing very strongly to non-accidental death and, although there had been no police investigation, we decided to classify these cases as fatal child abuse. All cases of homicide involving sexual assault came under the definition of fatal child abuse and we included these cases in our study after confirmation by police investigation.

Data were analysed with Stata version 12 (StataCorp. LP, College Station, United States of America). The analysis took into account the survey design as well as the sampling weights of mortuaries to calculate population estimates for the numbers and proportions of child homicides and child deaths resulting from child abuse and neglect. Descriptive statistics (means and proportions) were calculated and categorical variables were compared using Pearson's  $\chi^2$  test. Standard errors and 95% confidence intervals (CIs) were calculated using methods for complex sample surveys (Taylor linearization).<sup>20</sup> As a denominator for incidence rates, we used age- and sex-specific 2009 mid-year population estimates obtained from Statistics South Africa.<sup>19</sup>

## Results

According to our estimate, 1018 (95% CI: 843–1187) child homicides occurred in South Africa in 2009. This is equivalent

to a rate of 5.5 homicides per 100 000 (95% CI: 4.6–6.4) children under 18 years of age (Table 2). The homicide rate for boys was 6.9 per 100 000 males younger than 18 years (95% CI: 5.6–8.3), nearly double the homicide rate for girls, which was 3.9 per 100 000 females younger than 18 years (95% CI: 3.2–4.7). Table 2 shows homicide rates by sex and age group. A bimodal age pattern was found in both sexes, with higher rates of homicide among children under 5 years of age as well as among children between the ages of 15 and 17 years.

Table 3 shows demographic and homicide characteristics by sex. The proportion of children who were victims of homicide was similar among the group of children younger than 5 years (39.6%) and the group between the ages of 15 and 17 years (41.0%), but the age pattern differed significantly by sex ( $P < 0.0001$ ). Over half (57.2%) of the girls were younger than 5 years, compared with 29.7% of the boys. Over half (52.9%) of the boys were between the ages of 15 and 17 years, compared with 19.7% of the girls.

Overall, most homicides occurred in public spaces (45.9%) or in the victim's own home (34.0%), and girls were more likely to be killed at home than boys (44% versus 28%, respectively;  $P = 0.0007$ ). Nearly half of the murdered children were cared for by a single mother (43%); 29.8% were cared for by both parents. A little more than one third (35.5%) of the children were killed by an acquaintance, and nearly one third (30%) were killed by their mothers. The perpetrator of the crime differed significantly by sex. Boys were more often killed by a non-family member than girls (44.9% versus 18.9%, respectively;  $P < 0.0001$ ); girls were significantly more likely than boys to be killed by their mothers (45.4% versus 21.3%, respectively;  $P < 0.0001$ ).

Stab wounds inflicted with sharp objects and blunt force trauma were the causes of death in over half of the cases. Stab wounds were more common

Table 2. Child homicide rates, by age and sex of victim, South Africa, 2009

Age (years)	Males <sup>a</sup>		Females <sup>b</sup>		All children <sup>c</sup>	
	No. (95% CI)	Rate <sup>d</sup> (95% CI)	No. (95% CI)	Rate <sup>d</sup> (95% CI)	No. (95% CI)	Rate <sup>d</sup> (95% CI)
< 5	193 (149–238)	7.6 (5.8–9.3)	208 (145–270)	8.3 (5.8–10.7)	405 (309–501)	7.9 (6.1–9.9)
5–9	42 (16–68)	1.6 (0.6–2.6)	45 (23–67)	1.7 (0.9–2.6)	87 (58–116)	1.7 (1.1–2.2)
10–14	71 (40–103)	2.7 (1.5–3.9)	39 (16–63)	1.5 (0.6–2.4)	110 (75–146)	2.1 (1.4–2.8)
15–17	344 (225–463)	21.7 (14.2–29.2)	72 (37–106)	4.6 (2.4–6.8)	416 (273–558)	13.2 (8.7–17.7)
< 18	650 (522–779)	6.9 (5.6–8.3)	364 (292–434)	3.9 (3.2–4.7)	1018 (848–1187)	5.5 (4.6–6.4)

CI, confidence interval.

<sup>a</sup> Crude number before weighting: 261; number after weighting: 651.

