Ministry of Health
Sultanate of Oman

Cancer Incidence in Oman 1996

Oman National Cancer Registry
Non-Communicable Diseases Control Section
Directorate General of Health Affairs

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Prepared by

The National Cancer Control Committee

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BACKGROUND OF THE SULTANATE OF OMAN

Geographical Features

The Sultanate of Oman is located in the south eastern corner of the Arabian Peninsula. It has a coastal line extending almost 1,700 kilometers from the Strait of Hormuz in the north to the borders of the Republic of Yemen, overlooking three seas; the Arabian Gulf, Gulf of Oman and the Arabia Sea. The Sultanate of Oman borders Saudi Arabia and United Arab Emirates (U.A.E) in the west, the Republic of Yemen in the south, the Strait of Hormuz in the north and the Arabian Sea in the east. Besides, there are a number of scattered Omani islands in the Arabian Sea; the most important are Masirah and Al-Halaniyat.

The total area of the Sultanate of Oman is approximately 309,500 square kilometers and it is the second largest country in the Arabian Peninsula. The Sultanate is composed of varying topographic areas consisting of plains, wadis (dry river beds) and mountains. The most important area is the plain overlooking the Gulf of Oman and the Arabian Sea with an area of about 3% of the total area. The mountain ranges occupy almost 15% of the total land of Oman and is inhabited by about 5% of the population. The remaining area is mainly sand, wadis and desert (about 82% of the total area). The climate differs from one area to another; it is hot and humid in the coastal areas in summer, hot and dry in the interior with exception of higher mountains and Dhofar Governorate, which enjoy a moderate climate throughout the year.

The Sultanate of Oman is administratively divided into 8 Governorates/Regions with 59 Wilayats. These are: Muscat, Dhofar and Musandam Governorates and regions of Dakhiliyia, Sharqiyah, Batinah, Dhahira, and Al-Wousta. The regions of Sharqiyah and Batinah have each been further subdivided into two, for health administration, giving a total of ten health regions.

The Population Structure

The estimated mid year populaiton in 1996 was 2135900 of which 1593800 were Omanis and 542100 were expatriates (Table 1). The Omani population shows a sex ratio of 104 males per 100 females. About 16% of the population is under-5 years and 45% is under-15 years. Only 4.5% of the total Omani population is above the age of 60 years.

Table 2 gives the population distribution of Omanis by region and gender, which was used to calculate incidence rates for different regions.

Table 1: Age Structure Of The Omani Population

Age	Male		Female		Total	
Group	Number	Percentage	Number	Percentage	Number	Percentage
0 - 4	128,210	15.79	121,350	15.52	249,560	15.66
5 - 9	134,350	16.55	130,540	16.69	264,890	6.62
10 - 14	132,190	16.28	127,770	16.34	259,960	16.31
15 - 19	108,010	13.31	102,780	13.14	210,790	13.23
20 - 24	72,820	8.97	67,090	8.58	139,910	8.78
25 - 29	47,570	5.86	44,510	5.69	92,080	5.78
30 - 34	35,440	4.37	35,850	4.58	71,290	4.47
35 - 39	29,930	3.69	32,910	4.21	62,840	3.94
40 - 44	25,640	3.16	28,070	3.59	53,710	3.37
45 - 49	21,690	2.67	21,410	2.74	43,100	2.70
50 - 54	21,390	2.63	20,590	2.63	41,980	2.63
55 - 59	16,580	2.04	14,710	1.88	31,290	1.96
60 - 64	13,560	1.67	10,990	1.41	24,550	1.54
65 - 69	10,240	1.26	8,530	1.09	18,770	1.18
70 - 74	5,790	0.71	5,800	0.74	11,590	0.73
75 - 79	4,050	0.50	4,350	0.56	8,400	0.53
80 - 84	1,850	0.23	1,960	0.25	3,810	0.24
85 +	2,480	0.31	2,800	0.36	5,280	0.33
Total	811,790	100.0	782,010	100.0	1,593,800	100.0

Table 2: Population Distribution Of Omanis By Region And Sex

Governorate / Region	No. of Males	No. of Females	Total Population
Muscat	359,240	218,190	577,430
Dhofar	122,300	77,300	199,600
Dakhiliya	132,400	112,070	244,470
North Sharqiyah	68,700	57,150	125,850
South Sharqiyah	82,570	66,340	148,910
North Batinah	212,400	168,000	380,400
South Batinah	121,950	96,910	218,860
Dhahira	112,230	79,550	191,780
Musandam	17,490	12,990	30,480
Al-Wousta	11,150	6,970	18,120
Total	1,240,430	895,470	2,135,900

Cancer among the Omani Population

Oman National Cancer Registry

Cancer is emerging as a major public health problem throughout the world. In 1996, more than 10 million people developed cancer, and at least 6 million people who already had the disease died from it. At present it accounts for about one-tenth of all deaths worldwide. The rapid improvement in the field of health care in the Sultanate of Oman, together with the control of communicable diseases, increased life expectancy at birth, and with rapid socio-economic changes has resulted in an increased prevalence of non-communicable disease including cancer.

The Cancer Registry in Oman was established in 1985 as a hospital based cancer registry. Only cases treated in tertiary hospitals were included. In 1996, with the establishment of the Non-Communicable Diseases Section, the cancer registry was shifted and started functioning under the Directorate General of Health Affairs. New cancer notification forms were developed and distributed to all regional hospitals and sister institutions. The cancer registrar is responsible for data collection, coding and data entry.

Methods of Data Collection

1. Active Collection

Active collection involves the registry personnel visiting different sources and abstracting data on Cancer Registry Forms. Since most of the cancer cases are referred to the Oncology Department of the Royal Hospital, the cancer registrar visits the Royal Hospital twice a week and abstracts data on the notification forms. Similarly, other tertiary hospitals like Khoula Hospital and Al-Nahdha Hospital are visited once a month.

Patients diagnosed outside the health facilities in Oman are traced through the Oncology outpatient register by the Cancer Registrar and subsequently data are extracted from their case notes.

2. Passive Reporting

When cancer cases are diagnosed, the attending physician of the relevant specialty at the regional hospital completes the notification forms and sends them to the registry. Similar passive reporting is done by other institutions like the Armed Forces Hospital and Sultan Qaboos University Hospital.

3. Data-Coding, Entry And Duplicate Entry Checking

All cancer cases are coded using International Classification of Diseases for Oncology (ICD-O) codes, with topography 'C' and morphology 'M' codes. Duplicate entry checking is done by Name, Age and Wilayat code. This avoids the same case being registered more than once.

4. Completeness of Data Reporting

Data are obtained from pathology laboratories for all cases diagnosed as cancer and compared with that in the registry. Details of missing data are sought from the respective institutions. This ensures completeness of data reporting.

5. Data Entry and Analysis

Data are entered in Dbase IV programme and analysis is done using EPI Info version 6.0 Steps have already been initiated for data entry and analysis using Canreg version 3 programme developed by the International Agency for Research On Cancer (Lyon, France)

Overall Results

The total number of cancer cases registered in 1996 in the Oman national Cancer registry was 885 (Table 3). Of these, Omanis accounted for 806 (91.1%), expatriates accounted for 77 (8.7%) and in 2 cases (0.2%) the nationality was unknown**.**

Table 3: Distribution of cancer cases in oman by nationality

Nationality	Frequency	Percentage (%)
Expatriates	77	8.7
Omanis	806	91.1
Unknown	2	0.2
Total	885	100.0

Cancer among the Omani Population

Age & Sex

The total number of cases reported in 1996 among Omani is 806 Table (4). Cancer occurs more frequently in men. Males accounted for 459 cases and females accounted for 347 cases- the male: female ratio being 1.3:1. Among the 806 cases, 75 cases (9.3%) were reported in children below 12 years of age. The median age of diagnosis was 53 years. This was higher in males (median age 55 years) than in females (median age 50 years).

Table 4: Distribution of cancer cases among Omanis by gender

Sex	Frequency	Percentage (%)
Female	347	43.1
Male	459	56.9
Total	806	100.0

Incidence rate

In 1996, the crude incidence rate for all cancers among Omanis was 50.6 per 100,000 (56.5 per 100,000 for males and 44.4 per 100,000 for females). For all sites the age specific incidence rates increased with age (Table 5). The difference in the age specific incidence rates is more marked after the age 50 years.

Table 5: Age specific distribution and incidence rates of all cancers cases among Omanis

Age Group	Male	*ASR/ 100,000	Female	*ASR/ 100,000	Total	*ASR/ 100,000
00-09	31	11.8	31	12.3	62	12.1
10-19	25	10.4	20	8.7	45	9.6
20-29	13	10.8	13	11.6	26	11.2
30-39	32	49.0	33	48.0	65	48.5
40-49	51	107.8	59	119.2	110	113.6
50-59	97	255.5	68	192.6	165	225.2
60-69	123	516.8	58	297.1	181	417.8
>70	87	614.0	64	429.2	151	519.3
Total	459	56.5	347	44.4	806	50.6

ASR - Age Specific Rates

Cancer among Omani population

Table 6 lists the incident cases of cancer among Omani population reported in 1996.

Table 6: Incidence rates of cancer cases by gender among Omanis

Topography	Male	Incidence/ 100,000	Female	Incidence/ 100,000	Total	Incidence/ 100,000
Bladder	34	2.1	8	0.5	42	2.6
Bone	7	0.4	3	0.2	10	0.6
Brain	18	1.1	11	0.7	29	1.8
Breast	4	0.5	57	7.3	61	3.8
Cervix	-	-	26	3.3	26	3.3
Colon	22	1.4	13	0.8	35	2.2
Esophagus	12	0.8	7	0.4	19	1.2
Kidney	8	0.5	10	0.6	18	1.1
Larynx	7	0.4	3	0.2	10	0.6
Leukemia	18	1.1	16	1.0	34	2.1
Lip/Mouth/Pharynx	21	1.3	10	0.6	31	1.9
Lung	32	2.0	16	1.0	48	3.0
Lymph Node	10	0.6	7	0.4	17	1.1
Liver	20	1.3	3	0.2	23	1.4
Lymphoma	62	3.9	28	1.8	90	5.6
Ovary	-	-	11	1.4	11	1.4
Pancreas	8	0.5	3	0.2	11	0.7
Prostate	39	4.8	-	-	39	4.8
Small Intestine	2	0.1	1	0.1	4	0.2
Skin	28	1.8	10	0.6	38	2.4
Stomach	40	2.5	24	1.5	64	4.0
Testis	4	0.5	-	-	4	0.5
Thyroid	8	0.5	27	1.7	35	2.2
Uterus	-	-	8	1.0	8	1.0
Others	54	3.4	46	2.9	100	6.3
Total	459	56.5	347	44.4	806	50.6

Cancer among Omani population

Common Cancers among Omani population

Overall the commonest cancer in the Omani population is lymphoma followed by stomach cancer and breast cancer (Table 7). The most common cancer in males is lymphoma followed by cancers of stomach, prostate and lung (Table 8). In females, the most common cancer was breast cancer followed by cervical cancer and lymphoma (Table 9).

Table 7: Ten most common cancers in the Omani population (male & female)

Topography	Frequency	Percentage (%)
Lymphoma	90	11.2
Stomach	64	7.9
Breast	61	7.6
Lung	48	5.9
Bladder	42	5.2
Prostate	39	4.8
Skin	38	4.7
Colon	35	4.3
Thyroid	35	4.3
Leukemia	34	4.2

Table 8: Ten most common cancers in the Omani population (male)

Topography	Frequency	Percentage (%)
Lymphoma	62	13.5
Stomach	40	8.7
Prostate	39	8.5
Bladder	34	7.4
Lung	32	7.0
Skin	28	6.1
Colon	22	4.8
Lip/Mouth/Pharynx	21	4.6
Liver	20	4.3
Leukemia	18	3.9

FIGURE 1: FREQUENCY DISTRIBUTION OF TEN MOST COMMON CANCERS AMONG THE OMANI POPULATION (MALE AND FEMALE)

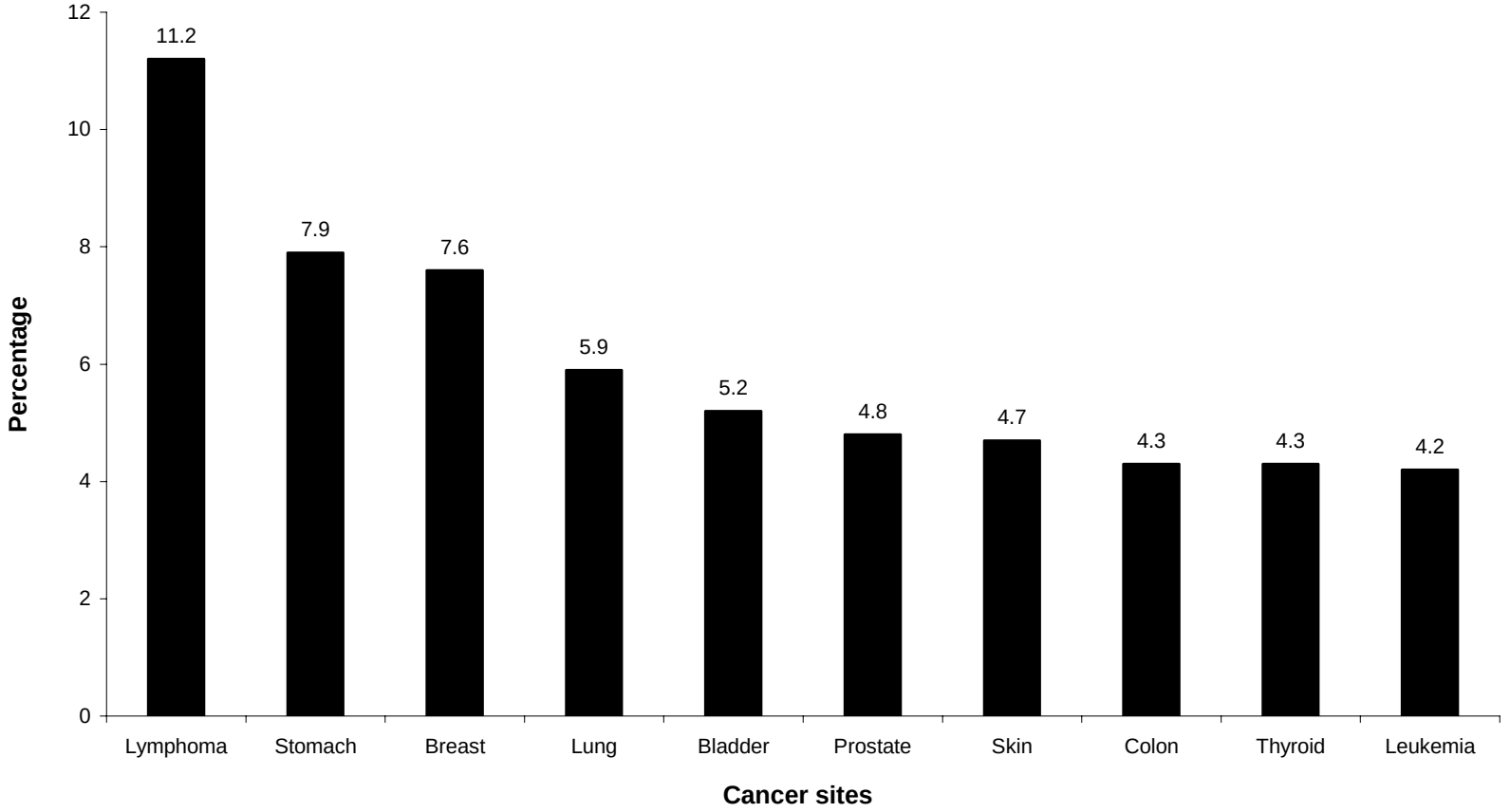
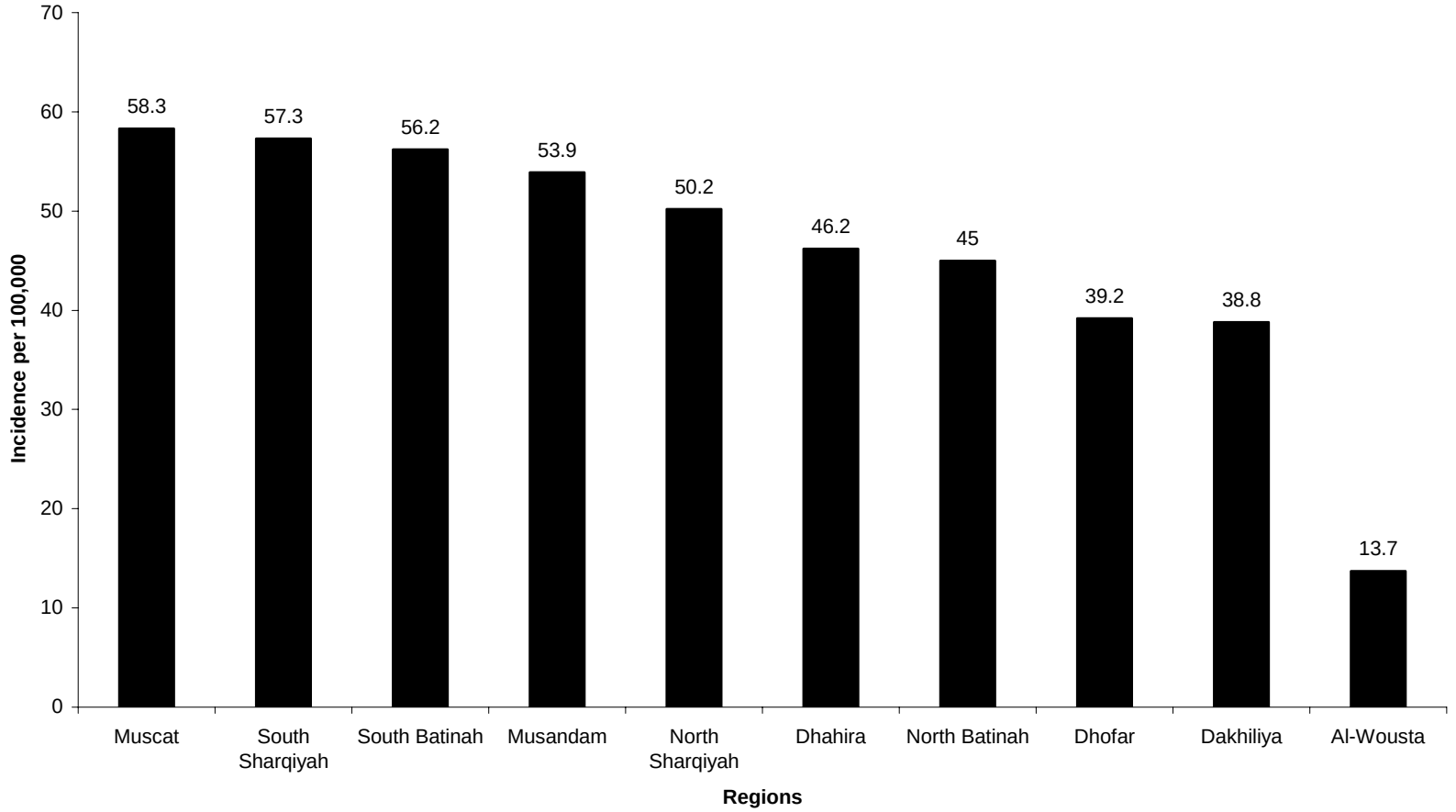


