

Ministry of Health Sultanate of Oman

Cancer Incidence in Oman 2003

Department of Non-Communicable Disease Surveillance and Control Directorate General of Health Affairs Ministry of Health Sultanate of Oman

Cancer Incidence in Oman 2003

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Preface

On the 4th of December 2004, the Ministry of Health celebrated the inauguration of the National Oncology Centre at the Royal Hospital. With this, the government has added the final and the long awaited component of radiotherapy to the already existing surgical and chemotherapy services in Oman. From now on, patients affected with cancer and their companions need not endure the difficulties of traveling abroad for radiotherapy.

From the epidemiological stand point, this will make it easier for cancer registry staff to collect information on and follow-up patients in order to maintain the cancer registry. Since 1996, the Oman National Cancer Registry strived to reach high standards which eventually paid off when its data were published in "Cancer Incidence in Five Continents" Volume VIII, 2002 - a publication of the International Agency for Research on Cancer (IARC), Lyon, France. This report includes a copy of Oman's data from this publication.

The year 2004 also marks an important step in the fight against cancer in the form of ratification of the world's first public health treaty, The WHO Framework Convention on Tobacco Control (FCTC). So far, more than 41 countries have signed and ratified the convention including some GCC states. Further, the Ministry of Health works with the Gulf Co-operation Council (GCC) countries for the development of a comprehensive cancer control programme, which will focus on 'prevention' as a major strategy. Prevention of major risk factors, such as smoking will play an important role in reducing the incidence and burden of cancer in Oman in the years to come.

In this year's report we present data using the 3rd edition of the International Classification of Diseases for Oncology (ICD-O) (WHO, Geneva) - in which the morphology section has been revised. Further, CanReg-3, the software which is used for cancer registration, has been updated to a newer version (CanReg-4) by the IARC, and this was used for data analysis for this year. Trends of specific cancers from 1996-2003 have been updated. This year, tables showing frequency and incidence of cancer by site from 1996-2003 has also been included for the first time for the benefit of those who are interested in trends of cancer in Oman.

For the benefit of those who only can read mainly in Arabic, this year's issue carries the most important data translated to Arabic. We hope to publish most of the other parts of these reports in Arabic in the years to come.

On behalf of the National Cancer Control Committee, I would like to thank all the health professionals working in the Ministry of Health and its sister institutions for their cooperation and notification of cases to the Registry. I also thank the staff of the Department of Non-Communicable Disease Surveillance and Control for their commitment and dedication in bringing out this publication. I hope this report will serve as a ready reference for cancer incidence in The Sultanate of Oman for clinicians, researchers, administrators and anyone interested in the subject.

Dr. Ali Jaffer Mohammed

Chairman, National Cancer Control Committee Director General of Health Affairs **Acknowledgement::** The Oman National Cancer Registry would like to thank all those who were involved in contributing to this report, in particular, the following persons, without which the publication of this report would have been impossible

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Directorate General of Health Affairs Ms. Naseera H Al-Adawi

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

On the basis of 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

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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 kilo-meters 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

According to the National Census conducted in 2003, the total population of Oman was 2,340,815 of which 1,781,558 were Omanis and 559,257 were Non-Omanis (Table 1). The Omani population shows a sex ratio of 978 females per 1000 males. About 13% of the population is under-5 years and 40.6% is under-15 years. Only 5.0% 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	Fem	ale	Total	
Group	Number	%	Number	%	Number	%
0 - 4	109,544	12.2	105,987	12.0	215,531	12.1
5 - 9	121,222	13.5	116,259	13.2	237,481	13.3
10 - 14	137,646	15.3	132,705	15.1	270,351	15.2
15 - 19	130,471	14.5	124,757	14.2	255,228	14.3
20 - 24	107,506	11.9	106,781	12.1	214,287	12.0
25 - 29	73,997	8.2	74,178	8.4	148,175	8.3
30 - 34	47,491	5.3	45,264	5.1	92,755	5.2
35 - 39	35,733	4.0	37,336	4.2	73,069	4.1
40 - 44	29,447	3.3	31,529	3.6	60,976	3.4
45 - 49	23,709	2.6	26,833	3.0	50,542	2.8
50 - 54	20,385	2.3	22,308	2.5	42,693	2.4
55 - 59	15,934	1.8	15,200	1.7	31,134	1.7
60 - 64	17,240	1.9	14,808	1.7	32,048	1.8
65 - 69	10,388	1.2	7,989	0.9	18,377	1.0
70 - 74	8,959	1.0	7,973	0.9	16,932	1.0
75 +	10,653	1.2	10,948	1.2	21,601	1.2
Unknown	215	0.0	163	0.0	378	0.0
Total	900,540	100	881,018	100	1,781,558	100

