Local-level mortality surveillance in resource-limited settings: a case study of Cape Town highlights disparities in health

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Objective To identify the leading causes of mortality and premature mortality in Cape Town, South Africa, and its subdistricts, and to compare levels of mortality between subdistricts.

Methods Cape Town mortality data for the period 2001–2006 were analysed by age, cause of death and sex. Cause-of-death codes were aggregated into three main cause groups: (i) pre-transitional causes (e.g. communicable diseases, maternal causes, perinatal conditions and nutritional deficiencies), (ii) noncommunicable diseases and (iii) injuries. Premature mortality was calculated in years of life lost (YLLs). Population estimates for the Cape Town Metro district were used to calculate age-specific rates per 100 000 population, which were then age-standardized and compared across subdistricts.

Findings The pattern of mortality in Cape Town reflects the quadruple burden of disease observed in the national cause-of-death profile, with HIV/AIDS, other infectious diseases, injuries and noncommunicable diseases all accounting for a significant proportion of deaths. HIV/AIDS has replaced homicide as the leading cause of death. HIV/AIDS, homicide, tuberculosis and road traffic injuries accounted for 44% of all premature mortality. Khayelitsha, the poorest subdistrict, had the highest levels of mortality for all main cause groups.

Conclusion Local mortality surveillance highlights the differential needs of the population of Cape Town and provides a wealth of data to inform planning and implementation of targeted interventions. Multisectoral interventions will be required to reduce the burden of disease.

Une traduction en français de ce résumé figure à la fin de l'article. *Al final del artículo se facilita una traducción al español.* الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

It is increasingly recognized that cause-of-death data are an essential component of health information systems.[1,2] Mortality data are required to identify the health needs of a community, monitor progress in the implementation of programmes and track changes over time.[3] Numerous authors have highlighted the need to strengthen national statistics systems and improve the comparability of mortality data and of international collection and reporting of data.[4–8] While the importance of such data at national level is well established, recent evidence of heterogeneous mortality patterns within countries and districts[9–11] – and the health inequities that they reflect – suggests that it is also important to compile such data at subnational level.[12] In contexts of resource constraints and health disparities, subpopulation data are critical for identifying and monitoring inequalities in health status and for prioritizing interventions, services and research at the local level. Consistent and reliable cause-specific data are also essential for evidence-based health planning.[13,14]

Few low- or middle-income countries have national cause-of-death data, and when they do, the quality of the data is often questionable.[2,4] The official mortality statistics produced by Statistics South Africa are classified as low-quality owing to incomplete reporting and large proportions of deaths attributed to ill-defined causes and injury deaths with undetermined intent.[2] Furthermore, since 1997 these statistics have only been collected for the national and provincial levels. Cause-of-death profiles for the local level are generally unavailable.[15] The City of Cape Town, however, has collected cause-of-death statistics for more than 100 years as part of its public health programme.[16] During the transition of the local government from 6 municipalities to a single municipality with 8 health subdistricts in the late 1990s, the method of collecting and collating statistics was reviewed and enhanced through training and standardization.[17] Since 2000, statistics have been analysed to subdistrict level with support from the South African Medical Research Council.[18] In 2003, the first subdistrict analysis was carried out and the findings revealed wide differentials at the local level. On the basis of these findings, trend analysis was done for the Cape Town Metro district for 2001–2006 and for the 8 new subdistricts for 2003–2006.

This article presents the key findings of the trend analysis and demonstrates how local mortality surveillance can identify the major causes of premature mortality and highlight the differential health needs of subpopulations. The findings were particularly relevant for health managers in Cape Town, who were decentralizing health services and developing subdistrict health plans at the time of the study.

Methods

Cape Town, one of 6 major metropolitan areas in South Africa, has a population of approximately 3.5 million people. Since 2003 the city has been divided into eight health subdistricts. The City of Cape Town has a well established system for routinely compiling cause-of-death statistics. The Cape Town Health Department collates data from copies of death notifications from the local offices of the Department of Home Affairs and collects data from local mortuaries. Cause-of-death coding and identification of

