CANCER INCIDENCE IN SELECTED MUNICIPALITIES OF THE EASTERN CAPE PROVINCE, 1998-2002

PROMEC Cancer Registry Summary Report

March 2008

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This Summary Report is based on the PROMEC Cancer Registry Technical Report compiled by the MRC's Burden of Disease Research Unit in collaboration with the PROMEC Research Programme.

A copy of the summary and the technical report can be obtained from the website of the MRC **www.mrc.ac.za/bod/bod.htm**

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CONTENTS

INTRODUCTION

This summary report sets out to report the cancer incidence rates and patterns in 10 magisterial areas around the former Transkei region (Figure 1). The rates are a result of the ongoing descriptive observational study based on the rural population-based cancer register of the Medical Research Council (MRC) of South Africa.

For the period, 1998-2002, the area under surveillance was extended from 4 magisterial areas to 10, covering a population of about 1.4 million in a northern region and a southern region. Both active and passive methods were used to collect data from collaborating hospitals and a pathology laboratory.

The main objective of the registry was to provide timely, complete, comparable and high quality cancer data to policy makers, health professionals, researchers, NGOs and communities for better planning and feedback. However, the main challenges have been to ensure the completeness of the register and quality of data.

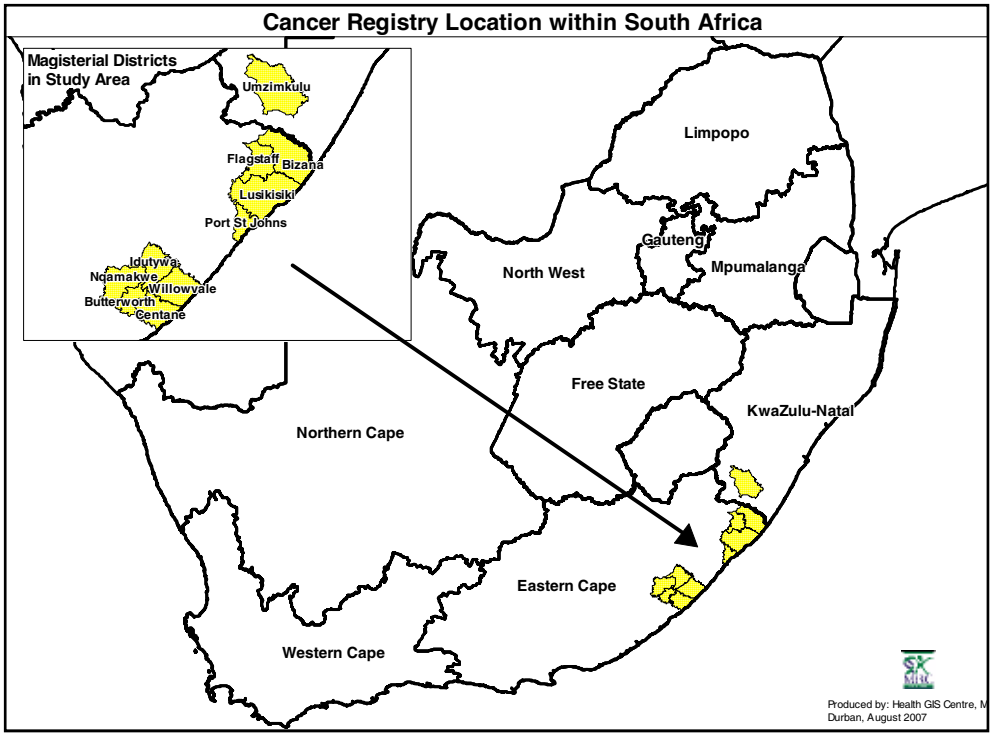

Figure 1: Map of South Africa showing the cancer registration area

POPULATION AND RISK PROFILE

The age and sex distribution of the population shown in Figure 2 is typical of a South African rural population. It reflects that the area is a labour reservoir, in which there are more children and older persons, particularly women, than there are working age adults. Labour migration is historically significant

in South Africa and such a migratory pattern may result in a lower cancer incidence being experienced in the area. It is possible that people from this area who develop a cancer while working in an urban area do not return to their rural home. The number of children under 5 years of age is markedly smaller than the next age group. This is likely to be a result of declining fertility on the one hand and under-enumeration of young children on the other. See below:

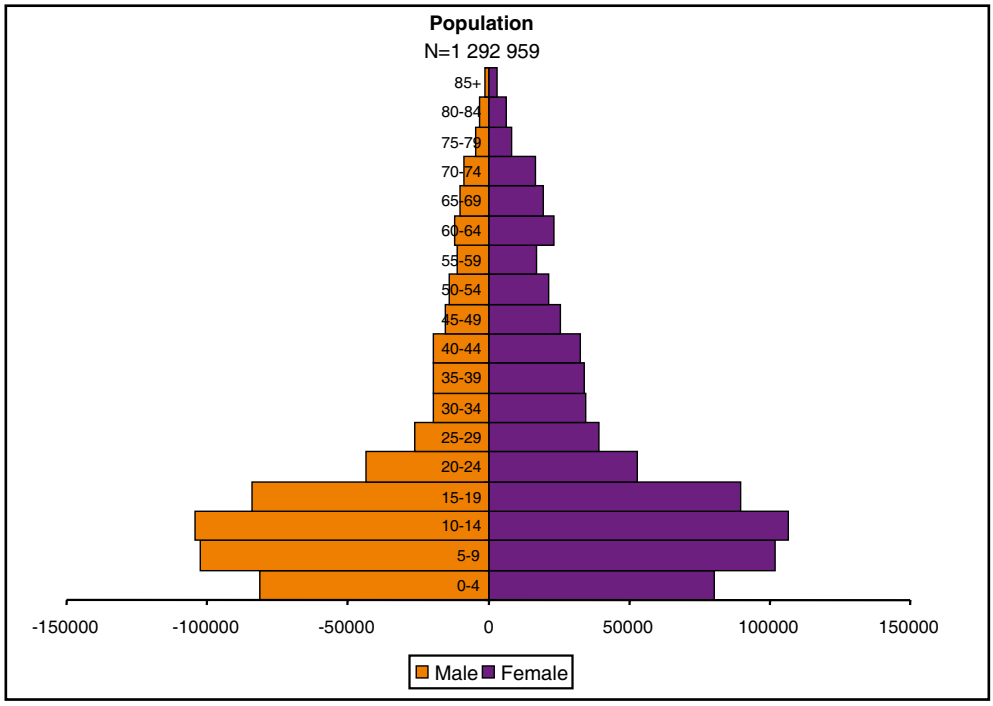

Figure 2: Population pyramid, 2001

According to a report by Statistics South Africa (2001), a large proportion of households in the area do not have any toilet facilities (51%) nor access to piped water. Across the surveillance area, 79% of the population is unemployed with the population living on subsistence farming, remittances and government grants. The lowest level of unemployment is in the district of Mnquma, including the town of Butterworth, where the level is 73%. Nearly two thirds of the households in the area are headed by women.

Results from the provincial household survey conducted during 2002 by the Eastern Cape Department of Health and Equity Project as reported by Bradshaw *et al*., 2004, indicated that in the former Transkei region 16% of men drink alcohol regularly while 13% partake in communal drinking. The prevalence is much lower in women with only 4% drinking regularly and another 4% partaking in communal drinking. This survey also found that 31% of men smoke tobacco and only 5% of women. Only 10% of households use electricity for cooking and heating while wood and paraffin are the most commonly used energy sources.

METHODS

The registry is collaborating with 19 hospitals in the area as well as a pathology laboratory under the National Health Laboratory Services (NHLS) situated at Nelson Mandela Medical School, Mthatha.

The active case finding system was set up by the registry manager utilising multiple sources. The collaborating hospitals located in 10 magisterial areas are visited twice a year. Case finding also extends to hospitals outside the registration area to which cancer cases may have been referred or presented themselves. These include Mthatha General Hospital, the regional referral centre, Frere Hospital in East London which is the regional radiotherapy referral centre, Cecilia Makiwane and five hospitals in the KwaZulu-Natal Province; Usher Memorial in Kokstad, King Edward VIII, Inkosi Albert Luthuli, King George V and Addington in Durban.

Passive case finding, which supplements the active method, involves part-time nurses completing specially designed cancer notification forms and sending them to the registry on a monthly basis. These nurses are trained in oncology as well as in cancer data abstraction and notification by the cancer registry manager.

