

Ministry of Health Sultanate of Oman

Cancer Incidence in Oman 2001

Non-Communicable Disease Control Section Directorate General of Health Affairs

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Cancer Incidence in Oman

2001

Prepared by

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Non-Communicable Disease Control Section Directorate General of Health Affairs

This report is printed annually. Comments and suggestions concerning its contents are encouraged and could be sent to

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Preface

One third of the 10 million new cases of cancer that are diagnosed globally each year can be prevented and another third can be effectively treated given early detection and treatment. The world is witness to 6 million cancer deaths of which an estimated 60% occurs in developing countries.

The planning and evaluation of cancer control activities and studies to determine cancer causation require the recording of the burden of cancer. Therefore, the cancer registry is a vital source of information for control and research activities.

The issuing of the ministerial decree declaring cancer as a notifiable disease in the year 2001 will enhance cancer registration in Oman. Cancer has been a notifiable disease in many developed countries (Sweden, Norway and others) from the early 1950's (Silva IDS, Cancer Epidemiology: Principles and Methods, 1999, Page 387).

The process of evaluation of any data collection method is vital for the maintenance of quality of the information. For the second time and 10 years after the first evaluation, the Ministry of Health commissioned a World Health Organization Consultant from the International Agency for Research on Cancer (IARC) a World Health Organization Agency, in March 2001, to evaluate Oman's Cancer Registry. Following this evaluation a better liaison was established with regional hospitals and the Sultan Qaboos University Hospital to improve reporting. Efforts are currently underway to establish a hospital-based registry for childhood tumours at the pediatric oncology department in SQUH

This report presents the data from the ONCR for the year 2001. This year for the first time a table showing the deaths due to cancer in 2001 has also been included. Trends of specific cancers from 1996 – 2001 have also been updated.

On behalf of the National Cancer Control Committee, I would like to express my thanks to all the health professionals in the regional hospitals and sister institutions of the Ministry of Health for extending their cooperation and support by notifying cancer cases. We are also thankful to the staff of Non-Communicable Diseases Control Section for their sincere efforts in bringing out this report. I hope that this publication will be useful to those interested in the study of cancer in the Sultanate of Oman and worldwide.

Dr. Ali Jaffer Mohammed Chairman, National Cancer Control Committee

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Dr. C.Thomas Mr. John Ratnaraj Mr. Habib Al-Hilali Mr. Bader Suleiman

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Diwan of Royal Court

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Department of Treatment Abroad Mr. Ali Al-Lamki Mr.Mohammed Aslam

Tuwam Hospital, United Arab Emirates Dr. Falah Al-Khatib

Ministerial Decision No. 4/2001, for Notification of Cancer Cases

On the basis the Law organizing the state administrative structure issued by Royal Decree No. 26/75, the Ministerial Decision No. 120/95 regarding formation of National Cancer Control Committee and the decision No. 2 of the 49th meeting of the GCC Health Ministers Council, the following have been decided:

- Article No. (1): The following diseases are considered malignancies or carcinoma in-situ numbered as per ICD-10 classification:
 - a. C00 C97
 - b. D00 D09
 - c. D37 D48
- Article No. (2): All cancer cases including carcinoma in-situ, diagnosed either clinically or surgically or by laboratory investigation, shall be reported to the National Cancer Registry at the Non-Communicable Diseases Control Section of the Directorate General of Health Affairs within 30 days from the date of diagnosis.
- Article No. (3): Reporting of cancer cases mentioned in the aforesaid Article shall be the responsibility of the following:
 - a. Doctor who examined the case

b. Head of laboratory in which the sample was confirmed positive

c. Head of health institution in which the positive case was detected

- Article No. (4): Reporting of confirmed or suspected cases shall include the 1st, 2nd and 3rd name, tribe name, surname, sex, residence, age and nationality (Form No. MR-123 to be filled completely).
- Article No. (5): This decision shall come into effect from the date of issue of the karar and the concerned officials shall implement it, within their respective responsibilities.

Dr. Ali bin Mohammed bin Moosa Minister of Health

Issued on: 11-10-1421 Corresponding to: 06-01-2001 WORLD HEALTH ORGANIZATION



ORGANISATION MONDIALE DE LA SANTE

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER CENTRE INTERNATIONAL DE RECHERCHE SUR LE CANCER

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7th February 2002

Ref.: DE/92/35 - SW/shi

Dear Dr Al-Lawati,

Cancer Incidence in Five Continents, Vol. VIII

The editors for Volume VIII of Cancer Incidence in Five Continents (CI5) would like to thank you for submitting the data from your registry to be considered for this volume. We met recently in Lyon and reviewed the data.

We noted that the proportion of cases with morphological verification is rather high, suggesting that clinically diagnosed cases may have been missed. Some incidence rates are on the low side, and there is a slight regional variation. The data suggest that there may be imprecision in the stated age.

I am happy to inform you that the data have been accepted for publication, with an asterisk for the reasons given above.

The tables and graphs on which our review was based are enclosed. These comprise:

Population pyramid

Fopulation pyramiu	
Editorial table 1	Number of cases for major sites by year of registration
Editorial table 2	Age-specific rates graphs for major sites
Editorial table 3	Incidence tables, one page for each sex: columns give numbers of cases by site (ALL AGES), numbers of cases of unknown age (AGE UNK), the age-specific incidence rates, the crude rate, the relative
	frequency (%), the proportion of cases with histology or cytology as basis of diagnosis by site (MV%), the world age-standardized rate (ASR W), the average annual change in the standardized rate for registries appearing in Vol. VII (CHV7), and the ICD-9 site code.
Editorial table 4	The age-standardized rates for major sites, the proportion of cases with morphological verification, the proportion of cases based on a death certificate alone and the mortality/incidence ratio. Each of these has been compared with the average value for the registries from your geographical area appearing in Volume VII of CI5, and when the value for your registry is significantly greater than or lower than this average this is indicated and the figure is printed in bold characters.

Dr J. Al-Lawati, Muscat, Oman DE/92/35 7th February 2002 page 2

Final table

The final table presents your data as they would appear in the book, with (by site) the numbers of cases, the relative frequency, the crude rate, the two cumulative rates (0-64 and 0-74) and the world age-standardized rate for males and for females.

With best wishes,

Yours sincerely,

Dr D.M. Parkin Chief, Unit of Descriptive Epidemiology

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Bone	

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Background Of The Sultanate Of Oman

Geographical Features

The Sultanate of Oman is located in the southeastern 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 Arabian Sea. The country borders Saudi Arabia and United Arab Emirates (UAE) 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 are 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 the 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 Wilayah. These are: Muscat, Dhofar and Musandam Governorates and regions of Ad Dakhliyah, Sharqiyah, Batinah, Adh Dhahirah, and Al Wusta. The regions of Sharqiyah and Batinah have each been further subdivided into two, for the purpose of health administration, giving a total of ten health regions.

Population Structure

The estimated mid year population in 2001 was 2,477,687 of which 1,826,124 were Omanis and 651,563 were Non-Omanis (Table 1). The Omani population shows a sex ratio of 966 females per 1000 males. About 14% of the population is under-5 years and 42.3% is under-15 years. Only 4.9% 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.

Age	Male	•	Fema	ale	Total					
Group	Number	%	Number	%	Number	%				
0 – 4	129,806	14.0	123,895	13.8	253,701	13.9				
5 – 9	130,800	14.1	126,021	14.0	256,821	14.1				
10 – 14	132,954	14.3	129,163	14.4	262,117	14.4				
15 – 19	123,631	13.3	118,639	13.2	242,270	13.3				
20 – 24	109,036	11.8	103,991	11.6	213,027	11.7				
25 – 29	78,016	8.4	73,644	8.2	151,660	8.3				
30 – 34	47,478	5.1	44,132	4.9	91,610	5.0				
35 – 39	36,737	4.0	36,770	4.1	73,507	4.0				
40 – 44	29,732	3.2	32,823	3.7	62,555	3.4				
45 – 49	24,864	2.7	26,698	3.0	51,562	2.8				
50 – 54	21,507	2.3	21,608	2.4	43,115	2.4				
55 – 59	18,576	2.0	17,804	2.0	36,380	2.0				
60 – 64	15,772	1.7	14,374	1.6	30,146	1.7				
65 – 69	12,086	1.3	10,735	1.2	22,821	1.3				
70 – 74	8,405	0.9	7,347	0.8	15,752	0.9				
75 +	9,347	1.0	9,733	1.1	19,080	1.0				
Total	928,747	100	897,377	100	1,826,124	100				

Table 1: Age Structure Of The Omani Population

Table 2: Population Distribution Of Omanis By Regions And Gender

Region	Males	Females	Total
Al Wusta	8,955	7,859	16,814
Ad Dakhliyah	120,165	122,504	242,669
Adh Dhahirah	85,149	80,351	165,500
Dhofar	79,951	75,139	155,090
Musandam	14,295	13,133	27,428
Muscat	198,241	179,536	377,777
North Al Batinah	182,813	180,424	363,237
North Ash Sharqiyah	62,212	62,508	124,720
South Al Batinah	105,601	104,220	209,821
South Ash Sharqiyah	71,365	71,703	143,068
Total	928,747	897,377	1,826,124

Population Pyramid of Oman, 2001



Health Administrative Regions of The Sultanate of Oman



This diagram is not an authority on international boundaries

Oman National Cancer Registry

The Oman National Cancer Registry was established in 1985 as a hospital based registry. Only cases treated in tertiary hospitals were registered. In 1996, with the establishment of the Non-Communicable Diseases Section, the cancer registry was transferred 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. In the year 2000, the registration form was simplified (see annex 2), printed and distributed to all institutions that could potentially report cancer cases. Two trained cancer registrars are responsible for data collection, coding and data entry.

Methods

1. Data Collection

a) Active Collection

Active collection involves the registry personnel visiting different sources and abstracting data on Cancer Registry Forms. Being the largest tertiary centre for diagnosis and treatment of cancer, registrars visit the Royal Hospital twice a week and abstracts data on the notification forms. Similarly, other tertiary hospitals like Khoula Hospital and Al-Nahda Hospital are visited once a month.

Patients diagnosed abroad are traced through the Oncology Outpatient Register at the Royal Hospital and subsequently data are extracted from their case notes. Details of patients treated abroad are obtained from the Department of Treatment Abroad, Ministry of Health.

b) Passive Reporting

Cancer notification was made mandatory in the year 2001 through a Ministerial Decision (4/2001). When a case of cancer is diagnosed, the attending physician of the relevant specialty at the regional hospital completes the notification forms and sends them to the registry. Other institutions like the Armed Forces Hospital and Sultan Qaboos University Hospital do similar passive reporting.

2. Data-Coding, Entry and Validity Checks

All cancer cases are coded using International Classification of Diseases for Oncology (ICD-O-2) codes, 2nd Edition, with topography 'C' and morphology 'M' codes. Data are entered in CanReg-3 programme, supplied by the International Agency for Research on Cancer (IARC), Lyon, France. This programme has a duplicate entry checking facility, which avoids the same case being registered more than once. Prior to analysis the entire database is checked using IARC-CHECK programme (Parkin et al., 1994). Validity checks are performed for consistency between items: site/histology, gender/site and age/site/histology combinations.

3. Completeness of Data Reporting

- Firstly, data are obtained from all hospitals with pathology/ hematology laboratories (Royal, Al-Nahdha, Salahlah and Sohar Hospitals) by way of copies of reports of patients diagnosed as cancer to the registry. Since the middle of 2001, the Sultan Qaboos University laboratory has also started sending reports.
- Secondly, monthly hospital "admission discharge" lists are being sent from the tertiary hospitals. From this year, similar lists are being sent by all the regional hospitals as well. These lists help in updating the registry as well as in updating the status of the patient (expired or alive).
- Thirdly, the list of cancer patients coming for chemotherapy to the tertiary hospital is obtained.
- Fourthly, the Diwan of Royal Court sends abroad certain patients who cannot be treated in Oman. This list of patients is also obtained beginning this year.
- Further, some Omani patients living near the border go to Tuwam Hospital in the United Arab Emirates (a country bordering Oman) for diagnosis and management of cancer. A list of these patients is also obtained annually.

Details of missing data are sought from all these above sources so that the registry can be updated.

4. Data Analysis

Data is first checked for consistency and validity using the International Association for Research on Cancer (IARC), 1998 software. Frequency distribution and incidence tables are generated using the Canreg-3 programme. Data for individual cancers are then exported to the EPIINFO version 6 (Centre for Disease Control and Prevention, Georgia, Atlanta, USA) for analysis of incidence by region, gender and morphological types. The results for childhood cancers are presented for the whole Sultanate according to the diagnostic groups defined in the "International Classification of Childhood Cancers 1996" Kramarova et al., 1996). Bar diagrams and graphs were made using Microsoft excel.

The Ministry of National Economy provides population denominators (by 5- year age group and gender by region), which are used for the calculation of incidence rates.

5. Definitions

Incidence

is the number of new cancer cases in a defined population within a specific period.

Date of Diagnosis

is the date documented on the histopathology report. For clinical cases, the date of diagnosis is the date stated in patient's case notes to have cancer.

Population at Risk

The part of the Omani population that is susceptible to have a specific cancer.

Crude incidence rate

Is the number of new cancer cases in the Omani population occurring within a Gregorian calendar (1st January to 31st December) divided by the population at risk in the same period expressed per 100,000.

Age-specific rate

Incidence rate in a specific age group.