<sup>b</sup> Crude number before weighting: 140; number after weighting: 363.

<sup>c</sup> Crude number before weighting: 402; number after weighting: 1018 – this value includes four cases that were excluded from the subgroup analysis because the sex and cause of death could not be determined owing to the decomposition of the body.

<sup>d</sup> Homicides per 100 000 children in the sex and age group.

among boys than girls, whereas infant abandonment was the most common among girls. The rate of death resulting from abandonment was 17.9 per 100 000 for girl infants and 14.4 per 100 000 for boy infants. Strangulation was also more common among girls than boys, whereas gunshot injuries were more common among males.

Nearly half of all child homicides (44.5%) were related to child abuse and neglect, but this was more often so among girls (76.0%) than among boys (26.8%) (Table 3). Sexual assault was suspected in 10% of the child homicides, but much more often in girls than in boys (25.3% versus 1.5%, respectively) (Table 3).

Table 4 presents the causes of death by age groups. Strangulation (55.9%) and blunt force trauma (30.3%) were the most common causes of death in children younger than 5 years, whereas stab wounds inflicted with sharp objects (78.5%), gunshots (51.8%) and blunt force trauma (47.8%) were common among the oldest children (15–17 years of age).

Homicide resulting from child abuse and neglect was most common in children younger than 5 years (73.8%) and no significant difference was found by sex. The rate of fatal child abuse was 6.6 per 100 000. Table 5 shows the figures broken down by age and sex. In children 5 years of age or older, more than 80% of the homicides linked to child abuse and neglect occurred in girls; the differences between girls and boys were significant in all of the corresponding age groups. A small number of homicides involving sexual assault was found among children younger than 5 years, but differences by sex became highly significant in all other age groups, with sexual assault suspected in 86 to 100% of female homicides.

## Discussion

This is the first national study of child homicide to be conducted in South Africa. Our estimated rate of child homicide for 2009 – i.e. 5.5 per 100 000 children under the age of 18 years – is double WHO's estimated global rate of 2.4 per 100 000 but resembles its estimate for the African Region (5.6 per 100 000).<sup>1</sup> Nearly half (44.4%) of all child homicides in this study involved fatal child abuse, a rate much higher than Australia's, which is 36%.<sup>4</sup> The high rate in South Africa reflects the country's very high general homicide rate and children's vulnerable position in South African society.

We found the homicide rate among boys to be greater than among girls, with a more pronounced difference between the two than suggested by WHO. The rate of infant abandonment was significantly higher among females than among males. Similarly, one quarter of all girl homicides were related to sexual assault. Overall child abuse and neglect were involved in three quarters of all girl homicides but only in one quarter of boy homicides. In contrast, the risk of death resulting from interpersonal violence was very high among teenage boys. Understanding this bimodal sex pattern is important for the planning of preventive interventions, since it points to different risks for different age groups.<sup>21</sup>

The rate of homicide is distinctly different in males and females. Teenage boys were victims of homicide five times more often than teenage girls. The fact that more than half of all the boys who were victims of homicide were teenagers is not surprising as violence and injury deaths are the second leading cause of death in South Africa and males aged 15–29 years are disproportionately af-

ected.<sup>22</sup> Most teenage males who are victims of homicide are killed by acquaintances during shows of manliness and in a context of antisocial behaviour.<sup>21</sup> Adverse childhood experiences such as growing up without a father present, poor parenting, family violence, neglect and abuse during childhood and living in poverty and in a context of social inequality are all pathways that can lead to violent masculine behaviour.<sup>23</sup> South Africa is in critical need of policies and programmes that effectively address the problem of male teenage violence and its roots in notions of masculinity.<sup>21</sup>

Child abuse in South Africa is endemic, as suggested by the high rate of fatal child abuse found in this study.<sup>24</sup> Physical violence under the guise of discipline is common and an acceptable parenting practice.<sup>21</sup> Among children younger than 5 years, the proportion of homicidal deaths that involve child abuse is around 80% in South Africa, similar to the rate reported in the United States of America. However, the population rate of 6.6 cases of fatal child abuse per 100 000 in South Africa is much higher than the rate of 2.4 per 100 000 reported in the United States.<sup>5,25,26</sup> Caution should be exercised when comparing rates because routine data sources tend to underestimate fatal child abuse.<sup>27</sup>