The data was manually abstracted from the records of the various hospitals and pathology laboratory records. Demographic variables, tumour characteristics, type and behaviour as well as vital statistics were extracted. Cancer sites were manually coded for topography and morphology according to the International Classification of Diseases for Oncology (ICD-O), third edition (Fritz *et al*., 2000) and captured using CanReg, a software computer program designed by the Unit of Descriptive Epidemiology of the International Agency for Research on Cancer. Only malignant cases are included in the analysis. The 2001 census was used as a base for the population estimates to calculate the incidence rates for each magisterial area. A direct method as described by Boyle and Parkin (1991) has been used to calculate age standardised rates (ASR) and standard population used was the World Standard Population.

RESULTS

The number of cases from each of the participating hospitals during the period 1998-2002 is shown in Figure 3. Hospitals in the registration area (the 10 magisterial areas) contributed 1633 cases (57.2%) whereas the referral hospitals, including the state pathology laboratory (Nelson Mandela Pathology Laboratory), contributed 1196 cases (42.3%). The largest percentage of cases was contributed by Frere Hospital (52.1%) which is a referral hospital based in East London, south of the registration area.

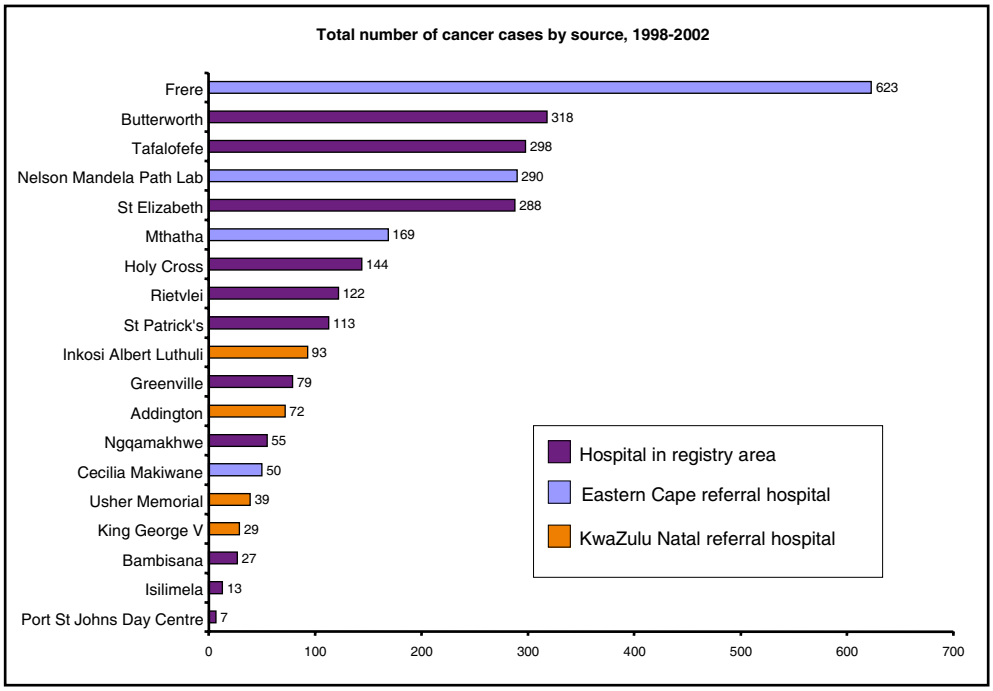

Figure 3: Total number of cancer cases by source, 1998-2002

A total of 2 829 new cancer cases was reported, of which 1 184 (41.8%) were males and 1 645 (58.2%) females. The annual number of cases was fairly consistent during this period with an annual average of 566 per annum (237 males and 329 females) (Table 1). The numbers in 1999 and 2000, however, were lower than average.

Table 1: Number of cases recorded each year by sex, 1998-2002

Year	Male	Female	Total
1998	234	389	623
1999	201	308	509
2000	216	262	478
2001	272	328	600
2002	261	358	619
1998-2002	1 184	1 645	2 829

From the most valid basis of diagnosis (Table 2) for all cancer cases recorded during 1998-2002, it can be seen that 52.3% of cancer sites were histologically confirmed whereas 47.6% were clinically diagnosed. The percentage of clinically diagnosed cancer sites is high. However, this is not uncommon in a rural setting where there is scarcity of specialists such as oncologists. In addition, the most common cancer in the former Transkei includes cancer of the oesophagus (73.7% of total cancers) which can be diagnosed clinically.

