Incidence and Patterns of Violent and/or Traumatic Deaths between 1993 and 1999 in the Transkei Region of South Africa

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Background: Incidence and patterns of violent and/or traumatic deaths among 4,525 victims over a 7-year period in the Transkei region of South Africa were investigated.

Method: Retrospective review and analysis was performed of all medicolegal autopsies (n = 6,181) between January 1993 and December 1999, of which 4,525 were violent or traumatic deaths.

Results: During the 7-year period (January 1993–December 1999), violent and/or traumatic deaths in the Transkei region accounted for an average annual rate of 162 per 100,000 of the population. The common causes of deaths per 100,000 of population per year were as follows: motor vehicle collisions, 63; firearm injuries, 43; stab wounds, 32; and blunt trauma, 24. Male subjects outnumbered female subjects by a 3.3:1 ratio. The murder rate in female subjects was 18 per 100,000 population. The murder rate in this area increased from 94 per 100,000 in 1993 to 121 in 1999. Nearly 50% of the violent and/or traumatic deaths occurred in the 21- to 40-year age group. There has been an increase in nontraumatic deaths such as hanging (1.5 times) and poisoning (5 times).

Conclusion: The average annual incidence of violent and/or traumatic deaths in the Transkei region of South Africa is 162 per 100,000 population. Firearm-related deaths, at 43 per 100,000 of the population per year, have contributed substantially to this high incidence. This is a major cause of concern.

Key Words: Blunt trauma, Firearm injury, Motor vehicle collision, Stab wound, Traumatic death, Violent death.

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Trauma is the leading causes of death in the Transkei region of South Africa, one of the least developed parts of the country, and violence contributes substantially to these traumatic deaths. The unusually high level of crime in this area is a reflection of massive unemployment, poverty, and low levels of education.[1]

In 2000, an estimated 1.6 million people worldwide met violent deaths -a rate of nearly 28.8 per 100,000 population. Approximately half of these deaths were suicides, nearly one third were homicides, and approximately one fifth were casualties of armed conflict. Rates of violent death in the low- to middle-income countries are more than twice as high (32.1 per 100,000 population) as those in high-income countries (14.4 per 100,000 population).[2]

Audited information on the causes of death is one of the basic components of a country's health information system.[3] The contribution of violence to the global burden of health is predicted to increase unless substantial efforts are taken to remediate this problem.[4]

South Africa has been rated the second most dangerous country in the world after Colombia. The murder rate is nine times the international average and the violent crime rate is six times the international average. Young offenders are becoming increasingly violent, and this is a cause for concern, as they are tomorrow's generation. There is need for urgent intervention.[5]

Violence is fast overtaking infectious diseases as the principal cause of morbidity and premature mortality worldwide. For too long, violence has been a neglected epidemic, and social responses have been mostly reactive rather than preventive. Violence today is the number one cause of premature death among young people. No single indicator or source of information is sufficient to describe the magnitude and the health and social consequences of violence. However, because it is hidden from the public view or because of the powerlessness, fear, and/or stigmatization of victims, much violence is unreported or undiagnosed.[3]

The murder rate in South Africa was estimated at 98 per 100,000 population in 1992, which compares poorly with American figures of 10.1 per 100,000.[6] The incidence of murders has increased in the Transkei region, despite the fact that the murder rate in South Africa has decreased from 69.3 per 100,000 people in 1994 to 55.3 per 100,000 in 1999.[7] And even though this decline is substantial, rates of murder in South Africa continue to be high by the standards of the vast majority of other countries.[8]

In sub-Saharan Africa, natural causes of deaths, especially of infections and other diseases, have been given their due emphasis. By contrast, unnatural and/or violent deaths attributable to homicide, accidents, and suicide have received relatively little attention.[9] The aim of this descriptive study is to estimate the mortality attributable to violence and/or

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trauma and to develop a link between different causes of deaths along with demographic variables, age, and gender.

PATIENTS AND METHODS

This retrospective study, covering the period January 1993 to December 1999, was carried out in the Umtata General Hospital mortuary. This is located on the hospital premises, the teaching hospital of the University of Transkei in the Eastern Cape Province of South Africa. The hospital mortuary provides services to Umtata and Ngqeleni magisterial districts, which together have a population of approximately 400,000. Nearly 1,000 medicolegal autopsies are carried out in this mortuary per year. All deaths from unnatural causes in the region are notifiable to the police, who then request medicolegal autopsies. A medicolegal autopsy is conducted, usually at the request of the police, after an unnatural death for which foul play is suspected or for which culpability is possible.

The word "assault" has been used interchangeably with blunt trauma. The other violent deaths are poisoning, hanging, suffocations, lightning strike, drowning, and burn.