FIGURE 2: INCIDENCE RATES OF CANCER CASES BY REGION



Cancer among Omani population

Table 9: Ten most common cancers in the Omani population (female)

Topography	Frequency	Percentage (%)
Breast	57	16.4
Lymphoma	28	8.1
Thyroid	27	7.8
Cervix	26	7.5
Stomach	24	6.9
Leukemia	16	4.6
Lung	16	4.6
Colon	13	3.7
Brain	11	3.2
Ovary	11	3.2

Regional distribution of cancer cases

The incidence rate in the various regions varies from 13.65 per 100,000 population to 58.34 per 100,000 population. The highest incidence is seen in Muscat region and the lowest in Al-Wousta region. Table 10 gives the incidence rates and the number of cases of cancer reported from each region. The incidence rate, especially the higher rate from Muscat could be biased since the majority of the cancer cases are referred to the Royal Hospital and the people sometimes give a local address in Muscat.

Table 10: Regional distribution of cancer cases among Omanis

Region	Frequency	Incidence/ 100,000
Muscat	187	58.3
Dhofar	53	39.2
Dakhliya	83	38.8
North Sharqiyah	55	50.2
South Sharqiyah	72	57.3
North Batinah	144	45.0
South Batinah	104	56.2
Dhahira	67	46.2
Musandam	13	53.9
Al-Wousta	2	13.7
Unknown	26	-
Total	806	-

Cancer among the Omani population

Childhood cancers

Of the 806 cases reported during 1996, 75 cases were among children below the age of 12. They constituted 9.3% of the total cancers reported. Lymphomas, leukemias, followed by brain tumors were the commonest tumors seen in the age group. Table 11, 12 and 13 list the common childhood cancers in Omani children.

Table 11: Common cancers in Omani children (boys & girls)

Topography	Frequency	Percentage (%)
Lymphoma	23	30.7
Leukemia	15	20.0
Brain	14	18.7
Kidney	4	5.3
Testis	2	2.7
Thyroid	2	2.7
Bone	1	1.3
Larynx	1	1.3
Lip/Mouth/Pharynx	1	1.3
Lung	1	1.3

Table 12: Common cancers in Omani children (boys)

Topography	Frequency	Percentage (%)
Lymphoma	12	31.6
Brain	8	21.0
Leukemia	8	21.0
Testis	2	5.3
Bone	1	2.6
Lip/Mouth/Pharynx	1	2.6
Liver	1	2.6
Thyroid	1	2.6

FIGURE 3: FREQUENCY DISTRIBUTION OF COMMON CANCERS AMONG OMANI CHILDREN (BOYS AND GIRLS)

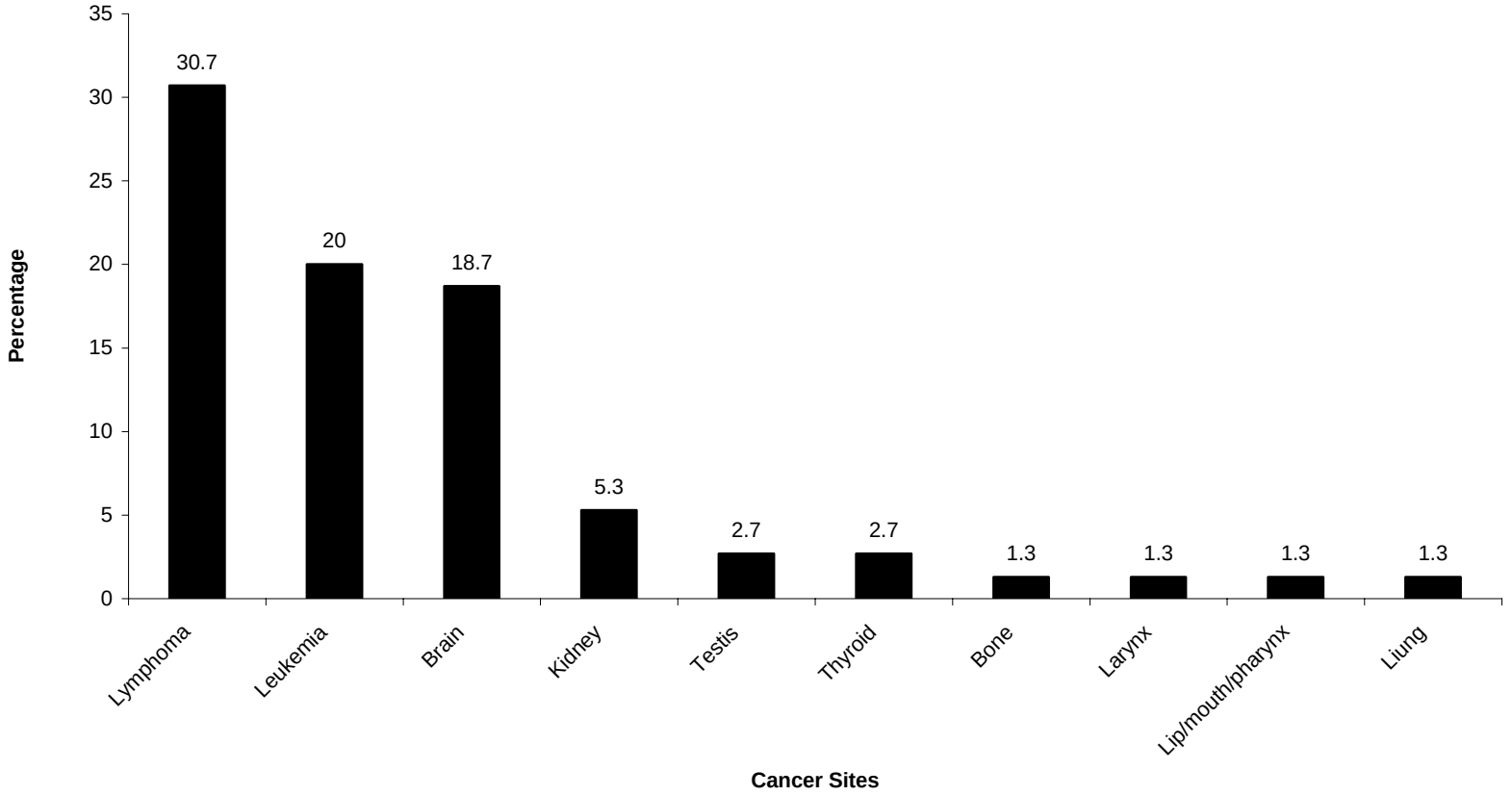


Table 13: Common cancers in Omani children (girls)

Topography	Frequency	Percentage (%)
Lymphoma	11	29.7
Leukemia	7	18.9
Brain	6	16.2
Kidney	4	10.8
Larynx	1	2.7
Lung	1	2.7
Thyroid	1	2.7
Lymph Node	1	2.7

Cancer among the Omani population

Lymphoma

There were 90 cases of lymphoma reported in 1996. Lymphoma was the most common cancer among the Omani population. Excluding female breast cancer lymphoma was the most common cancer among the Omani population in both sexes and all ages. There were 62 males and 28 females, with the male: female ratio being 2.2: 1. The highest incidence rate was seen in Musandam (8.3 per 100,000) followed by North Sharqiyah (8.2 per 100,000) and Dakhiliyah (7.5 per 100,000). Non-Hodgkin's lymphoma constituted 40% of the total lymphoma whereas Hodgkin's lymphoma constituted only 24% of the lymphoma. The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are presented in the tables 14, 5, 16 and 17 respectively.

Table 14: Regional distribution of lymphoma

Region	Frequency	Incidence/ 100,000
Dakhiliya	16	7.5
Dhahira	10	6.9
Dhofar	4	3.0
Musandam	2	8.3
Muscat	18	5.6
North Batinah	20	6.2
North Sharqiyah	9	8.2
South Batinah	4	2.2
South Sharqiyah	7	5.6
Total	90	

Table 15: Age specific incidence rates of lymphomas

Age Group	Frequency	ASR/100,000
00-09	18	3.5
10-19	14	3.0
20-29	7	3.0
30-39	5	3.7
40-49	9	9.3
50-59	15	20.5
60-69	12	27.7
>70	10	34.4
Total	90	

FIGURE 4: INCIDENCE OF LYMPHOMAS BY REGION

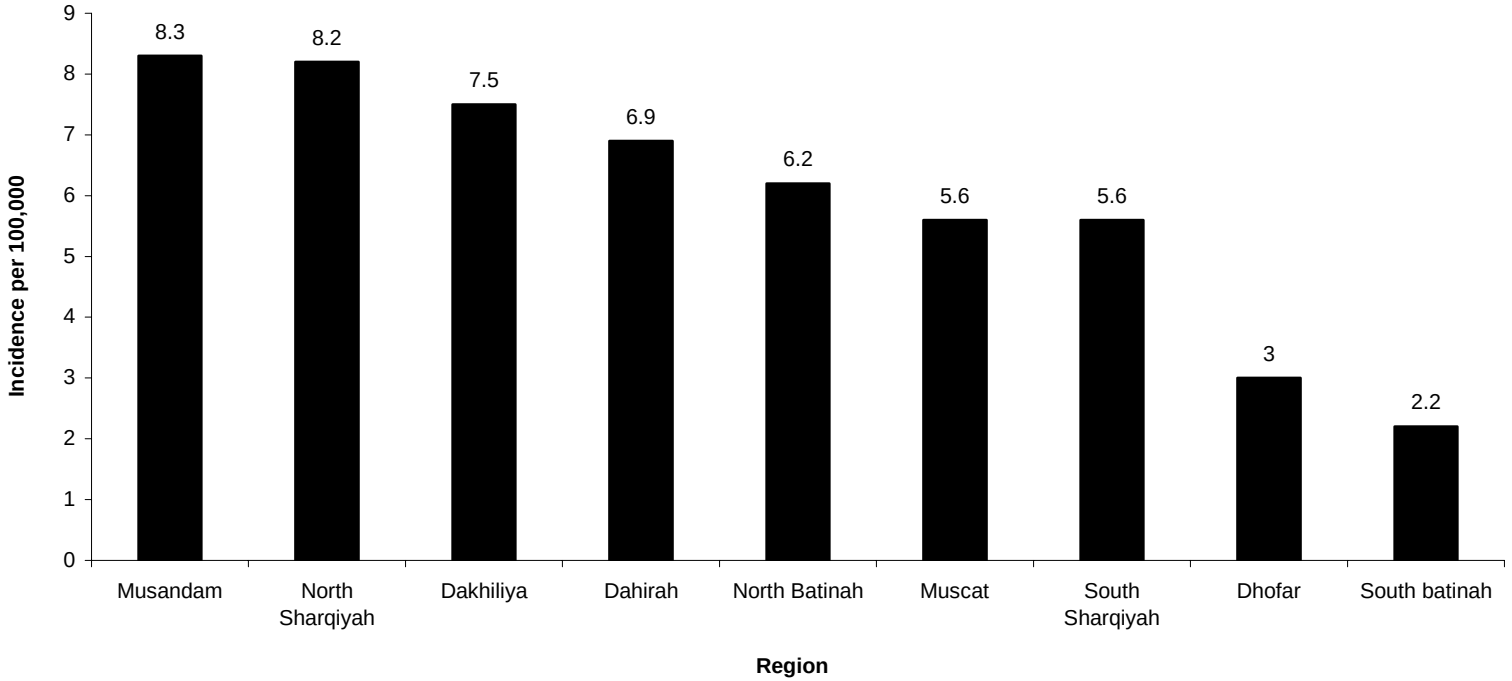


Table 16: Sex distribution of lymphomas

Sex	Frequency	Incidence/ 100,000
Female	28	3.6
Male	62	7.6
Total	90	

Table 17: Histology of lymphomas

ICD-O Code	Histology	Percentage (%)
95913	Malignant lymphoma, non-Hodgkin's (NOS)	40.0
96503	Hodgkin's Disease (NOS)	12.2
95903	Malignant lymphoma (NOS)*	8.9
96633	Hodgkin's Disease Nodular sclerosis (NOS)	8.9
96803	Malignant lymphoma, large cell, diffuse (NOS)	5.6
96873	Burkitt's lymphoma (NOS)	4.4
97203	Malignant histiocytosis	3.3
96643	Hodgkin's disease, nodular sclerosis, cellular phase	3.3
96983	Malignant lymphoma, large cell, follicular (NOS)	2.2
96853	Malignant lymphoma lymphoblastic	2.2
97033	T-zone lymphoma	1.1
97113	Monocytoid B-cell lymphoma	1.1
96703	Malignant lymphoma, small lymphocytic (NOS)	1.1
96843	Malignant lymphoma, immunoblastic (NOS)	1.1
96903	Malignant lymphoma, follicular (NOS)	1.1
97043	Lymphoepithelioid lymphoma	1.1
97133	Angiocentric T-cell lymphoma	1.1

NOS – Not Otherwise Specific

Sites of Lymphomas

Majority of the lymphomas presented as lymphnodular swelling (61%). Other sites included pharynx (5.6%), small intestine (4.4%), stomach (3.3%), bone (3.3%), thyroid (1.1%) and colon (1.1%).