Age-standardized rate (ASR)

Age standardization is necessary when comparing several populations that differ with respect to age. Hence the *World Standard Population of Segi*, (Table 3) *(Segi M. Cancer mortality for selected sites in 24 countries (1950-57). Sendai: Tohuku University, School of Medicine, 1960)* was used to adjust the crude incidence rates and to remove the confounding effect of age. Therefore, the ageadjusted rates (ASR) given in tables 8 and 9 could be used for comparison purposes with other rates where the same world standard population was used, especially those issued by the World Health Organization's agency, the International Agency for Research on Cancer (IARC), in its periodic publication Cancer Incidence in Five Continents.

Table 3: Age Structure of the World Standard Population of Segi, used for Ageadjustment

Age Group	Population
00-04	12,000
05-09	10,000
10-14	9,000
15-19	9,000
20-24	8,000
25-29	8,000
30-34	6,000
35-39	6,000
40-44	6,000
45-49	6,000
50-54	5,000
55-59	4,000
60-64	4,000
65-69	3,000
70-74	2,000
75+	2,000
Total	100,000

Overall Results

Table 4: Distribution Of Cancer Cases in Oman by Nationality

Nationality	Frequency	Percentage (%)
Omanis	892	92.1
Non-Omanis	76	7.9
Total	968	100

The total number of cancer cases registered in 2001 in the Oman National Cancer Registry was 968 (Table 4). Of these, 892 (92.1%) cases were among Omanis, and 76 (7.9%) cases were Non-Omanis. In two cases (0.2%), the nationality was unknown. Of the total of 892 cases, males accounted for 482 cases (54.0%), and females accounted for 410 cases (46%) (Table 5); the male : female ratio being 1.2 : 1. Eighty six cases (9.6%) were reported in children aged 14 years and below. The median age at diagnosis was 55 years. This was higher in males (median age 60 years) than in females (median age 50 years).

Table 5: Distribution of Cancer Cases Among Omanis by Gender

Gender	Frequency	Percentage (%)
Male	482	54.0
Female	410	46.0
Total	892	100

Tables 6 and 7 give the frequency distribution of incident cases of cancer by site and age group in Omani males and females respectively.

Incidence Rates

In 2001, the crude incidence rates for all cancers among Omanis was 54 per 100,000 for males and 46 per 100,000 for females. The age standardised rates, adjusted to the world standard population, was 98.1 per 100,000 for males and 83.5 per 100,000 for females (Tables 8 and 9). Figure 1 shows the age specific incidence rates for all cancers.

Basis Of Diagnosis

Table 10 gives the most valid basis of diagnosis of the various cancers for both males and females combined. The majority of cases 84.5% were diagnosed by histology of the primary/metastasis or cytological/haematological investigations. Clinical investigation (e.g. x-ray, isotopes) or specific biochemical and / or immunological test or exploration surgery but without histology, was the second most common method of diagnosis, contributing 14.5%. Cases diagnosed by death certificate constituted only 0.3%.



Figure 1: Age Specific Incidence Rates by Gender, 2001

Table 6: Frequency of incident cases among Omanis by site and age, 2001 (male)

	ALL	AGE	0 -	5 -	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	% of	ICD
SITE	AGES	UNK.	- 4	- 9	-14	-19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-74		Total	(10th)
Lip	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1 :	0.4%	: C00
Tongue	4 :	: 0 :	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0 :	0.8%	: C01-C02
Salivary gland	1 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0 :	0.2%	: C07-C08
Mouth	2 :	: 0 :	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0 :	0.4%	: C03-C06
Oropharynx	1 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0 :	0.2%	: C09-C10
Nasopharynx	6 :	: 0 :	0	1	0	0	0	0	0	0	1	1	1	0	1	1	0	0 :	1.2%	: C11
Hypopharynx	1 :	: 0 :	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0 :	0.2%	: C12-C13
Pharynx unspec.	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C14
Oesophagus	11 :	: 0 :	0	0	0	0	0	0	0	0	0	0	2	1	3	1	1	3 :	2.3%	: C15
Stomach	54 :	: 0 :	0	0	0	0	0	0	1	0	2	3	6	5	16	6	9	6 :	11.2%	: C16
Small intestine	2 :	: 0 :	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0 :	0.4%	: C17
Colon	10 :	: 0 :	0	0	0	0	0	1	2	0	0	2	0	1	1	2	0	1 :	2.1%	: C18
Rectum	16 :	: 0 :	0	0	0	0	1	0	0	0	0	2	1	1	7	1	3	0 :	3.3%	: C19-C21
Liver	29 :	: 0 :	1	0	0	0	0	0	0	0	1	0	1	6	5	4	6	5 :	6.0%	: C22
Gallbladder etc.	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0 :	0.4%	: C23-C24
Pancreas	13 :	: 0 :	0	0	0	0	0	0	0	0	1	2	0	2	3	2	1	2 :	2.7%	: C25
Nose, sinuses etc.	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C30-C31
Larynx	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1 :	0.4%	: C32
Bronchus, lung	41 :	: 0 :	0	0	0	0	1	1	1	2	1	4	3	3	9	3	9	4 :	8.5%	: C33-C34
Other Thoracic organs	4 :	: 0 :	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	1 :	0.8%	: C37-C38
Bone	3 :	: 0 :	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0 :	0.6%	: C40-C41
Connective tissue	7 :	: 0 :	0	2	0	0	0	0	0	1	1	0	0	2	0	0	0	1 :	1.5%	: C47;C49
Mesothelioma	1 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0 :	0.2%	: C45
Kaposi's sarcoma	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0 :	0.4%	: C46
Melanoma of skin	4 :	: 0 :	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0 :	0.8%	: C43
Other skin	17 :	: 1 :	1	0	0	0	0	0	1	0	1	1	2	1	4	3	1	1 :	3.5%	: C44
Breast	6 :	: 0 :	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	2 :	1.2%	: C50
Prostate	40 :	: 0 :	0	0	0	0	0	0	0	0	0	0	1	5	11	5	7	11 :	8.3%	: C61
Testis	4 :	: 0 :	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0 :	0.8%	: C62
Penis	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C60
Other male genital	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C63
Bladder	20 :	: 0 :	0	0	0	0	0	0	0	1	0	1	3	2	4	3	2	4 :	4.1%	: C67
Kidney etc.	6 :	: 0 :	0	1	0	0	0	0	0	0	1	0	0	1	3	0	0	0 :	1.2%	: C64-C66;C68
Eye	2 :	: 0 :	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 :	0.4%	: C69
Brain, nervous system	32 :	: 0 :	2	4	4	3	2	1	4	1	3	0	1	2	1	2	2	0 :	6.6%	: C70-C72
Thyroid	12 :	: 0 :	0	0	0	0	1	2	0	0	0	3	0	2	1	2	0	1 :	2.5%	: C73
Other endocrine	2 :	: 0 :	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0 :	0.4%	: C74-C75
Hodgkin's disease	19 :	: 0 :	1	1	4	3	0	0	1	1	1	3	1	0	0	2	1	0 :	3.9%	: C81
Non-Hodgkin lymphoma	31 :	: 0 :	2	1	0	1	1	2	0	2	3	0	6	0	0	6	4	3:	6.4%	: C82-C85;C96
Multiple myeloma	9 :	: 0 :	0	0	0	0	0	0	0	0	0	1	0	2	2	2	1	1 :	1.9%	: C88;C90
Lymphoid leukaemia	20 :	: 0 :	6	3	2	1	1	0	0	0	0	0	0	2	1	1	3	0 :	4.1%	: C91
Myeloid leukaemia	12 :	: 0 :	0	1	0	4	1	2	0	0	1	0	0	0	0	0	2	1 :	2.5%	: C92
Monocytic leukaemia	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C93
Other leukaemia	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C94
Leukaemia unspec.	6 :	: 0 :	0	1	1	1	0	0	0	0	0	1	1	0	1	0	0	0 :	1.2%	: C95
Other & unspecified	26 :	: 0 :	2	0	0	1	1	0	0	3	2	2	4	1	4	2	3	1:	5.4%	:
All sites	482 :	: 1 :	17	16	11	16	11	10	13	12	22	28	37	40	89	51	57	51 ::	 100.0%	:

Table 7: Frequency of incident cases among Omanis by site and age, 2001 (female)

	ALL	AGE	0 -	5 -	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	б0-	65-	70-	75+	% of	ICD
SITE	AGES	UNK.	- 4	- 9	-14	-19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-74		Total	(10th)
Lip	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C00
Tongue	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C01-C02
Salivary gland	2 :	: 0 :	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0 :	0.5%	: C07-C08
Mouth	2 :	: 0 :	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0 :	0.5%	: C03-C06
Oropharynx	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C09-C10
Nasopharynx	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C11
Hypopharynx	2 :	: 0 :	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1 :	0.5%	: C12-C13
Pharynx unspec.	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C14
Oesophagus	7 :	: 0 :	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	3 :	1.7%	: C15
Stomach	18 :	: 0 :	0	0	0	0	0	0	2	1	2	0	3	2	3	1	1	3 :	4.4%	: C16
Small intestine	3 :	: 0 :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1 :	0.7%	: C17
Colon	10 :	: 0 :	0	0	0	0	0	0	0	0	0	0	3	0	4	0	0	3 :	2.4%	: C18
Rectum	7 :	: 0 :	0	0	0	0	0	0	0	1	0	0	1	2	0	0	1	2 :	1.7%	: C19-C21
Liver	11 :	: 0 :	1	0	0	0	0	0	0	0	2	1	1	0	1	1	3	1 :	2.7%	: C22
Gallbladder etc.	5 :	: 0 :	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0 :	1.2%	: C23-C24
Pancreas	7 :	: 0 :	0	0	0	0	0	0	0	0	0	0	2	1	2	1	1	0 :	1.7%	: C25
Nose, sinuses etc.	1 :	: 0 :	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.2%	: C30-C31
Larynx	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0 :	0.5%	: C32
Bronchus, lung	13 :	: 0 :	0	0	0	0	0	0	0	1	0	0	4	1	4	2	0	1 :	3.2%	: C33-C34
Other Thoracic organs	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C37-C38
Bone	2 :	: 0 :	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0 :	0.5%	: C40-C41
Connective tissue	3 :	: 0 :	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0 :	0.7%	: C47;C49
Mesothelioma	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C45
Kaposi's sarcoma	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C46
Melanoma of skin	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C43
Other skin	14 :	: 0 :	0	0	0	0	0	0	1	0	1	1	1	1	3	1	3	2 :	3.4%	: C44
Breast	75 :	: 1:	0	0	0	0	2	3	3	10	12	12	3	6	13	3	4	3 :	18.3%	: C50
Uterus unspec.	8 :	: 0 :	0	0	0	0	0	0	0	0	0	2	2	1	1	1	0	1 :	2.0%	: C55
Cervix uteri	25 :	: 0 :	0	0	0	0	0	0	0	1	3	2	5	3	1	4	5	1 :	6.1%	: C53
Placenta	1 :	: 0 :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 :	0.2%	: C58
Corpus uteri	6 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	1 :	1.5%	: C54
Ovary etc.	19 :	: 0 :	0	0	1	1	1	1	2	0	1	4	0	2	5	0	0	1 :	4.6%	: C56
Other female genital	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0 :	0.5%	: C51-C52;C57
Bladder	10 :	: 0 :	0	0	0	0	0	0	0	0	1	1	1	2	1	1	1	2 :	2.4%	: C67
Kidney etc.	12 :	: 0 :	4	1	0	0	0	0	0	0	1	0	3	0	2	1	0	0 :	2.9%	: C64-C66;C68
Eye	1 :	: 0 :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0 :	0.2%	: C69
Brain, nervous system	19 :	: 0 :	1	3	0	2	0	2	0	0	2	1	2	1	3	1	1	0 :	4.6%	: C70-C72
Thyroid	40 :	: 0 :	0	0	1	2	3	3	8	3	2	7	8	1	0	1	1	0 :	9.8%	: C73
Other endocrine	3 :	: 0 :	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0 :	0.7%	: C74-C75
Hodgkin's disease	4 :	: 0 :	0	0	1	0	1	0	0	0	0	1	0	0	0	0	1	0 :	1.0%	: C81
Non-Hodgkin lymphoma	25 :	: 0 :	2	1	2	1	1	0	0	0	1	1	5	2	4	3	1	1 :	6.1%	: C82-C85;C96
Multiple myeloma	2 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0 :	0.5%	: C88;C90
Lymphoid leukaemia	14 :	: 0 :	2	5	4	0	0	0	0	0	0	0	0	0	0	2	1	0 :	3.4%	: C91
Myeloid leukaemia	11 :	: 0 :	1	0	3	0	0	0	1	1	0	1	1	0	1	0	0	2 :	2.7%	: C92
Monocytic leukaemia	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C93
Other leukaemia	0 :	: 0 :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 :	0.0%	: C94
Leukaemia unspec.	7 :	: 0 :	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1	2 :	1.7%	: C95
Other & unspecified	17 :	: 0 :	1	0	0	2	0	1	0	0	0	1	2	4	2	1	2	1 :	4.1%	:
All sites	410 :	: 1 :	16	11	15	9	8	11	18	20	32	39	50	33	55	27	33	32 :	100.0%	:

Table 8: Age specific incidence rate per 100,000 Omanis, 2001 (male)

