

Who are the victims of poisoning homicide/murder in South Africa? Evidence from vital registration 2001-2011

By

Lutendo Malisha

Lutendom@statssa.gov.za

Introduction and Background

Poisoning is a significant global public health problem. According to WHO (2005), in 2004 an estimated 346,000 people died worldwide from unintentional poisoning. Majority of these deaths occurred in low and middle income countries. Most of these deaths were unintentional poisoning which caused the loss of over 7.4 million years of healthy life. Poisoning death occur in all regions and countries and affect people in all age and income group. In addition, WHO (1999) reported that more than three million poisoning cases with 251,881 deaths occur worldwide annually, of which, 99% of fatal poisonings occur in developing countries, particularly among agricultural workers. Pattern of poisoning in any region also depends on availability of poisons, religious and cultural influences, occupation prevalent in the region and likewise.

Death rates poisoning have been declining over the past several decades in most developed countries (WHO, 1988, 1994, 1995a, 1996d, 2009). In all these countries, death rates from poisoning have been reported to be consistently lower for females than for males. In 1992, male: female rate ratios varied from 2.0 in the Netherlands, Hong Kong to 3.5 in Spain and in Australia. Countries such as France, Switzerland, the United States and New Zealand are the developed countries which had rates in excess of 70 deaths per 100,000 population in the year 1992 (Ibid). In contrast, the United Kingdom, the Netherlands and Hong Kong had rates lower than 40 deaths per 100,000 population in 1992, 1996 and 2009. Interestingly, the reports indicated that poisoning death rates are the highest in old ages in developed countries. However, the reports on this countries did not clearly indicate if all these deaths were accidental/unintentional or were intentional deaths. Therefore, one is not able to make conclusions with this regard.

In the South African context, very few studies have looked into poisoning death, however, the very few focused mainly on unintentional or accidental poisoning deaths for children and adults. For adult mortality, Meel (2009) found that in the Mthatha area of South Africa, the leading cause of death due to poisoning was from traditional medicines such as *muti*, which caused 51.7% in the study of poison-related mortality form autopsies. The study further illustrate that the *Sangomas* (traditional healers) provide basic health care to a large number

of black population in South Africa. This according to the study is in relation to poor economic conditions which hinders those people to afford modern medication. Similar studies conducted in Ga-Rankuwa hospital and in Zimbabwe found that people living in rural areas will consult a traditional healer before going to a medical doctor, clinic or hospital when they are sick. However, these studies indicated that it was difficult for doctors to confirm the direct cause of death since the ingestion of traditional *muti* with other modern medication made it impossible to pin point the direct cause (Whinnery, 2003; Joubert, 1990).

Rational of the study

Poisoning-related deaths in Africa are grossly under investigated, and therefore underestimated. A detailed knowledge about the nature and magnitude of the poisoning deaths is not only important for early diagnosis and prompt treatment but also is essential for introducing the new and evaluating the old preventive measures. Moreover, death due to intentional poisoning is a large public health problem in worldwide and in South Africa, except for suicides other intentional poisoning deaths have not been investigated. This is despite the fact that a significant number of poison-related deaths have been recorded in death registrations. Therefore, all levels of government and other relevant organs of society need to be informed about the magnitude of the problem to prioritise it and form intervention strategies. Therefore, it is against this background, the present study was undertaken to know the nature, pattern and magnitude of deaths due to international poisoning in South Africa.

Objectives

The study investigates the trends and patters of international cause of death due to poison in South Africa. These deaths include suicide. The study population of interest is those people from the age of 15 and above.

Methodology

Analysis Methods

Statistical methods were mainly descriptive and constituted of frequencies and percentages. This was done to provide a description of the population who died within those years (2001-2011) of study. Age-Adjusted Standardized Death Rates (AASDR) were computed to aid comparison of mortality risks across groups and over time. AASDR were expressed as follows:

$$\text{Age Standardised Death Rate} = \frac{\text{Total Expected Deaths}}{\text{Total Deaths in Standard Population}}$$

Logistic regression was utilised to investigate the risk factors associated with poison death in South Africa. This was expressed as follows:

$$Prob (PD)= \frac{1}{1+e^{-(B_0+B_1X_1+B_2X_2+B_3X_3+B_4X_4)}}$$

Prob (PD) is the probability of a person dying of poison. *PD*= 1 if the immediate cause of death was PD; *PD* = 0 if the immediate or cause of death was not PD; *e* = base of the natural logarithm; *B*₀= constant; *B*₁... 5 = estimated regression coefficients corresponding to the independent variables *X*₁...*X*₅; where: *X*₁ = Sex: 1 = male, 0 = female (reference category).

Results

Excluding children, there were 11174 adults from the age of 15 year and above who were intentionally killed in South Africa from the year 2001 to 2011.