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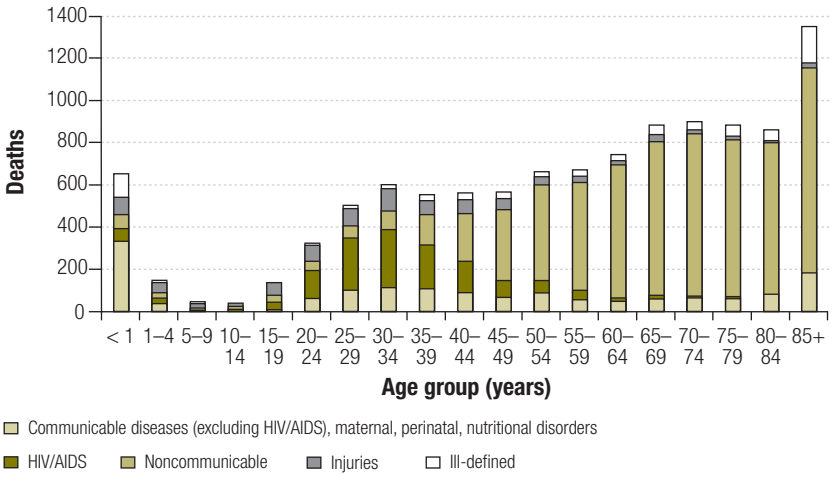
underlying cause is done by trained clerks at the Health Department using a shortlist based on the *International statistical classification of diseases and related health problems, 10th Revision* (ICD-10) (table 2 in Bradshaw et al.)[17] This list includes the most prevalent conditions in Cape Town, as well as diseases of public health importance.

For this study, interpretive coding was used where euphemisms for HIV/AIDS such as "retroviral disease," "RVD", "immunodeficiency" and "immunocompromised," were written on the death certificate. These causes were coded to HIV as the underlying cause. For unnatural deaths, where the manner of death was missing from the death certificate, the relevant mortuary records were identified using personal identifiers such as name and identity number to obtain this information.

After data cleaning and exclusion of duplicate records by means of personal identifiers, the shortlist cause-of-death codes were aggregated into three main cause groups according to the South African National Burden of Disease Study, based on an adapted version of the 1990 Global Burden of Disease Study.[19] These groups were: group 1: pre-transitional causes (communicable diseases, maternal causes, perinatal conditions and nutritional deficiencies); group 2: noncommunicable diseases; group 3: injuries. HIV/AIDS is part of group 1 but statistics on the disease are recorded separately because it accounts for such a large share of the disease burden in South Africa. Deaths attributed to ill-defined causes were redistributed proportionally by age and sex across the appropriate cause groups as described in a previous report.[18]

The data were analysed by age, cause and sex for the Cape Town Metro district from 2001 to 2006 and for the 8 new health subdistricts from 2003 to 2006. Completeness of death statistics was assessed through a comparison with estimates of the number of deaths per household from the 2001 South African census, as described by Zinyakatira.[20] During the period 2001–2006 completeness of death registration for adults was estimated to be 96%, except in 2005 when it was 84%, owing to a problem with collection of death notifications from some offices. Data for 2005 were therefore excluded from further analysis. Completeness for children is difficult to assess but is assumed to be lower than for adults.

Fig. 1. **Age distribution of female deaths (n = 11 132) by cause and age group, Cape Town Metro district, South Africa, 2006**



Premature mortality was calculated in years of life lost (YLLs) using the Global Burden of Disease approach, with age-weighting, discounting of 3% per year and standard life expectancies based on the West model life table,[21] with an average expectancy at birth of 80 years for men and 82.5 years for women.[19] These assumptions were chosen to allow for national and international comparison. Population estimates for the Cape Town Metro district were projected by means of the Actuarial Society of South Africa (ASSA) 2003 model[22] and were used to calculate age-specific rates per 100 000 population. Those rates were then age-standardized using the World Health Organization (WHO) world population standard[23] and compared across subdistricts. Mortality differentials by subdistrict and sex were assessed using 95% confidence intervals around the age-standardized mortality rates.[24]

Results

A total of 25 251 deaths was recorded in the Cape Town Metro district in 2006 – an increase of about 7.0% with respect to the number in 2001 (23 681). Natural deaths from ill-defined causes accounted for 7.7% of total deaths analysed in 2001 and 6.0% in 2006. Among unnatural deaths, deaths due to undetermined causes (i.e. where intentionality could not be determined) increased significantly from 5.7% to 11.0% over the period ($\chi^2 = 78.0$: $P < 0.001$).

The broad pattern of mortality by age and cause in Cape Town Metro district in 2006 is shown in Fig. 1 and Fig. 2. There were considerable sex differences, with young adult males experiencing much higher numbers of deaths from injury than females in absolute terms. HIV/AIDS deaths were common among young adults and to some extent children. Noncommunicable diseases accounted for large numbers of deaths over the age of 40 years. In age groups over 75 years, there were more deaths among females.

The overall age-standardized mortality rate was 1011 per 100 000 (95% confidence interval, CI: 983–1039) in 2001 (males, 1263, 95% CI: 1241–1286; females, 799, 95% CI: 783–815). The rate decreased slightly, to 939 per 100 000 (95% CI: 941–964), in 2006 and male mortality remained significantly higher (males, 1159, 95% CI: 1140–1180; females, 756, 95% CI: 742–771). During this period there was a significant increase in deaths from HIV/AIDS and a significant decrease in deaths from noncommunicable diseases among both males and females and in injury deaths among males (Table 1).

