Trends in Firearm-Related Deaths in the Transkei Region of South Africa

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Background: Firearms tends to be seen today as instrumental in injuries and deaths, including suicide. South Africa's gun law allows firearms to be licensed and legal, so in general they are not illegal weapons, even though many used in violence are illegal. This is a prime area in which multisectorial collaboration is needed in a country like South Africa.

Objective: The purpose of this study is to determine the incidence of firearm-related deaths and to understand the underlying causative factors.

Method: This is a record review of 10,860 medicolegal autopsies conducted between 1993 and 2004 at Umtata General Hospital.

Results: Between 1993 and 2004, there were10,860 autopsies performed of those who died as a result of trauma and others in Umtata General Hospital. The average gunshot-related deaths during this period are 48.4 per 100,000 of the population per year. The rate has increased from 27 per 100,000 in 1993 to 42 per 100,000 in 2004. It was climbed to its peak to 67.8 per 100,000 in 2001. Firearm-related deaths account for 29% of all traumatic deaths. Males (82%) outnumber females 4.6:1 in fatalities due to firearms. There is an increasing trend in females. About 50% were in the 21- to 40-year age group. Interpersonal violence, poverty, and use of drugs and alcohol are common underlying factors.

Conclusion: There is a high incidence of firearm-related deaths in Transkei, which is in support of stricter gun control.

Key Words: firearm injury, gender-specific, violent, prehospital

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Injuries are a leading cause of death in all age groups and both sexes. Violence and injuries account for 9% of the global mortality and 12% of all disability adjusted life-years (DALYs) lost in 2002.[1] It is estimated that 5.8 million people worldwide die each year as a result of some form of injury.[2] Firearm-related violence is not new in South Africa. According to a United Nations survey of 69 countries, South Africa has one of the highest firearm-related homicide rates in the world per 100,000 people, second only to Columbia.[3] Police figures indicate that firearms are increasingly being used in murders.[4]

According to WHO, Japan recorded a homicide rate by firearms of less than 0.1 per 100,000 persons in 1997. In the same year, a firearm homicide rate of 40 per 100,000 persons was reported in Brazil, and a rate of 50 per 100,000 persons in Columbia. Global burden of violent death in low- and middle-income countries (42.2 per 100,000 persons) is more than double that in high-income countries (17.3 per 100,000 persons).[5] In South Africa, police figures indicate that forearms are increasingly being used in murders, 42% in 1994 to 49% in 1999.[4] The city of Cape Town reported a firearm homicide rate of 40.4 per 100,000 people per year for 1999.[6] A recently (2004) published study by the author showed that the average annual incidence of violent and/or traumatic deaths in Transkei region of South Africa is 162 per 100,000 of population. Firearms-related deaths, at 43 per 100,000 of the population per year, have contributed substantially to this high incidence.[7] South Africa has more than 32 murders per day. In Witwatersrand, it is almost 10 per day. This is twice the average murder rate of New York City. An estimated 70,000 South Africans are killed due to trauma every year, with a further 3.5 million seeking health care as a result of trauma.[8,9] A study conducted by van der Spuy[10] has showed that violence is a major factor in South African trauma, accounting for 34.3% of all trauma cases and 53.2% of trauma fatalities in the Cape Metropole. The United States is generally regarded as a relatively violent society and represents an average annual rate of deaths of 10.1 per 100,000 populations. Over the same period, South Africa had annual violent death tolls 5.5 times higher than the US figure.

The highest rates of death due to homicide among males and females were for those aged between 15 and 44 years. Worldwide, suicide claimed the lives of nearly 1 million people in 1998. Approximately 60% of all suicides occurred among males, and over half (53%) of all suicides occurred among persons between the ages of 15 and 44 years. Thirty percent of suicides were carried out with a firearm among males and 13% in females.[5] There are an estimated 11 to 13 million firearms in South Africa, 4 million legally owned, 5 million belonging to South African National Defense Force and Police Service and 1 to 4 million being illegally held.[11] Of the 29,694 guns stolen in 1998, only 1764 (6%) were recovered in that year[12]; the rest, by definition, fell into the hands of criminals. The number of guns is increasing annually in South Africa, with the Central Firearms Register