Table 2: Most valid basis of diagnosis, 1998-2005

Method of diagnosis	No. of cases	Percentage
Clinical*	1 349	47.6
Histology#	1 480	52.3
Death certificate only	-	-
Total	2 829	100.0

* Clinical = clinically only, x-rays, scans, surgery
\# Histology = histology of primary site/metastasis, haematology and cytology

Table 3 shows the number of reported cancers and the percent distribution of the 10 leading cancers for males and females and Figure 3 the annual age standardised rates per 100 000 population. Among males, oesophagus cancer is leading and accounts for 42.2% of the total cancers, followed by lung cancer. Surprisingly, there were relatively few Kaposi sarcoma cases in spite of the HIV/AIDS epidemic. Among females, cervix and oesophagus cancers are leading and account for 33.8% and 31.5%, respectively of the total cancers observed during this period. Kaposi sarcoma did not feature among the leading cancers for females. The age standardised rates for all cancers were 72.8 per 100 000 in males and 59.1 per 100 000 in females.

Table 3. Percentage distribution of leading cancers by sex, 1998-2002

Males			Females		
Site (ICD-O)	Numbers	%	Site (ICD-O)	Numbers	%
Oesophagus (C15)	496	42.2	Cervix (C53)	552	33.8
Lung (C33-34)	92	7.9	Oesophagus (C15)	514	31.5
Prostate (C61)	81	6.9	Breast (C61)	186	11.4
Liver (C22)	68	5.8	Ovary (C56)	24	1.5
Larynx (C32)	42	3.6	Liver (C22)	23	1.2
Mouth (C03-C06)	38	3.2	Lung (C33-34)	20	3.2
Tongue (C01-C02)	36	3.1	Melanoma of skn (C43)	19	1.2
Kaposi sarcoma (C46)	25	1.3	Thyroid (C73)	15	0.9
Stomach (C16)	23	2.0	Pancreas (C25)	14	0.9
Colon (C18)	21	1.8	Bone (C40-C41)	12	0.7
Leading 10 sites	922	77.9	Leading 10 sites	1 379	86.3

The incidence rates for the most common cancers are shown in Figure 4. Top five cancers in males included oesophagus, lung, prostate, liver, larynx and mouth whereas in females were cervix, oesophagus, breast, ovary and liver. Oesophageal cancer in the case of both males and females and cervical cancer in the case of females had the highest rates across the region.