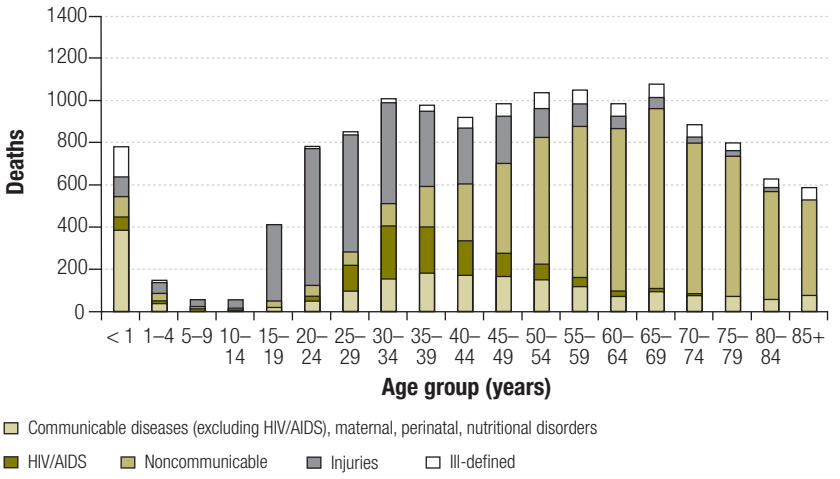
Significant differences in age-standardized mortality rates were observed between health subdistricts within the Cape Town Metro district (Table 2). The lowest rates were in the Northern and Southern subdistricts (679 and 713 per 100 000, respectively) and the highest in Khayelitsha subdistrict (1619 per 100 000), where the rates were almost 2.5 times higher than in Northern (Table 2). Khayelitsha had the highest mortality rates for all cause groups.

Age-standardized death rates for selected noncommunicable conditions showed marked variations by subdistrict

(Table 3). Ischaemic heart disease mortality rates were very high in Eastern and Tygerberg but low in Khayelitsha, while stroke, hypertension and diabetes mortality rates were very high in Khayelitsha and Mitchell's Plain. Lung cancer and chronic obstructive pulmonary disease death rates were higher among males than females and highest among males in Tygerberg and Mitchell's Plain. However, there was variability in these rates, the most extreme variation being ± 30% (hypertensive heart disease death rates in males in the Northern subdistrict ranged between 9.5 and 17.5 per 100 000, with the point estimate being 13.5).

Trends in the leading causes of premature deaths (presented as a percentage of total YLLs) over the period 2001–2006 are shown in Fig. 3. The relative contribution of violent deaths to premature mortality increased between 2001 and 2002 but declined between 2002 and 2004. However, violent deaths increased again in 2006, reaching 2003 levels. Deaths due to HIV/AIDS increased markedly between 2001 and 2003, levelled off in 2004 and 2005 and declined in 2006. The trends for HIV/AIDS, homicide and tuberculosis death rates are similar to the trends in percentage of total YLLs for these causes, although it is not possible to estimate rates for 2005 owing to incomplete data. HIV/AIDS has now replaced violence as the leading cause of death. The four leading causes in the Cape Town Metro district – namely, homicide, HIV/AIDS, tuberculosis and road traffic injuries – accounted for 44.2% of all premature mortality in 2006. Table 4 shows the ranking of conditions based on premature mortality (YLLs) for each health subdistrict in 2006.

Fig. 2. **Age distribution of male deaths (n=14 119) by cause and age group, Cape Town Metro district, South Africa, 2006**



Discussion

The above data show that although mortality rates are lower than the national average, the pattern of mortality observed in Cape Town reflects the quadruple burden of disease observed in the national cause-of-death profile,[25] with high infectious disease mortality among young children; high mortality from violence and injuries among young adults; high noncommunicable disease mortality in older age groups; and rising HIV/AIDS mortality among young adults and young children. The use of premature mortality (YLLs) facilitates the identification of public health priorities such as HIV/AIDS and violence. Analysis of emerging trends in mortality between 2001 and 2006 shows that HIV/AIDS has overtaken homicide as the leading cause of premature mortality, partly as a result of a decline in homicide rates during the analysis period but also as a result of an increase in HIV/AIDS mortality rates.