Table 1: Age Structure Of The Omani Population

Table 2: Population Distribution of Omanis by Regions and Gender, 2003

Region	Males	Females	Total
Al Wusta	9,035	7,826	16,861
Ad Dakhliyah	116,638	118,699	235,337
Adh Dhahirah	74,337	73,352	147,689
Dhofar	77,376	73,583	150,959
Musandam	10,824	9,500	20,324
Muscat	198,719	182,893	381,612
North Al Batinah	175,598	175,645	351,243
North Ash Sharqiyah	61,059	61,746	122,805
South AI Batinah	106,567	106,597	213,164
South Ash Sharqiyah	70,387	71,177	141,564
Total	900,540	881,018	1,781,558



According to the 2003 census there were 215 males and 163 females whose age was not known and were not included in the population pyramid

Background



Health Administrative Regions of the Sultanate of Oman Common Cancers in 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 Department of Non-Communicable Diseases Surveillance and Control, 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 abstract 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 2000 through a Ministerial Decision (4/2000). 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

Until 2001 all cancer cases were being coded using International Classification of Diseases for Oncology (ICDO-2) codes, 2nd Edition, with topography 'C' and morphology 'M' codes. Data was entered in CanReg-3 programme, supplied by the International Agency for Research on Cancer (IARC), Lyon, France.Canreg-4 software programme and International Classification of Diseases for Oncology ICDO-3 began to be used from 2003, since it was introduced in October 2002. 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, Salalah 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. With the co-operation of the Diwan of Royal Court, this list of patients is also obtained since 2002.
- 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-4 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.

For the first time we have included in this report two comprehensive tables showing the frequency as well as the incidence of cancers by site, from the years 1996 till 2003.

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 age-adjusted rates (ASR) given in tables 12 and 13 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".

Age-aujustinent	
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

Table 3: Age Structure	of the	World	Standard	Population	of Seg	i, used	for
Age-adjustment							

