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Mortality of Women From Intimate Partner Violence in South Africa: A National Epidemiological Study

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The purpose of this article is to describe mortality of women from intimate partner violence (IPV) in South Africa using a retrospective national study in a proportionate random sample of 25 mortuaries. Homicides identified from mortuary, autopsy, and police records. There were 3,797 female homicides, of which 50.3% were from IPV. The mortality rate from IPV was 8.8 per 100,000 women. Mortality from IPV were elevated among those 14 to 44 years and women of color. Blunt force injuries were more common, while strangulation or asphyxiation were less common. The national IPV mortality rate was more than twice that found in the United States. The study highlights the value of collecting reliable data across the globe to develop interventions for advocacy of which gender equity is critical.

Keywords: female homicide; femicide; intimate partner violence; South Africa

Death is the most extreme consequence of intimate partner violence (IPV) and is often the culmination of extended periods of abuse (Campbell, Sharps, & Glass, 2001; Campbell et al., 2003; Daly & Wilson, 1988; McFarlane et al., 1999; Moracco, Runyan, & Butts, 1998). The health consequences of IPV have been extensively

researched, but there has been little focus on mortality. It is a much less common health outcome than morbidity, but it is nonetheless particularly important. The United States has national crime databases that routinely collect statistics, and these are presented in a manner that shows the victim–perpetrator relationship and that enables mortality rates from IPV to be studied. Globally, this is very uncommon (Campbell, Glass, Sharps, Laughon, & Bloom, 2007). In most other settings, mortality from IPV can be described only through research, and very few studies have been done (Arbuckle et al., 1996; Campbell et al., 2003; Moracco et al., 1998).

Routine data sources in South Africa do not enable murder to be studied by victim–perpetrator relationship, and therefore the burden of mortality due to IPV has not been explored. We conducted a national study to describe the epidemiology of mortality from IPV, and we present and discuss the mortality rates in this article.

METHODS

This was a retrospective national study. All 225 mortuaries in South Africa that were operating in 1999 were included in the sampling frame. These were stratified by size based on the number of autopsies performed per annum (small = <500 autopsies, medium = 500–1,499 autopsies, large = >1,499 autopsies). A stratified random sample of 25 medicolegal laboratories was drawn using proportional allocation (see Table 1). Within each sampled laboratory, all women aged 14 and older who had been killed by another person in circumstances that were not accidental, between January 1 and December 31, 1999, and whose bodies were taken to mortuaries were identified. This study took 14 as the youngest age, as below this age very few women have intimate partners.

The primary data source was the death registers at the sampled mortuaries. Where death registers were incomplete or not available ($n = 4$ mortuaries), cases were identified from diaries of the forensic medical examiners or from other police record-keeping systems. The underlying cause of death was usually recorded in the register. All gunshot injuries, head injuries, poisonings, hangings, decomposed bodies, or any cases where the cause of death was “undetermined” or “unknown” were initially included, while clearly recorded suicides and transport accidents were excluded at this stage. For each of these cases, the autopsy report was photocopied. Cases were finally classified as homicide or nonhomicide after review of the autopsy report (second data source) and the interview with the police or docket review (third data source). In a small number of cases ($n = 34$) where there were discrepancies between the autopsy report and police information, the research

TABLE 1. The Sampling Fraction Based on the Operating Medical Legal Laboratories (MLL) in South Africa in 1999

Number of Autopsies per Annum	Number of MLL (N)	Sample (n)	Sampling Fraction (%)
>1,499	15	8	53.3
1,499–500	34	5	14.7
<500	176	12	6.8
Total	225	25	11.1

team discussed each case, and if there was any doubt that the case was a homicide, it was excluded. Links between data sources were made by the police case number or the mortuary number.

Data were collected during the period 2002–2003 using a pretested data capture sheet. The first part was completed from the records in the mortuaries by the researchers. A second part was based on data abstracted from the photocopied autopsy report (by a forensic pathologist Lorna J. Martin). A final section was completed by the researchers by telephonic or face-to-face interview with the case's primary investigating officer (53.7% of cases), the police station's commanding officer (27.1% of cases), or direct inspection of the police docket by a researcher (19.2% of cases).

The information recorded from the mortuary records included case number and police station, details of death and location of the body, and social and demographic characteristics of victim. That from the police included social and demographic characteristics of the perpetrator and information about the case investigation and outcome. Further questions about the history of violence and relationship data, such as type of partnership (e.g., husband), were asked if cases were identified to be intimate femicide cases. The autopsy reports provided information on the mechanism of death.

