Adult External Cause Mortality in South Africa and Russia: 1997-2002

Barbara A. Anderson
(barba@umich.edu)
Professor, Department of Sociology
Research Professor, Population Studies Center
University of Michigan
Consultant, Statistics South Africa
Visiting Researcher, Human Sciences Research Council

Heston E. Phillips
(HestonP@statssa.gov.za)
Executive Manager, Integrative Analysis
Statistics South Africa

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Abstract

South Africa and Russia have nearly identical per capita incomes, with greater inequality in South Africa. Both countries experienced major political changes since the mid-1980s. By international standards both countries have high adult external cause and all cause death rates. At adult ages (15-64), between 1997 and 2002 external cause death rates for each sex rose in Russia and but declined for most ages for each sex in South Africa. Also above age 35, for each sex at every age, for a given date external cause death rates were higher in Russia than in South Africa. The sex differential in external cause mortality is greater in Russia than in South Africa. The decline in external cause mortality in South Africa seems to be due to a decline in homicide mortality, while the increase in external cause death rates in Russia seems to be the result of increases both in homicide and in accident mortality. Natural cause mortality for each sex rose in South Africa. The decline in external cause mortality (or the slower increase in external cause than natural cause mortality) muted the rise in all cause mortality in South Africa, especially for men. In Russia, for each sex, natural cause and external cause mortality both rose and at about the same rate. Thus, although South Africa and Russia seem to be in a similar high external mortality situation, the direction and the components of change in external cause mortality and their effects on all cause mortality are very different in the two countries.
Introduction

South Africa and Russia are interesting countries to compare. According to the World Bank classification, they are both lower middle income countries (gross national income per capita $826-$3,255). As shown in Table 1, they have virtually the same gross national income per capita. Purchasing power parity gross national income per capita adjusts for the cost of goods in a given country. That measure indicates that South Africans are on average somewhat better off than Russians. By contrast, in 2003 France had gross national income per capita of $24,730 and a purchasing power parity gross national income per capita of $27,640.

<table>
<thead>
<tr>
<th></th>
<th>Gross National Income (GNI) per capita</th>
<th>Parity Purchasing Power (PPP) GNI per capita</th>
<th>% with &lt; $2 per Day</th>
<th>% of Income or Consumption to Poorest 20% of Population</th>
<th>Percent Unemployed Among those Age 15-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>$2,750 2003</td>
<td>$10,130 2003</td>
<td>34.1% 2000</td>
<td>3.5% 2000</td>
<td>44.2% 2000</td>
</tr>
<tr>
<td>Year</td>
<td>Russia</td>
<td>$8,950 2003</td>
<td>7.5% 2002</td>
<td>8.2% 2003</td>
<td>24.7% 2000</td>
</tr>
<tr>
<td>Year</td>
<td>Russian</td>
<td></td>
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However, South Africa has a considerably more unequal income distribution than Russia. Thirty-four percent of South Africans in 2000 lived on less than $2 per day, while this was true of only 8% of Russians in 2002. Income concentration is considerably greater in South Africa than Russia, with 4% of income or consumption by the poorest 20% of the population in South Africa, while 7% of income or consumption is by the poorest 20% of the population in Russia. Among young adults, 44% are unemployed in South Africa and 25% in Russia.
Social Disorganization, Alcohol, and Violence

This paper compares patterns and levels of external cause mortality for people age 15-64 in South Africa and Russia. Both countries are well known for having high external mortality and high overall mortality by international standards.

Many similar factors have been cited as causes for the high levels of external cause mortality in the two countries, including social disorganization after large political changes accompanied by a sharp decline in social control.

The timing of major social and political changes was similar in the two countries. In South Africa, in 1985, influx control regulations, which had previously severely restricted residence of Africans in South African cities, were repealed (Kok and Gelderblom 1994: 9). In 1991, apartheid laws were voided (Thompson, 2000), and in 1994, a new South African state was formed. In Russia, in 1986, with Gorbachev becoming head of the Soviet Union, many earlier restrictions on activities were relaxed or eliminated. In 1991, the Soviet Union dissolved, and Russia became a separate country (Bunce, 1993; Tarschys, 1993).