	ALL	AGE	0 -	5 -	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	CRUDE	A	SR	ICD
SITE	AGES	UNK.	- 4	- 9	-14	-19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-74		RATE	WO!	RLD	(10th)
Lip	2	: 0 :	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-	10.7	: 0.2	: /	0.4 :	C00
Tongue	4	: 0 :	-	-	-	-	-	-	-	-	3.4	4.0	9.3	-	-	-	-	-	: 0.4	: /	0.9 :	C01-C02
Salivary gland	1	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	: 0.1	: /	0.3 :	C07-C08
Mouth	2	: 0 :	-	-	-	-	-	-	2.1	-	-	-	-	-	6.3	-	-	-	: 0.2	: /	0.4 :	C03-C06
Oropharynx	1	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	: 0.1	: /	0.3 :	C09-C10
Nasopharynx	6	: 0 :	-	0.8	-	-	-	-	-	-	3.4	4.0	4.6	-	6.3	8.3	-	-	: 0.6	: :	1.3 :	C11
Hypopharynx	1	: 0 :	-	-	-	-	-	-	2.1	-	-	-	-	-	-	-	-	-	: 0.1	: /	0.1 :	C12-C13
Pharynx unspec.	0	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: /	0.0 :	C14
Oesophagus	11	: 0 :	-	-	-	-	-	-	-	-	-	-	9.3	5.4	19.0	8.3	11.9	32.0	: 1.2	: :	2.6 :	C15
Stomach	54	: 0 :	-	-	-	-	-	-	2.1	-	6.7	12.0	27.8	26.9	101.2	49.5	106.9	64.1	: 5.8	: 1	2.7 :	C16
Small intestine	2	: 0 :	-	-	-	-	-	-	2.1	-	-	-	-	-	6.3	-	-	-	: 0.2	: /	0.4 :	C17
Colon	10	: 0 :	-	-	-	-	-	1.3	4.2	-	-	8.0	-	5.4	6.3	16.5	-	10.7	: 1.1	: :	2.0 :	C18
Rectum	16	: 0 :	-	-	-	-	0.9	-	-	-	-	8.0	4.6	5.4	44.3	8.3	35.6	-	: 1.7	: ;	3.7 :	C19-C21
Liver	29	: 0 :	0.8	-	-	-	-	-	-	-	3.4	-	4.6	32.2	31.6	33.0	71.2	53.4	: 3.1	: (6.6 :	C22
Gallbladder etc.	2	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	12.7	-	-	-	: 0.2	: /	0.5 :	C23-C24
Pancreas	13	: 0 :	-	-	-	-	-	-	-	-	3.4	8.0	-	10.7	19.0	16.5	11.9	21.4	: 1.4	: :	3.0 :	C25
Nose, sinuses etc.	0	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: (0.0 :	C30-C31
Larynx	2	: 0 :	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-	10.7	: 0.2	: (0.4 :	C32
Bronchus, lung	41	: 0 :	-	-	-	-	0.9	1.3	2.1	5.4	3.4	16.1	13.9	16.1	56.9	24.8	106.9	42.7	: 4.4	: '	9.1 :	C33-C34
Other Thoracic organs	4	: 0 :	-	0.8	-	-	-	-	-	2.7	-	-	-	-	-	-	11.9	10.7	: 0.4	: (0.7 :	C37-C38
Bone	3	: 0 :	-	-	-	0.8	1.8	-	-	-	-	-	-	-	-	-	-	-	: 0.3	: (0.2 :	C40-C41
Connective tissue	7	: 0 :	-	1.5	-	-	-	-	-	2.7	3.4	-	-	10.7	-	-	-	10.7	: 0.8	: '	1.2 :	C47;C49
Mesothelioma	1	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-	: 0.1	: (0.2 :	C45
Kaposi's sarcoma	2	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	12.7	-	-	-	: 0.2	: (0.5 :	C46
Melanoma of skin	4	: 0 :	-	-	-	-	-	-	-	-	-	4.0	-	-	6.3	16.5	-	-	: 0.4	: '	1.0 :	C43
Other skin	17	: 1 :	0.8	-	-	-	-	-	2.1	-	3.4	4.0	9.3	5.4	25.3	24.8	11.9	10.7	: 1.8	: :	3.5 :	C44
Breast	6	: 0 :	-	-	-	-	-	-	-	-	3.4	-	-	-	19.0	-	-	21.4	: 0.6	: '	1.4 :	C50
Prostate	40	: 0 :	-	-	-	-	-	-	-	-	-	-	4.6	26.9	69.6	41.3	83.1	117.4	: 4.3	: '	9.3 :	C61
Testis	4	: 0 :	-	-	-	0.8	-	1.3	-	-	3.4	-	-	5.4	-	-	-	-	: 0.4	: /	0.6 :	C62
Penis	0	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: /	0.0 :	C60
Other male genital	0	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: /	0.0 :	C63
Bladder	20	: 0 :	-	-	-	-	-	-	-	2.7	-	4.0	13.9	10.7	25.3	24.8	23.7	42.7	: 2.1	: /	4.6 :	C67
Kidney etc.	6	: 0 :	-	0.8	-	-	-	-	-	-	3.4	-	-	5.4	19.0	-	-	-	: 0.6	:	1.3 :	C64-C66;C68
Еуе	2	: 0 :	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7	: 0.2	: /	0.3 :	C69
Brain, nervous system	32	: 0 :	1.5	3.1	3.0	2.4	1.8	1.3	8.4	2.7	10.1	-	4.6	10.7	6.3	16.5	23.7	-	: 3.4	: /	4.4 :	C70-C72
Thyroid	12	: 0 :	-	-	-	-	0.9	2.6	-	-	-	12.0	-	10.7	6.3	16.5	-	10.7	: 1.3	: :	2.4 :	C73
Other endocrine	2	: 0 :	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	11.9	-	: 0.2	: /	0.3 :	C74-C75
Hodgkin's disease	19	: 0 :	0.8	0.8	3.0	2.4	-	-	2.1	2.7	3.4	12.0	4.6	-	-	16.5	11.9	-	: 2.0	: :	2.8 :	C81
Non-Hodgkin lymphoma	31	: 0 :	1.5	0.8	-	0.8	0.9	2.6	-	5.4	10.1	-	27.8	-	-	49.5	47.5	32.0	: 3.3	: /	6.0 :	C82-C85;C96
Multiple myeloma	9	: 0 :	-	-	-	-	-	-	-	-	-	4.0	-	10.7	12.7	16.5	11.9	10.7	: 1.0	: :	2.1 :	C88;C90
Lymphoid leukaemia	20	: 0 :	4.6	2.3	1.5	0.8	0.9	-	-	-	-	-	-	10.7	6.3	8.3	35.6	-	: 2.1	: :	2.7 :	C91
Myeloid leukaemia	12	: 0 :	-	0.8	-	3.2	0.9	2.6	-	-	3.4	-	-	-	-	-	23.7	10.7	: 1.3	:	1.5 :	C92
Monocytic leukaemia	0	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: /	0.0 :	C93
Other leukaemia	0	: 0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: /	0.0 :	C94
Leukaemia unspec.	6	: 0 :	-	0.8	0.8	0.8	-	-	-	-	-	4.0	4.6	-	6.3	-	-	-	: 0.6	: (0.9 :	C95
Other & unspecified	26	: 0 :	1.5	-	-	0.8	0.9	-	-	8.1	6.7	8.0	18.6	5.4	25.3	16.5	35.6	10.7	: 2.8	: !	5.3 :	:
All sites	482	: 1 :	13	12	8	13	10	13	27	33	74	112	172	215	563	421	677	545	: 51.8	: 9	8.1 :	:

Table 9:Age specific incidence rate per 100,000 Omanis, 2001 (female)

ст тр	ALL	AGE	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50- -54	55-	60-	65-	70-	75+	CRUDE	ASR WORLD	ICD
JIIE Tim	AGES .	0.1	- 4	- 9	-14	-19	-24	-29	-34	-39	-44	-49	-14	- 59	-04	-09	-/4		· 0 0	· 0 0	· coo
Tenano	0.	0.	_	-	-	_	_	_	-	_	_	_	_	_	_	_	_	_	. 0.0	. 0.0	. 001 002
Colivery gland	2	0.	_	-	-	0 0	_	_	-	_	2 0	_	_	_	_	_	_	_	· 0.0	· 0.0	· C01-C02
Salivary gianu Mouth	2 .	0.	-	-	-	0.0	-	-	-	2 7	5.0	-	-	-	- -	-	-	-	· 0.2	· 0.3	· C07-C08
Mouth	2 .	0.	-	-	-	-	-	-	-	2.1	-	-	-	-	0.9	-	-	-	• 0.2	. 0.4	. 003-006
oropharynx Negenebeurge	0.	0.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	. 0.0	. 0.0	· CU9-CIU
Nasopharynx	0.	0.	-	-	-	-	-	-	-	~ 7	-	-	-	-	-	-	-	10 2	. 0.0	. 0.0	• CII
hypopnarynx Dhaenen a c	2 .	0.	-	-	-	-	-	-	-	2.1	-	-	-	-	-	-	-	10.3	• 0.2	. 0.4	· CIZ-CI3
Pharynx unspec.	0	0 :	-	-	-	-	-	-	-	-	-	-	-	-	_	-	12 6	-	: 0.0	. 1 7	: C14
Uesopnagus	/	0 :	-	-	-	-	-	-	-		- 1	-	4.6	-	6.9	9.3	13.6	30.8	. 0.8	· 1./	: C15
Stomach	18	0 :	-	-	-	-	-	-	4.5	2.1	6.1	-	13.9	11.2	20.8	9.3	13.6	30.8	: 2.0	3.9	: C16
Small intestine	3	0:	-	-	-	-	-	-	-	-	-	3.7	-	-	-	-	13.6	10.3	: 0.3	: 0.7	: C17
Colon	10 :	0:	-	-	-	-	-	-	-	-	-	-	13.9	-	27.8	-	-	30.8	: 1.1	2.4	: C18
Rectum	7	0:	-	-	-	-	-	-	-	2.7		-	4.6	11.2	-	-	13.6	20.5	: 0.8	: 1.5	: C19-C21
Liver	11 :	0:	0.8	-	-	-	-	-	-	-	6.1	3.7	4.6		6.9	9.3	40.7	10.3	: 1.2	: 2.5	: C22
Gallbladder etc.	5 :	0:	-	-	-	-	-	-	-	-	6.1	-		5.6	6.9		13.6	-	: 0.6	: 1.1	: C23-C24
Pancreas	7 :	0:	-	-	-	-	-	-	-	-	-	-	9.2	5.6	13.9	9.3	13.6	-	: 0.8	: 1.8	: C25
Nose, sinuses etc.	1 :	0 :	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.1	: 0.1	: C30-C31
Larynx	2 :	0 :	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	13.6	-	: 0.2	: 0.5	: C32
Bronchus, lung	13 :	0 :	-	-	-	-	-	-	-	2.7	-	-	18.5	5.6	27.8	18.6	-	10.3	: 1.4	: 3.2	: C33-C34
Other Thoracic organs	0 :	0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: 0.0	: C37-C38
Bone	2 :	0 :	-	-	-	-	-	-	2.3	-	-	3.7	-	-	-	-	-	-	: 0.2	: 0.4	: C40-C41
Connective tissue	3 :	0 :	1.6	-	-	-	-	-	-	-	-	-	-	5.6	-	-	-	-	: 0.3	: 0.4	: C47;C49
Mesothelioma	0 :	0:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: 0.0	: C45
Kaposi's sarcoma	0 :	0:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: 0.0	: C46
Melanoma of skin	0 :	0 :	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: 0.0	: C43
Other skin	14 :	0:	-	-	-	-	-	-	2.3	-	3.0	3.7	4.6	5.6	20.8	9.3	40.7	20.5	: 1.6	: 3.3	: C44
Breast	75 :	1:	-	-	-	-	1.9	4.1	6.8	27.1	36.5	44.9	13.9	33.6	90.3	27.9	54.3	30.8	: 8.3	: 15.6	: C50
Uterus unspec.	8 :	0:	-	-	-	-	-	-	-	-	-	7.5	9.2	5.6	6.9	9.3	-	10.3	: 0.9	: 1.9	: C55
Cervix uteri	25 :	0:	-	-	-	-	-	-	-	2.7	9.1	7.5	23.1	16.8	6.9	37.2	67.9	10.3	: 2.8	: 5.9	: C53
Placenta	1 :	0:	-	-	-	-	-	-	-	-	-	3.7	-	-	-	-	-	-	: 0.1	: 0.2	: C58
Corpus uteri	6 :	0 :	-	-	-	-	-	-	-	-	-	-	-	5.6	6.9	18.6	13.6	10.3	: 0.7	: 1.5	: C54
Ovary etc.	19 :	0 :	-	-	0.8	0.8	1.0	1.4	4.5	-	3.0	15.0	-	11.2	34.7	-	-	10.3	: 2.1	: 3.7	: C56
Other female genital	2 :	0 :	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	13.6	-	: 0.2	: 0.5	: C51-C52;C57
Bladder	10 :	0 :	-	-	-	-	-	-	-	-	3.0	3.7	4.6	11.2	6.9	9.3	13.6	20.5	: 1.1	: 2.3	: C67
Kidney etc.	12 :	0 :	3.2	0.8	-	-	-	-	-	-	3.0	-	13.9	-	13.9	9.3	-	-	: 1.3	: 2.2	: C64-C66;C68
Еуе	1 :	0 :	-	-	-	-	-	-	-	-	-	3.7	-	-	-	-	-	-	: 0.1	: 0.2	: C69
Brain, nervous system	19 :	0 :	0.8	2.4	-	1.7	-	2.7	-	-	6.1	3.7	9.2	5.6	20.8	9.3	13.6	-	: 2.1	: 3.4	: C70-C72
Thyroid	40 :	0 :	-	-	0.8	1.7	2.9	4.1	18.1	8.1	6.1	26.2	36.9	5.6	-	9.3	13.6	-	: 4.4	: 6.9	: C73
Other endocrine	3 :	0 :	0.8	-	0.8	-	-	1.4	-	-	-	-	-	-	-	-	-	-	: 0.3	: 0.3	: C74-C75
Hodgkin's disease	4 :	0 :	-	-	0.8	-	1.0	-	-	-	-	3.7	-	-	-	-	13.6	-	: 0.4	: 0.6	: C81
Non-Hodgkin lymphoma	25 :	0 :	1.6	0.8	1.5	0.8	1.0	-	-	-	3.0	3.7	23.1	11.2	27.8	27.9	13.6	10.3	: 2.8	: 5.0	: C82-C85;C96
Multiple myeloma	2 :	0 :	-	-	-	-	-	-	-	-	-	-	-	5.6	6.9	-	-	-	: 0.2	: 0.5	: C88;C90
Lymphoid leukaemia	14 :	0 :	1.6	4.0	3.1	-	-	-	-	-	-	-	-	-	-	18.6	13.6	-	: 1.6	: 1.7	: C91
Myeloid leukaemia	11 :	0:	0.8	-	2.3	-	-	-	2.3	2.7	-	3.7	4.6	-	6.9	-	-	20.5	: 1.2	: 1.7	: C92
_ Monocytic leukaemia	0 :	0:	-	-	-	-	-	-	_	-	-	-	_	-	_	-	-	_	: 0.0	: 0.0	: C93
Other leukaemia	0 :	0:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	: 0.0	: 0.0	: C94
Leukaemia unspec.	7 :	0:	0.8	0.8	0.8	-	-	-	-	-	3.0	-	-	-	-	-	13.6	20.5	: 0.8	: 1.1	: C95
Other & unspecified	17 :	0 :	0.8	-	-	1.7	-	1.4	-	-	-	3.7	9.2	22.4	13.9	9.3	27.2	10.3	: 1.9	: 3.5	:
All sites	410 :	1:	13	9	12	8	8	 15	41		 97	146	231	185	382	251	448	328	 : 45.6	: 83.5	:

Site	A*	B*	C*	D*	Total
Lip	0	0	2	0	2
Tongue	0	0	4	0	4
Mouth	0	0	4	0	4
Salivary Glands	0	0	3	0	3
Oropharynx	0	0	1	0	1
Nasopharynx	0	2	4	0	б
Hypopharynx	0	1	2	0	3
Oesophagus	1	3	14	0	18
Stomach	0	8	64	0	72
Colon	0	1	19	0	20
Small Intestine	0	0	5	0	5
Rectum	0	2	21	0	23
Liver	0	19	20	1	40
Gall Bladder	0	3	4	0	7
Pancreas	0	13	7	0	20
Nose, Sinuses	0	0	1	0	1
Larynx	0	0	4	0	4
Bronchus, Lung	2	17	34	1	54
Other Thoracic Organs	0	0	4	0	4
Bone	0	1	4	0	5
Connective Tissue	0	2	8	0	10
Melanoma	0	0	4	0	4
Skin	0	0	31	0	31
Kaposi's Sarcoma	0	0	2	0	2
Mesothelioma	0	0	1	0	1
Breast	0	2	79	0	81
Cervix uteri	0	0	25	0	25
Uterus Unspecified	0	2	б	0	8
Corpus uteri	0	1	4	1	6
Ovary	0	2	16	1	19
Other Female Genital	0	0	2	0	2
Prostate	0	4	36	0	40
Testis	0	1	3	0	4
Kidney	0	5	13	0	18
Bladder	0	0	30	0	30
Еуе	0	1	2	0	3
Brain, Nervous System	0	16	35	0	51
Thyroid	0	4	48	0	52
Hodgkin's Disease	0	0	23	0	23
Non Hodgkin's Disease	0	1	55	0	56
Multiple Myeloma	0	1	10	0	11
Leukemia	0	8	61	1	70
Other and Unspecified	0	9	39	1	49
Total	3	129	754	6	892
Percentage of total	0.3	14.5	84.5	0.7	100

Table 10: Incident Cases by most valid basis of diagnosis among Omanis, 2001

*Key to basis of diagnosis

A = Death certificate only

B = Non-microscopic: clinical, clinical investigation, and specific tumour markers, exploratory surgery without histology

C = Microscopic: cytology, histology of primary, & histology of metastasis
D = Unknown

Common Cancers in Omanis

Table 11: Ten Most Common Cancers among Omanis (Males & Females)

Topography	Frequency
Breast*	81
Stomach	72
Leukemia	70
Non-Hodgkin's lymphoma	56
Lung and Bronchus	54
Thyroid	52
Brain	51
Prostate	40
Liver	40
Skin	31
* includes 6 cases of male b	preast cancer

Overall, the commonest cancer in the Omani population was breast cancer followed by stomach cancer and leukemia (Table 11). The most common cancer in males was cancer of the stomach followed by cancer of the lung & bronchus and prostate (Table 12). In females, the most common cancer was breast cancer followed by thyroid cancer and leukemia (Table 13). The totals of each cancer in tables 11, 12, 13 do not include lymphomas, since they are categorized as a separate entity.

Table 12: Ten Most Common Cancers among Omani Males

Topography	Frequency	Percentage (%)
Stomach	54	11.2
Lung & Bronchus	41	8.5
Prostate	40	8.3
Leukemia	38	7.9
Brain	32	6.6
Non-Hodgkin's lymphoma	31	6.4
Liver	29	6.0
Bladder	20	4.1
Hodgkin's lymphoma	19	3.9
Skin	17	3.5

Table 13: Ten Most Common Cancers among Omani Females

Topography	Frequency	Percentage (%)
Breast	75	18.3
Thyroid	40	9.8
Leukemia	32	7.8
Non-Hodgkins lymphoma	25	6.1
Cervix	25	6.1
Ovary	19	4.6
Brain and spinal cord	19	4.6
Stomach	18	4.4
Skin	14	3.4
Uterus	14	3.4



Figure 2: Frequency Distribution of ten most common cancers among Omanis (males and females), 2001

Regional Distribution

The incidence rate in the various regions varied from 17.8 per 100,000 population to 62.2 per 100,000 population. The highest incidence was seen in South Ash Sharqiyah region and the lowest in Al Wusta region. Table 14 gives the incidence rates and number of cases of cancer reported from each region. The high frequency of cancer reported from Muscat could be biased since majority of the cancer cases are referred to the Royal hospital, Muscat and people sometimes give a local address in Muscat, rather than their original place of residence.

Table14 : Regional Distribution Of Cancer Cases Among Omanis

Region	Frequency
Al Wusta	3
Adh Dhahirah	61
Ad Dakhliyah	99
Dhofar	79
Musandam	6
Muscat	180
North Al Batinah	190
North Ash Sharqiyah	42
South Al Batinah	110
South Ash Sharqiyah	89
Unknown	33
Total	892

Common Cancers in Oman



Lymphoma

There were 79 cases of lymphomas reported in 2001. Of these 56 cases (70.9%) were Non-Hodgkin's lymphomas and 23 cases (29.1%) were Hodgkin's lymphomas. Non-Hodgkin's lymphomas formed the fourth most common cancer among the Omani population. The male : female ratio was 1.2:1 for Non-Hodgkin's lymphomas and 4.8:1 for Hodgkin's lymphomas.

The highest incidence rate for Non-Hodgkin's Lymphoma was seen in Al Wusta region (6.0 per 100,000) followed by Adh Dhahirah (4.8 per 100,000). The highest incidence rate for Hodgkin's lymphomas was seen in South Ash Sharqiyah (3.5 per 100,000) followed by Adh Dhahirah (2.4 per 100,000). The regional distribution, gender distribution, the morphology and the trends (1996-2001) of lymphomas reported are presented in Tables 15 - 20 respectively.

	Lymphoma		
Region	Hodgkin's	Non-Hodgkin's	
Al Wusta	0	1	
Ad Dakhliyah	2	4	
Adh Dhahirah	4	8	
Dhofar	1	6	
Musandam	0	1	
Muscat	5	11	
North Al Batinah	3	6	
North Ash Sharqiyah	1	3	
South Al Batinah	2	9	
South Ash Sharqiyah	5	5	
Unknown	0	2	
Total	23	56	

Table15: Regional Distribution Of Lymphomas

Table 16: Gender Distribution Of Lymphomas

	Hodgkin's Lymphoma		Non-Hodgki	n's Lymphoma
Gender	Frequency	Incidence†	Frequency	Incidence†
Female	4	0.4	25	2.8
Male	19	2.0	31	3.3
Total	23		56	

†Incidence per 100,000 per year

Figure 4: Incidence of Hodgkin's Lymphoma by Region (Incidence rates are per 100,000 population)



Lymphoma

Figure 5: Incidence of Non-Hodgkin's Lymphoma by Region (Incidence rates are per 100,000 population)



Table 17: Morphology of Hodgkin's Disease

	Morphology	Number
1	Lymphocytic predominance	0
2	Nodular sclerosis	12
3	Mix ed cellularity	4
4	Lymphocytic depletion	-
5	Unspecified Hodgkin's disease	7
	Total	23

Table18: Morphology of Non-Hodgkin's lymphoma

Morphology	Frequency
Malignant lymphoma, NOS*	8
Non- Hodgkin's lymphoma, NOS*	21
Malignant lymphoma, diffuse, NOS*	4
Malignant lymphoma, small lymphocytic, NOS*	1
Malignant lymphoma, lymphoplasmacytic	1
Malignant lymphoma, large cell, diffuse, NOS*	11
Malignant lymphoma, immunoblastic, NOS*	1
Malignant lymphoma, lymphoblastic	2
Burkitt's lymphoma, NOS*	3
Follicular, NOS*	2
Mycosis fungoides	1
Large cell (Ki-1+) lymphoma	1
Total	56

*NOS - not otherwise specified

Table19: Trends of Hodgkin's Lymphoma, 1996–2001

	Male		Fen	nale
Year	Frequency	ASR World	Frequency	ASR World
1996	11	1.9	11	2.0
1997	17	1.9	4	0.7
1998	16	3.4	4	0.5
1999	18	2.2	9	2.0
2000	18	2.7	12	1.8
2001	19	2.8	4	0.6

ASR, Age-standardized incidence rate per 100,000

	Male		Fen	nale
Year	Frequency	ASR World	Frequency	ASR World
1996	45	8.6	17	3.0
1997	43	7.9	30	6.1
1998	32	9.0	17	3.6
1999	39	8.1	18	3.1
2000	41	7.7	29	5.4
2001	31	6.0	25	5.0

Table 20: Trends of Non-Hodgkin's Lymphoma, 1996 –2001

ASR, Age-standardized incidence rate per 100,000

Stomach

Gastric cancer formed the second most common cancer among the Omanis. In 2001, there were 76 cases of gastric cancer. Among these 58 were males and 18 were females, giving the male : female ratio of 3.2:1. The highest incidence rate was seen in Musandam (10.9 per 100,000) followed by South Al Batinah (5.7 per 100,000) and South Ash Sharqiyah (5.6 per 100,000). The regional distribution, gender distribution the morphological types and the trends (1996-2001) of stomach cancer cases reported are presented in Tables 21-24 respectively

Frequency*
0
12
0
6
3
14
20
1
12
8
76

Table 21: Regional Distribution Of Gastric Cancer

*includes cases of malignant lymphomas

Table 22: Gender Distribution Of Gastric Cancer

Gender	Frequency	Incidence/100,000
Male	58	6.2
Female	18	2.0
Total	76	

Table 23: Morphology of Gastric cancer

Morphology	Frequency	
Adenocarcinoma, NOS*	49	
Papillary adenocarcinoma, NOS*	2	
Mucin-producing adenocarcinoma	6	
Leiomyosarcoma, NOS*	2	
Malignant Lymphoma, NOS*	1	
Malignant Lymphoma, non-Hodgkins, NOS*	3	
Unspecified carcinoma	3	
Unspecified cancer	10	
Total (including lymphoma)	76	
*NOS - not otherwise specified		

NOS - not otherwise specified

Stomach



This Diagram is not an authority on international boundaries.
Table 24:	Trends of	Gastric	Cancer,	1996 - 2001
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	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World
1996	42	11.4	24	6.9
1997	53	14.6	27	6.9
1998	43	13.3	29	8.2
1999	55	13.7	26	7.0
2000	54	12.5	22	5.6
2001	54	12.7	18	3.9

Breast

Breast cancer was the most common cancer among Omani females. In all there were 82 cases of breast cancer, 76 cases among females and only 6 among males. The incidence rate (Figure 7) was highest in Muscat (16.2 per 100,000) followed by North Al Batinah (9.4 per 100,000) and Ad Dakhliyah (8.2 per 100,000). The regional distribution and the morphology as well as trends (1996-2001) of breast cancer cases reported, are presented in Tables 25-27 respectively.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	10
Adh Dhahirah	2
Dhofar	3
Musandam	0
Muscat	29
North Al Batinah	17
North Ash Sharqiyah	3
South Al Batinah	5
South Ash Sharqiyah	4
Unknown	3
Total	76
* includes melianent lym	nhama

Table 25: Regional Distribution of Breast Cancer

* includes malignant lymphoma

Table 26: Morphology of breast cancer

Morphology	Frequency
Infiltrating duct carcinoma	55
Tubular adenocarcinoma	1
Adenocarcinoma	1
Medullary carcinoma, NOS*	1
Lobular carcinoma, NOS*	1
Paget's disease and infiltrating duct carcinoma	2
Malignant lymphoma, diffuse, NOS*	1
Unspecified carcinoma	11
Unspecified cancer	3
Total	76

*NOS - not otherwise specified

Figure 7: Incidence of Breast Cancer by Region (Incidence rates are per 100,000 population)



Year	Frequency*	ASR World	
1996	53	14.4	
1997	56	12.6	
1998	50	13.0	
1999	55	13.1	
2000	70	14.7	
2001	75	15.6	