Following convention in this field of research and surveillance established by the Supplementary Homicide Reports of the Bureau of Justice (Bureau of Justice Statistics, 2008), the perpetrator of the homicide was defined as the person the investigating officer perceived to be primarily responsible for the murder. A perpetrator was "known" if there was a coherent account of events pointing to the culpability of one person, regardless of whether there had been a prosecution. If there was substantial doubt or no suspect, the perpetrator was "unknown." The victim–perpetrator relationships were classified into intimate and nonintimate partners. Intimate partners were current or ex-spouses, cohabiting or dating partners, other sexual (including lesbian) partners, or rejected suitors.

Data were analyzed using Stata release 8.0 (Stata Statistical Software, 1996). We took into account the survey design, including the different sampling weights of mortuaries. Using standard methods for the analysis of data from a sample survey, estimates for the numbers and proportions of deaths and the mechanisms of death from IPV and murders by others were calculated. Pearson's chi-square test was used to determine significant differences between groups (those murdered from IPV and those murdered by others). Mortality rates were calculated overall and presented for age-groups and race groups, where the denominator source was the South African 1996 national census. These population estimates were adjusted for annual growth using procedures commonly used in mortality studies (Bradshaw et al., 2003; Nannan, Timeus, & Bradshaw, 2002; Statistics South Africa, 1996). Ethical approval for the study was granted by the South African Medical Research Council Ethics Committee, and standard methods were applied to ensure confidentiality of records and identification of victims and perpetrators.

RESULTS

All sampled mortuaries contributed data to the study. Figure 1 presents a flow diagram showing the total sample of murdered women identified through mortuaries and the subgroups on which more information was available for the analysis. The mortuary data enabled us to identify 1,052 female murders, but we were able to trace police investigative

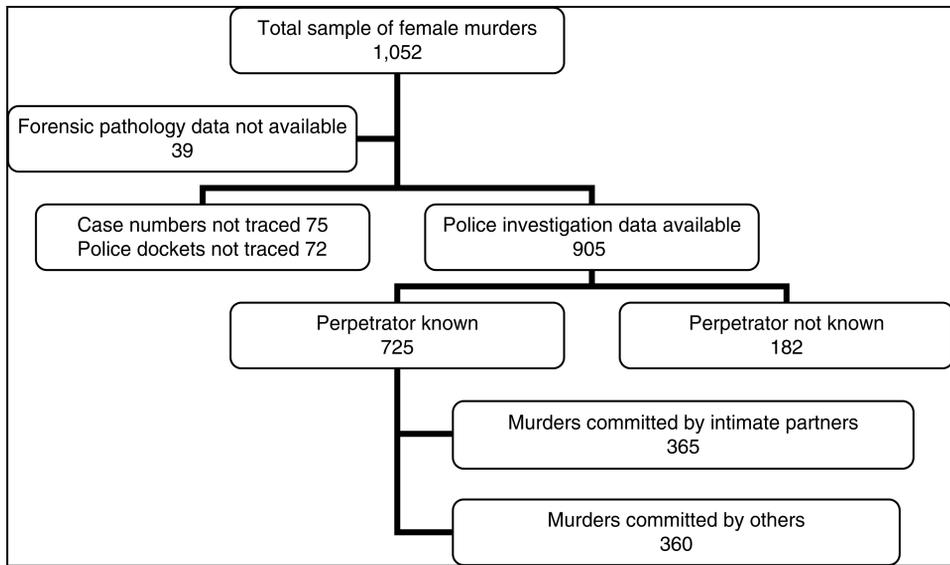


Figure 1. Flow diagram of the sample from 25 medical legal laboratories.

information on only 905 of 1,052 cases (86%). We were able to establish that the police had information on the perpetrator in 725 of the homicides (68.9%); in the other cases, perpetrators remained unknown.

We estimate that 3,797 (95% confidence interval [CI]: 2,693–4,894) homicides of women aged 14 years and older occurred in 1999 in South Africa, giving an overall female homicide rate of 24.7 per 100,000 women 14 years and older (95% CI: 17.7–31.6). In the subgroup where the victim–perpetrator relationship was known, 50.3% (95% CI: 43.8–56.7) were killed by a current or ex-husband or boyfriend; that is, they were deaths from IPV. This enables us to conservatively estimate that 1,349 women died from IPV in South Africa in 1999 (95% CI: 972–1,727), a rate of 8.8 per 100,000 (95% CI: 6.2–11.2) women 14 years and older (Table 2).