Infanticide is considered rare in high-income countries<sup>13,28</sup> but was found to be relatively common in South Africa, as well as in the United Republic of Tanzania.<sup>11</sup> This is particularly concerning, since contraception is widely available in South Africa and the country has liberal abortion legislation. Research shows that infanticide is rooted in psychosocial and structural factors such as poverty, lack of social support, lack of access to services and dysfunctional relationships.<sup>28,29</sup> The

Table 3. **Demographic characteristics of child homicide victims, characteristics of the homicide and perpetrator, and circumstances surrounding the homicides, by sex of victim, South Africa, 2009**

Characteristic	Percentage (95% confidence interval)		
	All (n = 1 018) <sup>a</sup>	Males (n = 651)	Females (n = 363)
<b>Age (years)</b>			
< 5	39.6 (31.8–47.8)	29.7 (23.2–37.2)	57.2 (46.2–67.5)
5–9	8.6 (6.6–11.1)	6.5 (3.8–10.8)	12.3 (8.1–18.3)
10–14	10.9 (8.6–13.8)	11.0 (7.9–15.0)	10.8 (6.6–17.3)
15–17	41.0 (33.4–48.9)	52.9 (44.2–61.3)	19.7 (13.8–27.3)
<b>Scene of injury</b>			
Own home	34.0 (28.6–39.4)	28.1 (22.7–34.2)	44.0 (36.1–52.2)
Other home	14.2 (10.6–18.8)	16.5 (12.0–22.3)	10.0 (5.9–16.6)
Public space	45.9 (39.5–52.4)	49.4 (42.3–56.6)	39.6 (30.5–49.3)
Place unknown	6.2 (4.1–9.2)	6.0 (3.7–9.6)	6.5 (3.5–11.7)
<b>Carer at time of death</b>			
Both parents	29.8 (25.0–35.5)	30.6 (25.3–36.4)	28.9 (21.9–37.1)
Mother	42.8 (36.8–48.9)	39.8 (33.4–46.6)	48.1 (40.9–55.3)
Father	4.6 (2.6–7.9)	5.5 (3.0–10.0)	3.0 (1.2–7.3)
Other	13.6 (10.6–17.3)	14.1 (10.2–18.9)	12.7 (8.9–18.0)
None (on the street)	1.9 (1.3–2.9)	3.0 (2.0–4.5)	0
Unknown	7.2 (5.2–9.7)	7.1 (4.8–10.5)	7.2 (4.4–11.8)
<b>Perpetrator</b>			
Mother	30.0 (23.4–37.5)	21.3 (15.1–29.2)	45.4 (36.7–54.3)
Father	5.8 (3.5–9.3)	4.9 (2.6–9.3)	7.3 (4.1–12.5)
Other relative	7.8 (5.1–11.6)	8.7 (5.5–13.6)	6.2 (3.5–10.5)
Stepmother/stepfather	3.0 (1.7–5.2)	2.0 (0.8–4.9)	4.7 (2.2–9.6)
Intimate partner of victim	2.6 (1.6–4.3)	1.2 (0.5–2.8)	5.1 (2.7–9.6)
Acquaintance	35.5 (28.9–42.8)	44.9 (38.5–51.5)	18.9 (12.6–27.4)
Stranger	3.8 (2.6–5.6)	4.0 (2.5–6.3)	3.5 (1.5–8.1)
Unknown	11.5 (8.4–15.6)	13.0 (9.3–17.9)	8.9 (5.0–15.4)
<b>Cause of death</b>			
Gunshot wounds	11.5 (8.5–15.3)	13.6 (10.3–17.8)	7.6 (4.4–12.9)
Stab wounds	26.2 (20.2–33.3)	33.6 (26.5–41.5)	13.0 (8.4–19.7)
Blunt force trauma	23.5 (19.7–27.7)	24.0 (19.7–28.8)	22.7 (16.1–30.9)
Strangulation/asphyxiation	11.7 (8.6–15.6)	7.2 (4.5–11.1)	19.8 (13.8–27.5)
Fire	2.1 (1.2–3.7)	1.8 (0.8–4.3)	2.7 (1.0–6.8)
Drowning	0.4 (0.1–1.4)	0.3 (0.0–1.5)	0.7 (0.1–3.4)
Multiple injuries	1.2 (0.5–2.7)	1.1 (0.4–2.7)	1.4 (0.4–4.4)
Infant abandonment	15.9 (12.3–20.3)	11.1 (7.9–15.5)	24.4 (18.6–31.2)
Other	5.1 (3.0–8.5)	6.3 (3.7–10.6)	2.8 (1.0–7.1)
Undetermined	2.5 (1.4–4.6)	1.1 (0.4–2.7)	5.1 (2.4–10.3)
<b>Child abuse and neglect</b>			
Yes	44.5 (37.5–51.5)	26.8 (20.0–34.8)	76.0 (70.5–80.7)
No	55.6 (48.5–62.5)	73.2 (65.2–80.0)	24.0 (19.3–29.5)
<b>Sexual assault</b>			
Yes	10.0 (7.4–13.4)	1.5 (0.5–4.3)	25.3 (18.5–33.7)
No	90.0 (85.9–93.0)	98.5 (95.7–99.5)	74.7 (66.4–81.5)

