

CANCER MORTALITY IN THE FEDERAL CAPITAL OF MALAYSIA

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SYNOPSIS

A study of cancer deaths registered in the Federal Capital of Malaysia during a three-year period from 1979-1981 was carried out to analyse the cancer patterns by age, sex and ethnic group. There were altogether 2524 cancer deaths, constituting 14.5% of the total 17,446 deaths in the three years. Analysis was based on the medically certified and inspected deaths, which constituted 98.2% of the total deaths. Classification was based on the Eighth (1965) Revision of the WHO International Classification of Diseases. A detailed description of the most common cancer deaths among males and females in the total study population, and in each of the three major ethnic groups (Malays, Chinese, Indians) was carried out.

Ethnic variations in mortality from some of the common cancers were described and discussed, and compared with another series based on hospital admissions.

INTRODUCTION

In Peninsular Malaysia, a developing nation with a multiracial population of 11.4 million, there has been a steady increase in cancer mortality over the last two decades. In 1963, the cancer death rate in the country was 14.3 per 100,000 population. By 1972, it had risen to 19.3 per 100,000 population, and by 1980 to 20.5 per 100,000 population (1, 2, 3). These rates are likely to be under-estimates because only about a third of all deaths in the country are medically certified and inspected deaths, of which cancer accounted for 4.8% in 1963, 8.0% in 1972 and 10.3% in 1980. It is difficult to ascertain whether this trend reflects a true increase in cancer mortality in the country, or is merely an artefact of improving standards of diagnosis, but probably both factors are contributory. Increasing urbanization and industrialization, with changes in the lifestyles of the people, may contribute towards greater cancer incidence and mortality in a newly industrializing country like Malaysia.

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The lack of a national, population-based cancer registry has greatly hampered epidemiological studies on cancer in the country. This is unfortunate because the multi-racial composition of the population affords unique opportunities for both descriptive and analytical studies. Efforts are now being made to set up a national registration scheme (4). Epidemiological studies so far has either been based on hospital records (5,6), biopsy series (7,8,9,10), or two special registers on oral precancerous conditions and nasopharyngeal carcinoma (11). A number of specific cancer reports based on clinical experience have also been documented (12, 13,14,15). However, little epidemiological research based on cancer mortality has been done in the country so far.

The aim of the present study is thus to describe the cancer mortality patterns in different ethnic groups within a defined geographical region. The Federal Capital of Kuala Lumpur was selected for study because of its high percentage of medically certified and inspected deaths compared with the rest of the country [98.3% compared with 37.5%, respectively, in 1980 (16)]. This is due to the large concentration of specialist facilities and personnel as well as good vital records system in the Federal Capital, which constitutes an essential factor in terms of data reliability. The three major ethnic groups (Malays, Chinese and Indians*) together make up 99.0% of the total Kuala Lumpur population of nearly one million.

It is not possible to computer cancer mortality rates because of several factors. Firstly, the cancer deaths cannot be accurately related to a denominator "population-at-risk" because of rapid demographic changes in Kuala Lumpur during the last decade. From 1970 to 1980, the total population of Kuala Lumpur increased from 451,986 to 977,102, partly from extensive rural-urban migration (Table 1). The net in-migration rates have also been unequal for the different ethnic groups, being highest for the Malays (14.8%), compared with Chinese (5.3%) and Indians

(2.5%) (16). The proportion of Malays in Kuala Lumpur increased from 24.9% to 32.8%, while that of Chinese decreased from 55.1% to 52.0% and the Indians, from 18.5% to 14.4%. As is common with such demographic transition, the in-migration consists predominantly of the younger age groups which will tend to lower the crude death rates, particularly for chronic diseases like cancer.

Secondly, being the capital city containing large specialist hospital and radiotherapy facilities, Kuala Lumpur is also the major reference centre for cancer cases in the country. This could lead to over-reporting of cancer incidence and mortality. Thirdly, hospital utilization rates are also unequal among the different ethnic groups: a previous study showed that Malays accounted for only 17.5% of admissions compared with Chinese (50.5%) and Indians (29.0%) (6). This could lead to inaccurate under-reporting of cancer deaths in certain ethnic groups.