Of the women dying from IPV, 52.1% (95% CI: 40.2–63.7) were killed by cohabiting partners, 27.9% (95% CI: 19.3–37.6) by husbands, and 18.5% (95% CI: 12.3–26.7) by noncohabiting boyfriends. In 31.6% (95% CI: 22.6–42.7) of cases, the police had recorded a previous history of IPV.

Table 2 shows the estimated mortality totals and rates by intimate partner status (intimate partner vs. others). These estimates are also broken down in age-groups and race groups. More than 90% of the women murdered by intimate partners were younger than 45 years compared to 63% in women murdered by others. Comparing the estimated murder rates among the four race groups, colored women had the highest murder rate regardless of intimate partner status: 18.3 (95% CI: 2.9–33.7) murders per 100,000 women by intimate partners and 13.8 (95% CI: 2.1–25.6) murders per 100,000 women by others.

The age and race breakdown of male perpetrators by intimate partner status are also given in Table 2. The median age interval for perpetrators was 14 to 29 years compared to 30 to 44 years for intimate partner perpetrators. Colored men had the highest perpetration rate as intimate partners or as others, and this is in agreement with the female rates reported previously.

TABLE 2. The Number and Female Mortality Rates for Age and Race Including Perpetration Rates for Murder From Intimate Partners and Murders by Others: South Africa, 1999 (weighted estimates)

	Population Estimates	Murder by Intimate Partners			Murder by Others		
		<i>n</i> (95% CI)	%	Rate per 100,000 Women (95% CI)	<i>n</i> (95%)	%	Rate per 100,000 Women (95% CI)
Overall	15,360,904	1,349 (972–1,727)	50.3	8.8 (6.3–11.2)	1,335 (959–1,710)	49.7	8.6 (6.2–11.1)
Age-group (women) ^a							
14–29 years	6,892,855	649 (441–857)	51.1	10.3 (6.3–12.4)	369 (228–511)	28.5	5.3 (3.3–7.4)
30–44 years	4,363,286	524 (336–712)	41.3	12.8 (7.7–16.3)	445 (300–590)	34.3	10.1 (6.8–13.5)
45–59 years	2,261,298	71 (26–117)	5.6	3.5 (1.1–5.1)	260 (165–354)	20.0	11.5 (7.2–15.6)
60+ years	1,843,465	26 (8–44)	2.0	1.5 (0.4–2.3)	223 (85–360)	17.2	12.0 (4.6–19.5)
Race (women) ^{a,b,c}							
African	11,683,651	1,023 (710–1,336)	75.8	8.8 (6.0–11.4)	992 (662–1,321)	75.6	8.4 (5.6–11.3)
People of color	1,375,413	252 (40–464)	18.7	18.3 (2.9–33.7)	191 (30–353)	14.6	13.8 (2.1–25.6)
White	1,974,767	53 (20–86)	3.9	2.8 (1.0–4.3)	116 (32–200)	8.9	5.8 (1.6–10.1)
Indian	424,331	21 (0–44)	1.5	4.9 (0–10.3)	13 (1–26)	0.9	3.0 (0.2–6.1)
				Perpetration Rate per 100,000 Men			Perpetration Rate per 100,000 Men

Age-group (men) ^{a,d}													
14–29 years	5,960,703	436 (255–618)	34.2	7.3 (4.2–10.3)	501 (320–681)	56.3	8.4 (5.3–11.4)						
30–44 years	4,001,223	672 (487–856)	52.6	16.7 (12.1–21.3)	285 (158–411)	32.0	7.1 (3.9–10.2)						
45–59 years	2,009,925	134 (69–200)	10.5	6.6 (3.4–9.9)	66 (15–117)	7.4	3.2 (0.7–5.8)						
60+ years	1,163,773	35 (7–62)	2.7	3.0 (0.6–5.3)	38 (0–81)	4.2	3.2 (0–6.9)						
Race (men) ^{a,c,e}													
African	9,774,527	1,031 (730–1,332)	76.4	10.5 (7.4–13.6)	912 (592–1,233)	80.9	9.3 (6.0–12.6)						
People of color	1,210,331	239 (43–434)	17.7	19.7 (3.5–35.8)	176 (9–343)	15.7	14.5 (0.7–24.3)						
White	1,763,837	53 (20–87)	3.9	3.0 (1.1–4.9)	35 (0–70)	3.0	1.9 (0–3.9)						
Indian	386,940	26 (4–48)	1.9	6.7 (1.0–12.4)	4 (0–9)	0.3	1.0 (0–2.3)						

^aData do not add to total because of missing data for age and race. ^bRates are calculated per 100,000 women for that race group aged 14 and over. Sample included women from the age of 14 years. ^cPrevious race categories used by the apartheid government.