Table 27: Trends of Breast Cancer, 1996–2001

Lung and Bronchus

There were 57 cases of cancer of the lung & bronchus. Of these 42 were males and 15 were females, with the male: female ratio being 2.8:1. This cancer formed the second most common cancer among Omani males. The highest incidence rate (Figure 8) was seen in South Ash Sharqiyah (4.9 per 100,000), followed by North Ash Sharqiyah (4.0 per 100,000) and Dhofar (3.2 per 100,000). The regional distribution, gender distribution and the morphology of this cancer and its trends (1996-2001) reported, are presented in Tables 28-31 respectively.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	6
Adh Dhahirah	3
Dhofar	5
Musandam	0
Muscat	9
North Al Batinah	10
North Ash Sharqiah	5
South Al Batinah	6
South Ash Sharqiah	7
Unknown	6
Total	57

Table 28: Regional Distribution of Lung & Bronchial Cancer

* includes cases of malignant lymphomas

Table 29: Gender Distribution of Lung & Bronchial Cancer

Gender	Frequency	Incidence/100,000
Male	42	4.5
Female	15	1.7
Total	57	

Lung and Bronchus

Figure 8: Incidence of Lung Cancer by Region (Incidence rates are per 100,000 population)



Table 30: Morphology of Lung Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Squamous cell carcinoma	7
	1.2 Adenocarcinoma	13
	1.3 Small-cell carcinoma	2
	1.4 Large-cell carcinoma (include giant cell, clear-	1
	cell and large-cell undifferentiated carcinoma)	
	1.5 ¹ Other specified carcinomas (include adenoid	1
	cystic, mucoepidermoid, and large-cell neuroendo-	
	crine carcinomas, and carcinoid tumour)	
	1.6 Unspecified carcinoma	7
2	Sarcoma	-
3	Other specified cancer (include pulmonary blastoma)	3
4	Unspecified cancer	23
	Total	57

¹ the separation of bronchial gland carcinomas (adenoid cystic and mucoepidermoid carcinomas) from other adenocarcinomas, as in the WHO classifiction, is based on differences in etiology and prognosis

	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World
1996	26	7.3	13	4.1
1997	46	12.8	11	2.8
1998	27	8.8	7	1.6
1999	46	12.1	9	2.3
2000	37	8.8	8	2.0
2001	41	9.1	13	3.4

Table 31: Trends of Lung and Bronchus Cancer, 1996–2001

ASR, Age-standardized incidence rate per 100,000

*Excludes cases of malignant lymphomas

Urinary Bladder

Cancer of the urinary bladder was diagnosed in 30 cases. Among these there were 20 males and 10 females, the male: female ratio being 2:1. The highest incidence rate (Figure 9) was observed in North Ash Sharqiyah (3.2 per 100,000) followed by Dhofar (2.6 per 100,000) and Ad Dakhliyah (1.7/100,000). The regional distribution, gender distribution and the morphology of this cancer and its trends (1996-2001) reported, are presented in Tables 32-35 respectively. Transitional cell carcinomas constituted 97.0% of the tumours .

Table 32: Regional Distribution of Malignancies of the Urinary Bladder

Region	Frequency
Al Wusta	0
Ad Dakhliyah	4
Adh Dhahirah	2
Dhofar	4
Musandam	0
Muscat	5
North Al Batinah	5
North Ash Sharqiyah	4
South Al Batinah	3
South Ash Sharqiyah	2
Unknown	1
Total	30

Table 33: Gender Distribution of Malignancies of the Urinary Bladder

Gender	Frequency	Incidence/100,000
Male	20	2.1
Female	10	1.1
Total	30	



Figure 9: Incidence of Urinary Bladder Cancer by Region (Incidence rates are 100,000 per population)

Table 34: Morphology of Bladder Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Squamous cell carcinoma	1
	1.2 Transitional cell carcinoma (include transi-	29
	tional	
	cell carcinoma with squamous and/or glandular	
	differentiation)	-
	1.3 Adenocarcinoma	-
	1.4 Other specified carcinoma	-
	1.5 Unspecified carcinoma	
2	Sarcoma	-
3	Other specified cancer (include phaeochromocytoma,	-
	malignant paraganglioma, melanoma, carcinosarcoma)	
4	Unspecified cancer	-
	Total	30

Table 35: Trends of Bladder Cancer, 1996–2001

	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World
1996	32	8.2	9	2.4
1997	24	7.4	9	2.9
1998	24	6.2	8	1.6
1999	23	5.8	12	3.4
2000	15	3.3	6	1.5
2001	20	4.6	10	2.3

Prostate

Carcinoma of the prostate was the third commonest cancer among Omani males, with 40 cases being reported. The highest incidence rate (Figure 10) was seen in Adh Dhahirah (7.1 per 100,000) followed by Dhofar (6.3 per 100,000) and South Ash Sharqiyah (5.6 per 100,000). The regional distribution, gender distribution and the morphology of this cancer as well as its trends (1996-2001) reported are presented in Tables 36-38 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	2
Adh Dhahirah	6
Dhofar	5
Musandam	0
Muscat	9
North Al Batinah	5
North Ash Sharqiyah	3
South Al Batinah	5
South Ash Sharqiyah	4
Unknown	1
Total	40

Table 36: Regional Distribution of Carcinoma of the Prostate

Table 37: Morphology of Prostatic cancer

Morphology	Frequency
Adenocarcinoma, NOS*	32
Unspecified carcinoma	4
Unspecified cancer	4
Total	40
*NICO materile a multiple and altical	

*NOS - not otherwise specified

Table 38: Trends of Prostate Cancer, 1996–2001

Year	Frequency*	ASR World
1996	39	10.8
1997	48	12.8
1998	37	10.8
1999	41	10.8
2000	35	8.5
2001	40	9.3

Figure 10: Incidence of Prostatic Cancer by Region (Incidence rates are per 100,000 population)



Skin

The frequency of skin cancers, including melanomas, in 2001 was 38. Among these 22 were males and 16 were females, with the male: female ratio being 1.4:1. It was the 10th commonest cancer among the Omanis. The highest incidence rate (Figure 11) was seen in North Al Batinah (3.6 per 100,000) followed by South Al Batinah (3.3 per 100,000) and Dhofar (3.2 per 100,000). The regional distribution, gender distribution and the morphology of skin cancers and its trends (1996-2001) reported, are presented in Tables 39-42 respectively. Basal cell carcinomas constituted 39.5% and squamous cell carcinomas 28.9 % of the skin cancers.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	2
Adh Dhahirah	3
Dhofar	5
Musandam	0
Muscat	6
North Al Batinah	13
North Ash Sharqyah	1
South Al Batinah	7
South Ash Sharqiah	0
Unknown	1
Total	38

Table 39: Regional Distribution of Skin Cancer

* includes cases of malignant lymphomas

Table 40: Gender Distribution of Skin Cancer

Gender	Frequency	Incidence/100,000
Male	22	2.4
Female	16	1.8
Total	38	



Figure 11: Incidence of Skin Cancer by Region (Incidence rates are per 100,000 population)



Table 41:	Morpholo	gy of Skin ca	ancer
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Morphology	Frequency
Verrucous carcinoma	3
Squamous cell carcinoma	11
Basal cell carcinoma	15
Adenoid cystic carcinoma	1
Malignant melanoma, NOS*	2
Epithelioid sarcoma	1
Dermatofibroma, NOS*	1
Kaposi's sarcoma	2
Malignant lymphoma, lymphoblastic	1
Mycosis fungoides	1
Total	38
*NOC not otherwise encoified	

*NOS - not otherwise specified

Table 42: Trends of Skin Cancer, 1996–2001

	Ma	ale	Ferr	nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	31	8.2	14	3.8
1997	30	7.8	10	3.2
1998	19	5.1	13	3.3
1999	13	3.1	23	5.2
2000	16	3.6	23	5.5
2001	22	4.5	16	3.3

Colon

A total of 21 cases of cancer of the colon were reported. Of these, 10 were males and 11 were females, the male: female ratio being 1:1.1 Adenocarcinomas constituted the majority of these cancers (85.7%). The incidence rate (Figure 12) was the highest in Dhofar and South Al Batinah (1.9 per 100,000) followed by Adh Dhahirah (1.8 per 100,000). The regional distribution, gender distribution and the morphology of this cancer as well as its trends (1996-2001) reported are presented in Tables 43 - 46.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	1
Adh Dhahirah	3
Dhofar	3
Musandam	0
Muscat	6
North Al Batinah	3
North Ash Sharqiyah	1
South Al Batinah	4
South Ash Sharqiyah	0
Total	21

Table 43: Regional Distribution of Carcinoma of the Colon

* includes cases of malignant lymphomas

Table 44: Gender Distribution of Carcinoma of Colon

Gender	Frequency	Incidence/100,000
Male	10	1.1
Female	11	1.2
Total	21	

Table 45: Morphology of Colon cancer

Morphology	Frequency
Adenocarcinoma, NOS*	16
Mucin- producing adenocarcinoma	2
Adenosquamous carcinoma	1
Malignant Lymphoma, NOS*	1
Unspecified cancer	1
Total	21

*NOS - not otherwise specified



	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World
1996	10	2.4	7	2.1
1997	14	2.6	8	1.6
1998	14	3.5	11	3.1
1999	6	1.5	4	1.2
2000	13	2.8	10	2.2
2001	10	2.0	10	2.4

Table 46: Trends of Colon Cancer, 1996–2001

Rectum and Anal Canal

Twenty-three cases were reported as cancer of the rectum and anal canal. Sixteen of them were males and 7 were females. Adenocarcinomas constituted the majority of these cancers (69.6%). The highest incidence rate (Figure 13) was seen in South Al Batinah (2.4 per 100,000) followed by Dhofar (1.9 per 100,000) and North Ash Sharqi-yah (1.6 per 100,000). The regional distribution, gender distribution and the morphology of these cases and trends (1996-2001) reported are presented in Tables 47 - 50 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	3
Adh Dhahirah	2
Dhofar	3
Musandam	0
Muscat	2
North Al Batinah	4
North Ash Sharqyah	2
South Al Batinah	5
South Ash Sharqiah	0
Unknown	2
Total	23

Table 48: Gender Distribution of Carcinoma of the Rectum and Anal Canal

Gender	Frequency	Incidence/100,000
Male	16	1.7
Female	7	0.8
Total	23	

Table 49: Morphology of Rectal cancer

Morphology	Frequency
Verrucous carcinoma, NOS*	1
Squamous cell carcinoma, NOS*	1
Basaloid carcinoma	2
Adenocarcinoma, NOS*	15
Mucin-producing adenocarcinoma	1
Signet ring cell carcinoma	1
Unspecified carcinoma	1
Unspecified cancer	1
Total	23

*NOS - not otherwise specified



Figure 13: Incidence of Cancer of the Rectum and Anal Canal (Incidence rates are per 100,000 population)

	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World
1996	9	2.3	4	1.1
1997	14	3.4	6	1.6
1998	10	2.7	10	2.1
1999	13	2.7	0	0.0
2000	7	1.3	9	2.2
2001	16	3.7	7	1.5

Table 50: Trends of Rectal Cancer, 1996–2001

Bone

There were 6 cases of bone cancer in 2001; 2 female and 4 male. The male:female ratio was 2:1. Three of these cases were osteosarcoma. The highest incidence rate (Figure 14) was seen in South Ash Sharqiyah (0.7 per 100,000) followed by Adh Dhahirah (0.6 per 100,000). The regional distribution, gender distribution and the morphology and trends of bone cancer (1996-2001) reported are presented in Tables 51 - 54 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	0
Adh Dhahirah	1
Dhofar	0
Musandam	0
Muscat	1
North Al Batinah	2
North Ash Sharqiyah	0
South Al Batinah	0
South Ash Sharqiyah	1
Unknown	1
Total	6

Table 51: Regional Distribution of Bone Malignancies

Table 52: Gender Distribution of Bone Malignancies

Gender	Frequency	Incidence/100,000
Male	4	0.3
Female	2	0.2
Total	6	

Table 53: Morphology of Bone Cancer

	Morphology	Number
1	Sarcoma	
	1.1 Osteosarcoma	3
	1.2 Chondrosarcoma	-
	1.3 Ewing sarcoma	1
	1.4 Fibrosarcoma and malignant fibrous histiocytoma	-
	1.5 Other specified sarcomas (include angiosar-	1
	coma, malignant giant cell tumour and PNET)	
	1.6 Unspecified sarcoma	-
2	Other specified cancer (include chordoma, adamanti-	-
	noma of long bones)	
3	Unspecified cancer	1
	Total	6

Figure 13: Incidence of Bone Cancer by region (Incidence rates are per 100,000 population)



	Ma	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World	
1996	3	0.5	1	0.2	
1997	8	1.3	8	1.1	
1998	5	0.7	4	0.2	
1999	3	0.5	6	0.5	
2000	4	0.7	3	0.3	
2001	3	0.2	2	0.4	

Table 54: Trends of Bone Malignancies, 1996–2001

Thyroid

A diagnosis of cancer of the thyroid was made in 52 cases this year. Among these 12 were males and 40 were females, the male: female ratio being 1:3.3. Carcinoma of the thyroid formed the 2nd most common tumour among Omani women. The incidence rate (Figure 15) was the highest in South Ash Sharqiyah (7.7 per 100,000) followed by South Al Batinah (5.2 per 100,000) and Dhofar (4.5 per 100,000). The regional distribution, gender distribution and the morphology of this cancer as well as its trends (1996-2001) reported, are presented in Tables 55 - 58 respectively. The commonest thyroid neoplasm was papillary carcinoma, which constituted 76.7% followed by follicular carcinoma which constituted 20% of the cases.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	3
Adh Dhahirah	5
Dhofar	7
Musandam	0
Muscat	3
North Al Batinah	9
North Ash Sharqiyah	2
South Al Batinah	11
South Ash Sharqiyah	11
Unknown	1
Total	52