Despite interpretive coding, the observed HIV/AIDS mortality rates are likely to be understated as there is a tendency among doctors to certify only the immediate causes of death to avoid disclosing HIV status. Nonetheless, HIV/AIDS was either the first or second most common cause of premature mortality in all subdistricts in 2006 and accounted for 16% of the total burden of mortality in the Cape Town Metro district. Mortality from HIV/AIDS followed a distinct age pattern that has been consistently observed,[26,27] with the majority of deaths concentrated among young children, women aged 25–39 and men aged 30–49. While the peak mortality rates for males and females were similar in magnitude, the peak occurred approximately 10 years earlier among women. The rapid increase in HIV/AIDS mortality between 2001 and 2004 appears to have levelled off, possibly demonstrating the impact of antiretroviral programmes implemented in the Western Cape in 2003.

In contrast with the rising trend in tuberculosis mortality seen nationally, tuberculosis death rates in Cape Town remained fairly constant over the period. Several factors might account for this. First, a large proportion of tuberculosis deaths at the national level are misclassified as HIV/AIDS deaths,[26] but this occurs less frequently in Cape Town because of the interpretive coding used. In addition, in recent years control efforts have been intensified in high-tuberculosis areas such as Khayelitsha, which has led to vast improvements in cure rates and thus probably also reduced mortality rates.

Although Cape Town homicide mortality rates declined between 2001 and 2004, they increased thereafter and remain among the highest in the world (59.8 per 100 000).[28] Homicide mortality rates among males in Cape Town in 2006 were almost 8 times the global average (109 per 100 000 versus 13.9 per 100 000), and those for females 3 times the global average (12.5 per 100 000 versus 4.2 per 100 000).[29] Data from the National Injury Mortality Surveillance System show that age-standardized homicide rates in Cape Town were also higher than in other South African cities.[30]

Homicide occurs most frequently among young adults. The rates among males were 2–4 per 100 000 in childhood and peaked sharply, at about 260 per 100 000, in the 15–24 year age group. The rates then declined steadily with age. A similar age pattern was seen among females except that the peak was lower (24 per 100 000) and occurred about 10 years later, between 25 and 34 years of age. Homicide rates were highest in the Khayelitsha subdistrict, where the rate for males (242.4 per 100 000) was 17 times the global average and that for females (36.6 per 100 000) almost 9 times the global average. Overall, our data show that approximately 40% of homicides in the Cape Town Metro district are committed with firearms.

Table 1. **Trend in age-standardized mortality rates per 100 000 (95% confidence intervals) by broad cause group and sex, Cape Town Metro district, South Africa, 2001–2004 and 2006[a]**

Cause group	2001		2002		2003		2004		2006	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Communicable diseases (excluding HIV/AIDS), maternal, perinatal, nutritional disorders	168 (161–176)	113 (107–118)	172 (164–180)	110 (104–115)	156 (149–164)	106 (101–111)	163 (156–171)	102 (97–108)	174 (167–182)	119 (114–125)
HIV/AIDS	53 (49–57)	58 (54–62)	69 (65–74)	69 (65–73)	81 (76–85)	81 (77–85)	79 (75–84)	84 (79–88)	73 (69–77)	79 (75–84)
Noncommunicable diseases	803 (783–822)	574 (560–588)	763 (745–782)	551 (537–564)	753 (734–771)	549 (536–562)	741 (723–759)	543 (530–556)	697 (681–714)	509 (497–521)
Injuries	239 (231–248)	54 (51–58)	241 (233–249)	52 (48–55)	206 (198–213)	46 (43–50)	199 (191–206)	49 (45–52)	215 (208–223)	49 (45–52)

[a] 2005 excluded owing to incomplete data.

Table 2. **Age-standardized mortality rates per 100 000 (95% confidence intervals) for broad cause groups, Cape Town Metro district and subdistricts, South Africa, 2003, 2004 and 2006[a]**

Cause group	Khayelitsha	Eastern	Mitchell's Plain	Klipfontein	Tygerberg	Western	Southern	Northern	Metro district
Other communicable, maternal, perinatal and nutritional conditions	321 (276–366)	186 (167–205)	150 (123–177)	148 (132–164)	116 (104–128)	109 (97–122)	82 (72–91)	96 (82–109)	135 (129–140)
HIV/AIDS	229 (204–253)	86 (74–97)	77 (66–88)	112 (99–124)	44 (37–50)	62 (53–71)	30 (25–36)	61 (52–71)	79 (76–83)
Noncommunicable diseases	844 (754–935)	717 (674–760)	810 (736–884)	677 (640–714)	712 (679–745)	540 (511–569)	526 (501–550)	432 (401–463)	618 (605–630)
Injuries	225 (198–252)	150 (134–165)	130 (115–145)	150 (135–165)	106 (95–117)	107 (95–119)	75 (66–84)	90 (78–102)	124 (120–129)
Total	**1619 (1512–1726)**	**1139 (1088–1189)**	**1167 (1086–1248)**	**1086 (1041–1131)**	**978 (940–1015)**	**819 (784– 854)**	**713 (684–741)**	**679 (642–716)**	**956 (941–970)**