Cancer among the Omani population

Gastric cancer

Gastric cancer formed the second most common cancer among the Omanis. In 1996 there were 67 cases of gastric cancer. Among these 43 were males and 24 were females, giving the male: female ratio of 1.8:1. Interestingly 4.5% of the total cancers of the stomach were constituted by lymphomas. The highest incidence rate was seen in Musandam (16.6 per 100,000) followed by South Sharqiyah (7.2 per 100,000) and Muscat (5.0 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are presented in the tables 18, 19, 20 and 21 respectively.

Table 18: Regional distribution of gastric cancer

Region	Frequency	Incidence/ 100,000
Dakhiliya	10	4.7
Dhahira	1	0.7
Dhofar	6	4.4
Musandam	4	16.6
Muscat	16	5.0
North Batinah	11	3.4
North Sharqiyah	1	0.9
South Batinah	9	4.9
South Sharqiyah	9	7.2
Total	67	

Table 19: Age specific incidence rates of gastric cancer

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	1	0.2
20-29	-	-
30-39	2	1.5
40-49	10	10.3
50-59	17	23.2
60-69	22	50.8
>70	15	51.6
Total	67	

FIGURE 5: INCIDENCE OF GASTRIC CANCERS BY REGION

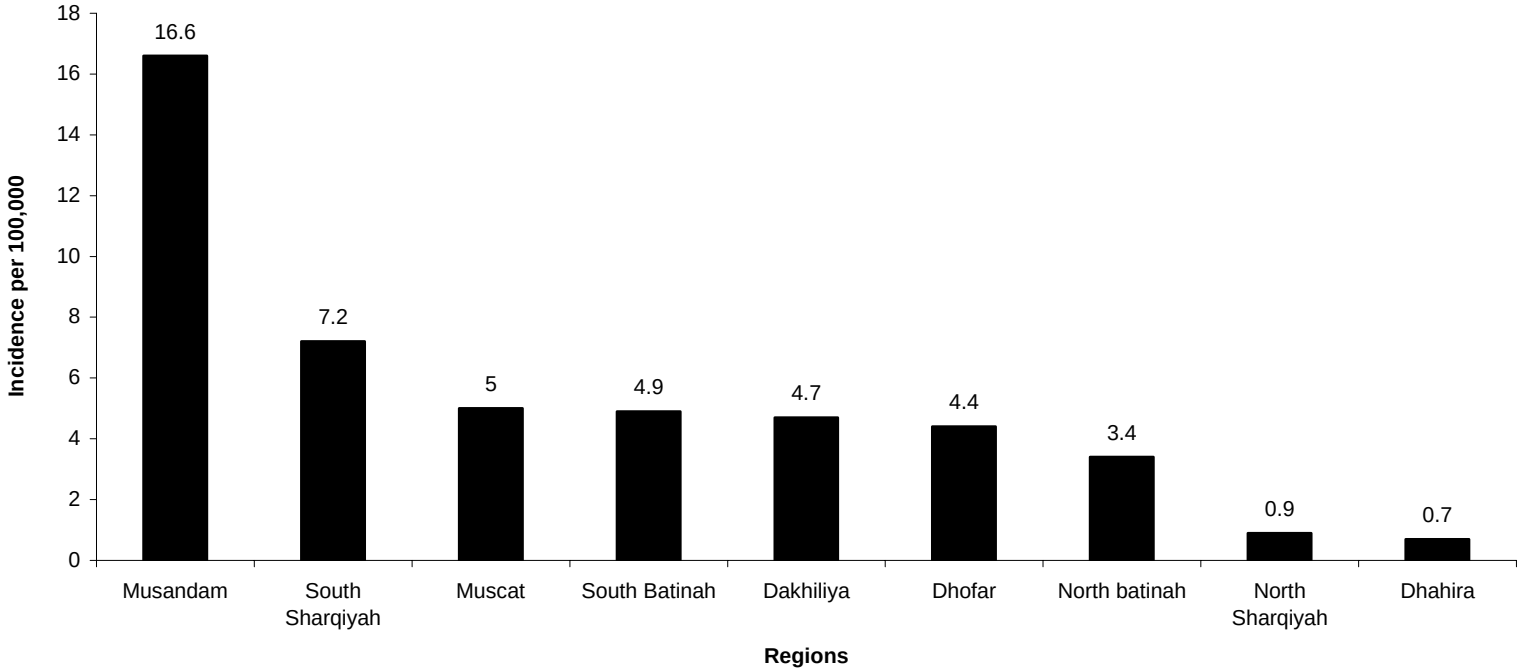


Table 20: Sex distribution of gastric cancer

Sex	Frequency	Incidence/ 100,000
Female	24	3.1
Male	43	5.3
Total	67	

Table 21: Histology of gastric malignancies

ICD-O Code	Histology	Percentage (%)
81403	Adenocarcinoma (NOS)	65.7
80103	Carcinoma (NOS)	9.0
84813	Mucin-producing adenocarcinoma	7.5
84803	Mucinous adenocarcinoma	6.0
80003	Neoplasm, malignant	3.0
95913	Malignant lymphoma, non-Hodgkin's, (NOS)	3.0
82602	Papillary adenocarcinoma (NOS)	1.5
80006	Neoplasm, metastatic	1.5
80009	Neoplasm, malignant uncertain whether primary or metastatic	1.5
97113	Monocytoid B-Cell lymphoma	1.5

Cancer among the Omani population

Breast cancer

Breast cancer was the most common cancer among Omani females. There were 61 cases of breast cancer. The highest incidence rate was seen in South Batinah (7.6 per 100,000) followed by Muscat (5.3 per 100,000) and Dhahira (3.4 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are presented in tables 22, 23, 24 and 25 respectively.

Table 22: Regional distribution of breast cancer

Region	Frequency	Incidence/ 100,000
Dakhiliya	4	1.9
Dhahira	5	3.4
Dhofar	4	3.0
Musandam	1	4.1
Muscat	17	5.3
North Batinah	6	1.9
North Sharqiyah	3	2.7
South Batinah	14	7.6
South Sharqiyah	3	2.4
Unknown	4	-
Total	61	

Table 23: Age specific incidence rates of breast cancer

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	-	-
20-29	3	2.7
30-39	6	8.7
40-49	21	42.4
50-59	13	36.8
60-69	12	61.5
>70	6	40.2
Total	61	

FIGURE 6: INCIDENCE OF BREAST CANCERS BY REGION

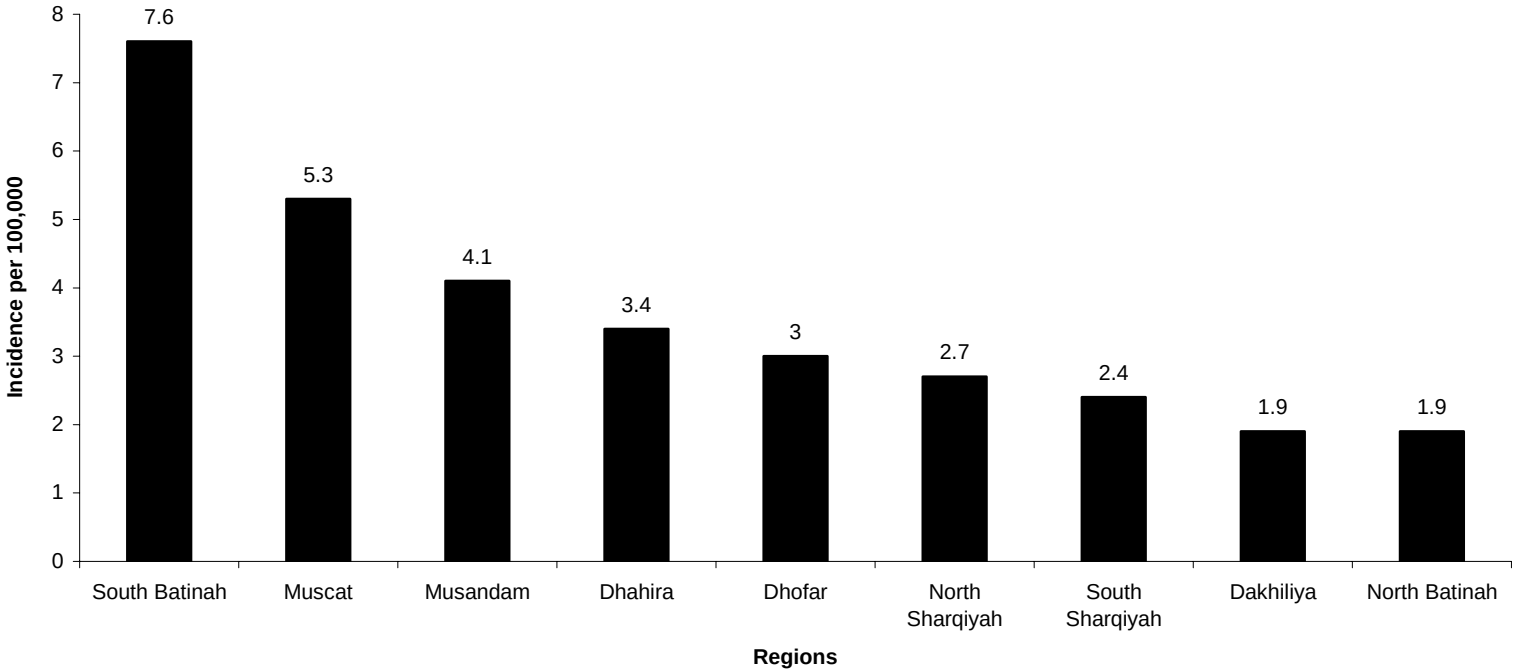


Table 24: Sex distribution of breast cancer

Sex	Frequency	Incidence/ 100,000
Female	57	7.3
Male	4	0.5
Total	67	

Table 25: Histology of breast cancer

ICD-O Code	Histology	Percentage (%)
85003	Infiltrating duct carcinoma	50.8
80103	Carcinoma (NOS)	27.9
85203	Lobular carcinoma (NOS)	6.6
85433	Paget's disease and intraductal carcinoma of breast	3.3
85103	Medullary carcinoma (NOS)	3.3
80503	Papillary carcinoma (NOS)	1.6
85413	Paget's disease and infiltrating duct carcinoma of breast	1.6
80001	Neoplasm, uncertain whether benign or malignant	1.6
84813	Mucin-producing adenocarcinoma	1.6

Cancer among the Omani population

Lung cancer

In 1996, there were 48 cases of lung cancer. Of these 32 were males and 16 were females, with the male : female ratio being 2 : 1. Cancer of the lung formed the fourth commonest cancer among Omani population. The highest incidence rate was seen in South Batinah (5.4 per 100,000) followed by South Sharqiyah (4.0 per 100,000) and Dhahira (3.4 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are presented in tables 26, 27, 28 and 29 respectively.

Table 26: Regional distribution of lung cancer

Region	Frequency	Incidence/ 100,000
Dakhiliya	4	1.9
Dhahira	5	3.4
Dhofar	1	0.7
Muscat	10	3.1
North Batinah	10	3.1
North Sharqiyah	2	1.8
South Batinah	10	5.4
South Sharqiyah	5	4.0
Unknown	1	-
Total	48	

Table 27: Age specific incidence rates of lung cancer

Age Group	Frequency	ASR/100,000
00-09	1	0.2
10-19	-	-
20-29	2	0.9
30-39	-	-
40-49	5	5.2
50-59	9	12.3
60-69	20	46.2
>70	10	34.4
Total	48	

FIGURE 7: INCIDENCE OF LUNG CANCERS BY REGION

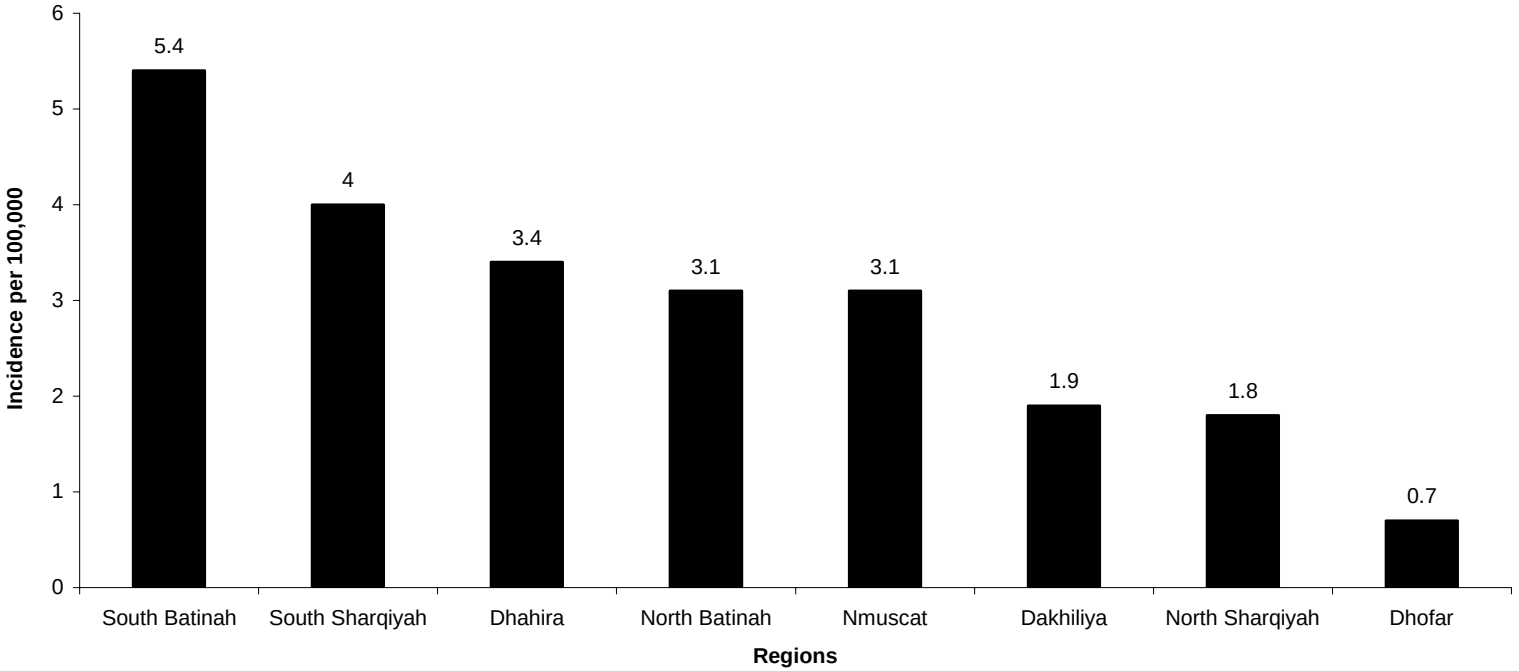


Table 28: Sex distribution of lung cancer

Sex	Frequency	Incidence/ 100,000
Female	16	2.0
Male	32	3.9
Total	48	

Table 29: Histology of lung cancer

ICD-O Code	Histology	Percentage (%)
80103	Carcinoma (NOS)	43.8
81403	Adenocarcinoma (NOS)	20.8
80006	Neoplasm, metastatic	6.3
80703	Squamous cell carcinoma (NOS)	4.2
80413	Small cell carcinoma (NOS)	4.2
80123	Large cell carcinoma (NOS)	4.2
80433	Small cell carcinoma, fusiform cell	2.1
82603	Papillary adenocarcinoma (NOS)	2.1
80423	Oat cell carcinoma	2.1
82463	Neuroendocrine carcinoma	2.1
80003	Neoplasm, malignant	2.1
89903	Mesenchymoma, malignant	2.1
90823	Malignant teratoma, undifferentiated	2.1

Cancer among the Omani population

Malignancies of the urinary bladder

Malignancies of the urinary bladder formed the 5th commonest cancer among Omani population. In 1996, there were 42 cases of carcinoma of urinary bladder. Among these there were 32 males and 8 females, with the male : female ratio being 4.3 : 1. the highest incidence rate was seen in Al-Wousta (6.8 per 100,000) followed by South Sharqiyah (4.8 per 100,000) and South Batinah (3.2 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 30, 31, 32 and 33 respectively. Transitional cell carcinomas constituted 69.1% of the tumors whereas squamous cell carcinoma constituted only 7.1%.