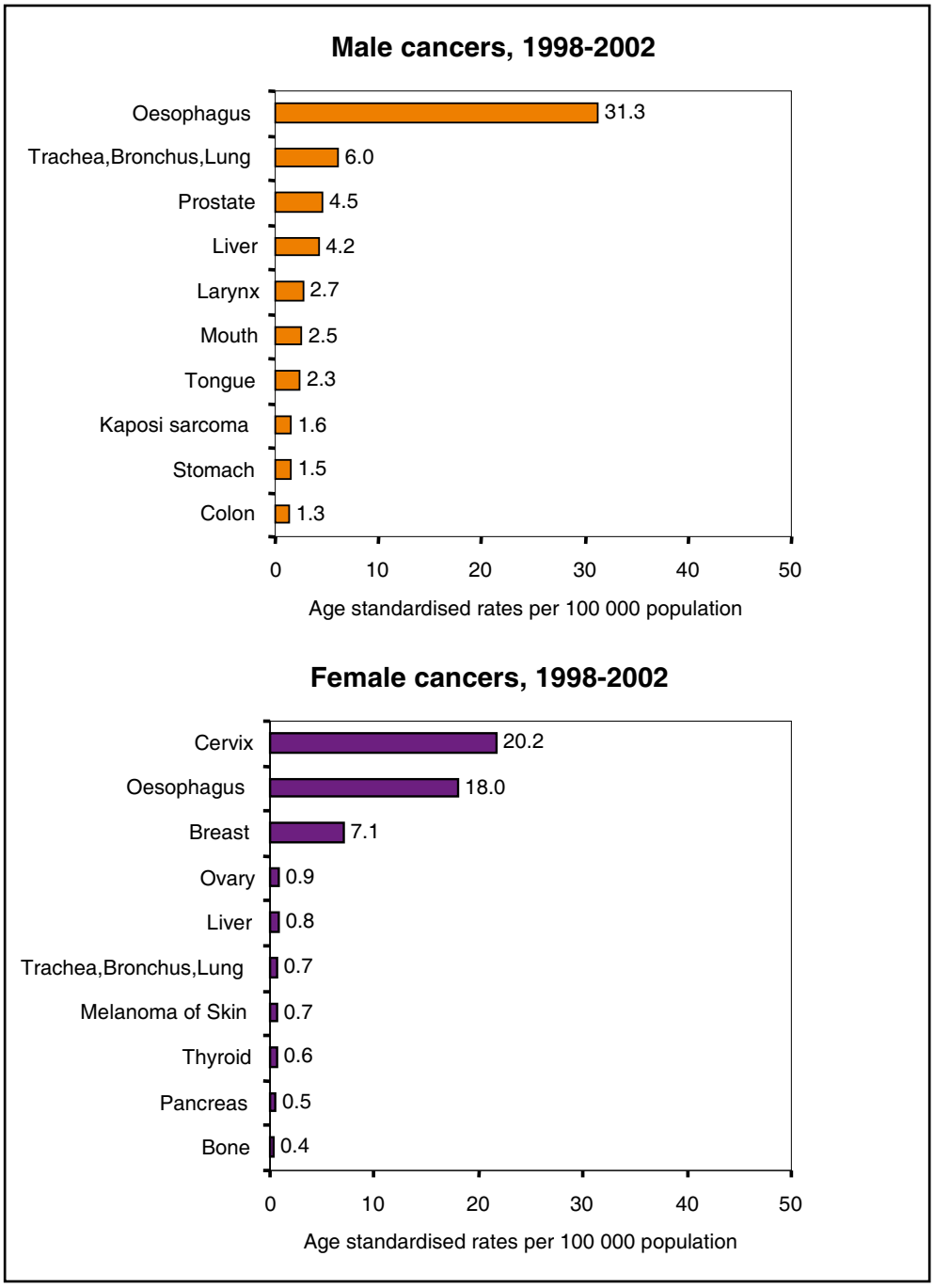

Figure 4: Annual age standardised rates (per 100 000 population) of leading cancers by sex, 1998-2002

There were variations across areas (Table 4) but oesophagus cancer consistently had the highest incidence rates in males. In females, cervical cancer had the highest incidence rates except for the three magisterial areas where oesophagus cancer dominated. Breast and prostate cancers exhibited higher rates in Butterworth compared with other magisterial areas. Other important cancers including Kaposi sarcoma, haematological malignancies and lymphomas were particularly low in this region and require further verification.

Table 4. Age standardised rates for most common cancers by magisterial area and sex, 1998-2002

Males					
Magisterial Area	OC	Lung	Prostate	Liver	KS
Umzimkhulu	21.1	6.9	4.3	1.6	1.3
Bizana	37.2	9.6	2.1	4.9	3.3
Flagstaff	17.2	3.9	1.4	4.0	2.2
Lusikisiki	43.2	3.8	2.5	7.8	2.0
Port St Johns	19.7	7.6	6.0	4.9	1.0
Idutywa	18.5	4.5	3.2	1.0	1.6
Willowvale	19.9	3.4	3.4	1.7	0.0
Centane	48.3	4.5	5.4	5.3	0.0
Butterworth	32.1	8.7	14.6	1.9	1.1
Ngqamakhwe	26.6	8.0	5.6	4.6	1.0
Total area	31.3	6.0	4.5	4.2	2.2
Females					
Magisterial Area	Cervix	OC	Breast	Lung	KS
Umzimkhulu	12.3	7.8	5.1	0.2	0.5
Bizana	14.4	19.4	4.3	1.3	0.4
Flagstaff	26.4	17.2	4.8	0.0	0.9
Lusikisiki	29.6	19.9	10.0	0.2	0.5
Port St Johns	10.8	4.3	2.7	0.6	0.0
Idutywa	21.2	7.4	3.9	1.1	0.5
Willowvale	17.0	18.7	6.4	0.3	0.0
Centane	19.2	40.2	6.9	1.1	0.0
Butterworth	22.6	23.2	15.2	2.3	0.0
Ngqamakhwe	14.2	12.7	5.9	1.2	0.0
Total area	20.2	18.0	7.1	0.9	0.8

OC = oesophagus cancer
KS = Kaposi sarcoma

Oesophagus cancer incidence rates for this region are higher than those observed in other parts of Africa or for the Black population in the USA (Figure 4). Although likely to be related to multiple risk factors, the large sex difference may be related to the large gender differences in smoking (and in a lesser extent, alcohol drinking). Although cervical cancer is the most common cancer among women, the incidence in this region is lower than many other settings (Figure 6) which may reflect a lower incidence in a more rural area or a lower detection rate.