Site	ICD (10th)	1996	1997	1998	1999	2000	2001	2002	2003
Lip	C00	1	2	2	2	2	2	1	0
Tongue	C01-C02	5	4	1	5	6	4	3	4
Mouth	C03-C06	6	4	6	5	3	2	7	4
Salivary glands	C07-C08	2	2	6	0	1	1	2	1
Tonsil	C09	0	1	0	1	0	1	0	0
Other Oropharynx	C10	0	0	0	0	2	0	0	3
Nasopharynx	C11	5	8	4	2	8	6	3	3
Hypopharynx	C12-C13	2	1	1	2	1	1	4	1
Pharynx unspec.	C14	1	1	0	0	0	0	0	1
Oesophagus	C15	13	11	10	10	10	11	12	9
Stomach	C16	43	53	50	56	56	57	53	32
Small intestine	C17	1	1	1	1	1	2	3	0
Colon	C18	11	11	15	6	13	12	12	13
Rectum	C19-C20	6	13	9	9	6	13	8	14
Anus	C21	3	0	1	4	1	5	4	3
Liver	C22	22	16	31	35	27	30	12	19
Gallbladder etc.	C23-C24	0	3	2	3	5	2	3	3
Pancreas	C25	9	11	5	6	10	13	2	6
Nose, sinuses etc.	C30-C31	1	2	1	3	2	0	0	2
Larynx	C32	7	5	10	5	5	2	2	7
Trachea,Bronchus,Lung	C33-C34	28	48	32	49	37	42	32	27
Other Thoracic organs	C37-C38	4	3	1	1	3	3	1	1
Bone	C40-C41	4	8	6	5	4	3	4	7
Melanoma of Skin	C43	2	3	1	0	1	4	2	2
Other Skin	C44	29	27	22	13	15	17	28	18
Mesothelioma	C45	0	0	1	2	1	1	0	1
Kaposi sarcoma	C46	3	8	0	5	1	2	7	4
Connective,Soft tissue	C47;C49	10	11	11	6	14	7	7	7
Breast	C50	2	4	3	3	3	6	2	6
Penis	C60	0	1	0	0	0	0	0	0
Prostate	C61	39	47	40	45	37	44	31	29
Testis	C62	4	3	4	3	1	4	6	4
Other male genital	C63	0	0	0	0	0	0	0	0
Kidney	C64	7	8	5	8	13	6	6	14
Renal Pelvis	C65	1	0	0	0	1	0	0	0
Ureter	C66	0	0	0	0	0	1	0	0
Bladder	C67	32	28	23	26	17	19	19	20
Other Urinary organs	C68	0	0	1	1	1	0	1	0
Eye	C69	7	3	5	3	2	2	0	4
Brain, Nervous system	C70-C72	17	22	25	15	18	28	15	22
Thyroid	C73	8	10	5	8	5	14	10	13
Adrenal gland	C74	0	1	0	1	1	1	0	2
Other Endocrine	C75	0	1	0	1	0	1	0	0
Hodgkin disease	C81	11	15	21	18	18	21	15	19
Non-Hodgkin lymphoma	C82-C85;C96	45	43	38	43	43	36	36	49
Immunoproliferative dis.	C88	1	0	1	0	0	0	0	0
Multiple Myeloma	C90	5	14	8	7	10	9	6	1
Lymphoid Leukemia	C91	12	19	19	20	18	20	21	21
Myeloid Leukemia	C92-C94	6	9	14	11	14	14	12	22
Leukemia unspec.	C95	7	3	5	4	4	7	11	6
Other & unspecified	Other	23	32	30	24	29	25	26	17
All sites Total	All	445	520	476	477	470	501	429	441
All sites but C44	Not C44	416	493	454	464	455	484	401	423