Thus because of these factors, only the cancer patterns in terms of relative proportions or relative frequencies are described in this study.

METHODS

The study was based on an analysis of death certificate records for all deaths registered in Kuala Lumpur during a three-year period from 1.1.79 to 31.12.81, inclusive (centred around the census year of 1980). Data analysis was based on a three-year period to minimise yearly fluctuations, and was carried out by computer.

There were altogether 2524 cancer deaths, constituting 14.5% of the total 17,446 deaths in the three years. The analysis was based on the medically certified and inspected deaths, which constituted 98.2% of the total deaths. The small percentage of uncertified deaths (1.8%) was excluded from the analysis.

Using the Eighth (1965) Revision of the WHO International Classification of Diseases (17), the age, sex

TABLE 1
POPULATION DISTRIBUTION OF KUALA LUMPUR
BY SEX AND ETHNIC GROUP, 1970 AND 1980

		Census population (1970)		Census population (1980)	
		No.	%	No.	%
Malays	Male	60,328	13.3	168,969	17.3
	Female	52,279	11.6	151,071	15.5
	Total	112,607	24.9	320,040	32.8
Chinese	Male	125,284	27.7	256,719	26.3
	Female	123,591	27.3	250,768	25.7
	Total	248,875	55.0	507,487	52.0
Indians	Male	46,122	10.2	74,832	7.7
	Female	37,451	8.3	65,334	6.7
	Total	83,573	18.5	140,166	14.4
Others	Male	3662	0.8	5199	0.5
	Female	3269	0.7	4210	0.4
	Total	6931	1.5	9409	0.9
All Ethnic Groups	Male	235,396	52.1	505,719	51.8
	Female	216,590	47.9	471,383	48.2
	Total	451,986	100.0	977,102	100.0

and ethnic group distributions of the 2524 cancer deaths (ICD 140-209) were analysed. A detailed description of the most common cancer deaths among males and females in the total study population and in each of the three major ethnic groups was carried out. The ethnic variations in some of the common cancers were also analysed.

RESULTS

Table 2 shows the ten common cancer sites among males and females in Kuala Lumpur, for all ethnic groups combined. Among the males, the leading cancer sites were lung (24.1%), liver (12.8%), stomach (11.2%), leukaemia (8.0%), nasopharynx (9.6%), oesophagus (4.7%), colon (3.7%), rectum (3.1%), pancreas (2.9%), and lymphoid tissue (2.7%). Among the females, the leading cancer sites were lung (13.9%), cervix (9.7%), stomach (9.4%), breast (8.5%), and liver (7.3%). Among the 385 Indian cancer deaths, the most common sites in males were lung (15.4%), stomach (11.9%), liver (10.1%), oesophagus (8.4%) and leukaemia (4.8%), and in females, stomach (12.0%), cervix uteri (10.8%), oesophagus (10.1%), breast (8.2%) and mouth (7.0%).

nasopharynx (3.1%), and oesophagus (3.0%).

The cancer mortality patterns by ten most common sites in Malays, Chinese and Indians are shown in Tables 3, 4 and 5. Among the 380 Malay cancer deaths, the most common sites in males were lung (19.4%), leukaemia (16.0%), liver (13.1%), stomach (6.3%), and pancreas (5.1%), and in females, leukaemia (21.0%), lung (11.9%), breast (8.4%), cervix uteri (8.4%), and stomach (5.6%). Among the Chinese, there were 1030 male and 670 female cancer deaths. The leading cancer sites in the Chinese males were lung (27.1%), liver (13.5%), stomach (12.0%), nasopharynx (7.8%) and leukaemia (7.0%), and in the females, lung (16.1%), cervix uteri (9.7%), stomach (9.4%), breast (8.5%), and liver (7.3%). Among the 385 Indian cancer deaths, the most common sites in males were lung (15.4%), stomach (11.9%), liver (10.1%), oesophagus (8.4%) and leukaemia (4.8%), and in females, stomach (12.0%), cervix uteri (10.8%), oesophagus (10.1%), breast (8.2%) and mouth (7.0%).