In the 1980s and 1990s, throughout the world income inequality within countries tended to increase (Goesling, 2001). Increased income inequality became even more pronounced in societies in a process of political and social transition (Cornia and Court, 2001: 8-11). In both countries a substantial portion of the population experienced real declines in their standard of living (Leibbrandt, Levinsohn, and McCrary, 2005; Lokshin and Popkin, 1999; Statistics South Africa, 2002; Statistics South Africa, 2006) and for others improvements occurred much more slowly than had been hoped for or expected (Brainerd and Cutler, 2005; Gavrilova et al., 2000).

This decline in social control in both countries was accompanied by a much higher level of violent death, which was facilitated by the greater availability of weapons, including firearms. Considerable violence accompanied the political struggle in South Africa. After 1994 deaths from political violence declined rapidly in South Africa, except in Kwazulu/Natal, where political violence continued until 1999 (Keegan, 2005: 18-19). With new social and political arrangements after 1991, individual freedoms increased, but crime and other deviant behavior also increased. Firearm license applications increased from 135 thousand in 1985 to 257 thousand in 1993 (Keegan,
These license applications declined after 1994 to 162 thousand in 2004 (Gould et al. 2004: 197). Homicide rates peaked in South Africa in 1994-1995 and have declined since (Moller, 2005: 265). In South Africa the number of licensed firearms increased from 2.5 million in 1986 to 3.5 million in 1996 to 3.7 million in 2004 (Keegan, 2005: 27), and there is a widespread perception that illegal firearms have steadily been entering South Africa from countries in the region in conflict (Meek, 2000). According to police records, firearms were used in 42% of murders in 1994 and in 49% of murders in 2000 in South Africa (Gun Free South Africa, 2002).

In Russia, homicides increased after the mid 1980s, decreased in the late 1990s and then increased again (Cheryakov, et al., 2002). Despite strict gun control laws, increased involvement of organized crime in violence and increased availability of illegal firearms have been concerns in Russia (Kvashis and Babaev, 2001). In the Soviet period to legally own a knife with a blade over a certain length, one needed a permit permitting ownership of a “deadly weapon.” In both countries, what would have been a nonlethal assault or a brawl could turn into homicide with the presence of a firearm.

For Russia, a major factor in high natural cause and external cause mortality has been alcohol consumption (Brainerd and Cutler, 2005; Pridemore, 2004; Shkolnikov, Mesle and Vallin, 1996: 167-171; Walberg et al., 1998). The stress associated with social disorganization, along with economic problems and increased income inequality, have also been cited as causes of high external cause mortality (Brainerd and Cutler, 2005; Chen, Wittgenstein, and McKeon, 1996; Walberg et al., 1998).

Alcohol was also heavily involved in mortality in Russia in the Soviet period, and the anti-alcohol policies that Gorbachev instituted led to a temporary decline in male mortality. However, these policies, which mainly restricted supply of alcohol, were curtailed because of widespread unpopularity in the late 1980s and were politically untenable in the post-Soviet period (Shkolnikov, Mesle and Vallin, 1996; Tarschys, 1993).

The role of alcohol in external cause mortality in South Africa has also been highlighted (Duflou, Lamont and Knobel 1988;, Lerer, 1992; Pluddemann et al., 2004). Social disorganization after large political changes has also been cited as a cause of increases in external cause mortality in South Africa (Shaw, 2001, 2002).
Data Sources

The death registry data for South Africa have been nearly complete since 1997 (Dorrington et al., 2001: 18).\(^1\) At this time, death registry data are available through 2002. Coverage of deaths is almost always better for those in the working ages than for young children, and accuracy of age at death and age of the population is a considerable problem for the elderly in South Africa (Phillips, Anderson and Tsebe, 2003) as in other countries (Anderson, 2006; Coale and Li, 1991; Rosenwaike and Preston, 1984). Thus, in this paper, we restrict most of the analysis to those age 15-64.\(^2\)

The number of deaths in the publicly released cause of death data 1997-2002, adjusted for estimated completeness of registration by sex, year and five-year age group, provided total deaths for numerators for each age-sex group for each year. Mid-year estimates of the population of South Africa by Statistics South Africa by age and sex by year provided denominators.\(^3\)

The data on death rates overall and by cause for Russia and France are from the on-line WHO Mortality Database.\(^4\) That source has data for Russia through 2002. This paper compares death rates in South Africa and Russia 1997-2002. The WHO Mortality Database presents data for those age 15-64 in the following age groups: 15-24, 25-34, 35-44, 45-54, 55-64. Those age groups are used in this paper.