<sup>a</sup> This value includes four cases that were excluded from the subgroup analysis because the sex and cause of death could not be determined owing to the decomposition of the body.

lower perceived social value of girls is an important contributor to the problem.

This study has shown that homicide involving rape is a problem mainly affecting girls but it is not well documented because it is considered a rare event involving older children.<sup>30–32</sup> The pattern in South Africa is different, with similar

proportions of rape victims in each age group. The high rate of child homicides involving sexual assault in South Africa reflects the high prevalence of sexual violence, which is fuelled by dominant notions of masculinity and grounded in the notion that men are entitled to exercise control over women.<sup>21</sup>

We used a fairly conservative definition of fatal child abuse and neglect. We may have underestimated the deaths linked to child abuse because we based our estimate on the outcome of the police investigation and inquest. High under-five mortality rates in South Africa can conceal these deaths, and deaths involving fatal child abuse are sometimes misclassified as accidental or natural or as resulting from sudden infant death syndrome, which is difficult to differentiate from smothering.<sup>13</sup> Furthermore, the concept of negligent behaviour is not well defined in South Africa and children are left vulnerable owing to an unconventional family structure and poor parenting.<sup>23</sup> The police appears to assign low priority to child homicides, especially when very young children are involved. During our field work, we noted that a police docket was opened for most abandoned neonates but no police investigation followed. We also found that cases had not been properly investigated and that only feeble attempts were made to hold someone responsible for deaths resulting from abuse and neglect. During detective training in South Africa, investigating officers are not capacitated to properly investigate the family circumstances of the homicide victim. As part of our study we inquired about social welfare involvement in the investigations but found that none took place. A coordinated response between social services, pathologists and the police is needed for this to improve. High-income countries have child fatality review teams and other mechanisms for identifying gaps in the child protection system through multi-sectoral case reviews.<sup>33</sup>

Our study has limitations. We used mortuary data to identify child homicides and police investigations to verify cases of child abuse and neglect. Although the law mandates that all non-natural deaths undergo an autopsy to determine their cause, deaths involving child abuse are underreported and sometimes misclassified.<sup>34</sup> This study may have underestimated the number of child fatalities involving child abuse. Despite this, we have shown the feasibility of conducting a national-level study of child homicides and have cast light on the dynamics of this problem in South Africa, where infanticide, fatal child abuse and neglect, and male teenage homicides prevail. These problems are not in the national policy spotlight.

Table 4. Number and fraction of homicides involving the four main causes of death, by age of victim, South Africa, 2009

Age (years)	By cause of death (%)				
	Stab wound (n = 266)	Blunt force trauma (n = 238)	Strangulation/asphyxiation (n = 118)	Gunshot wound (n = 116)	All (n = 1018)
<5	7.2	30.7	55.9	17.7	39.6
5–9	1.9	13.1	20.5	9.1	8.6
10–14	12.4	8.4	15.2	21.4	10.9
15–17	78.5	47.8	8.4	51.8	41.0

Table 5. Fraction of homicides related to child abuse and neglect or to sexual assault, by sex and age of victim, South Africa 2009