TABLE 2
CANCER DEATHS BY TEN MOST COMMON SITES IN ALL ETHNIC GROUPS COMBINED,
KUALA LUMPUR, 1979-81

Males						Females		
Rank		Site (ICD 8th Revision)	No. of deaths	Percent		Site (ICD 8th Revision)	No. of deaths	Percent
1	162	Lung	368	24.1	162	Lung	138	13.9
2	155	Liver	196	12.8	180	Cervix	97	9.7
3	151	Stomach	169	11.1	151	Stomach	91	9.1
4	204-7	Leukaemia	123	8.1	204-7	Leukaemia	89	8.9
5	147	Nasopharynx	92	6.0	174	Breast	83	8.3
6	150	Oesophagus	72	4.7	155	Liver	65	6.5
7	153	Colon	57	3.7	153	Colon	49	4.9
8	154	Rectum	48	3.1	183	Ovary	37	3.7
9	157	Pancreas	45	2.9	147	Nasopharynx	31	3.1
10	202	Other lymphoid tissue	42	2.7	150	Oesophagus	30	3.0
	140-209	All sites	1529	100.0	140-209	All sites	995	100.0

TABLE 3
CANCER DEATHS BY TEN MOST COMMON SITES IN MALAYS,
KUALA LUMPUR, 1979-81

Males						Females		
Rank		Site (ICD 8th Revision)	No. of deaths	Percent		Site (ICD 8th Revision)	No. of deaths	Percent
1	162	Lung	46	19.4	204-7	Leukaemia	30	21.0
2	204-7	Leukaemia	38	16.0	162	Lung	17	11.9
3	155	Liver	31	13.1	174	Breast	12	8.4
4	151	Stomach	15	6.3	180	Cervix Uteri	12	8.4
5	157	Pancreas	12	5.1	151	Stomach	8	5.6
6	202	Other Reticuloses	10	4.2	155	Liver	7	4.9
7	191	Brain	9	3.8	182	Corpus Uteri	7	4.9
8	171	Connective Tissue	8	3.4	183	Ovary	6	4.2
9	154	Rectum	8	3.4	181	Chorion- Epithelioma	5	3.5
10	147	Nasopharynx	7	3.0	193	Thyroid	5	3.5
	140-209	All Sites	237	100.0	140-209	All Sites	143	100.0

TABLE 4
CANCER DEATHS BY TEN MOST COMMON SITES IN CHINESE,
KUALA LUMPUR, 1979-81

Males						Females		
Rank		Site (ICD 8th Revision)	No. of deaths	Percent		Site (ICD 8th Revision)	No. of deaths	Percent
1	162	Lung	279	27.1	162	Lung	108	16.1
2	155	Liver	139	13.5	180	Cervix Uteri	65	9.7
3	151	Stomach	124	12.0	151	Stomach	63	9.4
4	147	Nasopharynx	80	7.8	174	Breast	57	8.5
5	204-7	Leukaemia	72	7.0	155	Liver	49	7.3
6	150	Oesophagus	50	4.9	204-7	Leukaemia	48	7.2
7	153	Colon	43	4.2	153	Colon	41	6.1
8	154	Rectum	31	3.0	147	Nasopharynx	24	3.6
9	157	Pancreas	27	2.6	154	Rectum	23	3.4
10	202	Other Reticulosis	25	2.4	183	Ovary	23	3.4
140-209		All Sites	1030	100.0	140-209	All Sites	670	100.0

TABLE 5
CANCER DEATHS BY TEN MOST COMMON SITES IN INDIANS,
KUALA LUMPUR, 1979-81

Males						Females		
Rank		Site (ICD 8th Revision)	No. of deaths	Percent		Site (ICD 8th Revision)	No. of deaths	Percent
1	162	Lung	35	15.4	151	Stomach	19	12.0
2	151	Stomach	27	11.9	180	Cervix Uteri	17	10.8
3	155	Liver	23	10.1	150	Oesophagus	16	10.1
4	150	Oesophagus	19	8.4	174	Breast	13	8.2
5	204	Leukaemia	11	4.8	143-5	Mouth	11	7.0
6	145	Mouth	10	4.4	162	Lung	10	6.3
7	141	Tongue	9	4.0	204-7	Leukaemia	9	5.7
8	153	Colon	8	3.5	155	Liver	7	4.4
9	154	Rectum	8	3.5	183	Ovary	7	4.4
10	171	Connective Tissue	7	3.1	170	Bone	5	3.2
140-209		All Sites	227	100.0	140-209	All Sites	158	100.0