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receiving about 18,000 to 20,000 new applications monthly. Every day, more than 30 people die of gunshot wounds and many more are injured.[13]

Although far more research is needed to estimate the economic costs of gun violence in South Africa, one study at Groote Schuur Hospital in Cape Town looked at how much the hospital spent on treating the almost 1000 firearm-injured patients who presented there in 1993. It was calculated that the treatment of these injured patients cost the hospital nearly R4 million (approximately $560,000). These are direct medical costs, which only account for an estimated 13% of the total costs of gun violence; the composite costs for these patients was calculated as approximately R30 million (approximately $4 million). This is for 1 year for 1 hospital only. A survey undertaken by the Human Sciences Research Council showed that stricter gun legislation is overwhelmingly supported' with 84% of South Africans indicating that they want stricter gun control.[14] The gun control bill that is being debated in the South African Parliament is a step in the right direction.

The purpose of this study is to determine the incidence of firearm-related deaths and to understand the underlying factors in this region of Transkei.

METHODS

This is a retrospective descriptive study, reviewing female traumatic deaths in the mortuary of Umtata General Hospital (UGH) for the period January 1993 to December 1999. All the medicolegal autopsies were recorded in the postmortem register at the mortuary. Recorded details included the names, addresses, and ages of the deceased, together with causes of deaths. The referrals were mainly from the Umtata and Nqgeleni magisterial districts (combined population of 400,000). The few referrals from nearby magisterial districts (eg, Qumbu, Mqanduli, Libode) were excluded from the study. All the autopsy records for the specified period were reviewed compiled and collated manually. An analysis of 7 years' records was also carried out manually, and then, with the help of a computer, the results were presented in tables and graphic forms.

RESULTS

There were10,860 medicolegal autopsies performed during the 12-year period 1993 to 2004 in UGH. Trauma accounted for 73% of all deaths. Death as a result of trauma has decreased from 82% in 1993 to 74% in 2004, and others have increased from 18% to 26% in 2004 (Table 1). The mean annual rate of traumatic death was 165 per 100,000 population, and nontraumatic deaths were 62 per 100,000. There was an increase in the traumatic deaths from 155 per 100,000 of population in 1953 to 169 in 2004 and in nontraumatic deaths from 35 per 100,000 population in 1993 to 59 per 100,000 in 2004 (Table 2).

The pattern of injuries was motor vehicle collisions (MVC's) 35%, firearm injuries 29%, stab wounds 21%, and blunt injuries 15% (Table 3). The mean firearm fatalities (48.4 per 100,000) were the leading cause of homicide in the population, followed by deaths caused by stabbing (33.2 per 100,000) and blunt injuries that resulted from assaults (23.7 per 100,000). Deaths by firearm injuries increased from 27 per 100,000 in 1993 to 42 in 2004, and climbed to its peak to 67.8 per 100,000 in 2001 (Table 4). Males (82%) outnumber females 4.6:1 in firearms fatalities (Figs. 1 and 2). The young adults who were in their most productive ages, ie, 21 to 40 years, accounted for almost half of the traumatic deaths (Fig. 3).

TABLE 1. Percentages of Traumatic vs Nontraumatic Deaths (1993–2004) (n = 10,860)

Year	Traumatic Deaths	Nontraumatic Deaths	Total Deaths
1993	622 (82%)	140 (18%)	762
1994	592 (73%)	223 (27%)	815
1995	548 (72%)	218 (28%)	766
1996	634 (77%)	186 (23%)	820
1997	767 (77%)	231 (23%)	998
1998	684 (66%	361 (34%)	1045
1999	678 (69%)	297 (31%)	975
2000	669 (71%)	279 (29%)	948
2001	647 (73%)	242 (27%)	889
2002	664 (73%)	243 (27%)	907
2003	727 (70%)	299 (30%)	1026
2004	675 (74%)	234 (26%)	909
Mean	659 (73%)	246 (27%)	1086

TABLE 2. Traumatic vs Nontraumatic Deaths per 100,000 of the Population (1993–2004) (n = 10,860)