Age (years)	Percentage (95% CI)			P
	All (n = 454) <sup>a</sup>	Males (n = 174)	Females (n = 276)	
<b>Child abuse and neglect</b>				
<5	73.8 (66.4–81.2)	45.4 (39.5–51.5)	54.5 (48.5–60.5)	0.0647
5–9	11.7 (7.0–16.3)	24.8 (9.3–51.4)	75.2 (48.6–90.7)	0.0005
10–14	8.0 (3.9–12.0)	22.4 (6.9–52.8)	77.6 (47.2–93.1)	0.0000
15–17	6.6 (3.6–9.7)	8.3 (1.5–35.6)	91.7 (64.4–98.5)	0.0001
<b>Sexual assault</b>				
<5	17.9 (2.8–33.1)	22.2 (6.3–54.8)	77.8 (45.2–93.7)	0.0832
5–9	30.9 (15.7–46.0)	0.0	100	0.0000
10–14	29.1 (18.3–39.8)	13.7 (2.4–50.8)	86.3 (49.2–97.6)	0.0002
15–17	22.1 (11.0–33.3)	8.0 (1.4–34.9)	92.0 (65.1–98.6)	0.0000

CI, confidence interval.

<sup>a</sup> This value includes four cases that were excluded from the subgroup analysis because the sex and cause of death could not be determined owing to the decomposition of the body.

The problems highlighted in South Africa are found in other African countries.<sup>35</sup> Under the Children's Act of 2005, the state is required to provide and fund a full range of child protection services.<sup>36</sup> In practice, the demand for services exceeds the response capacity of existing services, which are composed of only 15 000 registered social workers and are characterized by long waiting lists and poor service delivery.<sup>16,37</sup> Studies have shown that even in well-resourced settings child abuse cannot be prevented through service provision and identification of children at risk, as evidenced by the fact that children known to child protection services continue to be killed.<sup>31,38,39</sup> A focus on primary prevention is imperative, coupled with interventions to strengthen parenting skills, which have proved effective in high-, middle- and low-income settings.<sup>40,41</sup> South Africa needs to research and test these models before taking them to scale. Interventions targeting teenage boys that focus on the gender context of the use of weapons and violent behaviour are needed to reduce the high mortality in this age group. South Africa also needs to adopt a national strategy to prevent child abuse and neglect. ■

Competing interests: None declared.

## ملخص

## الوضع الوبائي لجرائم قتل الأطفال في جنوب أفريقيا

الغرض وصف معدلات جرائم قتل الأطفال حسب العمر ونوع الجنس في جنوب أفريقيا.

الطريقة تم إجراء دراسة متعددة القطاعات مستندة إلى المشرحة في عينة وطنية مكونة من 38 مختبراً طبياً قانونياً عاملاً في عام 2009. وتم أخذ عينات هذه المختبرات بنسبة عكسية إلى العدد الذي يعمل في كل فئة من الفئات الثلاث التي تم تحديدها من خلال حجم التشريح: أقل من 500، أو من 500 إلى 1499، أو أكبر من 1499 حالة تشريح سنوية. وتم جمع البيانات المعنية بجرائم قتل الأطفال من ملفات المشرحة وتقارير التشريح ومقابلات الشرطة. وتم تحري سبب الوفاة والبيانات المعنية بالإيذاء والإهمال أو بالاعتداء الجنسي وخصائص مرتكبيها والظروف المحيطة بالوفاة.

النتائج تشير التقديرات إلى وقوع 1018 جريمة من جرائم قتل الأطفال (فاصل الثقة 95٪، فاصل الثقة: من 843 إلى 1187) في عام 2009، بمعدل 5.5 (فاصل الثقة 95٪: من 4.6 إلى 6.4) جريمة قتل لكل 100 000 طفل أقل من 18 سنة. وكان معدل

جرائم القتل مرتفعاً في الأولاد (6.9 لكل 100 000؛ فاصل الثقة 95٪: من 5.6 إلى 8.3) عنه في الفتيات (3.9 لكل 100 000؛ فاصل الثقة 95٪: 3.2 – 4.7). وسبق إيذاء الأطفال وإهمالهم نصف جميع جرائم القتل تقريباً (44.5٪)، ولكن معدل تكرارها بين الفتيات كان يفوق ثلاث مرات معدل تكرارها بين الأولاد. وفي الأطفال الذين تراوحت أعمارهم من 15 إلى 17 سنة، كان معدل جرائم القتل بين الأولاد (21.7 لكل 100 000؛ فاصل الثقة 95٪: من 14.2 إلى 29.2) يفوق خمس مرات تقريباً معدل جرائم القتل بين الفتيات (4.6 لكل 100 000؛ فاصل الثقة 95٪: 2.4 – 6.8)