All 6,181 medicolegal autopsies during the period under study had been recorded in the postmortem register. The name, address, age, gender, and cause of death were entered. All autopsy records were reviewed and analyzed manually.

There were no records of 194 (3%) of the cases. There were 760 (12.3%) natural deaths, and both groups were excluded from this study. The cause of death could not be ascertained on 205 (3.3%) decomposed bodies. There were 73 (1.1%) who fell from a height, and they were also not included in this study, as there was lack of certainty about the nature of the violence. The stillbirths (51 [0.82%]) have also been omitted.

RESULTS

There were 6,181 medicolegal autopsies performed during the period 1993 to 1999 in Umtata General Hospital. The average annual rate of violent and/or traumatic deaths was 162 per 100,000 population (Table 1).

Overall, homicide was the most important cause of violent/traumatic death, accounting for 99 per 100,000 population annually (Table 2). However, in any given year, motor vehicle collisions (MVCs) were the single most prevalent cause of violent/traumatic death (Fig. 1).

Table 2 Incidence of Deaths in Motor Vehicle Collision vs. Homicides in the Transkei Region of South Africa (1993–99)

Year	Deaths in Motor Vehicle Collision per 100,000 Population per Year	Homicide per 100,000 Population per Year			
		Firearm	Stab	Blunt	Total Murders
1993	62	27	42	25	94
1994	65	35	28	21	84
1995	56	29	26	26	81
1996	68	38	28	25	91
1997	80	57	29	26	112
1998	65	50	33	22	105
1999	48	63	35	23	121
Average	63	43	32	24	99

The incidence of homicide compared with MVCs is summarized in Table 2 and Figure 1. The majority (43 per 100,000) of homicidal deaths were caused by firearms, followed by deaths caused by stabbing (32 per 100,000) and blunt injuries resulting from assault (24 per 100,000). Deaths by firearm injuries increased from 27 per 100,000 in 1993 to 63 per 100,000 in 1999. By contrast, there was a decrease in deaths related to stab injuries, from 42 per 100,000 in 1993 to 35 per 100,000 in 1999, and also in homicides (blunt trauma) from 25 per 100,000 to 23 per 100,000 in 1999. MVC-related deaths also showed a decrease, from 62 per 100,000 in 1993 to 48 per 100,000 in 1999. Young adults (age range, 21–40 years) accounted for between 40% and 50% of the violent/traumatic deaths occurring in the period under study.

On average, 77% of the deaths were male subjects (range, 67–83%) and 23% (range, 17–30%) were female subjects. Thus, men outnumbered women subjects by a 3.3:1 ratio. The average annual murder rate was 99 per 100,000 population (Fig. 2), and it increased from 94 per 100,000 in 1993 to 121 per 100,000 in 1999 (Table 2). Murders of women were mainly by firearms (8 per 100 000 population)

Table 1 Violent and/or Traumatic Deaths vs. Nontraumatic Deaths per 100,000 Population in the Transkei Region of South Africa (1993–99)

Year	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
Average	162	59	221

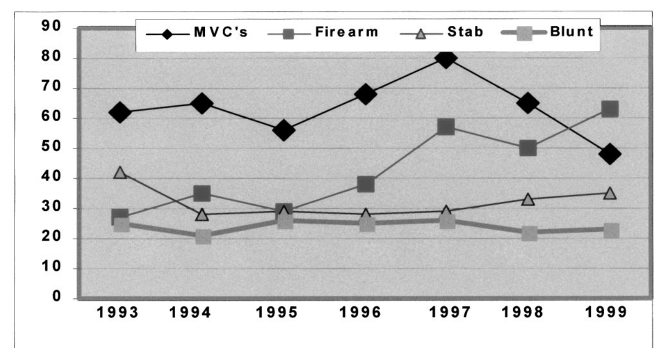

Fig. 1. *Pattern of violent and/or traumatic deaths per 100,000 population in Transkei (1993–1999).*

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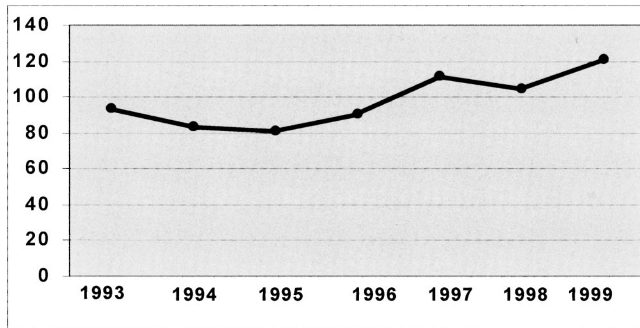

Fig. 2. *Annual murders per 100,000 population in Transkei region (average rate is 99 per 100,000).*

(Table 3). The incidence of female deaths (especially deaths related to firearm injuries) increased during the 7-year period under study. The rate of murder in women has increased from 14 per 100,000 population in 1993 to 29 per 100,000 in 1998. The incidence of murder in women is 18 per 100,000 population (Table 3).