Table 4: Frequency of Cancers among Omanis, 1996-2003, Males

Table 5: Frequency of Cancer among O	manis, 1996-2003,	Females
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Site	ICD (10th)	1996	1997	1998	1999	2000	2001	2002	2003
	C00	0	0	1	0	0	0	0	1
Tongue	C01-C02	6	1	0	4	2	0	1	2
Mouth	C03-C06	1	7	1	4	2	2	1	3
Salivary glands	C07-C08	0	1	2	2	1	2	0	7
Tonsil	C09	0	0	0	0	0	0	0	0
Other Oropharynx	C10	0	0	0	0	0	0	0	2
Nasopharynx	C11	1	2	1	4	2	0	4	5
Hypopharynx	C12-C13	0	1	2	1	1	2	1	2
Pharynx unspec	C14	0	0	0	0	0	1	0	0
Oesophagus	C15	8	9	13	12	9	7	5	4
Stomach	C16	25	26	30	26	23	20	30	17
Small intestine	C17	2	1	1	0	0	3	2	0
Colon	C18	7	6	13	3	10	10	10	13
Rectum	C19-C20	4	6	9	0	8	7	8	9
Anus	C21	0	0	0	0	1	0	1	2
Liver	C22	2	12	13	16	13	11	8	8
Gallbladder etc.	C23-C24	4	4	4	5	3	5	2	2
Pancreas	C25	3	3	8	5	5	7	3	3
Nose, sinuses etc.	C30-C31	0	1	2	0	0	1	4	1
Larynx	C32	2	1	2	0	2	2	2	1
Trachea, Bronchus, Lung	C33-C34	13	11	7	8	8	13	5	9
Other Thoracic organs	C37-C38	0	2	0	1	0	0	0	2
Bone	C40-C41	2	8	3	7	4	2	3	6
Melanoma of Skin	C43	2	3	1	1	4	0	1	1
Other Skin	C44	12	9	12	24	20	14	7	10
Mesothelioma	C45	0	0	0	0	1	0	0	0
Kaposi sarcoma	C46	0	0	1	4	2	0	1	3
Connective,Soft tissue	C47;C49	6	10	4	5	10	3	7	3
Breast	C50	53	56	58	58	71	74	67	60
Vulva	C51	1	2	0	1	1	1	1	4
Vagina	C52	0	1	2	0	3	1	2	0
Cervix Uteri	C53	26	26	29	25	31	22	16	33
Corpus Uteri	C54	2	1	4	1	3	6	7	8
Uterus unspec.	C55	10	8	6	6	3	8	3	3
Ovary	C56	10	17	31	31	27	22	17	17
Other Female Genital	C57	0	0	0	0	0	0	1	0
Placenta	C58	0	1	0	0	3	1	0	0
Kidney	C64	10	6	8	4	11	11	6	9
Renal Pelvis	C65	0	0	0	0	0	0	0	0
Ureter	C66	0	0	0	0	0	1	0	0
Bladder	C67	9	10	8	12	6	10	12	7
Other Urinary organs	C68	0	0	0	0	0	0	0	0
Eye	C69	5	3	4	5	2	1	2	2
Brain, Nervous system	C70-C72	10	15	18	17	13	19	9	8
Thyroid	C73	31	32	36	35	25	41	34	31
Adrenal gland	C74	0	4	2	1	3	3	1	3
Other Endocrine	C75	0	0	0	0	0	1	0	0
Hodgkin disease	C81	12	4	5	9	14	5	10	11
Non-Hodgkin lymphoma	C82-C85;C96	17	28	19	19	29	26	23	28
Immunoproliferative dis.	C88	0	0	0	0	0	0	0	0
Multiple Myeloma	C90	3	9	6	9	11	2	1	4
Lymphoid Leukemia	C91	9	9	13	9	11	14	11	12
Myeloid Leukemia	C92-C94	6	8	7	9	15	11	7	11
Leukemia unspec.	C95	3	1	3	5	4	8	11	12
Other & unspecified	Other	25	33	34	25	19	18	29	21
All sites Total	All	342	398	423	413	436	418	376	400
All sites but C44	Not C44	330	389	411	389	416	404	369	390

