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Summary

Mortality rates (MRs) for cancer in black men and women, aged 25 - 74 years, in the 34 'selected' (urban) magisterial districts were calculated for 1980 and compared with the MRs for cancer in 1970. All MRs were age-adjusted to the age distribution of the white population in 1970 to enable valid comparisons to be made. A notable feature was the increase in MRs for cancer of the oesophagus and cancer of the lungs over the period. Cancer of the liver was among the three leading causes of deaths from cancer in both black men and women, which contrasted markedly with the situation in the other populations of the RSA.

Examination of MRs for all causes of death and of deaths from cancer in the 16,9 million black population in 1980 suggests that there was a very substantial under-reporting of deaths, particularly in the rural areas of RSA. It is estimated that around 60,000 deaths were not reported. The implications of this finding are discussed and an interim solution proposed.

Methods

The MRs for cancer in black men and women were calculated for 1970 from Central Statistical Services reports and age-adjusted to the age distribution of the white population in 1970 in order to facilitate comparison with the MRs of other populations in the RSA. These calculations were also made for the total black population of the RSA (excluding the independent black homelands) of 16,9 million.

In a recent article in this Journal age-adjusted mortality rates (MRs) for cancer in whites, Indians and coloureds aged 25 - 74 years for the year 1970 were compared with the MRs for 1980. At the time the article was written a similar comparison of cancer MRs in blacks for these two years could not be made because in 1970 these deaths were reported only for 34 'selected' (urban) magisterial districts with a population of approximately 3.4 million whereas in 1980 the deaths were reported for the total black population of the RSA. The implications of this finding are discussed and an interim solution proposed.

Results and discussion

Table I and II give the 10 leading causes of death from cancer, ranked by MRs, of black men and women for 1970 and 1980. Two sets of MRs are given for 1980. One set was calculated for the 34 'selected' (urban) magisterial districts with a population of 4.4 million and the other set for the total black population of 16.9 million.

Table I shows that, based on the MRs for 1980 of the 34 'selected' magisterial districts, cancer of the oesophagus was the leading cause of death in black men in both 1970 and 1980 with MRs around twice as high as the next cause of death from cancer. Over the 10-year period the MR increased by 34%. Cancer of the lungs which ranked third in 1970 showed a dramatic increase in 1970 over 1980 to rank second as a leading cause of death from cancer. The only other cancer to show a similar large increase in MR was cancer of the larynx, which increased by 83% over the 10-year period; it was, however, relatively low in the rank order of MRs. Most of the other forms of cancer, such as liver cancer, stomach cancer, cancer of the prostate, cancer of the pancreas and cancer of the colon, showed little change in MRs over the period or in rank order. There were certain noteworthy differences between 1970 and 1980 in that in 1970 cancer of the bladder was among the 10 leading causes of cancer death but did not appear in the rank order in 1980. On the other hand, multiple myeloma did not appear among the 10 leading causes of cancer death in 1970 but did in 1980. Unspecified cancers are not included in Table I but had relatively large MRs being 8.4/100000 in 1970 and 10.5/100000 in 1980.

Table II shows that, based upon the MRs for 1980 of the 34 'selected' magisterial districts, cancer of the cervix was the leading cause of death of black women in both 1970 and 1980 and that the MR increased substantially by 60% over the 10-year period. Cancer of the oesophagus ranked second in both 1970 and 1980 and the MR increased dramatically by 182%. MRs for cancers of the lungs and pancreas also increased markedly by 111% and 116% respectively. MRs for cancers of the liver and breast increased by 21% and 38% respectively but the MR for cancer of the stomach decreased. Cancers of the uterus and colon were among the 10 leading causes of cancer deaths in 1970 but were low in rank.
order. They did not appear in 1980. On the other hand, cancers of the brain and rectum appeared in 1980 but low in rank order and did not appear in 1970. Unspecified cancers were excluded from Table II but had relatively high MRs of 7.6/100 000 in 1970 and 11.7/100 000 in 1980.

Features common to both black men and women were, firstly, the increase in MRs for cancer of the oesophagus by 34% in males and a dramatic 182% in females and, secondly, the increase in MRs for lung cancer by 78% in males and 111% in females. It is difficult to explain the increase in MRs for cancer of the oesophagus because the carcinogenic agent is not known with any certainty in spite of intensive research, but the increase in MRs for cancer of the lung must be attributed to an increase in the smoking of cigarettes, especially in black women. The increase in the MR for cancer of the larynx in black men can probably also be attributed to cigarette smoking. No explanation can be offered for the marked increase in MR for cancer of the pancreas in black females.

It is also noteworthy that cancer of the liver in both black men and women appeared very high in the rank order of the leading causes of cancer deaths, which is quite different from the situation in the other populations in the RSA. The MRs for liver cancer were relatively unchanged over the 10-year period but the MR for men was roughly twice as high as the MR for women.