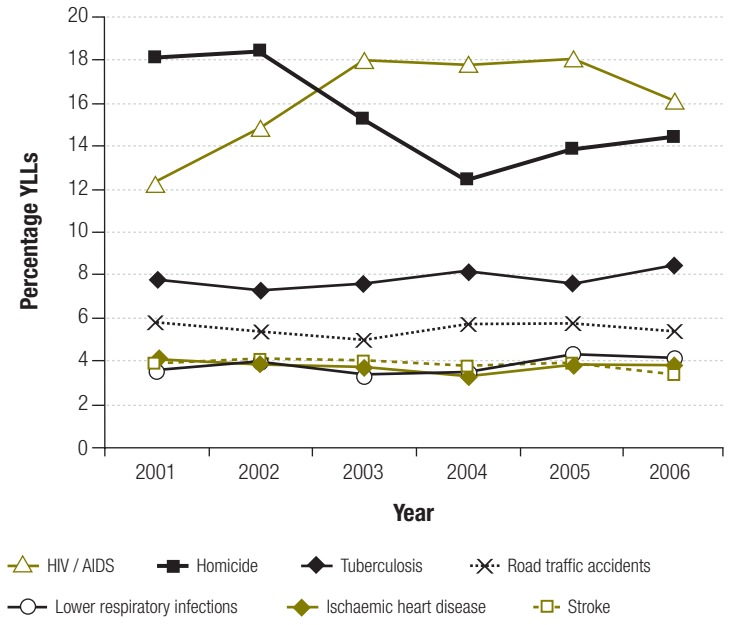
[a] Pooled estimates for 2003, 2004 and 2006; 2005 excluded owing to incomplete data.

Table 3. **Age-standardized mortality rates per 100 000 for selected noncommunicable conditions by subdistrict and sex, Cape Town Metro district, South Africa, 2003, 2004 and 2006[a]**

Condition	Eastern		Khayelitsha		Klipfontein		Mitchell's Plain		Northern		Southern		Tygerberg		Western		Metro district	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
IHD	171.3	109.4	21.7	22.1	88.5	57.1	97.0	64.2	92.4	50.4	95.8	57.6	132.1	71.5	102.1	59.8	106.8	64.0
Stroke	105.1	102.3	125.8	131.5	97.8	76.6	136.6	108.1	49.8	53.6	68.8	57.2	112.4	80.9	60.6	75.4	84.3	76.4
Hypertensive disease	27.1	30.1	81.4	125.8	60.8	65.8	72.0	78.0	13.5	16.2	20.0	24.2	47.9	44.2	30.6	37.1	35.4	40.8
Diabetes mellitus	53.4	60.2	89.0	122.9	92.1	100.9	133.2	149.0	34.8	32.0	48.1	46.8	84.3	85.0	49.5	52.3	64.0	70.3
Lung cancer	56.1	25.8	63.2	24.4	71.6	18.7	77.6	30.9	40.9	27.1	54.2	20.7	82.8	30.5	44.4	25.5	59.4	24.8
COPD	71.4	24.4	60.8	9.5	66.2	18.8	83.8	24.6	30.9	14.9	47.6	20.8	78.6	28.1	41.0	22.2	56.9	22.0

COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease.
[a] Pooled estimates for 2003, 2004 and 2006; 2005 excluded owing to incomplete data.

Fig. 3. **Trend in percentage years of life lost (YLLs) for selected leading causes of death, Cape Town Metro district, South Africa, 2001–2006**



Unlike homicide rates, deaths from road traffic injuries remained fairly constant in Cape Town between 2001 and 2006, ranging from 25 to 29 deaths per 100 000. However, road traffic fatality rates for males in Cape Town are 30% higher than the global average for males (45 per 100 000 versus 32 per 100 000).[29] Prevention of injuries, particularly violent injuries, thus remains a pressing provincial priority that will require intersectoral and multilevel coordination.[31]

The wide differentials in levels of mortality across the city highlight the importance of subdistrict-level information. Khayelitsha subdistrict, a large, impoverished township on the outskirts of Cape Town, had a considerably higher burden of premature mortality for all three main cause groups in comparison to the other subdistricts. While this difference was particularly marked for pre-transitional conditions, HIV/AIDS and injuries, noncommunicable disease rates were also highest in Khayelitsha, which confirms a previous finding that noncommunicable diseases are prevalent among the urban poor in South Africa.[32] Of the cardiovascular diseases, only ischaemic heart disease rates were lowest in Khayelitsha. Hypertensive disease, stroke and diabetes mortality rates in Khayelitsha were among the highest, however, which suggests that this population is in an earlier phase of the cardiovascular epidemiological transition than populations in other subdistricts. Rates of death due to tobacco-related conditions such as lung cancer and chronic obstructive pulmonary disease were also higher among males in Khayelitsha than in the Southern, Northern and Western subdistricts.