DISCUSSION

The number of trauma-related deaths worldwide is unacceptably high.[10] More than 1.6 million people worldwide lost their lives to violence in 2000.[11] Violent deaths (homicide, accidents) are the leading cause of death in people aged 1 to 39 years in the United States.[12] Therefore medicolegal autopsies are necessary for an exhaustive evaluation of violent and/or traumatic death. These autopsies are necessary not only for legal security but also for fulfilling the social need to analyze injury mechanisms and the consequent possibility of preventive efforts.[13]

There are very few studies in South Africa on violence- and/or trauma-related mortality, despite this country having one of the most violent societies in the world, making trauma a common cause of death.[5] The direct cost to society of caring for the victims of trauma is enormous. Similar patterns have been observed in the United States, where trauma tends to take the lives of individuals in their first four decades and is the third most common cause of death. In the United States, it has been calculated that more than 4 million trauma patients are hospitalized annually.[14] Trauma restricts the growth of any economically viable state such as South Africa. This retrospective mortality study is probably the first comprehensive and systematic inquiry into violent and/or traumatic death in this country. It indicates the need for expanding efforts to initiate and develop violence and/or trauma control programs.

Table 3 **Incidence of Murders in Women per 100,000 Population (1993–99)**

Year	Firearm	Stab	Blunt	Murders
1993	3.7	3.7	6.5	14
1994	3.2	3.0	7.0	13
1995	5.7	4.5	5.0	15
1996	7.7	8.7	5.0	21
1997	9.2	6.2	3.2	19
1998	14.5	8.5	6.0	29
1999	11.0	3.0	2.0	16
Average	8	5	5	18

The observed rate of violent and/or traumatic deaths in the Transkei region of South Africa from 1993 to 1999 is 2.4 times higher than in Cape Town, whereas that of homicidal death is 1.3 times higher.[15] Although homicides in this study constituted 60% of total traumatic deaths (firearm, 36%; stab, 20%; and blunt weapon, 14%) in 1999, a recent National Injury Mortality Survey System in South Africa[16] reported that homicides constituted 46%. Among the homicide deaths, firearm injuries constituted 24% and stabs constituted 17%, findings that are comparable to those of the present study. Similarly, deaths attributable to MVCs were 39%, exactly the same rate as has been revealed by the present study.

The rates of violent/traumatic deaths by gender in the present study (3.3 male violent and/or traumatic deaths for every female death) were also similar to those in the National Injury Mortality Survey System report (3.8:1).[16] These data are also similar to the male-to-female ratio of homicides worldwide, which has been reported to be 3.4:1, with the highest being 7.8:1 in Latin America and the Caribbean and the smallest being 1.4:1 in India.[10] Violence against women is a growing problem in developing countries, and the observed increase in homicide of women, particularly by firearms, underlines this cause for concern.[17,18] The rate of murder in women has increased from 14 per 100,000 population in 1993 to 16 per 100,000 in 1999. It has reached the highest level of 29 murders per 100,000 population in 1998.

In 1990, there were reportedly 10.5 homicides per 100,000 people in the world. The range was wide, from 1.0 per 100,000 in developed countries to 44.8 per 100,000 in sub-Saharan Africa.[10] Between 1991 and 1994, the United States had a violent death rate of 10.1 per 100,000 population, but over the same period, South Africa had a violent death rate 5.5 times higher at 55.2 per 100,000 population.[19] From the present study, the annual murder rate was 99 per 100,000 population. The rate of murder in the Transkei region gradually increased since 1994 to a level in 1999 that was at least 10 times that of the United States. In this regard, firearm injuries were the main contributor, considering that death rates from other violent or traumatic causes showed a decrease.

The victims of violent/traumatic death in this study were typically young male subjects in the 15- to 44-year age group, a finding in line with what has been reported from most studies.[20] The vulnerability of male adolescents and young adults to homicide victimization appears to be a universal phenomenon.[21] High homicide rates in male subjects between 15 and 29 years old have been reported from sub-Saharan Africa (156.7 per 100,000), Latin America countries (68.8 per 100,000), and the United States (34.1 per 100,000),[10] affirm-

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ing that young male subjects are the commonest victims of violent and/or traumatic deaths. This is a group that is generally at peak sexual activity, consumes alcohol, and carries lethal weapons. Variations in homicide patterns have been attributed to many factors, including socioeconomic inequalities, availability of guns, cultural beliefs, and attitude.[22]