\(^1\) Using a modification of the growth balance method, Dorrington and Timaeus estimated that at least 87% of deaths to people age 15 and older were registered 1997-2000.

\(^2\) There have been studies based on South African death registration data for earlier than 1997 (c.f. Bradshaw et al., 2002), but, as noted by the Bradshaw and her co-authors, the incompleteness of death registration for these earlier years requires caution.

\(^3\) Using a comparison with implied deaths from the Statistics South Africa mid-year population estimates, the authors estimated that 1997-2002, completeness of death registration by sex and year was at least 82%. The deaths data for South Africa are adjusted for estimates of completeness by 5-year age group, sex, and year of death. For discussion of the death registration and cause of death data for South Africa, see South Africa, Statistics South Africa (2002) and South Africa, Statistics South Africa (2005), and Anderson and Phillips (forthcoming 2006).

\(^4\) WHO Mortality Database: www3.who.int/whosis/menu.cfm?path=whosis,mort&language=english

In the WHO Mortality database, for Russia, the data for 1999-2002 using ICD-10 codes, the death rate for all external causes is available as one number, V01-Y89 External causes of morbidity and mortality. For 1997 and 1998, the death rate from all external causes must be calculated by summing the rates for ICD-9 codes E47-E53 Accidents and adverse effects, E54 Suicide and self-inflicted injury, E55 Homicide and injury purposely inflicted by other persons, and E56 Other violence. For France for 2000, total external cause death rates are the sum of the ICD-10 categories V01-X59, Y40-Y86, Y88 Accidents and adverse effects, X60-X84 Suicide and self-inflicted injury, X85-Y09 Homicide and injury purposely inflicted by other persons, and Y10-Y36, Y87, Y89 Other external causes.
Overview of Adult Mortality in South Africa and Russia

Before turning to external mortality, we look briefly at all cause mortality by sex in South Africa and Russia. Between 1997 and 2002, in each country, death rates at a given age tended to progressively decrease or increase over time. In order to present changes in death rates over time in an economical manner, Figures 1 and 2 show age-specific death rates for a given sex for South Africa and Russia in 1997 and in 2002. Data for France in 2000 are shown as a comparison.

In Figure 1, in both South Africa and Russia, male death rates in every age group increased between 1997 and 2002. Below age 45, in both 1997 and 2002, death rates in South Africa were higher than in Russia. Above age 55, death rates in Russia were higher than in South Africa. Below age 45, the increase in death rates in Russia was smaller between 1997 and 2002 (a 31% increase for those age 35-44) than in South Africa (an 88% increase for those age 35-44). However, for those age 55-64, the increase between these dates in Russia (28%) was greater than for South Africa (10%).
As shown in Figure 2, the pattern of change in death rates for females is different than for males. All of the groups by sex and country, except for females in South Africa, show the typical pattern of gradual increases in death rates with increasing age through age 44, with the death rates increasing at an accelerating pace through age 64. For South Africa, in 2002, the death rate for women age 25-44 was higher than for women age 45-54.

This elevated mortality age 25-44 is probably due to the high toll that HIV/AIDS has taken on women in South Africa. The average time from becoming HIV-positive to death is about 8-10 years in sub-Saharan Africa (Hunter and Williamson, 2000: 23), and HIV only appeared to any substantial extent in South Africa in the early 1990’s. At public antenatal clinics in South Africa, the percent of pregnant women who were HIV-positive was 1% in 1990, 17% in 1997 and 27% in 2002 (South Africa, Department of Health, 2004: 6). Thus, in Figure 2 for South African females in 2002, we could be observing a cohort effect; in the near future female death rates above age 44 could also show a large increase.

![Figure 2. Female All Cause Death Rates, 1997 and 2002](image-url)
Usually, at every age males have higher death rates than females.\(^5\) This is not the case for those age 15-34 in 2002 in South Africa. It has been noted for many years that the sex differential in mortality in Russia is extremely large (Anderson and Silver, 1986; Shkolnikov and Mesle, 1996: 130). It is much larger in Russia than in South Africa. In Russia in 2002, male age-specific death rates ranged from being 185% of the female age-specific death rates (age 55-64) to 273% of the female death rates (age 25-34). For South Africa in 2002, male death rates ranged from being 33% lower than the female death rates (age 15-24) to being 105% higher (age 45-54).