Table 4. **Leading 10 causes of premature mortality (YLLs), Cape Town Metro district and subdistricts, South Africa, 2006**

Rank	Eastern	Khayelitsha	Klipfontein	Mitchell's Plain	Southern	Western	Tygerberg	Northern	Metro district
1	HIV/AIDS (17.5%)	HIV/AIDS (25.7%)	Homicide (17.4%)	Homicide (17.7%)	HIV/AIDS (8.5%)	HIV/AIDS (13.1%)	Homicide (11.1%)	Homicide (17.0%)	HIV/AIDS (16.1%)
2	Homicide (11.8%)	Homicide (20.1%)	HIV/AIDS (15.7%)	HIV/AIDS (14.5%)	IHD (7.6%)	Homicide (12.5%)	HIV/AIDS (9.7%)	HIV/AIDS (14. 6%)	Homicide (14.4%)
3	TB (9.7%)	TB (9.8%)	TB (8.0%)	TB (8.7%)	Homicide (7.2%)	TB (8.3%)	TB (7.6%)	TB (8.6%)	TB (8.4%)
4	Road traffic (5.1%)	Road traffic (6.3%)	LRI (5.0%)	Road traffic (5.9%)	TB (6.2%)	Road traffic (5.4%)	Road traffic (6.1%)	Road traffic (6.0%)	Road traffic (5.3%)
5	IHD (3.9%)	LRI (4.7%)	Road traffic (4.2%)	LRI (4.6%)	Stroke (5.3%)	IHD (4.8%)	Diabetes mellitus (5.4%)	IHD (5.5%)	LRI (4.1%)
6	Diarrhoea (3.6%)	Diarrhoea (3.5%)	Diabetes mellitus (3.8%)	Diabetes mellitus (3.9%)	Diabetes mellitus (4.2%)	Stroke (4.1%)	IHD (4.9%)	Suicide (5.5%)	IHD (3.7%)
7	LRI (3.6%)	LBW/RDS (2.5%)	IHD (3.8%)	LBW/RDS (3.6%)	LRI (4.2%)	LRI (3.7%)	Stroke (4.8%)	Lung cancer (2.7%)	Stroke (3.4%)
8	LBW/RDS (3.4%)	Fires (2.4%)	Stroke (3.4%)	Diarrhoea (3.4%)	Lung cancer (3.9%)	LBW/RDS (3.7%)	Lung cancer (3.9%)	Stroke (2.6%)	Diabetes mellitus (3.4%)
9	Stroke (3.4%)	Stroke (1.8%)	LBW/RDS (2.8%)	IHD (2.8%)	Road traffic (3.6%)	Diabetes mellitus (3.2%)	LRI (3.5%)	Diabetes mellitus (2.6%)	LBW/RDS (2.9%)
10	Diabetes mellitus (2.9%)	Diabetes mellitus (0.5%)	Lung cancer (0.2%)	Stroke (2.5%)	Suicide (2.9%)	Lung cancer (2.6%)	COPD (3.4%)	Diarrhoea (2.4%)	Diarrhoea (2.5%)

COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease; LBW, low birth weight; LRI, lower respiratory infection; RDS, respiratory distress syndrome, TB, tuberculosis; YLLs, years of life lost.

There are some concerns about the quality of the data used in this study. A recent study of cause-of-death certification revealed errors that could affect identification of the underlying cause of death,[33] in particular failure to specify an underlying cause, which results in the attribution of deaths to ill-defined causes. In 2006, 6.0% of Cape Town Metro district deaths were attributed to ill-defined causes. This was substantially lower than the 12.0% observed in the national data for 2005,[34] and is only slightly higher than the international target of 5.0%.[19] Nevertheless, such data are not useful and were therefore redistributed to defined causes for purposes of this study. Because the ill-defined deaths accounted for a relatively small percentage of the total and occurred across all age groups, this redistribution did not influence the results significantly.