Years	Traumatic Deaths per 100,000	Nontraumatic Deaths per 100,000	Total Deaths per 100,000
1993	155	35	190
1994	148	56	204
1995	137	55	192
1996	158	47	205
1997	192	58	250
1998	171	90	261
1999	170	74	244
2000	167	70	237
2001	162	61	223
2002	166	61	242
2003	182	75	257
2004	169	59	228
Mean	165	62	227

DISCUSSION

Transkei is a former homeland and is now a part of the Eastern Cape Province. This province is one of the poorest in the country. Almost three quarters of the population (74%) earn less than R1500 per month (approximately $200), and 41% of households have a monthly income of less than R500 per month (approximately $70).[15] South Africa has thousands upon thousands of legal and illegal firearms, and many were smuggled in towards the end of the apartheid regime.[16]

TABLE 3. Patterns of Traumatic Deaths (1993–1999) in Transkei (n = 10,860)

Years	MVCs	Firearm	Stab Injuries	Blunt Trauma	Total
1993	248 (39%)	107 (18%)	167 (27%)	100 (16%)	622
1994	260 (43%)	140 (24%)	110 (19%)	82 (14%)	592
1995	224 (41%)	117 (22%)	103 (18%)	104 (19%)	548
1996	271 (42%)	153 (24%)	111 (18%)	99 (16%)	634
1997	319 (42%)	229 (30%)	117 (15%)	102 (13%)	767
1998	261 (38%)	201 (30%)	132 (19%)	90 (13%)	684
1999	193 (30%)	250 (36%)	142 (20%)	93 (14%)	678
2000	203 (30%)	237 (36%)	140 (21%)	89 (13%)	669
2001	168 (26%)	271 (42%)	117 (18%)	91 (14%)	647
2002	203 (31%)	237 (36%)	140 (21%)	84 (13%)	664
2003	249 (35%)	212 (29%)	154 (21%)	112 (15%)	727
2004	241 (36%)	168 (26%)	161 (24%)	95 (14%)	665
Mean	237 (35%)	194 (29%)	133 (21%)	95 (15%)	658

The culture of owning a gun is still very prevalent in the society. Owning a gun is not a problem, but trigger-happy owners are the problem. There are very few studies done on firearm-related deaths in South Africa, despite that shooting is the leading cause of nonnatural deaths.[17]

Trauma (73%) is a leading cause of death in the Transkei region (Table 1). The rate of violent deaths varies according to country's income levels. In 2000, the rate of violent deaths in low- to middle-income countries was 32.1 per 100,000 population, more than twice the rate in high-income countries (14.4 per 100,000).[18] The average violent death rate in this study is at least 5 times (165 per 100,000) more than in low- to middle-income countries and at least 11 times that of high-income countries (Table 2). South Africa is first and third world. At one end, the people are very prosperous and rich like in the high-income countries, and at other end, very poor. Mortality from firearm injuries also nearly tripled from 3.8 per 100,000 in 1992 to 10.3 per 100,000 in 1996 in the rich area of South Africa.[19] In the same period (1993 to 1996), firearm-related deaths increased from 26.7 per 100,000 of population in 1993 to 38.2 per 100,000 in 1996 in this study (Table 2). The city of Cape Town reported a firearm homicide rate of 40.4 per 100,000 person-years for 1999.[6] In the same year, in Transkei average homicide rate was 62.5 per 100,000 person-years (Table 4). It clearly indicates that firearm homicide rate is at least half again as high in Transkei than in Cape Town. In South Africa, the violent crimes vary in intercity and interregional differences, both in rates and patterns. The majority of historical black areas like Transkei have high levels of firearm-related crime.