As for males, female death rates increased between 1997 and 2002 at every age in both countries. The increase between these dates in Russia was modest, with the percentage increase ranging from 2% (age 15-24) to 32% (age 35-44). In South Africa, the lowest percentage increase was 4% (age 55-64) and the largest percentage increase was 243% (age 25-34).

**Death Rates from External Causes in South Africa and Russia**

Figures 3 and 4 show external cause death rates in South Africa and Russia in 1997 and in 2002.\(^6\) External cause death rates in France in 2000 are shown for comparison.

External cause death rates in both South Africa and Russia for each sex were high. For males external cause death rates ranged from a low of 3.5 times the rate for France in South Africa for those age 55-64 in 2002, to a high of 5.1 times the rate in France for those age 25-34 in 1997. For Russian males, the multiple of the rate ranged from a low of 3.6 times the French value for those age 15-24 in 1997, to 7.4 times the French value for those age 55-64 in 2002. For females in South Africa, the multiple ranged from a low of 2.2 times the French value for those age 55-64 in 2002, to 4.9 times the French value for those age 25-34 in 2002. For Russian females, there was a low of 3.0 times the French value for those age 15-24 in 1997 to a high of 4.9 times the French value for those age 25-34 in 2002.

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\(^5\) The exception is when there is extreme female deprivation and is most often seen at very young ages (D'Souza and Chen, 1980) or when there is neglect of female infants in a high male preference situation (Anderson and Liu, 1997). Neither of these is the situation in South Africa or Russia.

\(^6\) It would have been nice to know how external cause mortality rates overall and by age and sex compare with those in various developing countries. However, the death registration systems in most developing countries are not adequate to produce valid results in this area. Thus, when statements are made about high overall mortality or high external cause mortality, these statements are necessarily in light of what is known about countries of the world, based on available data.
Looking at Figure 3, in 1997 South African male external cause death rates by age increased from the 15-24 age group to the 25-34 age group and then declined with each older age group. In 2002, the rates increased through the 35-44 age group. Also, for South African males external cause death rates declined for the 25-34, 45-54, and 55-64 age groups between 1997 and 2002. These declines varied by age, ranging from 4% (age 25-34) to 11% (age 55-64). There was a 3% increase for those age 15-24 and a 10% increase for those age 35-44.

For Russian males, there is a different pattern. In both 1997 and 2002, external cause death rates by age increased for every successive age group through those age 45-54 and then declined slightly in the 55-64 age group. Also, Russian male external cause death rates increased for every age group between 1997 and 2002. These increases were substantial in the older age groups, with an increase of 34% for those age 55-64.
Looking at Figure 4, for South African females in 1997, external cause death rates increased gradually with age. In 2002, for South African females, external cause death rates increased from the 15-24 age group to the 25-34 age group and then declined to a fairly constant level at older ages. For South African females below age 34, there were small increases in the external cause death rates between 1997 and 2002, but there were substantial declines between 1997 and 2002 above age 35, with decreases ranging from 16% (age 35-44) to 30% (age 45-54).

For Russian females in both 1997 and 2002, external cause death rates increased with age. Also, as for Russian males, external cause death rates increased between 1997 and 2002 in every age group, with a low percentage increase of 6% (age 15-24) to a high of 31% (age 55-64). Since Russian male external cause death rates are so much higher than those for females, an increase of 34% in the male rate at age 55-64 resulted in a rise in the external cause death rate of 156 per 100,000, while an increase of 31% in the female rate at age 55-64 resulted in a rise in the external cause death rate of only 35 per 100,000.
The excess of male over female external cause mortality is looked at in Figure 5, which shows the male external cause death rate divided by the female external cause death rate for South Africa and for Russia in 1997 and in 2002. Similar results for France in 2000 are also shown.

In every case, male external cause mortality is much higher than female external cause mortality, and the excess of the male rate over the female rate increases with age from adolescence to the young adult ages and then declines beginning in either the thirties or the forties. The ratio of the male rate to the female rate is highest among the three countries in Russia at every age in both 1997 and 2002. At most dates it is next highest in South Africa. However, for the 25-34 age group, it is higher in France in 2000 than in South Africa in 2002.
Estimation of External Mortality by Cause for South Africa 1999-2002

We want to look at death rates from homicide, suicide, and other external causes of death in South Africa and Russia. This is straightforward for Russia, using the WHO Mortality Database, but a more indirect approach must be used for South Africa.