Table 6 shows the ethnic distribution of cancer deaths for sixteen selected sites (both sexes combined). The Chinese accounted for a high proportion of deaths from cancer of the nasopharynx (84.5%), colon (79.3%), bladder (78.6%), lung (76.5%), larynx (75.7%), rectum (73.0%), liver (72.0%), stomach (71.9%), breast (68.2%), cervix uteri (66.3%), skin (62.9%) and ovary (62.2%). Indians accounted for a high proportion of deaths from mouth cancer (72.4%), and oesophageal cancer (34.3%). Malays generally have the lowest proportion of cancer deaths, except for cancer of the thyroid (37.5%) and leukaemia (32.1%).

The age distribution of cancer deaths for fourteen selected sites (both sexes combined) is given in Table

7. The general age pattern of most of the cancer deaths shows a predominance in the older age groups. Thus, the largest number of deaths were found in those aged 65 years and above for cancer of the oesophagus, stomach, colon, rectum, liver, lung, skin and bladder.

In the case of the female genital cancers (carcinoma of the cervix uteri and ovarian cancer) as well as breast cancer, the modal class (with the highest frequencies) was age 45-54 years. Nasopharyngeal carcinoma was more common in the younger age groups, the modal class being 35-44 years. In the case of leukaemia, there was a preponderance of deaths occurring in childhood and young adults, the modal class being 5-14 years.

TABLE 6
DISTRIBUTION OF CANCER DEATHS FOR SELECTED SITES BY ETHNIC GROUP,
KUALA LUMPUR, 1979-81

Site (ICD 8th Revision)	Malay		Chinese		Indian		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
143-5 Mouth	2	6.9	5	17.2	21	72.4	1	3.5	29	100.0
147 Nasopharynx	11	8.9	104	84.5	4	3.3	4	3.3	123	100.0
150 Oesophagus	6	5.9	59	57.8	35	34.3	2	2.9	102	100.0
151 Stomach	23	8.8	187	71.9	46	17.8	4	1.5	260	100.0
153 Colon	7	6.6	84	79.3	12	11.3	3	2.8	106	100.0
154 Rectum	9	12.2	54	73.0	10	13.5	1	1.3	74	100.0
155 Liver	38	14.6	188	72.0	30	11.5	5	1.9	261	100.0
161 Larynx	2	6.1	25	75.7	6	18.2	0	0.0	33	100.0
162 Lung	63	12.5	387	76.5	45	8.9	11	2.1	506	100.0
172-3 Skin	4	11.4	22	62.9	7	20.0	2	5.7	35	100.0
174 Breast	13	14.8	60	68.2	14	15.9	1	1.1	88	100.0
180 Cervix Uteri	12	12.2	65	66.3	18	18.4	3	3.1	98	100.0
183 Ovary	6	16.2	23	62.2	7	18.9	1	2.7	37	100.0
188 Bladder	5	17.9	22	78.6	1	3.5	0	0.0	28	100.0
193 Thyroid	6	37.5	5	31.3	2	12.5	3	18.7	16	100.0
204-7 Leukaemia	68	32.1	120	56.6	20	9.4	4	1.9	212	100.0
140-209 All Sites	380	15.1	1700	67.3	385	15.3	59	2.3	2524	100.0