The similarity of usage of murder weapons in the present study and in other studies is interesting. In the United States, firearms are used in approximately 60% of murders, and knives and other sharp edged weapons are used in approximately 20% of cases.[23] In the present study, firearms were used in 26% of murders, sharp weapons in 20%, and blunt weapons in 15%. In a study carried out in Soweto, Johannesburg,[24] 53% of murders were committed using sharp weapons and 26% were committed using firearms. Both the Transkei and Soweto were hives of resistance politics and some degree of political violence during the apartheid era (up to 1994), an era in which firearms were also strictly controlled. Since then, the pattern of fatal violent trauma has changed. For example, firearm death rates increased more than twofold between 1993 and 1999, whereas deaths from MVCs showed a modest decrease over the same period. Similar but less dramatic trends have been reported from the United States.[25]

The costs of firearms-related injuries and deaths are not confined to human loss. There are medical and social costs to this epidemic as well. The lifetime costs of treating gun-related injuries have been estimated to be $2.3 billion.[26] The costs to the state in South Africa in general, and Transkei region in particular, must also be enormous, although a thorough study in this regard has not yet been conducted.

It is tempting to speculate that the high rate of murder in the Transkei region of South Africa might be attributed to high unemployment (49%), poverty, and excessive consumption of alcohol. These three factors are interrelated in terms of causation of crime. In a study on homicide among African Americans, a high rate of unemployment was cited as contributory to the higher than average involvement of the unemployed in crime both as victims and perpetrators.[27] Alcohol was found to have played a major role in commission of murders in Soweto, in that in 48% of the cases either both or one of the parties was under the influence of alcohol.[24] Another South African study showed that the majority of deaths attributable to external violence were associated with positive blood alcohol levels in the victims.[28] Lastly, alcohol misuse also impacts on the criminal justice system, with evidence of associations between drinking at risky levels, committing crime, or being a victim of crime.[29] However, although the role of alcohol has always been inextricably entwined with crime, the nature of the relationship is not a simplistic one. To assume that the relationship is causal is to oversimplify the issue, as other factors associated with the murder will be negated. Alcohol is but one, albeit an important, link in the overall chain of causative factors.[30]

There has been an increase in deaths related to hanging, poisoning, lightning strike, and drowning during the past 7 years (1993–1999). Deaths by hanging increased by 1.5 times, deaths by poisoning increased by 5 times, death by lightning strike increased by 2 times, and death by drowning increased by more than 3 times from 1993 to 1999. These findings are similar to an earlier study carried out by the author (2003) regarding suicide and human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) in Transkei.[18] A prospective study is required to identify the underlying factors in causation of these deaths.

Violent death ranks third among the major causes of death, after diseases of the circulatory system and malignant tumors, in most developed and in some developing countries.[31] In South Africa, common causes of deaths are violence (homicide and suicide), accidents, and certain infectious diseases (HIV/AIDS, tuberculosis).[32] South Africa has been carrying a triple burden of poverty, chronic diseases, and injuries, and now a fourth has been added on by way of the HIV/AIDS pandemic. These conditions are interrelated. Homicide is the major cause of death for men, whereas unintentional injuries are the major cause death for women.[33] By the year 2010, AIDS would have caused 135,000 to 270,000 deaths, and in that year, will account for 28% to 52% of all deaths.[34]

HIV/AIDS-related deaths are on the increase; as a result, the proportion of traumatic deaths seems to be declining. However, the rate of traumatic deaths per 100,000 population is increasing as is apparent from the present study. In the year 2010, approximately 500,000 AIDS-related deaths are predicted.[35,36] South African statistics show that the number of HIV-related deaths is increasing, nearly doubling in the past 3 years, from 4.6% to 8.7%.[37] A medical research council consultant reported that HIV-related deaths are also increasing along with unnatural causes.[38] Johannesburg is currently burying 20,000 people per year, with the figure expected to rise to 70,000 in 2010.[38]

It is thus clear that although both violent/traumatic deaths and AIDS deaths are on the increase, HIV/AIDS is increasing at a much more alarming rate, and this paints a much grimmer picture. Thus, although attention needs to be paid to the reduction of violent and/or traumatic deaths in the country, the HIV/AIDS epidemic needs even more urgent attention in terms of prevention and management of the infected and the affected.

CONCLUSION

The incidence of violent and/or traumatic deaths is high in the Transkei region of South Africa and constitutes a substantial public health problem that needs to be addressed. The increasing incidence of firearm-related death is a major cause for concern. Social factors such as low levels of education, unemployment, poverty, and alcohol appear to be common contributors to the problem. The burden of violence and trauma is a challenge to law enforcement agencies and

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the health services. All of this is compounded by the HIV pandemic, which pauses an even bigger threat to the country than does violence. However, violence has the potential to get lost in the growing pandemic of HIV, and this should not be allowed to happen.

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