TABLE 4. Fatalities by Firearm vs Stabbing and Blunt Objects per 100,000 of Population (1993–2004) in Transkei (n = 10,860)

Years	Firearm	Stab Injuries	Blunt Force	Total Homicide
1993	26.7	41.7	25	93
1994	35	27.5	20.5	83
1995	29.2	25.7	26	81
1996	38.2	27.7	24.7	91
1997	57.2	29.2	25.2	112
1998	50.2	33.2	22.5	106
1999	62.5	35.5	23.2	121
2000	59.3	35	22.2	117
2001	67.8	29.2	22.7	120
2002	59.2	35	21	115
2003	53	38.5	28	120
2004	42	40.2	23.7	106
Average	48.4	33.2	23.7	105

Injury problems tend to be greatest in those countries with the fewest resources. A greater number and variety of potential hazards especially plague low-income countries, which have the least capacity to prevent and treat injury.[20] The high level of poverty and low level of education and employment in this region could be attributed to this high violence. The poor and weaker are at a high risk for injury because they are faced with hazardous situations on a daily basis. The poor also have less chance of survival when injured because they have less access to health services. The sad news is that the violence-related disease burden is projected to increase by 2020.[21] Statistics from developed countries indicate that, for every person killed by injury, around 30 times as many people are hospitalized and 300 times as many people are treated in hospital emergency rooms and then released.[2] A recent study published by the author has shown a very high prehospital (74%) mortality of trauma A patients in the Transkei region and recommended employing more medical personnel in the rural areas, along with an effective ambulance service.[22]

The fourth annual report of the National Injury Mortality Surveillance System (NIMSS) covered the period January 1 to December 31, 2002, and described 25,494 fatal injuries that were registered at 34 mortuaries in 6 provinces. Estimates for the total number of nonnatural fatalities in South Africa range between 70,000 and 80,000 annually. Firearms were the leading cause of fatal injury for all ages from 15 to 65.[23] In this 12-year study (1993–2004), 10,860

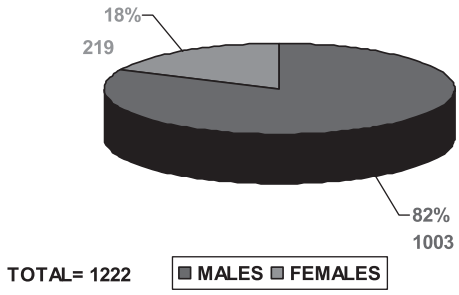

FIGURE 1. Firearm fatalities: male versus female in Transkei in between 1993 and 1999 (n = 1222).

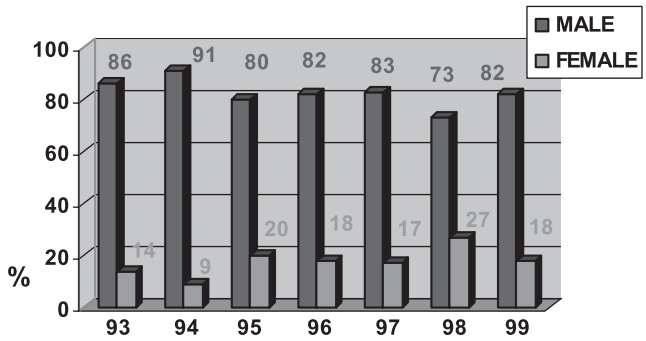

FIGURE 2. Firearm fatalities: males versus females in Transkei (n = 1222).

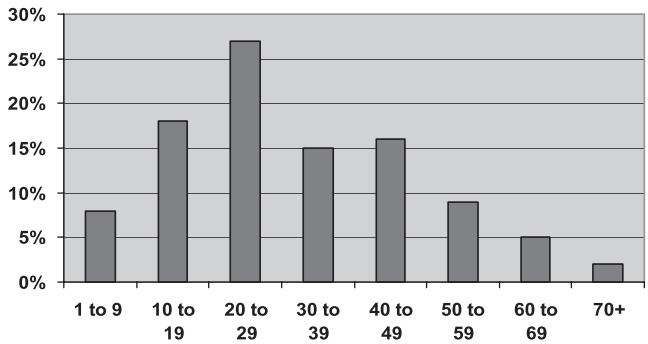

FIGURE 3. Age groups versus traumatic deaths in Transkei in 1999 (n = 274).