الاستنتاج يفوق معدل جرائم قتل الأطفال في جنوب أفريقيا مرتين التقدير العالمي. ونظراً لشيوع خلفية إيذاء الأطفال وإهمالهم، ينبغي أن يكون تحسين مهارات حسن تربية الوالدين للأولاد جزءاً من جهود الوقاية الأولية.

## 摘要

## 南非儿童凶杀案流行病学

目的 说明南非特定年龄和性别的儿童凶杀案率。

方法 在 2009 年运转的 38 个法医学实验室的全国样本

中执行基于太平间的横断面研究。对这些样本的采样在解剖量确定的三个层次 (<500, 500–1499 或 >1499

个年度尸检)中与每个层次的可用数字成反比。从太平间文件、尸检报告和警方访谈中收集凶杀案数据。对死亡原因、虐待和遗弃或性侵犯的证据、肇事者的特征和死亡情况进行了调查。

**结果** 2009年估计发生1018(95%置信区间, CI: 843–1187)起儿童凶杀案,不满18岁儿童凶杀案比例是每十万名5.5(95% CI: 4.6–6.4)。男童的凶杀案比例(每十万名6.9; 95% CI: 5.6–8.3)比女童(每十万名3.9; 95% CI: 3.2–4.7)高很多。在所有凶杀

案中有将近一半(44.5%)案件之前发生过儿童虐待和遗弃情况,但是在女童当中这种情况比男童要多三倍。在15至17岁儿童中,男童当中的凶杀率(每十万名21.7; 95% CI: 14.2–29.2)几乎是女童当中凶杀率(每十万名4.6; 95% CI: 2.4–6.8)的五倍。

**结论** 南非儿童凶杀案是全球估计数据的两倍以上。常见的背景是儿童虐待和遗弃,因此,应将改善育儿技能纳入主要的预防工作中。

## Résumé

### Épidémiologie des homicides d'enfants en Afrique du Sud

**Objectif** Détailler les taux d'homicide d'enfants en Afrique du Sud par âge et par sexe.

**Méthodes** Une étude transversale basée sur les autopsies a été menée sur un échantillon national de 38 laboratoires médico-légaux en 2009. Ces laboratoires ont été choisis en proportion inverse du nombre de laboratoires qui étaient opérationnels dans chacune des trois strates définies par le nombre d'autopsies réalisées par an: < 500, entre 500 et 1499 ou > 1499. Les données sur les homicides d'enfants ont été collectées à partir des fichiers mortuaires, des rapports d'autopsie et des interrogatoires de police. La cause de la mort, la preuve de l'abus, de la négligence ou de l'agression, les caractéristiques des agresseurs sexuels, et les circonstances entourant le décès ont été étudiées.

**Résultats** On estime que 1018 (intervalle de confiance de 95%: 843 à 1187) homicides d'enfants ont eu lieu en 2009, pour un taux de 5,5 (IC

de 95%: 4,6 à 6,4) homicides pour 100 000 enfants de moins de 18 ans. Le taux d'homicide était beaucoup plus élevé chez les garçons (6,9 pour 100 000, IC de 95%: 5,6 à 8,3) que chez les filles (3,9 pour 100 000, IC de 95%: 3,2 à 4,7). La maltraitance et la négligence des enfants étaient à l'origine de près de la moitié (44,5%) des homicides, mais cela trois fois plus souvent chez les filles que chez les garçons. Chez les enfants âgés de 15 à 17 ans, le taux d'homicides chez les garçons (21,7 pour 100 000; IC de 95%: 14,2 à 29,2) était près de cinq fois plus élevé que le taux d'homicide chez les filles (4,6 pour 100 000, IC de 95%: 2,4 à 6,8).