Table 30: Regional distribution of malignancies of the urinary bladder

Region	Frequency	Incidence/ 100,000
Al-Wousta	1	6.8
Dakhiliya	4	1.9
Dhahira	4	2.8
Dhofar	2	1.5
Muscat	7	2.2
North Batinah	9	2.8
North Sharqiyah	3	2.7
South Batinah	6	3.2
South Sharqiyah	6	4.8
Total	42	

Table 31: Age specific incidence rates of malignancies of the urinary bladder

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	-	-
20-29	1	0.4
30-39	3	2.2
40-49	3	3.1
50-59	12	16.4
60-69	9	20.8
>70	14	48.1
Total	42	

FIGURE 8: INCIDENCE OF CANCER OF THE URINARY BLADDER BY REGION

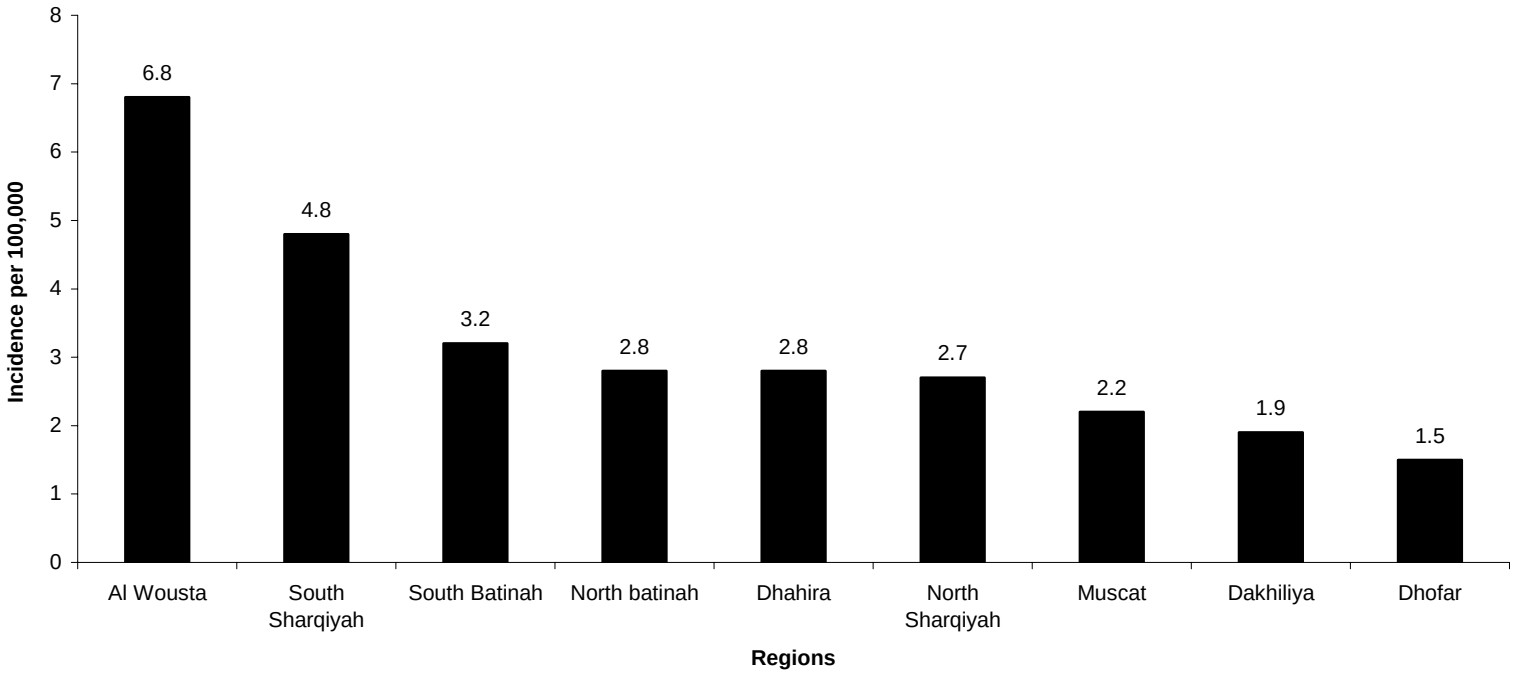


Table 32: Sex distribution of malignancies of the urinary bladder

Sex	Frequency	Incidence/ 100,000
Female	8	1.0
Male	34	4.2
Total	42	

Table 33: Histology of malignancies of the urinary bladder

ICD-O Code	Histology	Percentage (%)
81203	Transitional cell carcinoma (NOS)	66.7
80103	Carcinoma (NOS)	16.7
80703	Squamous cell carcinoma (NOS)	7.1
81403	Adenocarcinoma (NOS)	7.1
81303	Papillary transitional cell carcinoma	2.4

Cancer among the Omani population

Carcinoma of the prostate

Carcinoma of the prostate was the third commonest cancer among the Omani males, with 39 cases being reported in 1996. The highest incidence rate was seen in South Sharqiyah (4.8/100,000) followed by Muscat (4.4/100,000) and Musandam (4.1/100,000). The regional distribution, age specific incidence rates and the histology of the cancer cases reported are represented in tables 34, 35 and 36 respectively.

Table 34: Regional distribution of carcinoma of the prostate

Region	Frequency	Incidence/ 100,000
Dakhiliya	3	1.4
Dhahira	3	2.1
Dhofar	2	1.5
Musandam	1	4.1
Muscat	14	4.4
North Batinah	6	1.9
South Batinah	3	1.6
South Sharqiyah	6	4.8
Unknown	1	-
Total	39	

Table 35: Age specific incidence rates of carcinoma of the prostate

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	1	0.4
20-29	-	-
30-39	-	-
40-49	3	6.3
50-59	8	21.1
60-69	9	37.8
>70	18	127.0
Total	39	

FIGURE 9: INCIDENCE OF PROSTATIC CARCINOMA BY REGION

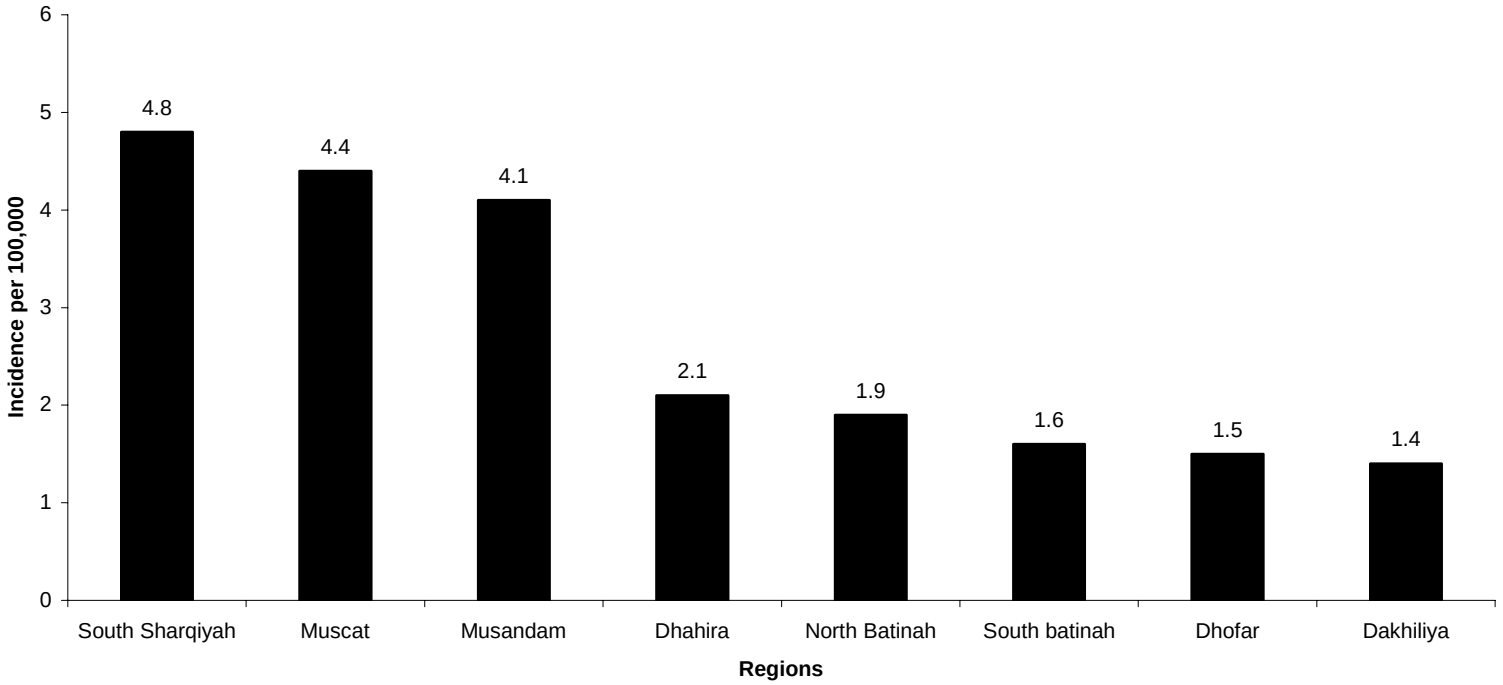


Table 36: Histology of carcinoma of the prostate

ICD-O Code	Histology	Percentage (%)
81403	Adenocarcinoma (NOS)	89.7
80103	Carcinoma (NOS)	7.7
80213	Carcinoma, anaplastic (NOS)	2.6

Cancer among the Omani population

Skin cancer

There were 38 cases of skin cancer in 1996. Among these 28 were males and 10 were females, with the male : female ratio being 2.8 : 1. Skin cancer was the 7th commonest cancer among the Omani population. The highest incidence rate was seen in Dhofar (4.4 per 100,000) followed by North Sharqiyah (3.7 per 100,000) and Dhahira (2.1 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 37, 38, 39 and 40 respectively. Basal cell carcinomas constituted 47.5% of the skin tumors. Kaposis sarcoma constituted 5.3% and malignant melanomas 2.6%.

Table 37: Regional distribution of skin cancer

Region	Frequency	Incidence/ 100,000
Dakhiliya	4	1.9
Dhahira	3	2.1
Dhofar	6	4.4
Muscat	4	1.2
North Batinah	6	1.9
North Sharqiyah	4	3.7
South Batinah	2	1.1
South Sharqiyah	2	1.6
Unknown	7	-
Total	38	

Table 38: Age specific incidence rates of skin cancer

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	2	0.4
20-29	-	-
30-39	2	1.5
40-49	5	5.2
50-59	5	6.8
60-69	18	41.6
>70	6	20.6
Total	38	

FIGURE 10: INCIDENCE OF SKIN CANCERS BY REGION

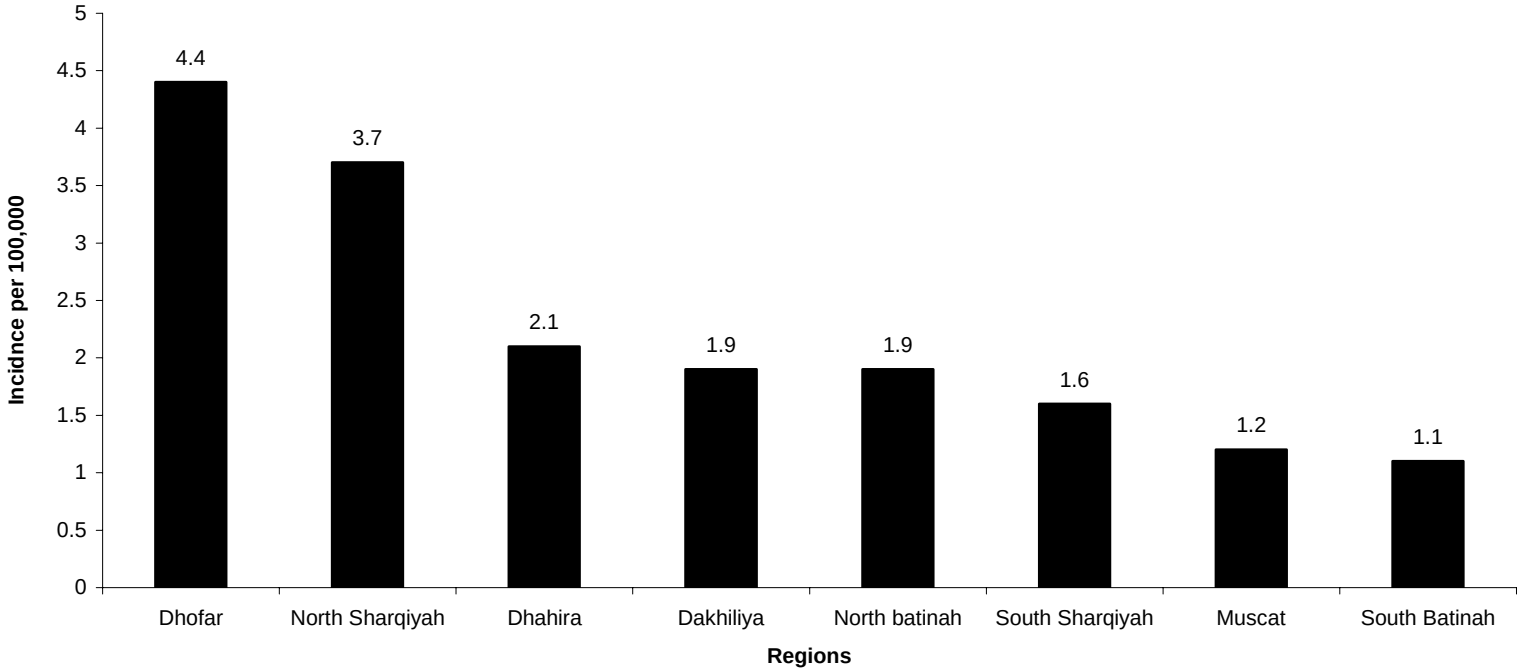


Table 39: Sex distribution of skin cancer

Sex	Frequency	Incidence/ 100,000
Female	10	1.3
Male	28	3.4
Total	38	

Table 40: Histology of skin cancer

ICD-O Code	Histology	Percentage (%)
80903	Basal cell carcinoma (NOS)	44.7
80703	Squamous cell carcinoma (NOS)	31.6
88903	Leiomyosarcoma (NOS)	5.3
91403	Kaposi's sarcoma	5.3
80323	Spindle cell carcinoma	2.6
80006	Neoplasm, metastatic	2.6
82473	Merkel cell carcinoma	2.6
87203	Malignant melanoma (NOS)	2.6
80923	Basal cell carcinoma, morphea	2.6

Cancer among the Omani population

Carcinoma of the colon

There were 36 cases of carcinoma of the colon in 1996. There were 23 males and 13 females, with the male: female ratio being 1.8:1. Overall, carcinoma of the colon was the 8th commonest cancer in Omani population. It was ranked as the 7th commonest cancer among males and the 8th commonest cancer among females. Adenocarcinomas constituted the majority of these cancers. However, non-Hodgkin's lymphoma constituted 2.8%. The highest incidence rate was seen in Musandam (8.3 per 100,000) followed by South Sharqiyah (4.03 per 100,000) and Dhofar (3.7 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 41, 42, 43 and 44 respectively.