External deaths can be accidents, self-inflicted, or inflicted by others, a categorization that is essential to estimates of suicide and homicide. However, in South Africa, between 1997 and 2002, the percentage of all external deaths coded as “unspecified event undetermined cause” in the death registration data ranged from 36% to 80%. This classification meant that the death had an external cause, but nothing else about its nature was recorded. Part of the reason for the lack of categorization of external deaths as to intent (homicide, suicide, accident) is that determination of intent is the prerogative of the courts in South Africa. This determination can take quite a long time. Thus, Death Notification Forms rarely record intent. For these reasons, it is not possible to further subdivide external deaths with any confidence using death registration data for South Africa.

Motivated by a desire to understand the cause distribution of external deaths, a National Injury Mortality Surveillance System (NIMSS) was established in South Africa in 1999. In this system, participating mortuaries filled out an extensive form in the case of external cause deaths. Characteristics of the decedent were recorded as well as the apparent manner of death and the intent. Since this was not a legal document, and since participation by the mortuaries was voluntary, the likely intent leading to the death was entered in almost all cases.

This set of participating mortuaries was not a representative sample. It was disproportionately urban and in 1999 included data from five of the nine provinces. It covered approximately 25% of external cause deaths in 1999 (NIMSS, 2000: ii). By 2002, participating mortuaries were in six provinces and were still predominantly urban. In 2002, the NIMSS data covered 35%-40% of all external deaths (NIMSS, 2003: 1-2).

The annual reports from NIMSS are quite detailed for some years and are quite sketchy for others. In every year, the reports include the total number of external deaths from the participating mortuaries, the number of homicides, and the number of suicides.
To obtain estimates of the external death rate by cause for 1999 and 2002, we took the total external death rate per 100,000 for all ages for both sexes combined (based on death registration data adjusted for completeness and on mid-year population estimates) and distributed that rate among homicides, suicides, and accidents and undetermined external cause deaths proportionately to the distribution of deaths in these categories from the mortuaries in NIMSS. This admittedly crude procedure at least yields somewhat comparable estimates for 1999 and 2002.\(^7\)

**An Exploration of External Mortality by Cause**

Estimates of death rates per 100,000 from homicide, suicide and other external causes for South Africa and Russia for 1999 and 2002, along with estimates for France in 2000 appear in Figure 6. The estimates are for all ages and for both sexes combined.

The first year presented in Figure 6 is 1999 rather than 1997 because the NIMSS data collection began in 1999. The estimates for Russia and France are from the WHO Mortality Database, as were the earlier external death rates for Russia and France. The crude procedure employed for South Africa described above seemed worthwhile in light of the very different patterns of change over time in external cause death rates in South Africa and in Russia and the desire to gain some insight into the source of the different patterns in the two countries. For each country, the total external cause death rate per 100,000 population appears below the label in the data table. Thus, in South Africa in 1999, there were 143 deaths per 100,000 population from external causes.

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\(^7\) Bradshaw *et al.* (2003) also estimated the number of external deaths and the distribution of external deaths among various causes, including homicide and suicide.
Figure 6 shows that external death rates decreased between 1999 and 2002 in South Africa and increased in Russia. They were much lower in France in 2000. Thus, the trends shown in Figure 6 are consistent with those in Figures 4 and 5.

According to the World Health Organization (2002: 11), based on the Global Burden of Disease 2002 estimates, external cause death rates per 100,000 for the entire population in 2000 were 119 for Africa as a whole, 48 for high income countries of Europe (which include France), and 132 for low and middle income countries of Europe (which include Russia). Thus external death rates for South Africa were somewhat higher than the estimates for Africa as a whole.8 France and Russia had high external cause death rates compared to similar countries in their region.

8 The data for South Africa are higher quality than those for most of the rest of Africa. Thus, although the WHO Africa estimates are discussed for comparative purposes, the accuracy of the data for Africa as a whole is not certain.
We see that the decline in external cause mortality in South Africa was due to a decline in homicide mortality, although only Colombia had a higher homicide rate than South Africa in 2002, with an estimated 66 deaths per 100,000 population (Colombia, 2005).