Table 55: Regional Distribution of Thyroid Cancers

Table 56: Gender Distribution of Thyroid Cancers

Gender	Frequency	Incidence/100,000
Male	12	1.3
Female	40	4.4
Total	52	





Table 57 : Morphology of Thyroid Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Follicular carcinoma	4
	1.2 Papillary carcinoma	41
	1.3 Medullary carcinoma	3
	1.4 Anaplastic carcinoma (include undifferentiated	-
	carcinoma, giant cell carcinoma)	
	1.5 Other specified carcinoma	-
	1.6 Unspecified carcinoma	-
2	Sarcoma	-
3	Other specified cancer	4
4	Unspecified cancer	-
	Total	52

Table 58: Trends of Thyroid Cancer, 1996–2001

	Male		Fem	nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	8	1.9	30	6.6
1997	9	2.2	31	7.0
1998	6	1.3	26	6.8
1999	8	1.7	31	5.2
2000	5	1.1	25	4.0
2001	12	2.4	40	6.9

Leukemia

Leukemia was reported in 70 cases. Of these, 38 were males and 32 were females, the male: female ratio being 1.3: 1. Leukemia formed the commonest cancer in children 14 years and below. The incidence rate (Figure 16) was the highest in South Ash Sharqiyah (6.3 per 100,000) followed by Dhofar (5.8 per 100,000) and North Ash Sharqiyah (4.8 per 100,000). The regional distribution, gender distribution and the morphology of leukemia and its trends (1996-2001) reported, are presented in Tables 59 - 62 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	11
Adh Dhahirah	4
Dhofar	9
Musandam	1
Muscat	10
North Al Batinah	11
North Ash Sharqiyah	6
South Al Batinah	5
South Ash Sharqiyah	9
Unknown	4
Total	70

Table 59: Regional Distribution of Leukemia

Table 60: Gender Distribution of Leukemia

Gender	Frequency	Incidence/100,000
Male	38	4.0
Female	32	3.6
Total	70	

Figure 16: Incidence of Leukemia by Region (Incidence rates are per 100,000 population)



Tab	ie of . Morphology of Leakaenna	
	Morphology	Number
	Leukaemia	
1	Lymphoid ¹	
	1.1 Acute	26
	1.2 Chronic	8
	1.3 Other specified leukaemia	-
	1.4 Unspecified	-
2	Myeloid	
	2.1 Acute	14
	2.2 Chronic	9
	2.3 Other specified (includes granulocytic sarcoma)	-
	2.4 Unspecified	-
3	Monocytic	
	3.1 Acute	-
	3.2 Chronic	-
	3.3 Other specified	-
	3.4 unspecified	-
4	Other specified leukaemia ²	
	4.1 Acute	5
	4.2 Chronic	-
	4.3 Other	1
5	Unspecified leukaemia	7
	Total	70

Table 61 : Morphology of Leukaemia

Hairy cell leukaemia and leukaemic reticuloendotheliosis included within lymphoid leukaemia in ICD-10

² Plasma cell leukaemia (9830) is excluded (it is classified with myeloma in ICD-9 203.1 and ICD-10 C90.1). Hairy cell leukaemia (9940) and leukaemic reticuloendotheliosis (9941) are excluded (they are classified with the non-Hodgkin lymphomas in ICD-9 (202.4) and with lymphoid leukaemias in ICD-10 (C91.4)

Table 62: Trends of Leukemia, 1996–2001

	Male		Female	
Year	Frequency*	ASR World	Frequency*	ASR World
1996	24	3.7	18	2.8
1997	37	4.7	19	3.4
1998	23	5.2	22	3.6
1999	16	5.5	21	2.9
2000	18	5.7	27	4.1
2001	38	5.1	32	4.5

ASR, Age-standardized incidence rate per 100,000

*Excludes cases of malignant lymphomas

Brain and Spinal Cord

There were 53 cases of brain and spinal cord tumours. Astrocytoma tumour constituted 34.0 %,). The highest incidence rate (Figure 17) was seen in South Al Batinah (4.8 per 100,000) followed by Ad Dakhliyahh (4.1 per 100,000). The regional distribution, gender distribution and the morphology of this cancer and its trends (1996-2001) reported, are presented in Tables 63- 66 respectively.

Table 63: Regional Distribution of Brain & Spinal Cord Tumours

Region	Frequency*		
Al Wusta	0		
Ad Dakhliyah	10		
Adh Dhahirah	3		
Dhofar	3		
Musandam	0		
Muscat	10		
North Al Batinah	8		
North Ash Sharqiyah	2		
South Al Batinah	10		
South Ash Sharqiyah	4		
Unknown	3		
Total	53		
* includes eaces of malignant lymphomas			

* includes cases of malignant lymphomas

Table 64: Gender Distribution of Brain & Spinal Cord Tumours

Gender	Frequency	Incidence/100,000
Male	34	3.7
Female	19	2.1
Total	53	



Figure 17: Incidence of Brain and Spinal Cord Tumors by Region (Incidence rates are per 100,000 population)

	Morphology	Number
1	Tumours of Neuroepithelial Tissue	
	1.1 Gliomas	
	1.1.1 Astrocytic tumours	18
	1.1.2 Oligodendroglial tumours and mixed glio-	1
	mas	5
	1.1.3 Ependymal tumours	3
	1.1.4 Gliomas of uncertain origin	
	1.2 Embryonal tumours	4
	1.2.1 Medulloblastoma	1
	1.2.2 Other	
	1.3 Other neuroepithelial tumours	1
	1.3.1 Choroid plexus tumours	-
	1.3.2 Neuronal & mixed neuronal glial tumours	-
	1.3.3 Olfactory tumours	1
	1.3.4 Pineal parenchymal tumours	
2	Tumours of cranial nerves	-
3	Tumours of meningeal & related tissue	
	3.1 Meningioma	2
	3.2 Soft tissue	1
	3.3 Melanoma	-
4	Germ cell tumours	
	4.1 Germinoma	
	4.2 Other	
5	Sellar Region	
	5.1 Pituitary tumours	-
	5.2 Craniopharyngioma	
6	Other specified tumours	-
7	Unspecified tumours	16
	Total	53

Table 65: Morphology of Brain & Central Nervous System Cancer in Oman – 2001

Table 66: Trends of Brain Malignancies, 1996–2001

	Male		Fem	nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	17	2.3	9	1.2
1997	22	3.7	16	2.5
1998	23	3.5	14	2.7
1999	16	2.8	14	1.7
2000	18	3.0	11	1.5
2001	32	4.4	19	3.4

Cervix

Region	Frequency
Al Wusta	0
Ad Dakhliyah	3
Adh Dhahirah	4
Dhofar	1
Musandam	0
Muscat	2
North Al Batinah	8
North Ash Sharqiyah	0
South Al Batinah	2
South Ash Sharqiyah	4
Unknown	1
Total	25

Table 67: Regional Distribution of Carcinoma of the Cervix

Cervical cancer was diagnosed in 25 cases. The highest incidence rate (Figure 18) was in South Ash Sharqiyah (5.6 per 100,000) followed by Adh Dhahirah (5.0 per 100,000) and North Al Batinah (3.9 per 100,000). The regional distribution and the morphology of cervical cancer and its trends (1996-2001) reported are presented in Tables 67-69 respectively.

Table 68 : Morphology of Cervical Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Squamous cell carcinoma	21
	1.2 Adenocarcinoma (include adenosquamouscarci-	2
	noma, adenocarcinoma with squamous differen-	
	tiation, mucoepidermoid and adenoid cystic car-	
	cinomas)	-
	1.3 Other specified carcinomas	1
	1.4 Unspecified carcinoma	
2	Sarcoma	_
3	Other specified cancer (include mullerian mixed tumour,	_
	carcinosarcoma, melanoma)	
4	Unspecified cancer	1
	Total	25

Table 69: Trends of Cervical Cancer, 1996–2001

Year	Frequency*	ASR World
1996	25	6.4
1997	28	6.7
1998	21	7.0
1999	22	5.6
2000	31	7.0
2001	25	5.9

ASR, Age-standardized incidence rate per 100,000

*Excludes cases of malignant lymphomas



Figure 18: Incidence of Cancer of the Cervix by Region (Incidence rates are per 100,000 population)

Liver

Liver cancer was diagnosed in 40 cases. Among these, 29 were males and 11 were females, giving a male: female ratio of 2.6:1. Hepatocellular carcinoma was the commonest cancer and constituted 52.5%. The highest incidence rate (Figure 19) was seen in Al Wusta (6.0 per 100,000) followed by Ad Dakhliyah(2.9 per 100,000) and North Al Batinah (2.8 per 100,000). The regional distribution, gender distribution and the morphology of this cancer and its trends (1996-2001) reported, are presented in Tables 70 - 73 respectively.

Region	Frequency
Al Wusta	1
Ad Dakhliyah	7
Adh Dhahirah	1
Dhofar	3
Musandam	0
Muscat	9
North Al Batinah	10
North Ash Sharqiyah	1
South Al Batinah	4
South Ash Sharqiyah	3
Unknown	1
Total	40

Table 70: Regional Distribution of Liver Cancer

Table 71: Gender Distribution of Liver Cancer

Gender	Frequency	Incidence/100,000
Male	29	3.1
Female	11	1.2
Total	40	


Figure 13: Incidence of Cancer of the Liver by Regoin (Incidence rates are per 100,000 population)

Table 72: Morphology of Liver Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Hepatocellular carcinoma	21
	1.2 ¹ Cholangiocarcinoma (all intrahepatic biliary	10
	carcinomas, i.e. all adenocarcinomas and	
	adenosquamous carcinoma)	
	1.3 Other specified carcinomas (include	-
	combined hepatocellular and	
	cholangiocarcinoma, carcinoid)	
	1.4 Unspecified carcinoma	-
2	Hepatoblastoma	2
3	Sarcoma	
	3.1 Haemangiosarcoma	-
	3.2 Other sarcomas	-
4	Other specified cancer	-
5	Unspecified cancer	7
	Total	40

¹The category Cholangiocarcinoma applies to all primary carcinomas of the liver of biliary epithelial type, i.e. all carcinomas other than hepatocellular carcinoma and combined hepatocellular and cholangiocarcinoma

	Male		Ferr	nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	21	5.6	2	0.6
1997	17	3.9	13	3.6
1998	29	7.8	15	3.3
1999	33	8.9	16	4.1
2000	26	5.7	12	2.9
2001	29	6.6	11	2.5

Table 73: Trends of Liver Cancer, 1996–2001

ASR, Age-standardized incidence rate per 100,000

*Excludes cases of malignant lymphomas

Esophagus

There were 18 cases of carcinoma of the esophagus. Eleven of these were males and 7 were females, the male:female ratio being 1.6:1. The incidence rate was (Figure 20) the highest in North Al Batinah and Muscat (1.9 per 100,000) followed by North Ash Sharqiyah (0.8 per 100,000) .The regional distribution, gender distribution and the morphology of esophageal cancer and its trends (1996-2001) reported, are presented in Tables 74 - 77 respectively. The majority of cancers were squamous cell carcinoma (50.0%).

Region	Frequency
Al Wusta	0
Ad Dakhliyah	1
Adh Dhahirah	0
Dhofar	0
Musandam	0
Muscat	7
North Al Batinah	7
North Ash Sharqiyah	1
South Al Batinah	1
South Ash Sharqiyah	1
Total	18

Table 74: Regional Distribution of Cancer of the Esophagus

Table 75: Gender Distribution of Carcinoma of the Esophagus

Gender	Frequency	Incidence/100,000
Male	11	1.2
Female	7	0.8
Total	18	

Table 76: Morphology of Esophageal Cancer

Morphology	Number		
1 Carcinoma			
1.1 Squamous cell carcinoma	9		
1.2 Adenocarcinoma (include adenosquamous, muci-	4		
nous, adenoid cystic, mucoepidermoid			
and Barret carcinoma)			
1.3 Other specified carcinomas	-		
1.4 Unspecified carcinoma	-		
2 Sarcoma -			
3 Other specified cancer (include melanoma, carcinosarcoma 1			
4 Unspecified cancer 4			
Total	18		



Figure 20: Incidence of Cancer Esophagus by Region (Incidence rates are per 100,000 population)

68

	Ma	Male		nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	13	3.6	8	1.8
1997	10	2.9	9	3.0
1998	9	2.6	11	4.4
1999	10	2.6	12	3.3
2000	10	2.4	9	2.1
2001	11	2.6	7	1.7

Table 77: Trends of Esophageal Cancer, 1996–2001

ASR, Age-standardized incidence rate per 100,000 *Excludes cases of malignant lymphomas

Kidney and Ureter

Cancer of the kidney & ureter were reported in 18 cases. There were 6 cases in males and 12 cases in females. Renal cell carcinoma constituted 33.3% and nephroblastomas 27.8% of the cases. The highest incidence rate (Figure 21) was seen in South AI Batinah and South Ash Sharqiyah (1.4 per 100,000) followed by Dhofar (1.3 per 100,000). The regional distribution, gender distribution and the morphology of the cancer and its trends (1996-2001) reported, are presented in Tables 78-81 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	2
Adh Dhahirah	1
Dhofar	2
Musandam	0
Muscat	4
North Al Batinah	3
North Ash Sharqiyah	0
South Al Batinah	3
South Ash Sharqiyah	2
Unknown	1
Total	18

Table 78: Regional Distribution of Carcinoma of the Kidney & Ureter

Table 79: Gender Distribution of Carcinoma of the Kidney & Ureter

Gender	Frequency	Incidence/100,000
Male	6	0.6
Female	12	1.3
Total	18	





18

	Morphology	Number
1	Carcinoma	
	1.1 Squamous, transitional cell carcinomas	3
	(epithelial tumours of renal pelvis)	
	1.2 Renal cell carcinoma	6
	1.3 Other specified carcinoma	-
	1.4 Unspecified carcinoma	-
2	Nephroblastoma (Wilms tumour) (include rhabdoid tu-	5
	mour, clear cell sarcoma)	
3	Sarcoma	-
4	Other specified cancer	-
5	Unspecified cancer	4

Table 80: Morphology of Kidney Cancer

Table 81: Trends of Renal Malignancies, 1996–2001

	Male		Fen	nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	8	1.9	10	2.1
1997	6	1.9	7	1.2
1998	4	1.0	7	1.7
1999	8	1.6	4	1.0
2000	12	2.4	12	1.9
2001	6	1.3	12	2.2

ASR, Age-standardized incidence rate per 100,000 *Excludes cases of malignant lymphomas

Total

Pancreas

Pancreatic cancers were reported in 20 cases. Of these, 13 were in males and 7 in females, the male:female ratio being 1.9:1. The highest incidence rate (Figure 22) was observed in South AI Batinah (2.4 per 100,000) followed by South Ash Sharqiyah (1.4 per 100,000) and Muscat (1.1 per 100,000). The regional distribution, gender distribution and the morphology of pancreatic cancer cases and their trends (1996-2001) reported, are presented in Tables 82-85 respectively.