were total fatalities. Of them, 7927 (73%) were related to injuries. It is a rough estimate that for every 70 nonnatural deaths in South Africa, 1 is from this region, although for every 100 living in South Africa, 1 lives here. The observed rate of violent and/or traumatic deaths in Transkei from 1993 to 1999 is 2.4 times higher than in Cape Town.[7] Sixty-five percent of nonnatural deaths are homicides in this study, compared with 46% in NIMSS. Firearms have a significant contribution (29%) in these homicides (Table 3) and are slightly (27.8%) higher than in the NIMSS report. The trend of firearm deaths has gone down from 2001, where it reached a peak 42% to 25% of all traumatic deaths, but it is still an unacceptably high figure (Table 3). The reason for this fall is not known, but better policing, positive hopes for employment, and food security may be contributory. Although motor vehicle accidents are still the major concern as they account for 35% of total traumatic deaths, firearms fatalities are more a concern to the community (Table 3).

South Africa is both first and third world. It has a population of about 41 million, of which 76% are black. The Eastern Cape Provinces has a population of 7 million (17% of the population of South Africa). This province contributes 7.5% to the country's GDP but is characterized by a gross lack of infrastructure and limited commercial facilities. In fact, the Eastern Cape has the highest percentage of poor (24%), and this figure rises to 92% in former Transkei.[24] There is an increasing tolerance, collective amnesia, and blind eye to violence, which has resulted in between 50% and 80% of the victims receiving medical treatment without reporting the incident to the police.[25] The poor are at the greatest risk, both as victims as well as perpetrators in Transkei. This may be one of the reasons for the limited response to violence as a public health and public advocacy issue. This neglect requires equitable police, health, and transport services in this area compared with rest of the country.

Firearm injuries are on the increase, from 1993 (18%) to 2004 (26%) (Table 3). Women are coming under increasing threat of death, which has increased from 14% in 1993 to 27% in 1998, in this study. On average, 4 males are killed for each female firearm-related homicide (Figs. 1 and 2). The majority of victims (80%) of these deaths are typically young male subjects between 15 and 49 years (Fig. 3). An earlier study by the author has also shown that there is an increasing trend of female traumatic deaths, especially related to firearms.[26] These figures in this study are also in line with WHO data. In 1998, WHO reported approximately 736,000 homicides due to all methods of death, including firearms. Males accounted for nearly 80% of all homicide victims. The highest rate of death due to homicide among males and females was for those aged between 15 and 44 years. With the exception of the youngest age groups (ie, 0–14 years), male homicide rates were approximately 3 to 6 times higher than female homicide rates across each of the various age groups. The high rates of male homicide in the 15- to 44-year age groups are driven largely by high rates of youth interpersonal violence among males.[2] Violent traumatic deaths among women in South Africa have been described as endemic in the sense that they are "widespread, common and deeply entrenched."[27] This demands that active steps be taken by the government to curb this trend. Recently, the moves for gun control are therefore a necessary step in the strategy to reduce violent crime.

Worldwide, suicide claimed the lives of nearly 1 million people in 1998. Approximately 60% of all suicides occurred among males, and over half (53%) of all suicides occurred among persons (male and female) between the ages of 15 and 44 years. Suicide rates, however, are generally higher among males than females.[2] The number of suicides in this study is difficult to estimate, but a recent circumstantial study showed that there has been a one-and-a-half-times

increase in suicidal deaths (eg, hanging) and in deaths from gunshot injuries (which may or may not be suicides).[28] HIV/AIDS is known to have a significant association. Early studies suggested suicide risk 20 to 36 times higher than the general population, but more recent trends in the United States show a decline. This is not true in Africa, including in Transkei.[29]

The introduction of a gun-control bill for South Africa is aimed at stricter and efficient gun ownership.[30] Violence has traditionally been seen as the domain of law enforcement or criminal justice systems. For this reason, societies have primarily responded to the problem of violence with strategies of repression or containment. The role of the health sector has generally been limited to treatment and disability prevention; in other words, to "damage control." The bill is a decisive step to achieve reduced mortality and disability. The costs of gun-related deaths are enormous; if the costs were decreased, the savings in monetary terms could be used for the welfare of the community.

In conclusion, the incidence of firearm deaths is declining but still is a major cause of concern in the Transkei region. It generally involves the poor and the weak of the society. It is increasingly clear that the government and civil society have an important role to play in the implementation of gun control to make it effective.

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