The relatively low percentage of deaths attributed to ill-defined causes and the relatively high level of data completeness in Cape Town may reflect access to better health services than in other districts. The completeness of death registration may also be a result of the system of triangulation of mortality data from various sources, although lower completeness for child deaths may imply underreporting of diarrhoea and lower respiratory infections, which may have affected the data on leading causes of premature mortality, particularly in Khayelitsha. In any case, improvement in the quality of cause-of-death certification is needed to enhance the reliability of cause-of-death statistics. This need is currently being addressed through a collaborative initiative to institutionalize death certification training at medical schools, training hospitals and other medical facilities. In addition, the surveillance system is being enhanced to allow for electronic transfer of cause-of-death data from mortuaries. This will provide full information on the manner of death for injury fatalities, which is usually missing from death certificates. While the use of a shortlist for coding was expedient in the early phases of the surveillance system, this approach is not ideal and the system is currently being upgraded to make use of automated ICD-10 coding, in line with international standards.

A challenge in establishing an effective mortality surveillance system and assessing trends in mortality rates in small areas is the need for accurate population data. In South Africa, no consistent official population estimates are available for subdistricts. We used estimates based on the ASSA model, which were calibrated to the 1996 and 2001 censuses. Migration may not have been fully captured, however, and mortality trends may therefore have been influenced by errors in the population figures. Nevertheless, since the rates do not show systematic trends across all causes of deaths, such an error is unlikely to have had a major effect.

Despite its limitations, the Cape Town routine local mortality surveillance system provides a wealth of information on the health of the population that is useful for identifying priority health problems and vulnerable groups and for planning and implementing targeted interventions. For example, data from 2006 show that noncommunicable diseases accounted for 55.8% of deaths, the majority from cancers, cardiovascular and respiratory disease and diabetes mellitus. From a health service perspective, noncommunicable disease mortality rates can be reduced through health promotion and improved risk factor management at the primary care level. This has important implications for existing primary health care systems, which were designed mainly to manage acute infectious diseases.[35]

While macro-level interventions are needed, community-based interventions, such as promotion of a healthy diet and regular exercise, aimed at reducing chronic disease risk factors at population level are also essential.[36] In particular, tobacco control efforts should be strengthened to reduce high smoking rates among men of all ethnic groups and women of colour.[37] Intersectoral coordination is also needed. The Health Department needs to engage sectors such as education, housing, transport, safety and security, and traffic control in addressing multifactorial problems such as HIV infection, tuberculosis, homicide and road traffic injuries, which together accounted for 44% of premature mortality in the Cape Town Metro district.

Dissemination of mortality information to relevant stakeholders is of the utmost importance. To that end summaries of key findings[38] have been produced and disseminated, and presentations have been made to health policy-makers and programme managers at various levels. It would be ideal to link the mortality surveillance system to the national statistical system. However, this needs to be done without losing the valuable ownership of the information by the local health officials who need to use it to allocate resources.

In a limited-resource setting, prioritization of health interventions is essential. Local level mortality surveillance can help by identifying the leading causes of premature death and the subpopulations suffering the highest levels of premature mortality. It can also provide useful data for monitoring the effectiveness of programmes and interventions. The Cape Town experience has demonstrated that it is possible through concerted collaborative effort to implement and strengthen mortality surveillance systems, and that such systems provide useful information for health planning and policy-making, particularly for urban poor communities. ■

Competing interests: None declared.

ملخص

ترصد الوفيات على الصعيد المحلي في المواقع المحدودة الموارد: دراسة حالة لمدنية كيب تاون تبرز التفاوت الصحي

الغرض تحديد الأسباب الرئيسية للوفيات والوفيات المبكرة في مدينة كيب تاون وأحيائها بجنوب أفريقيا، ومقارنة مستويات الوفيات بين أحياء المدينة.
الطريقة حُللت بيانات الوفيات لمدينة كيب تاون خلال الفترة 2001 – 2006 حسب العمر، وسبب الوفاة، والجنس. وجُمعت رموز أسباب الوفيات في ثلاثة مجموعات رئيسية: (1) أسباب قبل انتقالية (مثل الأمراض السارية، وأسباب ناجمة عن حالات الأمومة، والحالات المحيطة بالولادة، وحالات العوز الغذائي)، (2) أمراض غير سارية، (3) الإصابات. وحُسبت الوفيات المبكرة عن طريق سنوات العمر المفقودة (YLLs). واستخدمت التقديرات السكانية لأحياء مدينة كيب تاون لحساب المعدلات الخاصة بعمر معين لكل 100 ألف شخص من السكان، وجرى تعييرها حسب العمر ومقارنتها بين أحياء المدينة.
الموجودات يوضح طراز الوفيات في مدينة كيب تاون العبء الرباعي للمرض كما هو ملاحظ في المرتسم الوطني لأسباب الوفاة، حيث يتسبب الإيدز وفيروسه، وسائر الأمراض المعدية، والإصابات، والأمراض غير السارية في نسبة كبيرة من الوفيات. وقد حل الإيدز والعدوى بفيروسه محل جرائم القتل كسبب أول للوفاة. ويؤدي الإيدز والعدوى بفيروسه، وجرائم القتل، وحالات السل، وإصابات الطرق إلى 44% من الوفيات المبكرة. وكان حي خايلتشا، وهو أفقر الأحياء في المدنية، الأكثر في معدلات الوفيات في جميع مجموعات أسباب الوفيات.
الاستنتاج يوضح ترصد الوفيات المحلي الاحتياجات المتباينة لسكان مدينة كيب تاون، ويقدم بيانات غزيرة تفيد في تخطيط وتنفيذ التدخلات المستهدفة. وهناك حاجة إلى التدخلات العديدة القطاعات للحد من العبء المرضي.