Table 41: Regional distribution of carcinoma of the colon

Region	Frequency	Incidence/ 100,000
Dhahira	2	1.4
Dhofar	5	3.7
Musandam	2	8.3
Muscat	8	2.5
North Batinah	10	3.1
North Sharqiyah	2	1.8
South Batinah	2	1.1
South Sharqiyah	5	4.0
Total	36	

Table 42: Age specific incidence rate of carcinoma of the colon

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	-	-
20-29	1	0.4
30-39	4	3.0
40-49	4	4.1
50-59	9	12.3
60-69	12	27.7
>70	6	20.6
Total	36	

FIGURE 11: INCIDENCE OF CANCER OF THE COLON BY REGION

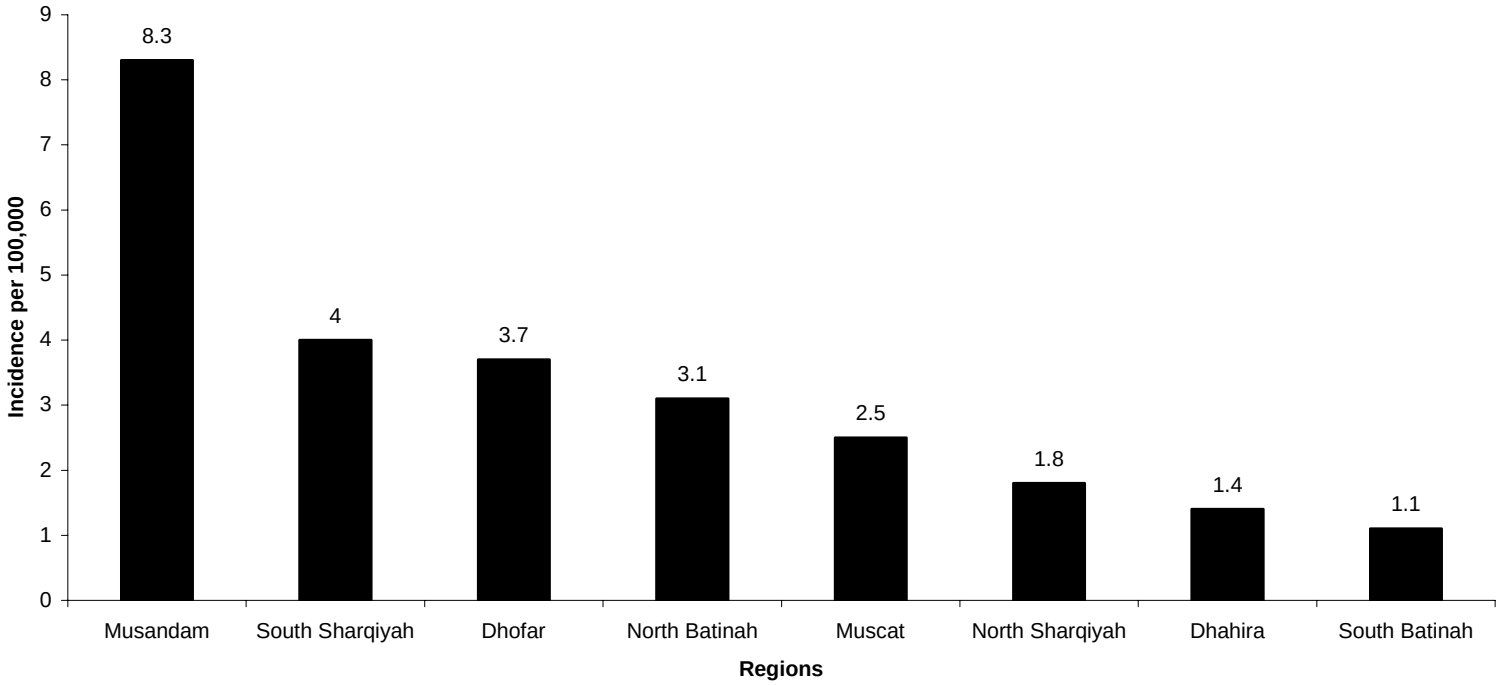


Table 43: Sex distribution of carcinoma of the colon

Sex	Frequency	Incidence/ 100,000
Female	13	1.7
Male	23	2.8
Total	36	

Table 44: Histology of carcinoma of the colon

ICD-O Code	Histology	Percentage (%)
81403	Adenocarcinoma (NOS)	52.8
80103	Carcinoma (NOS)	16.7
80703	Squamous cell carcinoma (NOS)	8.3
80513	Verrucous carcinoma (NOS)	2.8
80413	Small cell carcinoma (NOS)	2.8
84903	Signet ring cell carcinoma	2.8
80003	Neoplasm, malignant	2.8
84813	Mucin-producing adenocarcinoma	2.8
95913	Malignant Lymphoma, nom-Hodgkin's (NOS)	2.8
88303	Fibrous histiocytoma, malignant	2.8

Cancer among the Omani population

Carcinoma of the thyroid

There were 36 cases of carcinoma of the thyroid in 1996. Among these there were 28 females and 8 males, with the male : female ration being 1 : 3.5. Carcinoma of the thyroid formed the 3rd commonest tumor among Omani women. The highest incidence rate was seen in Al-Wousta (6.8 per 100,000) followed by Dhofar (3.7 per 100,000) and South Batinah (3.2 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 45, 46, 47 and 48 respectively. The commonest thyroid neoplasm was papillary carcinoma which constituted 63.9% followed by follicular carcinoma which constituted 25%. Malignant lymphomas of the thyroid constituted 2.8%.

Table 45: Regional distribution of carcinoma of the thyroid

Region	Frequency	Incidence/ 100,000
Al-Wousta	1	6.8
Dakhiliya	3	1.4
Dhahira	3	2.1
Dhofar	5	3.7
Muscat	5	1.6
North Batinah	4	1.2
North Sharqiyah	3	2.7
South Batinah	6	3.2
South Sharqiyah	4	3.2
Unknown	2	-
Total	36	

Table 46: Age specific incidence rates of carcinoma of the thyroid

Age Group	Frequency	ASR/100,000
00-09	1	0.2
10-19	2	0.4
20-29	7	3.0
30-39	7	5.2
40-49	6	6.2
50-59	5	6.8
60-69	5	11.5
>70	3	10.3
Total	36	

FIGURE 12: INCIDENCE OF THYROID CANCERS BY REGION

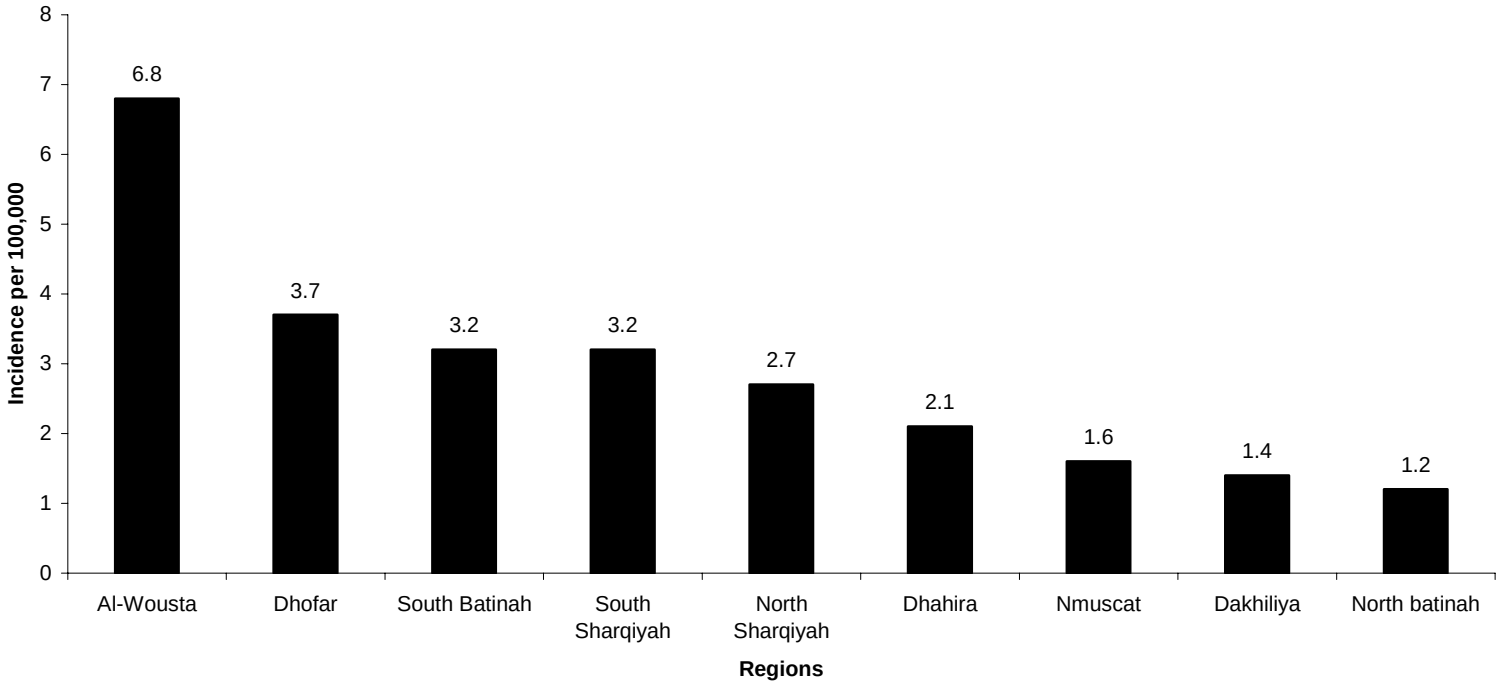


Table 47: Sex distribution of carcinoma of the thyroid

Sex	Frequency	Incidence/ 100,000
Female	28	3.6
Male	8	1.0
Total	36	

Table 48: Histology of carcinoma of the thyroid

ICD-O Code	Histology	Percentage (%)
80503	Papillary carcinoma (NOS)	63.9
83303	Follicular adenocarcinoma (NOS)	25.0
83403	Papillary carcinoma follicular variant	2.8
82603	Papillary adenocarcinoma (NOS)	2.8
82903	Oxyphilic adenocarcinoma	2.8
95903	Malignant lymphoma (NOS)	2.8

Cancer among the Omani population

Leukemias

There were 37 cases of leukemia in 1996. Among these 20 were males and 17 were females, with the male : female ratio being 1.2 : 1. Leukemias formed the second commonest cancer in children below 12 years and it was ranked the 3rd commonest cancer among boys and the 2nd commonest cancer among girls below 12 years. The commonest type leukemia was acute lymphoblastic leukemia (33.3%). Multiple myeloma constituted 16.7%. The highest incidence rate was seen in Musandam (4.1 per 100,000) followed by Dhahira (3.4 per 100,000) and North Sharqiyah (2.7 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 49, 50, 51 and 52 respectively.

Table 49: Regional distribution of leukemia

Region	Frequency	Incidence/ 100,000
Dakhiliya	4	1.9
Dhahira	5	3.4
Dhofar	1	0.7
Musandam	1	4.1
Muscat	8	2.5
North Batinah	7	2.2
North Sharqiyah	3	2.7
South Batinah	5	2.7
South Sharqiyah	3	2.4
Total	37	

Table 50: Age specific incidence rates of leukemia

Age Group	Frequency	ASR/100,000
00-09	15	2.9
10-19	4	0.8
20-29	1	0.4
30-39	3	2.2
40-49	1	1.0
50-59	4	5.5
60-69	5	11.5
>70	4	13.8
Total	37	

Figure 13: INCIDENCE OF LEUKEMIAS BY REGION

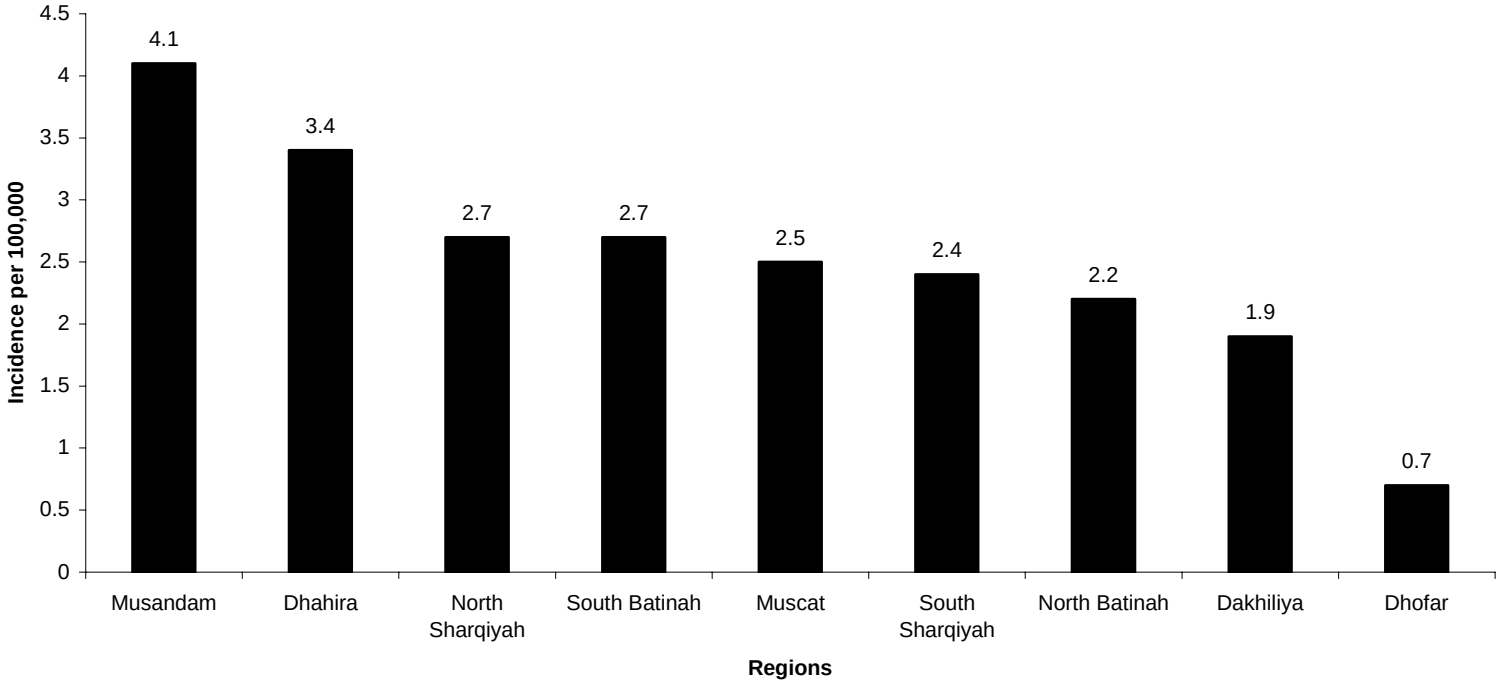


Table 51: Sex distribution of leukemia

Sex	Frequency	Incidence/ 100,000
Female	17	2.2
Male	20	2.5
Total	37	

Table 52: Types of Leukemia

ICD-O Code	Histology	Percentage (%)
98213	Acute lymphoblastic leukemia (NOS)	33.3
98003	Leukemia (NOS)	20.0
97323	Multiple Myeloma	16.7
98613	Acute Myeloid	13.3
98013	Acute leukemia (NOS)	10.0
98633	Chronic myeloid	6.7

Cancer among the Omani population

Brain Tumors

There were 29 cases of brain tumors in 1996. Brain tumors formed the 3rd commonest tumor in children below the age of 12 years. It was ranked as the 2nd commonest tumor in boys and the 3rd commonest tumor in girls. Malignant glioma, medulloblastomas and astrocytomas together constituted the majority of tumors. The highest incidence rate was seen in North Sharqiyah (5.5 per 100,000) followed by South Batinah (3.2 per 100,000) and South Sharqiyah (1.6 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 53, 54, 55 and 56 respectively.