**Conclusion** Le taux d'homicide d'enfants en Afrique du Sud est deux fois plus élevé que la moyenne mondiale estimée. Puisqu'on retrouve fréquemment un climat de violence et de négligence envers les enfants, l'amélioration des compétences parentales devrait faire partie des principaux efforts de prévention.

## Резюме

### Эпидемиология убийств детей в Южной Африке

**Цель** Описать показатели убийств детей в Южной Африке в разрезе возраста и пола.

**Методы** Было проведено стратифицированное исследование моргов на основе национальной выборки, состоящей из 38 судебно-медицинских лабораторий, работавших в 2009 году. Могги были отобраны обратно пропорционально количеству моргов, принадлежавших к каждой из трех страт, сформированных на основе количества вскрытий: < 500, 500–1499 или > 1499 вскрытий ежегодно. Данные об убийствах детей собирались на основе записей моргов, отчетов о вскрытиях и допросов полиции. Исследовались следующие показатели: причина смерти, свидетельства жестокого обращения и пренебрежения родительскими обязанностями, сексуального насилия, характеристики преступника и обстоятельства смерти.

**Результаты** По оценкам, в 2009 году произошло 1018 (95% доверительный интервал, ДИ: 843–1187) случаев убийства детей,

что равняется 5,5 (95% ДИ: 4,6–6,4) убийств на 100 000 детей в возрасте до 18 лет. Уровень убийств был значительно выше среди мальчиков (6,9 на 100 000, 95% ДИ: 5,6–8,3), чем среди девочек (3,9 на 100 000, 95% ДИ: 3,2–4,7). Жестокое обращение с детьми и пренебрежение родительскими обязанностями предшествовали почти половине (44,5%) всех убийств, причем наблюдались в три раза чаще среди девочек, чем среди мальчиков. У детей в возрасте от 15 до 17 лет уровень убийств среди мальчиков (21,7 на 100 000, 95% ДИ: 14,2–29,2) был почти в пять раз выше, чем среди девочек (4,6 на 100 000, 95% ДИ: 2,4–6,8).

**Вывод** Показатель детоубийств в Южной Африке более чем в два раза превышает мировой уровень. Распространенность жестокого обращения с детьми и пренебрежения родительскими обязанностями свидетельствует о том, что часть усилий по первичной профилактике должна направляться на улучшение родительских навыков.

## Resumen

### La epidemiología de los homicidios de menores en Sudáfrica

**Objetivo** Describir las tasas específicas por edad y sexo de los homicidios de menores en Sudáfrica.

**Métodos** Se realizó un estudio transversal basado en datos de los depósitos de cadáveres en una muestra nacional de 38 laboratorios médico-legales activos en 2009. Se muestrearon en proporción inversa al número que estaba operativo en cada uno de los tres estratos definidos por volumen de autopsias: < 500, 500–1499 o > 1499 autopsias anuales. Los datos de los homicidios de menores se recopilaban de los archivos

de los depósitos de cadáveres, de informes de autopsias y de entrevistas con la policía. Se investigaron la causa del fallecimiento, las pruebas de abuso y abandono o de agresión sexual, las características del homicida y las circunstancias aledañas al fallecimiento.

**Resultados** En concepto de estimación, en 2009 se perpetraron 1018 (intervalo de confianza 95%: 843–1187) homicidios de menores, lo que representa una tasa de 5,5 (intervalo de confianza 95%: 4,6–6,4) homicidios por cada 100 000 menores de 18 años. La tasa de homicidios

era mucho más alta en niños (6,9 por cada 100 000; intervalo de confianza 95%: 5,6–8,3) que en niñas (3,9 por cada 100 000; intervalo de confianza 95%: 3,2–4,7). El abuso y abandono de los menores había precedido a casi la mitad (44,5%) de todos los homicidios, si bien fue tres veces más frecuente entre las niñas que entre los niños. En menores de 15 a 17 años, la tasa de homicidios masculina (21,7 por cada 100 000; intervalo de confianza 95% 14,2–29,2) fue casi cinco veces mayor que

la femenina (4,6 por cada 100 000; intervalo de confianza 95%: 2,4–6,8).

**Conclusión** La tasa de homicidios de menores de Sudáfrica es más del doble que la estimación global. Como los precedentes de abuso y abandono de los menores son habituales, la mejora de las competencias de los padres debería formar parte de los primeros esfuerzos de prevención.

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