Résumé

Surveillance de la mortalité au niveau local dans des pays disposant de ressources limitées : mise en lumière des disparités en matière de santé par une étude de cas menée dans la ville du Cap

Objectif Identifier les principales causes de mortalité et de mortalité prématurée dans la ville du Cap, en Afrique du Sud, et dans ses sous-districts et comparer les niveaux de mortalité entre sous-districts.
Méthodes Les données de mortalité de la ville du Cap pour la période 2001–2006 ont été analysées par âge, par cause du décès et par sexe. Les codes affectés aux causes de décès ont été agrégés pour obtenir trois groupes de causes principaux : (i) les causes pré-transitionnelles (maladies transmissibles, causes maternelles, pathologies périnatales et carences nutritionnelles, par exemple), (ii) les maladies non transmissibles et (iii) les traumatismes. La mortalité prématurée a été calculée en années de vue perdues (YLL). Les estimations démographiques pour le district métropolitain du Cap ont été utilisées pour calculer les taux de mortalité par âge et pour 100 000 habitants, qui ont ensuite été standardisés selon l'âge et comparés entre sous-districts.
Résultats Le schéma de la mortalité au Cap reflète la quadruple charge de morbidité dont on observe l'impact sur le profil national des causes de décès : le VIH/sida, les autres maladies infectieuses, les traumatismes et les maladies non transmissibles représentent au total une proportion conséquente des décès. Le VIH/sida a remplacé les homicides comme cause principale de décès. Le VIH/sida, les homicides, la tuberculose et les accidents de la route totalisent 44 % de la mortalité prématurée. Khayelitsha, le plus pauvre des sous-districts, détient les plus hauts taux de mortalité pour l'ensemble des principaux groupes de causes.
Conclusion La surveillance locale de la mortalité met en lumière la diversité des besoins de la population du Cap et fournit une quantité considérable de données pour étayer la planification et la mise en œuvre d'interventions ciblées. Des interventions multisectorielles seront nécessaires pour réduire la charge de morbidité.

Resumen

Vigilancia de la mortalidad local en entornos con recursos limitados: un estudio de casos realizado en Ciudad del Cabo pone de relieve disparidades en salud

Objetivo Identificar las causas principales de mortalidad y mortalidad prematura en Ciudad del Cabo (Sudáfrica) y sus subdistritos, y comparar los niveles de mortalidad entre estos.
Métodos Los datos de mortalidad de Ciudad del Cabo para el periodo 2001–2006 fueron analizados por edad, causa de muerte y sexo. Los códigos de las causas de defunción se agruparon en tres tipos principales de causas: (i) causas de pretransición (p. ej., enfermedades transmisibles, causas maternas, enfermedades perinatales y carencias nutricionales), (ii) enfermedades no transmisibles y (iii) traumatismos. La mortalidad prematura se expresó en años de vida perdidos (AVP). Las estimaciones poblacionales correspondientes al distrito metropolitano de Ciudad del Cabo se utilizaron para calcular las tasas por edad por 100 000 habitantes, y a continuación las cifras se normalizaron en función de la distribución de edades para comparar los subdistritos.
Resultados El perfil de mortalidad de Ciudad del Cabo refleja la cuádruple carga de morbilidad observada en el conjunto de causas de defunción, con una proporción importante de muertes por VIH/sida, otras enfermedades infecciosas, traumatismos y enfermedades no transmisibles. El VIH/sida ha reemplazado al homicidio como causa principal de defunción. El VIH/sida, los homicidios, la tuberculosis y los traumatismos causados por el tránsito representaron el 44% de la mortalidad prematura. Khayelitsha, el subdistrito más pobre, presentó los niveles más altos de mortalidad en todos los grupos de causas principales.
Conclusión La vigilancia de la mortalidad local pone de relieve las diferentes necesidades de la población de Ciudad del Cabo y aporta una gran cantidad de datos para fundamentar la planificación y puesta en práctica de intervenciones focalizadas. Se requerirán intervenciones multisectoriales para reducir la carga de morbilidad.

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