Al Wusta0Ad Dakhliyah1Adh Dhahirah1Dhofar1Dhofar1Musandam0Muscat4North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Region	Frequency
Ad Dakhliyah1Adh Dhahirah1Dhofar1Dhofar1Musandam0Muscat4North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Al Wusta	0
Adh Dhahirah1Dhofar1Musandam0Muscat4North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Ad Dakhliyah	1
Dhofar1Musandam0Muscat4North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Adh Dhahirah	1
Musandam0Muscat4North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Dhofar	1
Muscat4North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Musandam	0
North Al Batinah3North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	Muscat	4
North Ash Sharqiyah0South Al Batinah5South Ash Sharqiyah2Unknown3Total20	North Al Batinah	3
South Al Batinah5South Ash Sharqiyah2Unknown3Total20	North Ash Sharqiyah	0
South Ash Sharqiyah2Unknown3Total20	South Al Batinah	5
Unknown 3 Total 20	South Ash Sharqiyah	2
Total 20	Unknown	3
	Total	20

Table 82: Regional Distribution of Carcinoma of the Pancreas

Table 83: Gender Distribution of Carcinoma of the Pancreas

Gender	Frequency	Incidence/100,000
Male	13	1.4
Female	7	0.8
Total	20	

Table 84: Morphology of Pancreatic cancer

Morphology	Frequency
Adenocarcinoma, NOS*	3
Signet ring cell carcinoma	1
Infiltrating duct carcinoma	1
Unspecified carcinoma	5
Unspecified cancer	10
Total	20

*NOS - not otherwise specified

Figure 22: Incidence of Pancreatic Cancer by Region (Incidence rates are per 100,000 population)



	Ma	Male		nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	9	2.3	3	0.8
1997	9	2.8	3	0.8
1998	4	1.3	8	2.4
1999	5	1.5	5	1.2
2000	9	2.1	5	1.2
2001	13	3.0	7	1.8

Table 85: Trends of Pancreatic Cancer, 1996–2001

ASR, Age-standardized incidence rate per 100,000 *Excludes cases of malignant lymphomas

Ovary

A diagnosis of ovarian cancer was made in 19 cases. These constituted the 6th most common cancer among Omani females. The highest incidence rate (Figure 23) was seen in South Ash Sharqiyah (4.2 per 100,000) followed by Dhofar (4.0 per 100,000) and South Al Batinah (3.8 per 100,000). The regional distribution of ovarian cancer, morphology and its trends (1996-2001) are reported, in Tables 86-88 respectively.

Table 86: Regional Distribution of Ovarian Cancer

Region	Frequency
Al Wusta	0
Ad Dakhliyah	0
Adh Dhahirah	1
Dhofar	3
Musandam	0
Muscat	5
North Al Batinah	2
North Ash Sharqiyah	0
South Al Batinah	4
South Ash Sharqiyah	3
Unknown	1
Total	19

Table 87: Morphology of Ovarian Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Serous carcinoma*	2
	1.2 Mucinous carcinoma*	2
	1.3 Endometrioid carcinoma	-
	1.4 Clear cell carcinoma	-
	1.5 Adenocarcinoma NOS	5
	1.6 Other specified carcinomas	1
	1.7 Unspecified carcinoma	3
2	Sex cord-stromal tumours	-
3	Germ cell tumours	3
4	Other specified cancers (include malignant Brenner tu-	-
	mour, mullerian mixed tumour, carcinosarcoma)	
5	Unspecified cancer	3
	Total	19

* 1.1-1.2: Categories 1.1 and 1.2 include tumours of borderline malignancy (low malignant potential). Unlike other borderline tumours, ICD-O includes borderline tumours of serous and mucinous type with carcinomas. This approach remains to be fully validated

Figure 23: Incidence of Ovarian Cancer by Region (Incidence rates are per 100,000 population)



Table 88:	Trends of	Ovarian	Cancer,	1996–2001

Year	Frequency*	ASR World
1996	9	2.0
1997	15	3.5
1998	31	7.7
1999	29	6.3
2000	27	6.0
2001	19	3.7

ASR, Age-standardized incidence rate per 100,000 *Excludes cases of malignant lymphomas

Larynx & Trachea

Region	Frequency
Al Wusta	0
Ad Dakhliyah	0
Adh Dhahirah	0
Dhofar	0
Musandam	0
Muscat	1
North Al Batinah	2
North Ash Sharqiyah	0
South Al Batinah	0
South Ash Sharqiyah	0
Unknown	1
Total	4

Table 89: Regional Distribution of Carcinoma of the Larynx & Trachea

There were 4 cases of carcinoma of the larynx and trachea reported of which two were male and two female. The male:female ratio was 1:1. Only two regions reported this cancer-North Al Batinah (0.6 per 100,000) and Muscat (0.3 per 100,000). The regional distribution, gender distribution and the morphology of this cancer as well as its trends (1996-2001) reported, are presented in Tables 89-92 respectively. All the cases were diagnosed as squamous cell carcinoma.

Table 90: Gender Distribution of Carcinoma of the Larynx & Trachea

Gender	Frequency	Incidence/100,000
Male	2	0.2
Female	2	0.2
Total	4	

Table 91: Morphology of Laryngeal cancer

Morphology	Frequency
Squamous cell carcinoma, NOS*	3
Squamous cell carcinoma, keratinizing, NOS*	1
Total	4
*NOS (not otherwise encoified)	

*NOS (not otherwise specified)

Table 92: Trends of Laryngeal Cancer, 1996–2001

	Ma	ale	Ferr	nale
Year	Frequency*	ASR World	Frequency*	ASR World
1996	6	1.7	2	0.5
1997	6	1.1	1	0.2
1998	9	2.3	2	0.4
1999	6	1.6	0	0.0
2000	5	1.2	2	0.4
2001	2	0.4	2	0.5

ASR, Age-standardized incidence rate per 100,000

*Excludes cases of malignant lymphomas



80

Uterus

There were 14 cases of uterine cancer in 2001. This includes Corpus Uteri(C 54) as well as 'Uterus, Not Otherwise Specified' (C 55.9). The highest incidence was in South Ash Sharqiyah (2.8 per 100,000) followed by Dhofar (2.7 per 100,000) and Muscat (2.2 per 100,000). The regional distribution and morphology of this cancer and its trends (1996-2001) reported are presented in Tables 93-95 respectively. Twelve of these cancers were carcinoma (85.7%).

Region	Frequency
Al Wusta	0
Ad Dakhliyah	1
Adh Dhahirah	0
Dhofar	2
Musandam	0
Muscat	4
North Al Batinah	3
North Ash Sharqiyah	0
South Al Batinah	0
South Ash Sharqiyah	2
Unknown	2
Total	14

Table 93: Regional Distribution of Uterine Cancer

Table 94: Morphology of Uterine Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Adenocarcinoma (include adenosquamous car-	5
	cinoma and adenocarcinoma with squamous dif-	
	ferentiation)	
	1.2 Other specified carcinoma (include squamous	7
	cell carcinoma, clear-cell carcinoma)	
	1.3 Unspecified carcinoma	-
2	Sarcoma (include leiomyosarcoma, endometrial	2
	Stromal sarcoma)	
3	Other specified cancer (include mullerian mixed	-
	tumour, carcinosarcoma, adenocarcinoma)	
4	Unspecified cancer	-
	Total	14



Figure 25: Incidence of Cancer of the Uterus by Region (Incidence rates are per 100,000population)

82

1.3

3.4

Table 95. Trends of Oterine Cancer, 1990–2001					
Year	Frequency*	ASR World			
1996	12	2.8			
1997	11	2.3			
1998	11	2.4			
1999	6	1.6			

Table 95: Trends of Uterine Cancer, 1006-2001

14 ASR, Age-standardized incidence rate per 100,000 *Excludes cases of malignant lymphomas

6

2000

2001

Childhood Cancers

Of the 892 cases reported during 2001 among Omanis, 86 cases were among children aged 14 years and below, constituting 9.6% of the total cancers reported. Leukemias, lymphomas followed by brain and spinal neoplasms, were the commonest tumours seen in this age group. Tables 96-98 list the common childhood cancers in Omani children. The age specific incidence rates of childhood cancer classified according to the international classification of childhood cancer is given in Table 99. The age standard-ized rates were 88.1 per million for males and 90.6 per million for females.

Topography	Frequency	Percentage (%)
Lymphoid Leukemia	22	25.6
Hodgkin's Lymphoma	7	8.1
Neuroblastoma	7	8.1
Non-Hodgkin's Lymphoma	6	7.0
Other Specified Leukemia	6	7.0
Ependymoma	5	5.8
Astrocytoma	4	4.7
Wilm's Tumour	4	4.7
Unspecified leukemia	4	4.7
Gliomas	3	3.5

Table 96: Frequency of cancer in Omani children

Table 97: Frequency Distribution of Cancers in Omani Boys

Topography	Frequency	Percentage (%)
Lymphoid Leukemia	11	25.0
Hodgkin's Lymphoma	6	13.6
Ependymoma	5	11.4
Neuroblastoma	4	9.1
Astrocytoma	3	6.8
Unspecified Leukemia	2	4.5
Non-Hodgkin's Lymphoma	2	4.5
Gliomas	2	4.5
Soft tissue sarcomas	2	4.5
Burkitt's Lymphoma	1	2.3

Childhood Cancers



Figure 26: Frequency Distribution of Common Cancers among Omani Children by site

Morphology

Topography	Frequency	Percentage (%)
Lymphoid Leukemia	11	26.2
Other specified Leukemia	5	11.9
Non-Hodgkin's Lymphoma	4	9.5
Neuroblastoma	3	7.1
Wilm's tumour	3	7.1
Unspecified Leukemia	2	4.8
Brain and Spinal Neoplasms	2	4.8
Burkitt's Lymphoma	1	2.4
Astrocytoma	1	2.4
Gliomas	1	2.4