### Validity of mortality data for the total black population of 16.9 million

In Tables I and II MRs for cancer in black men and women were calculated from the deaths reported in 1980 for the total black population of 16.9 million in the RSA.

What is immediately clear is that the MRs for cancer in black men, with two exceptions, were lower than those calculated for the 34 ‘selected’ (urban) magisterial districts. This is particularly the case for lung cancer. The exceptions were the MRs for cancer of the oesophagus and cancer of the liver which were similar in the two methods of calculation. In black women the differences were very much greater — the MRs calculated for the total black population being uniformly lower than the MRs calculated for the 34 ‘selected’ magisterial districts.

The reason for the large discrepancies in the MRs for cancer calculated in these two ways is not far to seek. If the MRs for all causes of death among whites, coloureds and blacks in 1970 are calculated (age-adjusted to the age distribution of the white population in 1970) the following are the results: whites — 899/100 000, coloureds — 1713/100 000 and blacks (in the 34 ‘selected’ magisterial districts) — 1263/100 000. A similar calculation of MRs for all causes of death in 1980 (also age-adjusted to the age distribution of the white population in 1970) gives the following results: whites — 787/100 000, coloureds — 1 359/100 000 and blacks (in the same 34 ‘selected’ magisterial districts) — 1 369/100 000. However, the MR for all causes of death of the total population of 16.9 million blacks for 1980 calculated from the deaths reported by Central Statistical Services was 797/100 000, very different from the MR calculated for blacks in the 34 ‘selected’ magisterial districts.

One reasonable explanation for this discrepancy in the calculation of the MRs for all causes of death, using mortality data from two different sources, is that there was gross under-reporting of deaths among the 16.9 million blacks in 1980. Most of the under-reporting must have been in the rural areas judging by the fact that the MR for blacks in the 34 ‘selected’ magisterial districts was almost twice as high as the MR for the total black population. As a rough estimate the number of unreported deaths in the total black population in 1980 would be around 60 000.

These results throw doubt upon the validity of Central Statistical Services reports on deaths for the total population of blacks in the RSA since 1978 when the new system of reporting deaths among...
blacks was introduced. Unfortunately, it means that the use of MRs based upon these data to monitor the health of the black population since 1978 is seriously open to question and calls for a concerted effort on the part of the Department of National Health and Central Statistical Services to correct this situation. A possible interim solution would be for Central Statistical Services to abstract the deaths and populations, by age and sex, for the 34 'selected' (urban) magisterial districts for each year since 1978 and to continue to report these mortality and population statistics separately from those for the total black population. This would allow accurate monitoring of the health of the black population at least in urban areas since 1978.

REFERENCES

A survey of human T-cell leukaemia virus type I antibodies in patients with malignant disease in the Witwatersrand area

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Summary

The prevalence of antibodies to human T-cell leukaemia virus type I in Africa ranges from 2% to 21% according to the geographical area surveyed. Most studies suggest that the background infection rate in children is low. In paediatric patients with malignant disease in the Witwatersrand area the prevalence is low (1%), whereas a seemingly high rate is found in healthy black children from a restricted rural area (7%). Further, the antibody prevalence in adult whites with lymphoproliferative disease is low (1%) compared with that in blacks with malignant disease (6%). There also appears to be a higher prevalence of positive results in black women (7%) than in black men (4%).

The association of human T-cell leukaemia virus type I (HTLV-1) infection and a human T-cell leukaemia/lymphoma with distinctive clinical features has been well documented in a number of epidemiological studies. Isolation of the virus from malignant T lymphocytes, in vitro transformation of human T cells by the virus, and the ability to maintain such transformed cells in long-term culture all provide additional evidence to suggest that infection with this retrovirus is an important element in neoplastic transformation. In endemic areas the high prevalence of natural antibody to HTLV-I indicates that viral infection is considerably more frequent than malignant transformation. A number of surveys among healthy subjects from various regions in Africa and elsewhere have demonstrated a well-marked geographical variation both between and within countries. Most surveys suggest an age-related increase in prevalence similar to previous findings in Japan.

In South Africa varying rates have been found in both normal and diseased people. The results of an investigation among children with leukaemia and lymphoma or other malignant disease as well as in a healthy age-matched rural population are reported. These findings were compared with those in adults with malignant diseases referred to the Witwatersrand area for therapy.

Subjects and methods

The study population consisted of 106 children suffering from malignant diseases, 100 healthy children, and 145 adults with malignant diseases. The healthy children were all from a rural community in KwaNdebele in the northern Transvaal. Serum samples were collected at the time of routine investigation among the patient population while sera from the control subjects were obtained during the course of a nutritional survey. The presence of HTLV-I antibody was detected by an enzyme-linked immunosorbent assay utilizing the p24 viral core antigen (Linton Bionetics) and a Microtect microtitre plate reader. Optical density (OD) was measured at 405 nm in a serum dilution of 1:50. A positive result was indicated by an OD value of > 0.8 of the mean OD value of three positive control wells.