Table 53: Regional distribution of brain tumors

Region	Frequency	Incidence/ 100,000
Dakhiliya	2	0.9
Dhahira	2	1.4
Muscat	5	1.6
North Batinah	4	1.2
North Sharqiyah	6	5.5
South Batinah	6	3.2
South Sharqiyah	2	1.6
Unknown	2	-
Total	29	

Table 54: Age specific incidence rates of brain tumors

Age Group	Frequency	ASR/100,000
00-09	13	2.5
10-19	4	0.8
20-29	1	0.4
30-39	4	3.0
40-49	-	-
50-59	5	6.8
60-69	2	4.6
>70	-	-
Total	29	

FIGURE 14: INCIDENCE OF BRAIN TUMOURS BY REGION

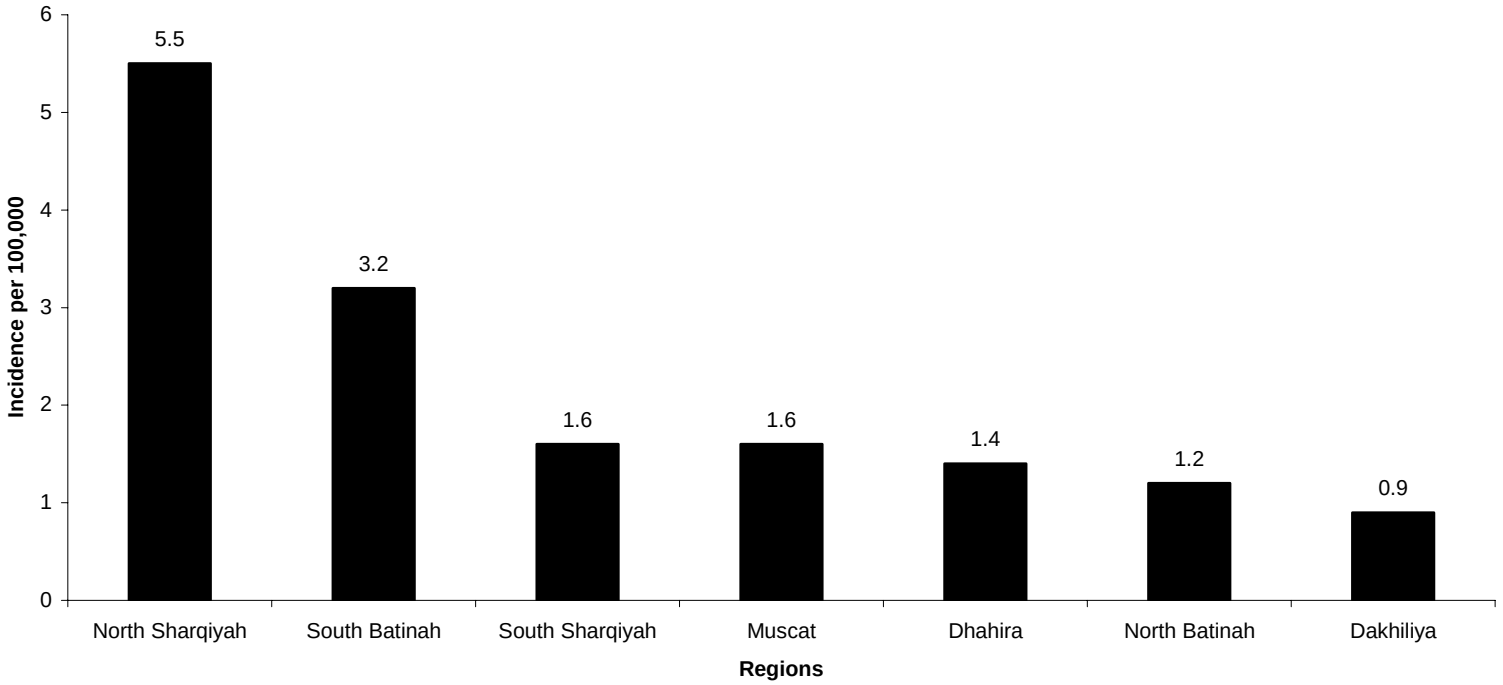


Table 55: Sex distribution of brain tumors

Sex	Frequency	Incidence/ 100,000
Female	11	1.4
Male	18	2.2
Total	29	

Table: 56 Histology of brain tumors

ICD-O Code	Histology	Percentage (%)
94703	Medulloblastoma (NOS)	20.7
93803	Glioma, Malignant	20.7
94003	Astrocytoma (NOS)	20.7
95003	Neuroblastoma (NOS)	6.9
94403	Glioblastoma(NOS)	6.9
94013	Astrocytoma, anaplastic	6.9
80013	Tumor cells, malignant	3.4
94213	Pilocytic astrocytomas	3.4
93823	Mixed glioma	3.4
95303	Meningioma, malignant	3.4
93913	Ependymoma (NOS)	3.4

Cancer among the Omani population

Carcinoma of the Cervix

There were 26 cases of cervical carcinoma in 1996. Carcinoma of the cervix formed the fourth commonest cancer among Omani females. The highest incidence rate was seen in Muscat (2.5 per 100,000) followed by North Batinah (2.2 per 100,000) and North Sharqiyah (1.8 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 57, 58 and 59 respectively.

Table 57: Regional distribution of carcinoma of the cervix

Region	Frequency	Incidence/ 100,000
Dakhiliya	3	1.4
Dhahira	1	0.7
Dhofar	2	1.5
Muscat	8	2.5
North Batinah	7	2.2
North Sharqiyah	2	1.8
South Batinah	1	0.5
South Sharqiyah	2	1.6
Total	26	

Table 58: Age specific incidence rates of carcinoma of the cervix

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	-	-
20-29	-	-
30-39	4	5.8
40-49	4	8.1
50-59	11	31.2
60-69	2	10.2
>70	5	33.5
Total	26	

FIGURE 15: INCIDENCE OF CERVICAL CANCERS BY REGION

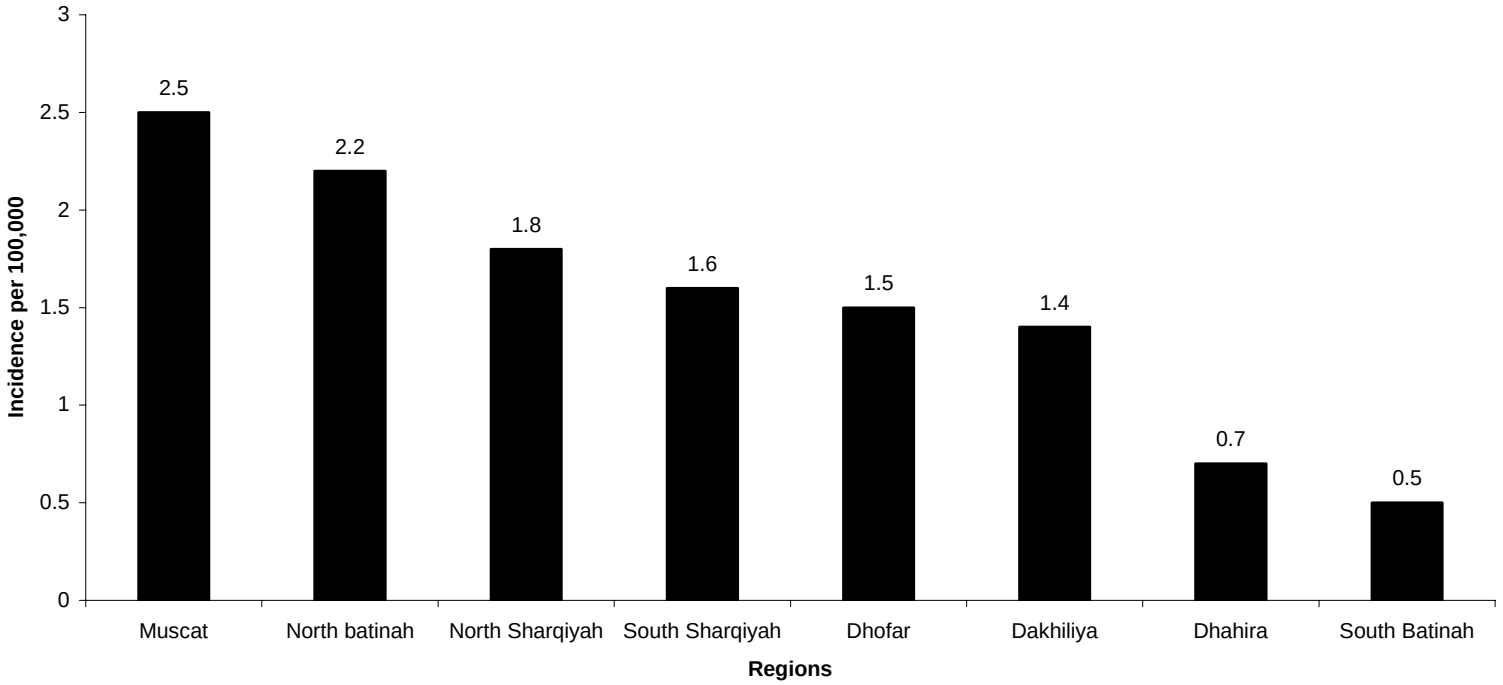


Table 59: Histology of carcinoma of the cervix

ICD-O Code	Histology	Percentage (%)
80703	Squamous cell carcinoma (NOS)	61.3
80713	Squamous cell carcinoma keratinizing (NOS)	7.7
80103	Carcinoma (NOS)	7.7
81403	Adenocarcinoma (NOS)	7.7
80723	Squamous cell carcinoma, large cell, non keratinizing	3.8
80003	Neoplasm, malignant	3.8
80109	Carcinomatosis	3.8
85703	Adenocarcinoma with Squamous metaplasia	3.8

Cancer among the Omani population

Liver cancer

There were 23 cases of liver cancer in 1996. It is predominantly a cancer of males, with the male : female ratio being 6.7 : 1. Liver cancer was ranked as the 9th commonest cancer in males. The highest incidence was seen in Muscat and Dakhiliya (2.8 per 100,000) followed by South Sharqiyah (1.6 per 100,000) and Dhahira (1.4 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 60, 61, 62 and 63 respectively.

Table 60: Regional distribution of liver cancer

Region	Frequency	Incidence/ 100,000
Dakhiliya	6	2.8
Dhahira	2	1.4
Muscat	9	2.8
North Batinah	1	0.3
North Sharqiyah	1	0.9
South Batinah	2	1.1
South Sharqiyah	2	1.6
Total	23	

Table 61: Age specific incidence rates of liver cancer

Age Group	Frequency	ASR/100,000
00-09	1	0.2
10-19	-	-
20-29	1	0.4
30-39	-	-
40-49	4	3.1
50-59	3	4.1
60-69	8	18.5
>70	6	20.6
Total	23	

FIGURE 16: INCIDENCE OF LIVER CANCERS BY REGION

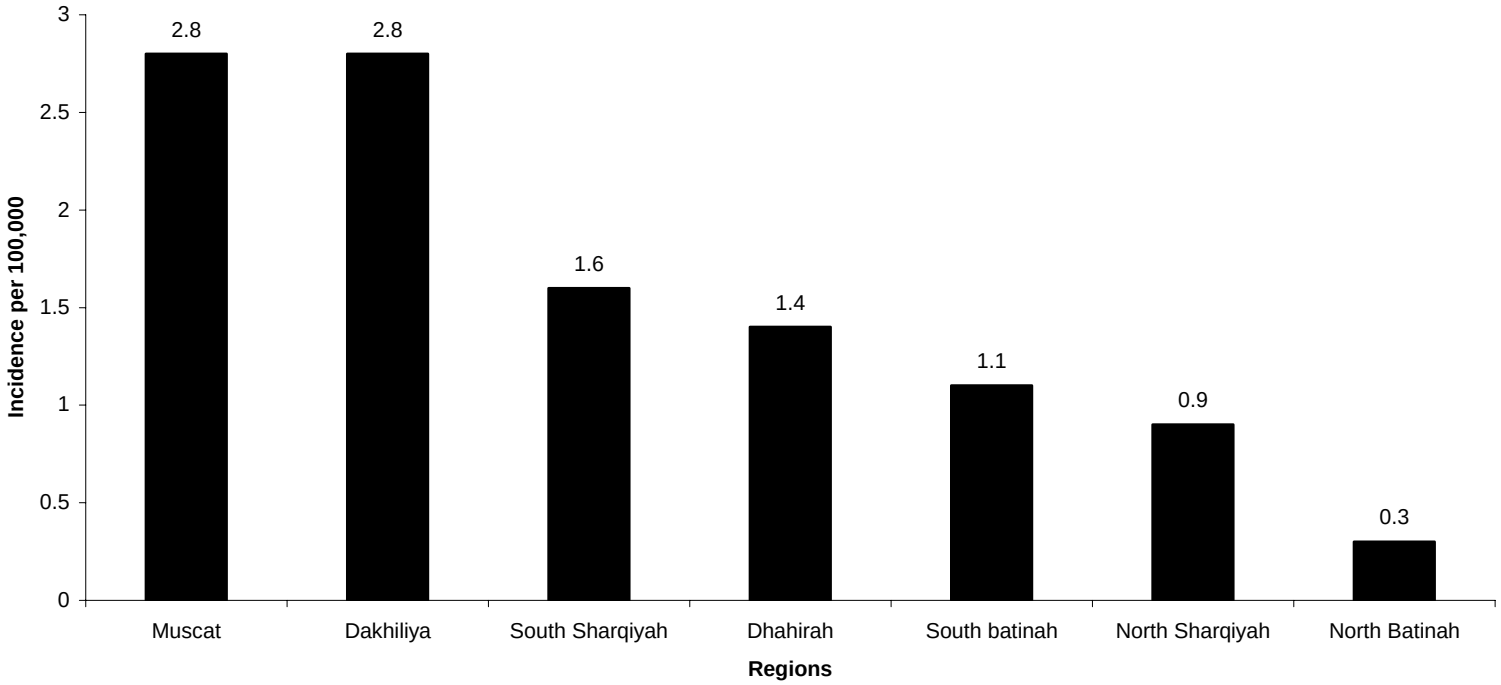


Table 62: Sex distribution of liver cancer

Sex	Frequency	Incidence/ 100,000
Female	3	0.4
Male	20	2.5
Total	23	

Table 63: Histology of liver cancer

ICD-O Code	Histology	Percentage (%)
81703	Hepatocellular carcinoma (NOS)	78.3
80103	Carcinoma (NOS)	8.7
81403	Adenocarcinoma (NOS)	8.7
84603	Papillary serous cystadenocarcinoma	4.3

Cancer among the Omani population

Carcinoma of the Esophagus

There were 19 cases of carcinoma in the esophagus in 1996. Among these there were 12 males and 7 females, with the male : female ratio being 1.7 : 1. The highest was seen in Musandam (4.1 per 100,000) followed by North Batinah (2.2 per 100,000) and North Sharqiyah (1.8 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 64, 65, 66 and 67 respectively. The majority of cancers were squamous cell carcinoma 63.2%. Adenocarcinoma constituted 26.3%.