We think the substantive implications of the homicide results for South Africa are generally correct. Using the procedure described in the previous section, we estimated 28,839 murders in 1999 and 25,933 murders in 2002 by applying the proportion of external deaths that were homicides in the NIMSS data to the total external cause deaths from death registration. The South African Police Service (SAPS, 2006) reported 23,235 murders for 1999 and 21,518 murders for 2002. Using the SAPS figures along with the Statistics South Africa mid-year population estimates, one calculates a homicide rate of 53 per 100,000 in 1999 and 47 per 100,000 in 2002. The homicide rate based on the mortuary data is higher than that based on the SAPS data, but the mortuaries that participated in NIMSS were overwhelmingly urban and likely had a higher proportion of homicides among all external deaths than in South Africa.

Whether the SAPS reports of homicides or the estimate from the mortuary sample is used, homicide rates in South Africa declined between 1999 and 2002, but even in 2002 the homicide rate in South Africa was higher than in Russia. Thus, although Chesnais (2000) despaired at the high homicide rate in Russia in the mid-1990s, Russia did not have the highest homicide rate in the world, being lower than in South Africa and Colombia in about 2000 (Cheryakov et al., 2002: 1716).

However, the increase in the homicide rate in Russia is troubling. Since the mid-1990’s homicide deaths in South Africa have declined steadily (SAPS, 2006). Homicide rates in Russia rose from 1988 through 1994 and then fell to 1998, after which they rose (Cheryakov et al., 2002: 1716). Homicide rates have been found to be positively related to income inequality (Kawachi, Kennedy and Wilkinson, 1999; Swarcwald et al., 1999), as well as being higher where a high proportion of the population is poor (Sampson and Lauritsen, 1994).

Also, since the early 1990’s the nature of homicide in Russia has changed somewhat. It seems to have shifted from being mainly a rural, alcohol-related phenomenon to a more urban phenomenon, increasingly related to the carrying out of some other crime, and increasingly often

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9 Actually the number of murders by fiscal year was reported. The fiscal year begins in April and ends in March. To estimate the number of murders in a calendar year from the SAPS data ¼ of the murders from the earlier April-March period were added to ¾ of the murders from the April-March period.
is carried out by two or more people working together (Chervyakov et al., 2002). Thus, homicide seems to be becoming more institutionalized in Russia, which would be a disturbing development.

Using Global Burden of Disease estimates for 2000, WHO (2002: 60) estimates that in 2000 in Africa as a whole interpersonal violence death rates (homicide) were 18 per 100 thousand population, in low and middle income countries of Europe they were 15 per 100 thousand and in high income countries of Europe they were 1 per 100 thousand. Thus Russia and South Africa had high homicide rates for their regions.

Suicide mortality was virtually unchanged in South Africa between 1997 and 2002, and the residual category of accidents and undetermined external cause mortality increased by 8%. In Russia, while suicide was unchanged, an increase in mortality both from homicide and from accidents (and undetermined external cause mortality) contributed to the rise in the external death rate.

We do not know whether the very low estimated suicide rate for South Africa is accurate. In any country there is some ambiguity in the distinction between a suicide and an accidental death, and attitudes toward suicide could affect this classification. This underreporting of suicide - reporting an accidental cause of death - has been noted for other countries, especially among groups, such as Catholics, who believe that suicide is morally wrong (Douglas, 1967; Pescosolido and Mendelsohn, 1986).

WHO (2002: 68) estimates that in 2000 the suicide rate in Africa as a whole was 4 per 100 thousand, in low and middle income countries of Europe it was 28 per 100 thousand and in high income countries of Europe it was 13 per 100 thousand. By these standards, all three countries had somewhat high suicide rates for their regions.

The extremely high external death rate in Russia is substantially due to a very high death rate from accidents. In Russia, alcohol consumption has been strongly implicated in accidental deaths. Although much has been written about deaths from violence in Russia, accidental deaths have received less attention (McKee, et al., 2000; McKee and Shkolnikov, 2001: 1052). As shown in Figure 6, accidents (and undetermined external cause deaths) constituted 71% of all external deaths in Russia in 2002, and 73% of all external deaths in France in 2000. They constituted only 51% of all external deaths in South Africa in 2002. In the world as a whole in 2000, accidents constituted 74%
of all external deaths (WHO, 2002: 9). Thus for Russia, it is not surprising that an extraordinarily high proportion of all external deaths are from accidents, what is surprising is the absolutely high value of the death rate from accidents in Russia in 2002 – 168 per 100,000.