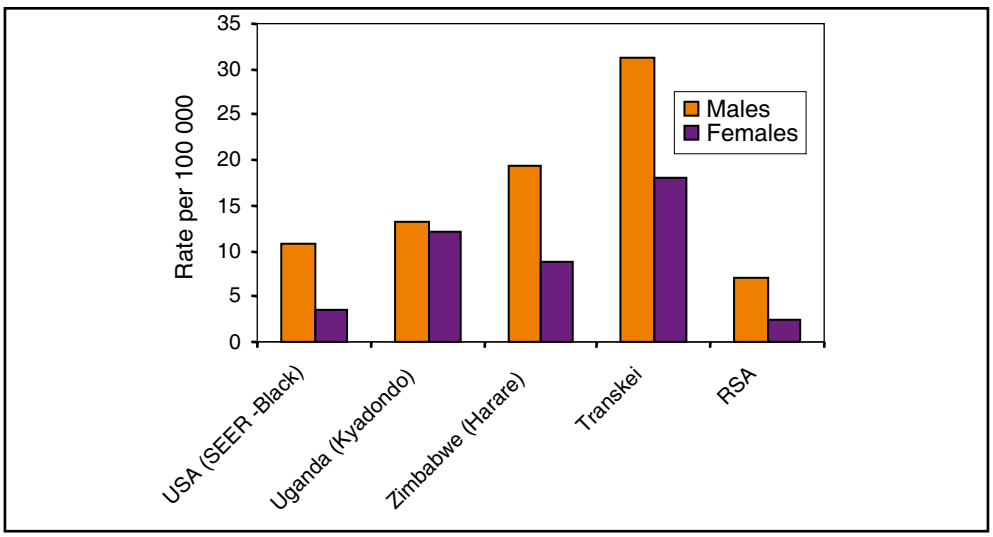

Figure 5: Oesophagus cancer age standardised rates (per 100 000 population) for selected countries

Source: Parkin *et al.*, 2002 and Mqoqi *et al.*, 2004

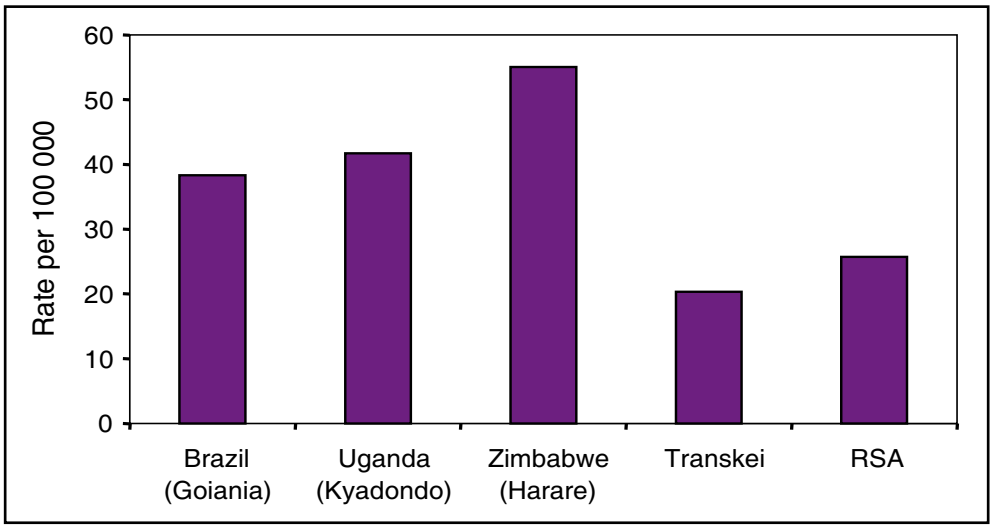

Figure 6: Cervical cancer age standardised rates (per 100 000 population) females for selected countries

Source: Parkin *et al*., 2002 and Mqoqi *et al*., 2004

There were 79 childhood cancers which accounted for 2.8% of the total cancers reported during the 1998-2002 period (Table 5). The most common childhood cancers observed were brain tumours, nephroblastoma, leukaemia, retinoblastoma and neuroblastoma. Cancers with genetic predisposition (retinoblastoma and nephroblastoma) constitute 32.9% of the childhood cancers when combined. Childhood cases are spread across the region except for nephroblastoma. A single area, Butterworth, accounted for 50% of the reported cases of nephroblastoma. Genetic counselling and support is important for families of these children.