^dRates are calculated per 100,000 men of that age-group. ^eRates calculated per 100,000 men for that race group.

The mechanisms of death are shown in Table 3 and were predominantly firearm injuries, sharp injuries, or injuries from use of blunt force. The latter was a more common mechanism of death for murders committed by intimate partners (33.3% vs. 21.9%: $p = 0.02$), while strangulation and asphyxiation were more common in murders committed by others.

DISCUSSION

This is the first national study of female murder in South Africa that has been able to describe the mortality rate from IPV. The overall rate of female homicide (24.7 per 100,000) found in this study is the highest in the published literature and is sixfold higher than the global rate (4.0 per 100,000 female population) estimated in the World Health Organization’s Global Burden of Disease project for 2000 (Dahlberg & Krug, 2002). The rate we found is somewhat higher than that reported (21.0 per 100,000 women all ages) in the South African injury burden study (Bradshaw et al., 2003). Studies from other settings have similarly found that about half of all female murders are deaths from IPV (Arbuckle et al., 1996; Dahlberg et al., 2002); however, the IPV mortality rate found in this study (8.8 per 100,000) far exceeds rates reported in the United States (Brock, 2003; Paulozzi, Saltzman, Thompson, & Holmgreen, 2001; Puzone, 2000; Shackelford & Buss, 2000), Australia (Mouzos, 2001), Canada (Daly et al., 1988), and the United Kingdom (Brookman & Maguire, 2003). It is 2.5 times higher than the highest comparable rate: that of Moracco et al. (1998) in their mortuary-based study from North Carolina, which estimated a mortality rate from IPV of 3.5 per 100,000 women aged 15 and older.

The high mortality rates suggest that both interpersonal violence and IPV are major public health problems in South Africa. The two categories of murder are obviously somewhat related, yet the differences in patterns of age-specific mortality rates by race group between the two groups suggest that murder of women from IPV should not just be seen as an extension of a problem of high rates of murder in the country. The demographic profile of age and race for both victims and perpetrators found in this study is similar to the findings from comparable prevalence and risk factor studies for IPV reported in South Africa. The pattern of greater risk in younger women and higher rates

TABLE 3. Mechanism of Death: Comparing Murders From Intimate Partner Violence and Murders by Others: South Africa, 1999 (weighted estimates)

Mechanism of Death ^a	Murders by Intimate Partners (<i>n</i> = 1,349) <i>n</i> (%)	Murders by Others (<i>n</i> = 1,335) <i>n</i> (%)	<i>p</i> -Value
Gunshot injuries	405 (30.0)	434 (32.5)	0.56
Sharp	440 (32.6)	444 (33.2)	0.82
Injuries from blunt force	449 (33.3)	283 (21.2)	0.02
Strangulation	47 (3.4)	111 (8.3)	0.02
Asphyxiation	2 (0.1)	41 (3.0)	0.00
Burns	14 (1.1)	29 (2.2)	0.37
Drowning	6 (0.4)	4 (0.3)	0.76

^aEstimates do not add up to 3,793 because categories are not mutually exclusive.

among women of color¹ are the same as those found for the prevalence of IPV in the 1998 South Africa Demographic and Health Survey (Department of Health, 2002). This found that the proportion of women under 40 years reporting physical violence in the past year was nearly double that of women over 40, and the proportion of women of color reporting it was 66% higher than that of African women (the race group with the next highest prevalence rate). The perpetration pattern is also similar to that found in a study of working men in Cape Town, where younger men and people of color reported higher levels of physical violence against intimate partners (Abrahams, Jewkes, Laubsher, & Hoffman, 2006). This suggests that the mortality from IPV can better be understood as an extension of the problem of IPV in the country rather than just an extension of the problem of general homicide.

This has important implications for prevention. The problem of IPV has been theorized as being rooted in constructions of masculinity found in the country and that legitimate the use of violence to control and punish women, compounded by very high levels of alcohol abuse (Jewkes, 2002). There are undoubtedly other factors as well. Firearm availability is widespread in South Africa. The role of firearms is clearly demonstrated in Table 3 as well as in a subanalysis of the cases where suicide followed the murder (Mathews et al., 2008). More than two-thirds of intimate femicide-suicide perpetrators owned a legal firearm. Some of this group of men may have killed themselves in remorse or to avoid the legal consequences of their actions, while others may have planned suicide and wanted to take their partner with them. Causation is very complex and clearly overlaps in multiple ways. While suicide may be precipitated by (untreated) major depressive illness or psychosis, the acts remain extreme manifestations of male control over women and examples of murder rooted in patriarchal ideas of gender hierarchy, norms, and behaviors.