It is somewhat surprising that accident mortality is not higher in South Africa, since alcohol also seems to play a strong role in external cause deaths there. NIMSS reports results of blood alcohol tests for various categories of external deaths. From the NIMSS data in both 1999 and 2002, over 50% of homicide victims, drivers of vehicles who died in transport accidents and pedestrians who died in transport accidents tested positive for blood alcohol. Pedestrians who died had the highest percentage with positive blood alcohol – 65% in 1999 and 59% in 2002. From the mortuary survey data, 39% of all transport deaths were pedestrians in 1999 and 34% in 2002 (NIMSS, 2000, 2003).

In South Africa in 1999, by far the highest rate of drowning deaths was for those age 1-4, which resembles the pattern in other countries (NIMSS, 2000). This contrasts with Russia in which the highest drowning death rates in 2002 were for adult men. Although the death rate per 100,000 population from “accidental drowning and submersion” for boys age 1-4 was 9.3, it was above 20 per 100,000 for males age 25-64, probably exacerbated by alcohol. Similarly, alcohol poisoning is reflected in the death rates from “accidental poisoning by and exposure to noxious substances,” which in Russia in 2002 was 6.8 per 100,000 for boys age 1-4 but was above 60 per 100,000 for men age 25-74 (WHO Mortality Database).

Role of Changes in External Cause Mortality in the Change in All Cause Mortality

We have seen that while rates of external cause mortality in South Africa declined for both sexes between 1997 and 2002, in Russia they increased for each sex. What is the influence of the change in external cause mortality on all cause mortality for each sex in each country?

Figures 7 and 8 show actual all cause mortality rates by sex for each country in both 1997 and 2002. They also show what all cause mortality rates would have been in 2002 if all cause mortality had increased at the same rate as natural cause mortality. Another way to look at this is, what would all cause mortality have been in 2002 if external cause mortality had increased at the same rate as natural cause mortality?
Figure 7 shows the situation for South Africa. For females at all ages, the decline or slower increase in external cause than natural mortality slightly moderated the increase in all cause mortality. If all cause mortality had risen at the same rate as natural cause mortality then the overall death rate for females age 25-34 would have been 15% higher. For males, the slower rate of increase in external cause than natural cause mortality and the decline in external cause mortality above age 45 inhibited the increase in all cause mortality between 1997 and 2002. If external cause mortality for South African males had increased at the same rate as natural cause mortality, then male all cause mortality age 25-34 would have been 50% higher in 2002 than it actually was; all cause mortality for males age 35-44 would have been 24% higher than it actually was in South Africa in 2002.
Looking at Figure 8, we see that for both males and females the actual age-specific death rates in 2002 were virtually identical to the 2002 hypothetical death rates in Russia. This is because both natural cause mortality and external cause mortality in Russia increased between 1997 and 2002, and they increased at virtually the same rate. Thus, whatever problems exacerbated natural cause mortality in Russia the same or different factors exacerbated external cause mortality to the same extent. Alcohol likely played a major role in Russia in increases in mortality both from natural and external causes. Shkolnikov, McKee and Leon (2001) noted that adult mortality in Russia declined between 1994 and 1998. One question is: How far had Russia regressed by 2002 toward the 1994 situation?

**Concluding Thoughts**

In a world in which generally mortality continues to decline, South Africa and Russia are distinguished in that adult mortality in both countries for each sex increased between 1997 and 2002. In South Africa much of that increase was due to increased natural cause death rates related
to HIV/AIDS, while external cause death rates declines. In Russia both natural cause mortality and external cause mortality rose at approximately the same rate.

McMichael et al. (2004: 1156) list 21 countries in which life expectancy at birth (both sexes combined) declined by 4 years or more between 1990 and 2001. This was looking at changes in mortality from all causes. The 21 countries include South Africa and Russia – all of the 21 countries are either in Africa or were formerly part of the Soviet Union. Hopefully there will be increased attention to the role of external cause mortality in overall adult morality in the future.
References


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