Table 5. Cancers aged 0-14 years by site and sex, 1998-2002

Site	Males	Females	Total cancers
Brain tumours	6	9	15
Nephroblastoma	12	3	15
Leukaemia	9	5	14
Retinoblastoma	3	8	11
Neuroblastoma	4	6	10
Other + unspecified	8	6	14
Total	42	37	79

DISCUSSION

The MRC Cancer Registry has expanded to cover a larger area. It is the only functional population-based registry in the country and has an important role to play not only in the context of the community it represents but also for understanding the disease burden in the province and nationally. The observed rates, however, need to be considered as minimum cancer incidence rates for

the area, particularly as it would appear that some cases were missed in 1999 and 2000 while hospitals were being refurbished.

Establishing and running a population-based cancer registry in a rural setting with limited resources is challenging. Not only does it depend on a reliable system to capture and process all the cancer cases that occur in the area, it is also highly dependent on the clinical capacity and health services infrastructure on the one hand and the individual health seeking behaviours of the community on the other. It is further complicated by the underlying migration patterns, relating to health services, which may be better resourced in urban areas. Dissemination of the findings from the register will hopefully contribute to systematic improvements in the quality of the register. The incidence of certain cancers including Kaposi sarcoma, haematological malignancies and lymphomas were particularly low in this region and require further investigation.

The register indicates that oesophagus and cervix cancers remain the leading cancers in the region. Breast cancer in women and lung, prostate and liver cancer in men are the next most common cancers in the area. The overall cancer rate was higher for males than females. The common cancers (oesophagus, cervix, lung, prostate, breast and liver) reported in the region are preventable or potentially curable if diagnosed early. This will require appropriate strengthening of the clinical services in the area and the implementation of prevention interventions. Dissemination of the findings from the register can play an important part in raising the awareness of the community around cancer prevention.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the MRC Cancer Registry has expanded to cover a larger population and is developing as a functional population-based registry. It has an important role to play not only in the context of the community it represents but also for understanding the disease burden in the province and nationally. The register needs further strengthening but more importantly, needs to be used to help develop appropriate health services and identify intervention strategies. Appropriate dissemination of the findings from the register can play an important role in raising community awareness about cancer prevention. The register indicates that oespohagus and cervix cancers remain the leading cancers in the region. Breast cancer in women and lung, prostate and liver cancer in men are the next most common cancers in the area.

Common cancers (oesophagus, cervix, lung, prostate, breast and liver) reported in the former Transkei region are preventable or potentially curable

if diagnosed early. Dissemination of information to enable the community to reduce their risk of developing cancer remains a challenge. The Non-communicable Diseases Directorate of the Department of Health and CANSA in collaboration with the MRC are already engaged in raising public awareness about cancer and its risks, the importance of prevention and screening for cancers such as cervix, breast and prostate. There is a need to strengthen these initiatives with particular focus on the aspects that can be changed. Clear messages need to be disseminated around:

- **Diet:** one can reduce his/her risk of developing cancer by as much as 30%-40% by making more healthful food choices. In fact, some foods can help protect against certain types of cancer and promoting eating 5 fruit and vegetable servings a day is an important example.
- **Lifestyle:** starts with not smoking tobacco with specific emphasis to teachers (learners' role models), health professionals and parents (role models in the general community), maintain smoke-free environment by respecting the rights of non-smokers and maintaining a healthy weight through a balanced diet and physical activity.
- **Screening:** the earlier the cancer is diagnosed the better the chances are that it can be cured, for example, cervical cancer.
- **Treatment:** compliance to treatment prolongs survival.

Reliable cancer data sources are essential to inform appropriate cancer control programmes. This calls for more population-based cancer registries to provide reliable information on cancer incidence in different settings. In a country such as South Africa with a diversity of cultures and living conditions, it would be useful to establish at least one population-based cancer registry in each province. However, as identified in this report, this registry needs further strengthening.

Investigations are needed to assess the low rates of laboratory confirmation of cancer cases in the area, and the reasons for low incidence of haematological malignancies and lymphomas also requires further investigation. In addition, further analysis of the data that have been collected may provide insight into the required health service response. For example, it will be important to assess the stage at which cervical cancer cases are identified as survival is associated with early detection and treatment. A good foundation has been established and it is important that the register receives the support needed to meet its full potential.

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