The World Health Organization (Barker, Ricardo, & Nascimento, 2007) has recently reviewed the evidence for the effectiveness of interventions to build gender equity through changing men and boys. They have documented a range of interventions that work with individual men as well as those that try to change institutional cultures, broader social norms, policies, and laws.

In South Africa, the randomized controlled trial evaluation of the HIV behavior change intervention Stepping Stones has shown it to be effective in reducing men's perpetration of IPV 2 years after the intervention (Jewkes et al., 2008). These sorts of interventions are critical for reducing IPV. Controlling access to firearms, interventions to reduce alcohol abuse, and improving mental health services should also have an impact on female homicide. South Africa has a system for the surveillance of homicides, the National Injury Mortality Surveillance System (NIMSS), which may have the potential to collect data to enable trends to be monitored and the broad impact of interventions monitored over time. Unfortunately, it currently does not include data on victim-perpetrator relationships and so cannot shed light on trends in IPV-related mortality (Matzoupolous, 2003). Amending the NIMSS system to include collection of this variable would be very useful.

Our study has several limitations. We depended on police data for details of the murders, and as a result some data were missing, especially on perpetrators, because of limitations of the police investigations and record keeping. We have no way of knowing the biases inherent in the missing data. It is unlikely that data missing due to untraceable case numbers would be biased toward a type of murder; however, it is possible that there were biases in the missing dockets. It is common in South Africa for money to be exchanged for dockets to go "missing," and this may be more common with cases of murder where there was more police sympathy with the perpetrator, as is common with IPV (Altbeker, 2005).

There may have been biases in the large group of cases where the police did not have a suspect. It was our perception when collecting data that the deaths of African women were often not thoroughly investigated, nor were known perpetrators pursued. This reflects both historically based inequalities in public service resources in historically African areas as well as the low status of African women in the national race and gender hierarchy. These limitations mean that the mortality rates from IPV presented are almost certainly conservative estimates of the true rates in South Africa.

One of the strengths of our study is that it used a research methodology that can be replicated to generate comparable data across countries. The need to strengthen global data for a better understanding of the nature and the prevalence of femicide was recently recognized when a global meeting was convened by PATH, the World Health Organization, Intercambios, and the South Africa Medical Research Council (Femicide Technical Meeting, 2008). The main aim of the meeting was to discuss the state of international research and to explore how to strengthen global data to ensure comparability. The meeting concluded that there have been no standard definitions of femicide, even those used by the national homicide databases in developed countries, such as United States, Australia, Canada and United Kingdom (Widyono, 2008). In resource-poor settings, national databases can rarely be used, so the methodology used in this study was recognized as a model that can be replicated, the key features of this being the use of a sampling methodology to enable findings to be generalized to a recognized geographical area through cluster (mortuaries) sampling and collection of data on perpetrators through police sources. Variations between countries or regions in the cultural and social context of female murders will influence case ascertainment in mortuaries. We recommend that femicide research start with a process of understanding the forms of female murder in a society, both the context and the mechanism of death. This will inform case ascertainment in mortuaries and is important background for interviews with the police. In countries with categories of female murder that have their origins in the status of women in society, such as dowry-related deaths and honor killings, it may be desirable to collect data on these and report them separately.

Developing working relationships with a variety of stakeholders, including service providers, policymakers, and advocates in the field, is important. For our study, the important services included medical staff performing the autopsies, police, and policymakers from the justice and health departments. The research methodology enabled us to observe the quality of autopsy records, which was valuable to feed back into services. Interviews with the police and the docket reviews revealed weaknesses in case investigations, particularly inconsistency in inquiry about previous history of IPV. This has also been reported back to services to inform discussions around strengthening investigations of cases.

The findings of the study have been of great value in highlighting the very serious consequences of IPV. This has contributed to raising awareness of the consequences of gender-based violence and the importance of viewing constructions of masculinity predicated on the control of women as a public health problem.

CONCLUSION

The study highlights the importance of collecting data that could be compared globally. The findings also highlight the important public health consequences of IPV and the substantial burden of mortality from murder of women in South Africa. The finding that

patterns of IPV-related mortality more closely follow those of exposure to IPV than to female murder overall suggests that prevention of IPV-related mortality requires interventions that seek to prevent IPV rather than general interventions to prevent homicide. Prevention of IPV through reducing gender power inequalities should be a public health priority for the country.

NOTE

1. Before 1994 during the apartheid era, South Africans was legally required to be identified by race, and the term “colored” referred to persons of mixed race and Khoisan descent.

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