Table 98: Frequency Distribution of Cancers in Omani Girls

Site			1	Male						Female		
<u> </u>	0-	5-	10-	All	*CR	*ASR	0-	5-	10-	All	*CR	*ASR
Leukemia	6	5	3	14	35.6	28.0	4	6	8	18	47.5	38.8
Lymphoid Acute pop-lymphocytic	0	3	2	0	28.0	22.0	2	5	4	0	29.0	23.7
Chronic myeloid	Ő	ŏ	ŏ	ŏ	0.0	0.0	ŏ	ŏ	Ő	Ő	0.0	0.0
Other specified	0	1	0	1	2.5	2.0	1	0	4	5	13.2	10.8
Unspecified	0	1	1	2	5.1	4.0	1	1	0	2	5.3	4.3
Lymphomas	3	2	4	9	22.9	18.0	2	1	3	6	15.8	12.9
Hodgkin's disease	1	1	4	6	15.3	12.0	0	0	1	1	2.6	2.2
Non-Hodgkin lymphomas	1	1	0	2	5.1	4.0	1	1	2	4	10.6	8.6
Burkett's lymphoma	1	0	0	1	2.5	2.0	1	0	0	1	2.6	2.2
Unspecified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Unspecified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Brain and Spinal Neoplasms	2	4	4	10	25.4	20.0	1	3	0	4	10.6	8.6
Ependymoma	1	1	3	5	12.7	10.0	0	0	0	0	0.0	0.0
Astrocytoma Primitive neuroectodormal tumours	0	2	1	3	7.6	0.0	1	0	0	1	2.0	2.2
Other gliomas	1	1	0	2	5.1	4.0	0	1	0	1	2.6	2.2
Other specified	0 0	Ö	ŏ	ō	0.0	0.0	ŏ	0 0	Ő	0 0	0.0	0.0
Unspecified	0	0	0	0	0.0	0.0	0	2	0	2	5.3	4.3
Sympathetic Nervous System Tumours	2	2	0	4	10.2	<u>۹</u> ۵	2	0	0	2	7.0	6.5
Neuroblastoma	2	2	0	4	10.2	8.0	3	0	0	3	7.9	6.5
Other	ō	ō	Ő	0	0.0	0.0	Ő	Ő	Ő	Ő	0.0	0.0
Retinoblastoma	1	0	0	1	2.5	2.0	0	0	0	0	0.0	0.0
	1	0	0	1	2.5	2.0	0	0	0	0	0.0	0.0
Renal Tumours	0	1	0	1	2.5	2.0	3	1	0	4	10.6	8.6
Wilm's tumour	0	1	0	1	2.5	2.0	2	1	0	3	7.9	6.5
Renal carcinoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Unspecified	0	0	0	0	0.0	0.0	1	0	0	1	2.6	2.2
Hepatic Tumours	1	0	0	1	2.5	2.0	1	0	0	1	2.6	2.2
Hepatoblastoma	1	0	0	1	2.5	2.0	1	0	0	1	2.6	2.2
Hepatic carcinoma	0	0	0	0	0.0	0.0	1	0	0	0	0.0	0.0
Unspecified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Malignant Bone Tumours	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Osteosarcoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Chondrosarcoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Other specified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Unspecified	0	ő	0	ő	0.0	0.0	ő	ő	0	0	0.0	0.0
Soft Tissue Sarcomas	2	1	0	3	7.6	6.0	2	0	1	3	7.9	6.5
Fibrosarcoma	0	0	0	1	2.5	2.0	0	0	1	1	2.6	2.2
Kaposi's sarcoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Other specified	1	1	Ő	2	5.1	4.0	1	Ő	Ő	1	2.6	2.2
Unspecified	0	0	0	0	0.0	0.0	1	0	0	1	2.6	2.2
Germ Cell and Gonadal Neoplasms	0	0	0	0	0.0	0.0	0	0	1	1	2.6	2.2
Intracranial and intraspinal germ cell	0	Ō	0	0	0.0	0.0	Ō	Ō	0	0	0.0	0.0
Other & unspecified non-gonadal germ cell	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Gonada germ cell	0	0	0	0	0.0	0.0	0	0	1	1	2.6	2.2
Gonadal carcinoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Other and unspecified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Carcinomas and Epithelial Neoplasms	0	0	0	0	0.0	0.0	0	0	1	1	2.6	2.2
Adrenocortical	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
i nyrola Nasophan/ngeal	0		0	0	0.0	0.0		0	1		2.6	2.2
Melanoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Skin	0	0	ő	0	0.0	0.0	0	0	ő	ő	0.0	0.0
Other and unspecified	Ő	Ő	Ő	Ő	0.0	0.0	Ő	Ő	Ő	Ő	0.0	0.0
Other and Unspecified Neoplasms	0	1	0	1	2.5	2.0	0	0	1	1	2.6	2.2
Other specified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Other unspecified	0	1	0	1	2.5	2.0	0	0	1	1	2.6	2.2
Total	17	16	11	44	111.8	88.1	16	11	15	42	110.8	90.6

Table 99 : Frequency Distribution of Childhood Cancers in Oman, 2001 (International Classification of Childhood Cancers)

*CR, Crude incidence rate; ASR, Age-Standardized incidence rate. Both rates are per million per year. the above analysis is restricted to children aged 0-14 years inclusive.

Cancer among Non-Omanis

Non-Omanis constitute 26.3% of the total population of Oman. In 2001 there were 76 cases of cancer among the expatriate population giving a crude incidence rate of 11.7 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 confounded by a detection bias since the majority of the Non-Omanis return to their homeland for major medical problems such as cancer, once suspected or diagnosed.

The commonest cancer among the Non-Omanis was breast cancer followed by skin cancer and leukemia. The gender distribution, the common cancers among the Non-Omanis (males and females), the common cancers among the Non-Omani males, the common cancers among Non-Omani females, the regional distribution, and the distribution by nationality are given in Tables 100-105 respectively.

Table 100: Gender Distribution of Cancer Cases among Non-Omanis

Gender	Frequency
Male	42
Female	34
Total	76

Topography	Frequency	Percentage (%)
Breast	16	21.1
Skin	9	11.8
Leukemia	7	9.2
Thyroid	6	7.9
Lymphoma	4	5.3
Urinary bladder	4	5.3
Cervix	3	3.9
Tongue	3	3.9
Brain	2	2.6
Colon	2	2.6

Table 101: Ten Most Common Cancers in Non-Omanis (Males & Females)

Topography	Frequency	Percentage (%)
Leukemia	7	16.7
Skin	7	16.7
Urinary bladder	4	9.5
Thyroid	3	7.1
Tongue	3	7.1
Lung and Bronchus	2	4.8
Lymphoma	2	4.8
Rectum and anal canal	2	4.8
Brain and spinal cord	1	2.4
colon	1	2.4

Table 102: Ten Most Common Cancers in Non-Omanis (Males)

Table 103: Ten Most Common Cancers among Non-Omanis (Females)

Topography	Frequency	Percentage (%)
Breast	16	47.1
Cervix	3	8.8
Thyroid	3	8.8
Lymphoma	2	5.9
Nasopharynx	2	5.9
Skin	2	5.9
Brain and spinal cord	1	2.9
Colon	1	2.9
Stomach	1	2.9
Uterus	1	2.9

Table 104: Regional Distribution of Cancer Cases among Non-Omanis

Region	Frequency
Al Wusta	0
Ad Dakhliyah	1
Adh Dhahirah	0
Dhofar	13
Musandam	2
Muscat	47
North Al Batinah	4
North Ash Sharqiyah	2
South Al Batinah	3
South Ash Sharqiyah	3
Unknown	1
Total	76

Country	Frequency
India	42
Egypt	12
Philippines	4
United Kingdom	8
Pakistan	10
Bangladesh	4
Sri Lanka	1
Yemen	2
Sudan	3
Morocco	2
Canada	1
United Arab Emirates	1
Jordan	1
Malaysia	1
United States of America	1
Syria	1
United Republic of Tanzania	1
Venezuela	1
Total	76

Table 105: Distribution of Cancer Cases among Non-Omanis by Nationality

Deaths due to cancer

The following table shows inpatient deaths due to cancer as reported to the Ministry of Health in the year 2001. As yet there is no vital registration system in the Sultanate of Oman and it is thought that between 30-40 percent of total deaths that occur in Oman are annually reported the Ministry of Health institutions.

Table 106: Deaths due to cancer in the year 2001

	Males	Females	Total
Malignant neoplasm of lip, oral cavity, pharynx & esophagus	12	5	17
Malignant neoplasm of stomach	28	5	33
Malignant neoplasm of colon	4	3	7
Malignant neoplasm of rectum, rectosigmoid junction & anus	5	4	9
Malignant neoplasm of liver & intraheptic bile ducts	16	6	22
Malignant neoplasm of pancreas	9	5	14
Malignant neoplasm of other sites of digestive organs	4	1	5
Malignant neoplasm of larynx	0	0	0
Malignant neoplasm of trachea, bronchus and lung	25	10	35
Malignant neoplasm of other respiratory & intrathoracic organs	3	0	3
Malignant neoplasm of bone & articular cartilage	3	0	3
Malignant melanoma of skin	1	0	1
Other malignant neoplasams of skin	0	0	0
Malignant neoplasm of retroperitoneum & peritoneum	0	0	0
Other malignant neoplasms of mesothelial and soft tissue	3	3	6
Malignant neoplasm of breast	1	9	10
Malignant neoplasm of cervix uteri	0	3	3
Malignant neoplasm of other & unspecified parts of uterus	0	1	1
Malignant neoplasm of other female genital organs	0	7	7
Malignant neoplasm of prostate	6	0	6
Malignant neoplasm of male genital organs	0	0	0
Malignant neoplasm of urinary bladder	5	1	6
Other malignant neoplasm of urinary Tract	0	2	2
Malignant neoplasm of eye & adnexa	0	0	0
Malignant neoplasm of brain	8	2	10
Malignant neoplasm of other parts of central nervous system	0	1	1
Malignant neoplasm of thyroid & endocrine glands	1	1	2
Malignant neoplasm of ill-defined, secondary & unspecified sites	13	16	29
Hodgkin's diseases	0	0	0
Non Hodgkin's lymphoma	9	7	16
Other malignant neoplasm of lymphatic & haemopoietic tissue	3	1	4
Leukemia	8	11	19
Carcinoma in situ of Cervix Uteri	0	0	0
Other In situ neoplasams	0	1	1
TOTAL	167	105	272

Members of the National Cancer Control Committee

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Dr. Ali Jaffer Mohammed	Director General of Health Affairs	Chairman
Dr. Mohammed Ali Jaffer	Head, Division of Surgery, Royal Hospital	Member
Dr. Ibrahim Abdul Rahim	WHO Representative, Oman	Member
Dr. Saadia Al-Riyami	Head, Dept. of Obs/Gyn, Royal Hospital	Member
Dr. Jawad A. AL-Lawati	Head of Noncommunicable Diseases control, DGHA	Member
Dr. Shalini Chandrashekar	Epidemiologist, Non-Communicable Diseases Control Section, DGHA	Member
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	Head, Oncology Dept., Royal Hospital	Member
-	Senior Specialist, Histopathology Dept., Royal Hospital	Member

Annex 1

Oman National Cancer Registry Directorate General of Health Affairs (HQ) Ministry of Health Sultanate of Oman

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Request for Data from the Oman National Cancer Registry

All requests should be submitted to the attention of the Director, Department of Surveillance and Non-Communicable Diseases Control.

DGHA (HQ), Post Box 393, Area Code 113, Muscat, Sultanate of Oman Tel : (968) 696187 Fax : (968) 695480

Date Submitted :			
Name :			
Department :			
Telephone No : Fax No :			
Information Requested:			
(Specify patient population, Time period, Year/s, Anatomic site/Histology, Region / Wilayat etc.)			
Purpose of Request: (Specify presentation at conference/meeting/publication, clinical/epidemiological study, personal information, etc.)			
Collaborators and Co-authors:			
Requester's affirmation statement:			
Registry will be treated with utmost confidentiality in relation to patient's identity, I also affirm that the data given to me will not be presented or published by me or any of my collaborators as an original work but rather can be cited in my presentation and / or publication with acknowledgement to the ONCR.			
Requester's signature : Date :			
For oπicial use only:			
Request : Approved :			
Signature of the Director of Department of Surveillance and Non-Communicable Disease Control			
Date :			



Annex 2

OMAN NATIONAL CANCER REGISTRY FORM

To: Directorate General of Health Affairs Non-Communicable Disease Control Section	DGHA, Muscat Tel. No. 696187 Fax No. 695480		
(Item No. 1 & 2 will be filled at the Central Registry only) D D M M Y Y Y 1. Patient's Registration No. 2. Date of Registration D D M M Y Y Y Y			
3. Patient's Hospital File No. 4. National / Civil No.			
5. Hospital Name			
7. First Name 8. Father's Name 9. Grandfather's Name 10. Tribe Name			
11. Sex 1=M 1=Single 13. Ag 2=F 12. Marital Status 3=Divorced or 9=Unknown 9=Unknown 9=Unknown 14. Marital Status	13. Age 14. Nationality or 14. Nationality Year of Birth 1=Omani, 2=Expatriate, 9=Unknown		
15. Country of Birth 16. Religion 1=Muslim, 2=Christian 1 3=Hindu, 4-Jewish 5=Others. 9=Not known 5	7. Ethnic Group 1=Arab, 2=Asian 3=Caucasian, 4=Others 9=Not known		
Patient's Address			
19. Telephone / GSM 21. Wilayat :			
20. Other Contact Tel. No.	22. Village :		
23. Date of First Diagnosis			
25 Primary Site of Cancer	ICD-0-2 Code		
27. Laterality28. Extent of Disease0=Not a Paired Site, Unknown or ill-defined Site0=In Situ1=Right : Origin of Primary 2=Left : Orgin of Primary 3=Bilateral Involvement 9=Paired Site, Laterality Unknown28. Extent of Disease0=In Situ 1=Localized 2=Regional by Direct Extension 	29. Histologic Grading 1=Grade I Well differentiated/Differentiated, NOS 2=Grade II Moderately differentiated/Moderately well differentiated/ Intermediate differentiation. 3=Grade III Poorly differentiated 4=Grade IV Undifferentiated anaplastic 5=T - Cell 6=B. Cell 7=Null Cell 8=Killer Cell 9=Grade or differentiation not determined, not stated or not applicable		
TNM Classification (Clinical) 30. T Tx To Tis T1 T2 T3 T4 31. N Nx	N0 N1 N2 N3 32. M Mx M0 M1 33. Not applicable		
34. Stage : (Clinical) Ia Ib IIa IIb IIIa IIIb	IV a IV b 99 = Un-known, Un-Specified, Not Applicable		
35. Most valid basis of Diagnosis Microscopic 36. Sequence of treatment 1=Surgery 6=Bone Marrow 0=Death certificate only 5=Cytological/Haematology 36. Sequence of treatment 1=Surgery 6=Bone Marrow 1=Clinical only 5=Cytological/Haematology 6=Histology of primary 7=Other Treatment 3=Chemotherapy 3=Chemotherapy 3=Chemotherapy 3=None 3=Exploration surgery but without Histology 8=Autopsy 9=Not known 9=Not known 9=Not known			
D D M M Y Y Y 38. Cause 37. Date of Death Image: Cause Image: Cause Image: Cause Image: Cause	38. Cause of Death 1=Cancer or Cancer related 3=Unrelated to Cancer 9=Not known		
39. Source of information 1 = Medical File 2 = Death Certificate 3 = Other 9 = Unknown			
Doctor's Name :	Doctor's Designation :		
Doctor's Signature : Department :			
Date :			

1. Send White copy to NCD Section Fax : 695480 2. Keep Pink Copy in Patient's Case Notes (File) 3. Send Blue Copy to Medical Records Dept. MR-123