Table 64: Regional Distribution of carcinoma of the esophagus

Region	Frequency	Incidence/ 100,000
Dakhiliya	2	0.9
Dhahira	1	0.7
Dhofar	2	1.5
Musandam	1	4.1
Muscat	1	0.3
North Batinah	7	2.2
North Sharqiyah	2	1.8
South Batinah	1	0.5
South Sharqiyah	2	1.6
Total	19	

Table 65: Age specific incidence rates of carcinoma of the esophagus

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	-	-
20-29	-	-
30-39	1	0.7
40-49	2	2.1
50-59	2	2.7
60-69	7	16.2
>70	7	24.1
Total	19	

FIGURE 17: INCIDENCE OF ESOPHAGEAL CANCERS BY REGION

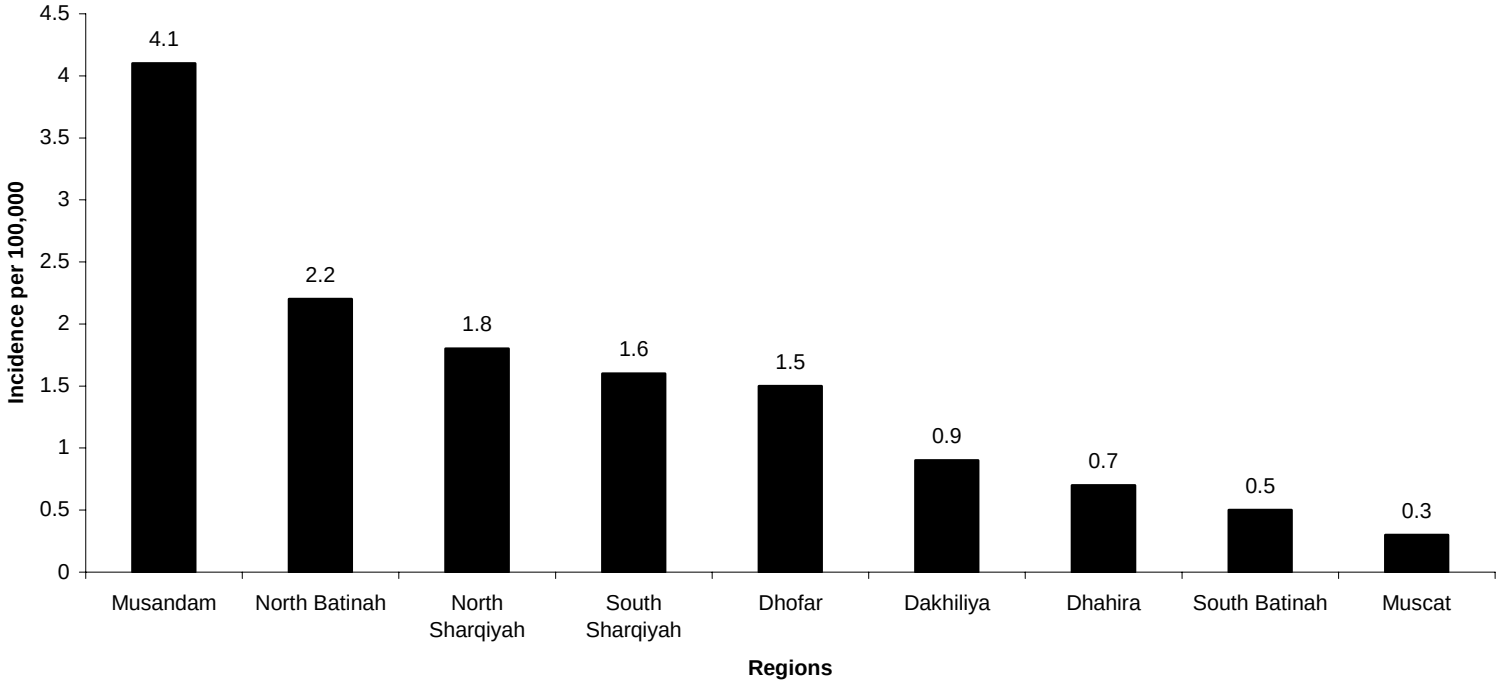


Table 66: Sex distribution of carcinoma of the esophagus

Sex	Frequency	Incidence/ 100,000
Female	7	0.9
Male	12	1.5
Total	19	

Table 67: Histology of carcinoma of the esophagus

ICD-O Code	Histology	Percentage (%)
80703	Squamous cell carcinoma (NOS)	63.2
81403	Adenocarcinoma (NOS)	26.3
80003	Neoplasm, malignant	5.3
80103	Carcinoma (NOS)	5.3

Cancer among the Omani population

Carcinoma of the Kidney

There were 18 cases of carcinoma of the kidney in 1996. carcinoma of the kidney was more in females than in males with male : female ration being 1 : 1.3. Renal cell carcinoma constituted 55.6% and the nephroblastomas 22.2%. The highest incidence rate was seen in Dhahira (4.1 per 100,000) followed by North Batinah (1.9 per 100,000) and Muscat (1.2 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 68, 69, 70 and 71 respectively.

Table 68: Regional distribution of carcinoma of the kidney

Region	Frequency	Incidence/ 100,000
Dhahira	6	4.1
Dhofar	1	0.7
Muscat	4	1.2
North Batinah	6	1.9
North Sharqiyah	1	0.9
Total	18	

Table 69: Age specific incidence rates of carcinoma of the kidney

Age Group	Frequency	ASR/100,000
00-09	3	0.6
10-19	1	0.2
20-29	-	-
30-39	3	2.2
40-49	2	2.1
50-59	3	4.1
60-69	2	4.6
>70	4	13.8
Total	18	

FIGURE 18: INCIDENCE OF KIDNEY CANCERS BY REGION

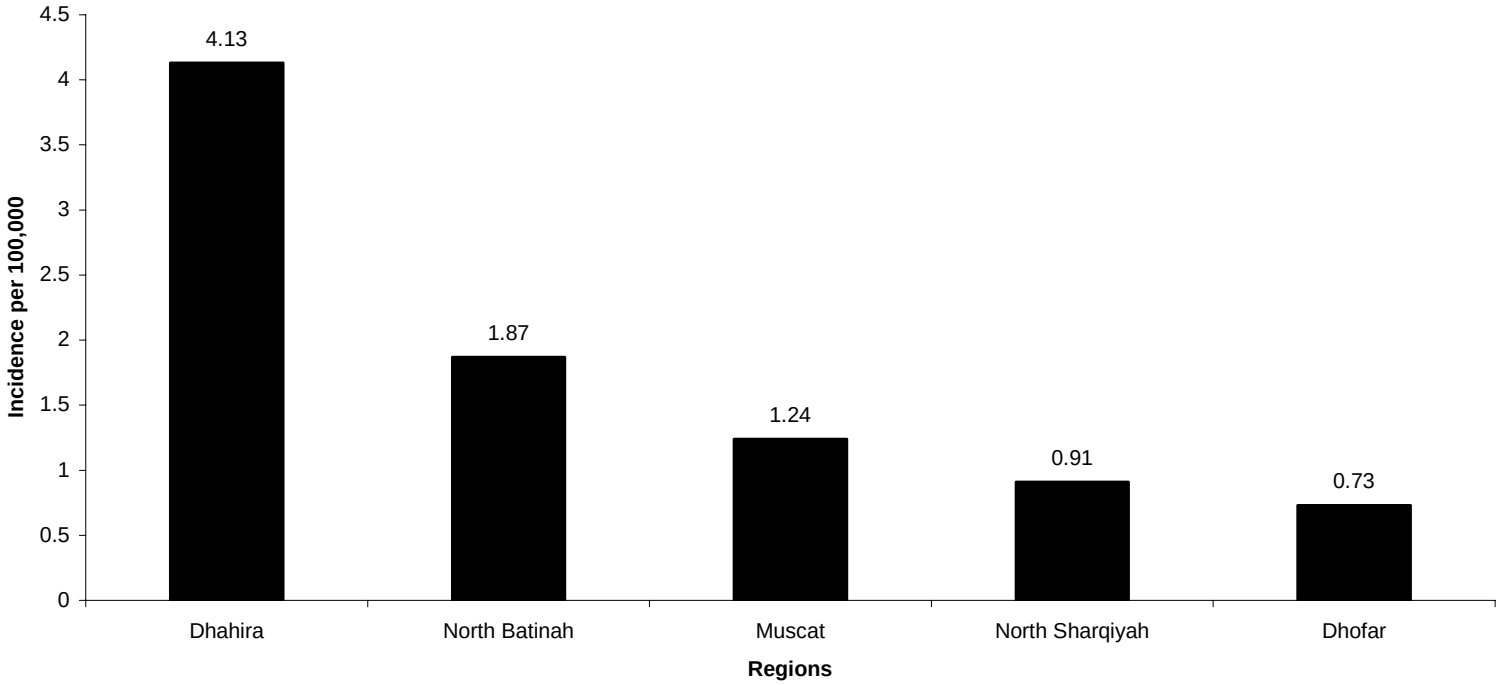


Table 70: Sex distribution of carcinoma of the kidney

Sex	Frequency	Incidence/ 100,000
Female	10	1.3
Male	8	1.0
Total	18	

Table 71: Histology of carcinoma of the kidney

ICD-O Code	Histology	Percentage (%)
83123	Renal cell carcinoma	55.6
89603	Nephroblastoma (NOS)	22.2
81203	Transitional cell carcinoma (NOS)	5.6
81303	Papillary transitional cell carcinoma	5.6
83103	Clear cell adenocarcinoma (NOS)	5.6
81403	Adenocarcinoma (NOS)	5.6

Cancer among the Omani population

Carcinoma of the Pancreas

There were 12 cases of carcinoma of the pancreas in 1996. There were 9 males and 3 females, with the male : female ratio being 3 : 1. the highest incidence rate was seen in South Sharqiyah (1.6 per 100,000) followed by South Batinah (1.1 per 100,000) and Dakhiliya (1.0 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are represented in tables 72, 73, 74 and 75 respectively.

Table 72: Regional distribution of carcinoma of the Pancreas

Region	Frequency	Incidence/ 100,000
Dakhiliya	2	1.0
Dhahira	1	0.7
Muscat	2	0.6
North Batinah	2	0.6
North Sharqiyah	1	0.9
South Batinah	2	1.1
South Sharqiyah	2	1.6
Total	12	

Table 73: Age specific incidence rates of carcinoma of the Pancreas

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	1	0.2
20-29	-	-
30-39	1	0.7
40-49	1	1.0
50-59	5	6.8
60-69	1	2.3
>70	3	10.3
Total	12	

FIGURE 19: INCIDENCE OF PANCREATIC CANCERS BY REGION

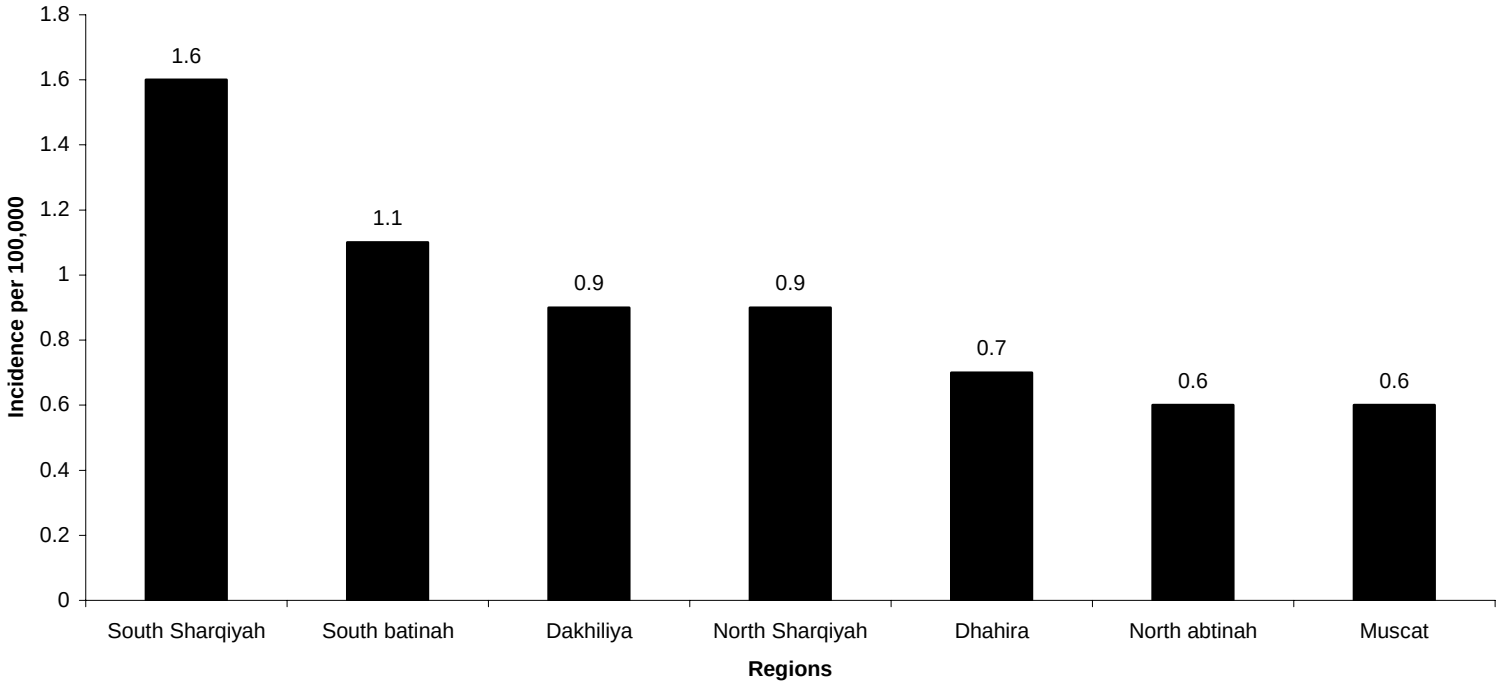


Table 74: Sex distribution of carcinoma of the pancreas

Sex	Frequency	Incidence/ 100,000
Female	3	0.4
Male	9	1.1
Total	12	

Table 75: Histology of carcinoma of the pancreas

ICD-O Code	Histology	Percentage (%)
81403	Adenocarcinoma (NOS)	63.2
97203	Malignant histiocytosis	26.3
80003	Neoplasm, malignant	5.3
80103	Carcinoma (NOS)	5.3

Cancer among the Omani population

Ovarian Cancer

There were 11 cases of cancer of the ovary in 1996. Ovarian cancers constituted only the 10th commonest cancer among Omani females. The highest incidence rate was seen in South Batinah (1.1 per 100,000) followed by North Sharqiyah (0.9 per 100,000) and South Sharqiyah (0.8 per 100,000). The regional distribution, age specific incidence rates and the histology of the cancer cases reported are presented in tables 76, 77 and 78 respectively.