Figure 1: Proportions of people who died of poison by race in South Africa, 2001-2011

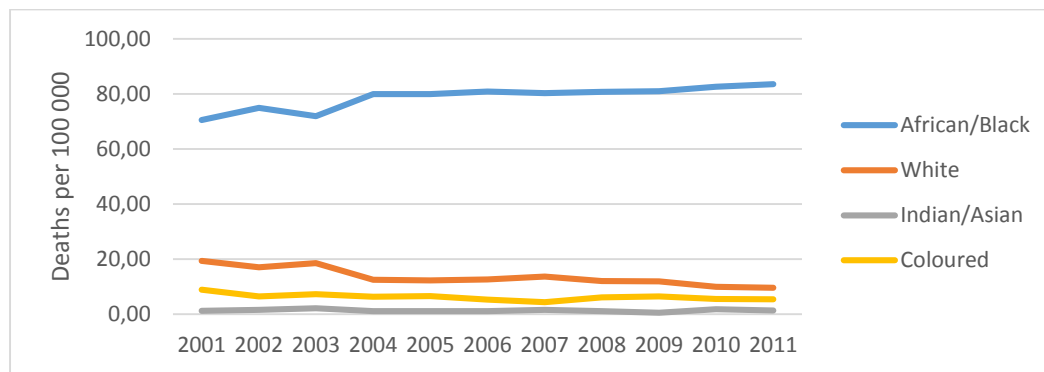


Figure 2: Age Standardised Poison Deaths by sex, 2001-2011

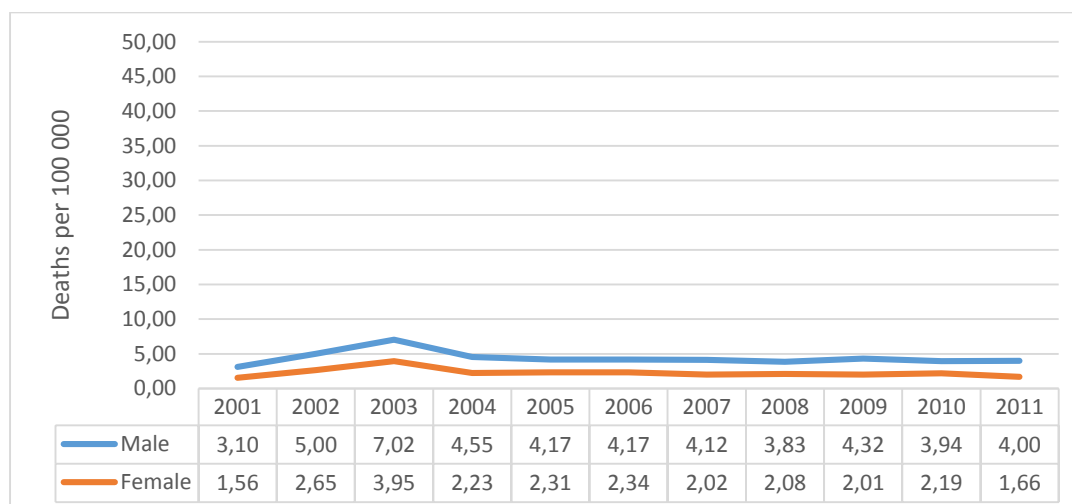


Table 1: Logistic Regression of Poison Deaths by Socio-economic Characteristics

Variable	Coefficient	Odds Ratio
Sex		
Male	0.412 (0.030)***	1.510
Female (RF)		
Age Group		
15-19	2.660 (0.069)***	14.302
20-39	1.540 (0.056)***	4.666
40-59	1.028 (0.055)***	2.794
60+ (RF)		
Highest Level of Education		
No Schooling (RF)		
Primary Schooling	0.518 (0.055)**	1.872
Secondary Schooling	0.449 (0.054)**	1.741
Tertiary	0.146 (0.076)	1.341
Marital status		
Never Married	0.623 (0.086)***	1.863
Married	0.541 (0.086)***	1.712
Widowed	0.298 (0.107)**	1.347
Divorced/Separated (RF)		
Race		
Black	-0.692 (0.101)***	0.500
White	0.495 (0.106)***	1.640
Coloured	-0.174 (0.121)	0.841
Asian (RF)		
Province of Death		
Western Cape	-0.759 (0.102)***	0.468
Eastern Cape	0.331 (0.058)***	1.393
Northern Cape	0.118 (0.093)	1.125
Free State	0.316 (0.059) ***	1.371
Kwazulu-Natal	-0.662 (0.059) ***	0.516
North West	-0.154(0.070)*	1.166
Gauteng	-0.400 (0.058)*	1.153

Mpumalanga	-0.543 (0.071)***	0.581
Limpopo (RF)		
Occupation		
Armed Force/No Occupation	-0.361 (0.119)**	0.697
Seniour Professional/Managers	-0.266 (0.099)**	0.766
Market/Trade/Elementary Agricultural/Fishery (RF)	-0.034 (0.966)	0.966
Constant	-7.590 (0.226)***	
Nagelkerk R ²	0.071	