TABLE 7
AGE DISTRIBUTION OF CANCER DEATHS BY SELECTED SITES FOR ALL ETHNIC GROUP,
KUALA LUMPUR, 1979-81

Site (ICD 8th Revision)	Age (years)										Total
	Below 1	1-4	15-14	15-24	25-34	35-44	45-54	55-64	65 & above		
147 Nasopharynx	0	1	0	5	11	38	36	12	20	123	
150 Oesophagus	0	0	0	1	1	5	14	32	49	120	
151 Stomach	1	0	1	1	9	28	33	79	108	260	
153 Colon	0	0	0	0	2	10	15	23	56	106	
154 Rectum	1	0	0	0	6	6	14	18	29	74	
155 Liver	1	3	1	4	15	35	58	59	85	261	
162 Lung	1	0	0	1	7	33	72	172	219	506	
172-3 Skin	0	0	0	0	0	7	9	8	11	35	
174 Breast	0	0	0	1	3	23	27	19	15	88	
180 Cervix Uteri	0	0	0	1	5	20	36	21	14	98	
183 Ovary	0	0	0	2	1	9	14	9	2	37	
188 Bladder	0	0	0	0	1	2	1	6	18	28	
193 Thyroid	0	0	0	0	0	2	8	3	3	16	
204-7 Leukaemia	3	27	51	48	35	25	13	10	10	212	
140-209 All Sites	10	47	75	112	150	291	449	590	798	2524	

DISCUSSION

The pattern of cancer deaths in the present study compares closely with another descriptive series based on admissions in a major teaching hospital in Kuala Lumpur (6), (Tables 8 and 9).

Among the major ethnic groups, Chinese have the highest proportion of cancer deaths for all sites combined (67.3%), followed by Indians (15.3%) and Malays (15.1%). This is at least in part due to differences in utilization of hospital and other medical facilities as well as varying population composition in the Federal capital. However, some striking variation in ethnic distributions of cancer deaths appear to be in excess of the expected differences. For nasopharyngeal cancer (NPC), there appears to be a high preponderance in the Chinese community. The high mortality reflects the high incidence of NPC in this community group (11), and is in line with similar reports from Singapore (18), China, Hong Kong, Taiwan and other pockets of Chinese populations around the world. Genetic predisposition moderated by HL-A System to one or more environmental factors, possibly viral, is thought to be the underlying aetiological mechanism (19).

Deaths from mouth cancer are also higher among the Indians, and reflects the high incidence in this

ethnic group (20). The high risk of mouth cancer among Indians is also well documented in Singapore (21), and is believed to be related to the customary habit of betel nut chewing among this community, particularly the older age groups.

For females cancers, Malays have the lowest proportion of deaths from carcinoma of the cervix uteri. This may be related to the Muslim practice of male circumcision among this community. Lung cancer appears to be the leading cause of cancer mortality among the males of all three major ethnic groups, as well as among Chinese females. Although there is little documented research on the smoking habits of Malaysians in general, it is widely accepted that smoking is a common habit among the males of all three ethnic groups. The higher proportions in the Chinese may also be partly related to their predominantly urban residence, compared with the other two communities.

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TABLE 8
FIVE LEADING CANCERS IN MALES (ALL ETHNIC GROUPS)
IN TWO COMPARATIVE STUDIES

Cancer deaths in Kuala Lumpur, 1979-81			University Hospital admissions, Kuala Lumpur, 1972-74		
Site	Number of deaths	% of deaths	Site	Number of deaths	% of deaths
Lung	368	24.1	Lung	138	13.2
Liver	196	12.8	Liver	114	10.9
Stomach	169	11.1	Stomach	108	10.3
Leukaemia	123	8.9	Nasopharynx	63	6.0
Nasopharynx	92	9.6	Rectum	60	5.7
All Sites	1529	100.0	All Sites	1047	100.0

TABLE 9
FIVE LEADING CANCERS IN FEMALES (ALL ETHNIC GROUPS)
IN TWO COMPARATIVE STUDIES

Cancer deaths in Kuala Lumpur, 1979-81			University Hospital admissions, Kuala Lumpur, 1972-74		
Site	Number of deaths	% of deaths	Site	Number of deaths	% of deaths
Lung	138	13.9	Cervix uteri	160	17.8
Cervix uteri	97	9.7	Breast	96	10.7
Stomach	91	9.1	Stomach	60	6.7
Leukaemia	89	8.9	Lung	50	5.6
Breast	83	8.3	Ovary	49	5.5
All Sites	995	100.0	All Sites	898	100.0

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