Table 76: Regional distribution of ovarian cancer

Region	Frequency	Incidence/ 100,000
Dakhiliya	1	0.5
Dhahira	1	0.7
Dhofar	1	0.7
Muscat	2	0.6
North Sharqiyah	1	0.9
South Batinah	2	1.1
South Sharqiyah	1	0.8
Unknown	2	-
Total	11	

Table 77: Age specific incidence rates of ovarian cancer

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	2	0.9
20-29	-	-
30-39	2	2.9
40-49	3	6.1
50-59	3	8.5
60-69	-	-
>70	1	6.7
Total	11	

FIGURE 20: INCIDENCE OF OVARIAN CANCERS BY REGION

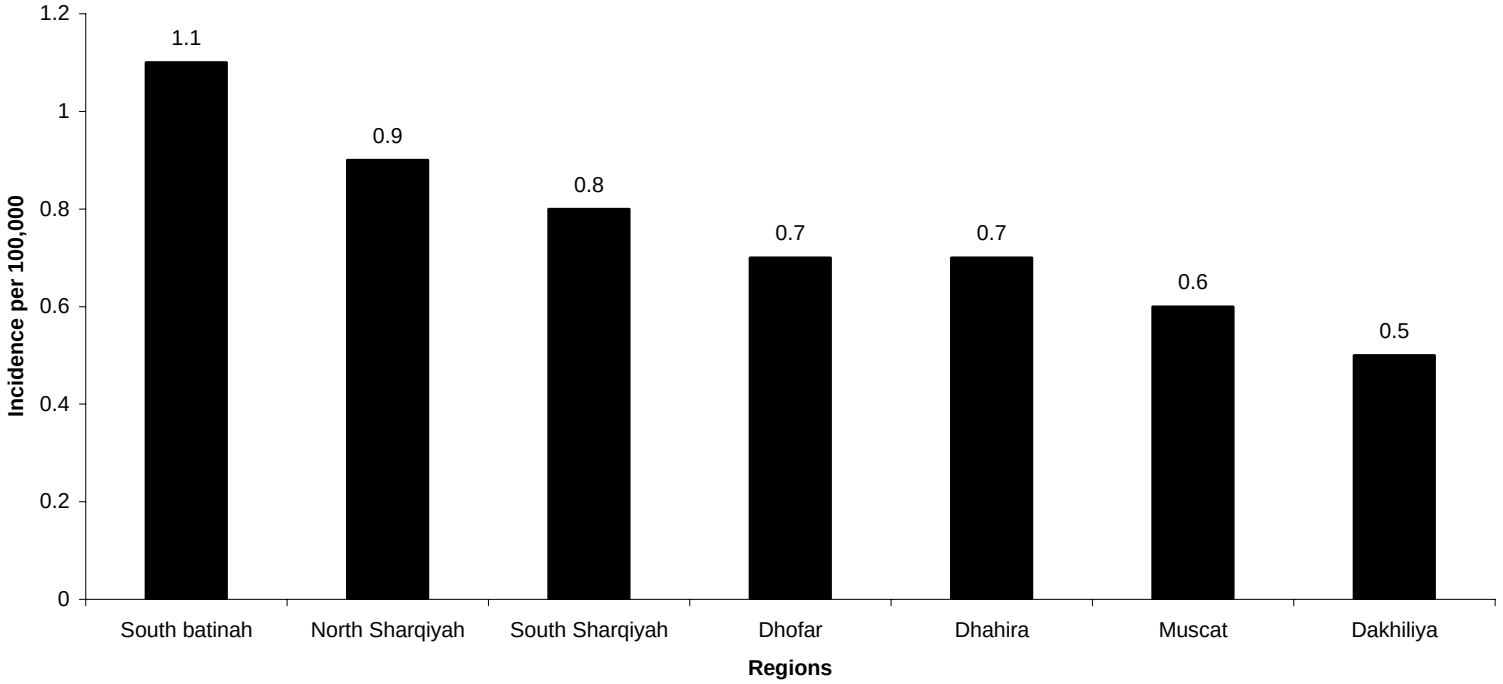


Table 78: Histology of ovarian cancer

ICD-O Code	Histology	Percentage (%)
83803	Endometrioid carcinoma	18.2
91003	Choriocarcinoma (NOS)	18.2
80103	Carcinoma (NOS)	18.2
80763	Squamous cell carcinoma, microinvasive	9.1
84423	Serous cystadenoma, borderline malignancy	9.1
84413	Serous cystadenocarcinoma (NOS)	9.1
88003	Sarcoma (NOS)	9.1
84700	Mucinous cystadenoma (NOS)	9.1

Cancer among the Omani population

Carcinoma of the Larynx

There were 10 cases of carcinoma of the larynx in 1996, with 7 cases among males and 3 among females, with the male : female ratio being 2.3 : 1. The highest incidence rate was seen in Muscat (1.2 per 100,000) followed by South Sharqiyah (0.8 per 100,000) and Dhofar (0.7 per 100,000). The regional distribution, age specific incidence rates, sex distribution and the histology of the cancer cases reported are presented in tables 79, 80, 81 and 82 respectively. Squamous cell carcinoma was the commonest malignancy constituting 80% of the tumors.

Table 79: Regional distribution of carcinoma of the larynx

Region	Frequency	Incidence/ 100,000
Dhahira	1	0.7
Dhofar	1	0.7
Muscat	4	1.2
North Batinah	1	0.3
South Batinah	1	0.5
South Sharqiyah	1	0.8
Unknown	1	-
Total	10	

Table 80: Age specific incidence rates of carcinoma of the larynx

Age Group	Frequency	ASR/100,000
00-09	1	0.2
10-19	-	-
20-29	-	-
30-39	1	0.7
40-49	1	1.0
50-59	3	4.1
60-69	2	4.6
>70	2	6.9
Total	10	

FIGURE 21: INCIDENCE OF LARYNGEAL CANCERS BY REGION

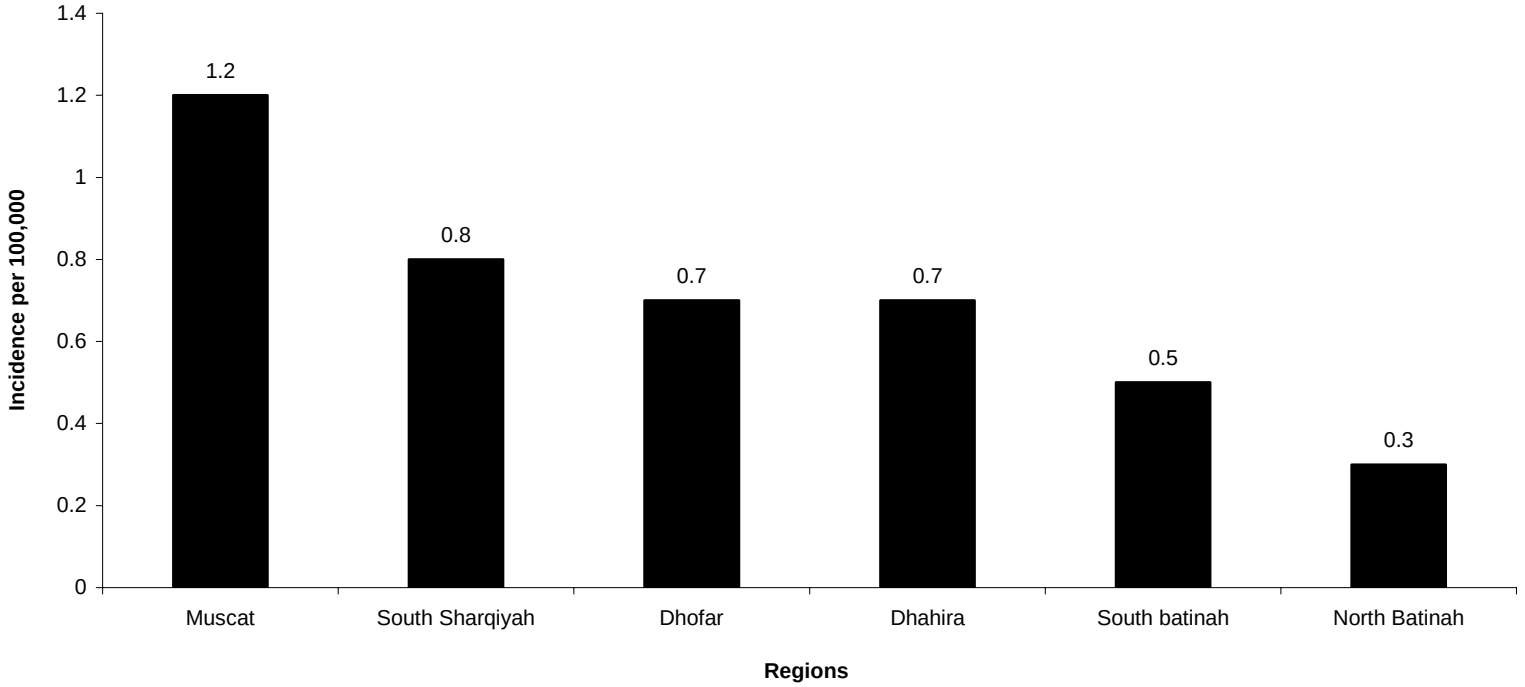


Table 81: Sex distribution of carcinoma of the larynx

Sex	Frequency	Incidence/ 100,000
Female	3	0.4
Male	7	0.9
Total	10	

Table 82: Histology of carcinoma of the larynx

ICD-O Code	Histology	Percentage (%)
80703	Squamous cell carcinoma (NOS)	80.0
89003	Rhabdomyosarcoma (NOS)	10.0
80003	Neoplasm, malignant	10.0

Cancer among the Omani population

Uterine Cancer

There were 8 cases of uterine cancer in 1996. The highest incidence rate was seen in Muscat (1.2 per 100,000) followed by North Sharqiyah (0.9 per 100,000) and South Sharqiyah (0.8 per 100,000). The regional distribution, age specific incidence rates and the histology of the cancer cases reported are presented in tables 83, 84 and 85 respectively. Choriocarcinomas constituted 50% of the uterine tumors.

Table 83: Regional distribution of uterine cancer

Region	Frequency	Incidence/ 100,000
Muscat	4	1.2
North Batinah	1	0.3
North Sharqiyah	1	0.9
South Batinah	1	0.5
South Sharqiyah	1	0.8
Total	8	

Table 84: Age specific incidence rates of uterine cancer

Age Group	Frequency	ASR/100,000
00-09	-	-
10-19	1	0.4
20-29	-	-
30-39	2	2.9
40-49	3	6.1
50-59	-	-
60-69	1	5.1
>70	1	6.7
Total	8	

FIGURE 22: INCIDENCE OF CANCERS OF THE UTERUS BYREGION

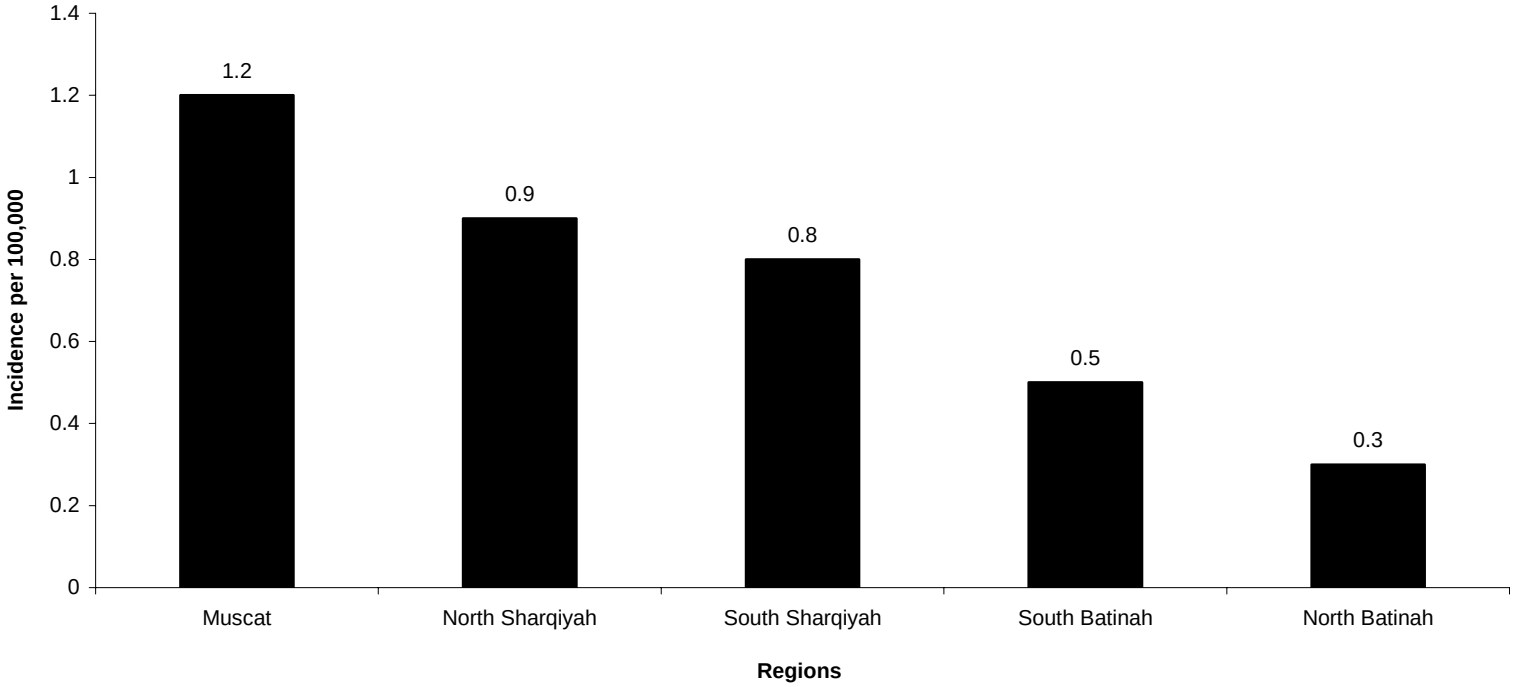


Table 85: Histology of uterine cancer

ICD-O Code	Histology	Percentage (%)
91003	Choriocarcinoma (NOS)	50.0
80103	Carcinoma (NOS)	25.0
82603	Papillary adenocarcinoma (NOS)	12.5
88903	Leiomyosacroma (NOS)	12.5

Cancer among the Expatriates

Cancer among the Expatriates

Expatriates constituted only 26.5% of the total Omani population. In 1996, there were 77 cases of cancer among the expatriate population constituting an incidence rate of 14.2 per 100,000 population. The low rate does not reflect the incidence rates of the respective countries since the expatriate population is a highly selected population, with the majority being adult males. This is also compounded by a detection bias since majority of the expatriates return to their homeland for major medical problems like cancer, once suspected or diagnosed. The higher rate in females is due to their lower numbers compared to males.

Table 86: Sex distribution of cancer cases in expatriates

Sex	Frequency	Incidence/ 100,000
Female	30	26.4
Male	47	11.0
Total	77	14.2

Table 87: Age specific distribution and incidence rates of all cancer cases among expatriates

Age Group	Male	*ASR/ 100,000	Female	*ASR/ 100,000	Total	*ASR/ 100,000
00-09	1	4.0	3	12.5	4	8.2
10-19	-	-	-	-	-	-
20-29	3	2.6	1	3.3	4	2.8
30-39	10	5.7	9	26.2	19	9.0
40-49	14	17.1	10	90.4	24	25.8
50-59	12	68.8	5	202.4	17	85.4
60-69	5	241.5	1	113.6	6	203.4
>70	2	210.5	1	181.8	3	200.0
Total	47	11.0	30	26.4	77	14.2

ASR - Age Specific Rates

Cancer among the Expatriates

Table 88: Ten most common cancers in the expatriates (male & female)

Topography	Frequency	Percentage (%)
Breast	16	20.8
Skin	7	9.1
Leukemia	6	7.8
Lip/Mouth/Pharynx	6	7.8
Lung	4	5.2
Brain	3	3.9
Esophagus	3	3.9
Ovary	3	3.9
Stomach	3	3.9
Colon	2	2.6

Table 89: Ten most common cancers in the expatriates (male)

Topography	Frequency	Percentage (%)
Lip/Mouth/Pharynx	6	12.8
Skin	6	12.8
Lung	4	8.5
Esophagus	3	6.4
Leukemia	3	6.4
Brain	2	4.2
Prostate	2	4.2
Stomach	2	4.2
Colon	1	2.1
Larynx	1	2.1

Cancer among the Expatriates

Table 90: Ten most common cancers in the expatriates (female)

Topography	Frequency	Percentage (%)
Breast	15	50.0
Leukemia	3	10.0
Ovary	3	10.0
Uterus	2	6.7
Cervix	2	6.7
Brain	1	3.3
Colon	1	3.3
Larynx	1	3.3
Skin	1	3.3
Stomach	1	3.3

Table 91: Regional distribution of cancer cases among expatriates

Region	Frequency	Incidence/ 100,000
Muscat	53	20.6
Dhofar	6	9.3
Dakhiliya	3	9.7
North Sharqiyah	-	-
South Sharqiyah	-	-
North Batinah	3	5.0
South Batinah	4	11.8
Dhahira	3	6.4
Musandam	-	-
Al-Wousta	1	28.8
Unknown	4	-
Total	77	-

Cancer among the Expatriates

Table 92: Distribution of cancer cases among expatriates by country of origin

Country	Frequency
India	27
Egypt	13
United Kingdom	7
Philippines	7
Pakistan	5
Bangladesh	4
Srilanka	3
Jordan	2
Canada	1
Palestine	1
Morocco	1
Sudan	1
Syrian Arab Republic	1
Yemen	1
Unknown	3
Total	77