Table 6: Age-adjusted Incidence Rates in Omanis, 1996-2003, Males

Site	ICD (10th)	1996	1997	1998	1999	2000	2001	2002	2003
Lip	C00	0.2	0.5	0.7	0.7	0.5	0.4	0.2	0
Tongue	C01-C02	1.3	0.9	0.3	1.2	1.3	0.9	0.7	0.9
Mouth	C03-C06	1.6	1.1	1.6	1	0.8	0.4	1.5	0.9
Salivary glands	C07-C08	0.3	0.5	1.3	0	0.2	0.3	0.5	0.1
Tonsil	C09	0	0.2	0	0.2	0	0.3	0	0
Other Oropharynx	C10	0	0	0	0	0.5	0	0	0.7
Nasopharynx	C11	0.9	1.7	0.8	0.4	1.6	1.3	0.3	0.4
Hypopharynx	C12-C13	0.6	0.3	0.2	0.4	0.2	0.1	0.7	0.2
Pharvnx unspec.	C14	0.2	0.2	0	0	0	0	0	0.3
Oesophagus	C15	3.6	2.9	2.6	2.6	2.4	2.6	2.8	2.1
Stomach	C16	11.7	14.6	13.5	14	12.9	13.4	11.6	7.2
Small intestine	C17	0.2	0.2	0.2	0.3	0.2	0.4	0.6	0
Colon	C18	2.7	2.8	3.5	1.5	2.8	2.4	2.7	2.8
Rectum	C19-C20	1.5	3.4	2.5	1.8	1.1	3	1.6	2.9
Anus	C21	0.8	0	0.2	0.9	0.3	1.2	0.8	0.7
Liver	C22	5.9	4.1	7.8	9.5	5.9	6.8	2.7	4.8
Gallbladder etc.	C23-C24	0	0.9	0.5	0.8	1.2	0.5	0.7	0.7
Pancreas	C25	23	2.8	1.3	17	2.3	3	0.5	1 4
Nose, sinuses etc.	C30-C31	0.2	0.6	0.2	0.7	0.5	0	0	0.1
	C32	1.9	1 1	2.7	1.3	1.2	0.4	0.4	1 7
Trachea Bronchus Lung	C33-C34	7.5	12.8	8.4	12.9	8.8	9.5	7.3	6.5
Other Thoracic organs	C37-C38	1	0.8	0.2	0.2	0.6	0.5	0.2	0.1
Bone	C40-C41	0.7	1.3	1 1	0.8	0.7	0.2	0.6	1
Melanoma of Skin	C43	0.5	0.9	0.3	0.0	0.2	1	0.4	0.4
Other Skin	C.44	7.7	6.9	5.8	3.1	3.4	3.8	5.6	3.9
Mesothelioma	C45	0	0.0	0.4	0.4	0.2	0.2	0	0.3
Kaposi sarcoma	C46	0.6	1 7	0.4	1.3	0.2	0.5	12	0.7
Connective Soft tissue	C47·C49	1.4	2	16	1.0	2	1.2	1.1	1.3
Breast	C50	0.5	1	0.6	0.7	0.7	1.4	0.4	1.0
Penis	C60	0.0	0.2	0.0	0.7	0.1	0	0.4	0
Prostate	C61	10.8	12.9	11 1	12	9	10.3	7 1	6.6
Testis	C62	0.6	0.5	0.5	0.5	0.2	0.6	0.9	0.5
Other male genital	C63	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Kidney	C64	16	19	13	16	25	12	11	25
Renal Pelvis	C65	0.3	0	0	0	0.2	0	0	0
Ureter	C66	0.0	0	0	0	0	0.3	0	0
Bladder	C67	8.3	7.5	5.8	6.6	3.8	4 4	4 1	4 6
Other Urinary organs	C68	0.0	0	0.2	0.3	0.1	0	0.2	0
Eve (C69	1.5	1	0.8	0.6	0.3	0.3	0	0.8
Brain, Nervous system	C70-C72	2.4	4	3.6	2.8	3	4.3	2.9	3.7
Thyroid	C73	1.9	2.2	1.3	1.7	1.1	2.8	1.4	2.8
Adrenal gland	C74	0	0.1	0	0.1	0.2	0.1	0	0.2
Other Endocrine	C75	0	0.2	0	0.1	0	0.2	0	0
Hodgkin disease	C81	1.9	2.2	3.6	2.2	2.7	3	2	2.3
Non-Hodgkin lymphoma	C82-C85-C96	8.9	8.6	9	9	8.1	6.9	6.9	9.5
Immunoproliferative dis	C88	0.2	0	0.2	0	0	0	0	0
Multiple Myeloma	C90	1.3	3.8	2	16	24	21	14	0.1
I vmphoid eukemia	C91	1.6	2.4	1.9	2.6	2.5	2.6	22	3.1
Myeloid Leukemia	C92-C94	1	2	2.8	2.0	2.9	1.8	1.9	3.3
	C95	13	0.5	0.6	0.6	0.6	1.0	1.0	1 1
Other & unspecified	Other	6.3	7.4	7.8	5.2	6.8	5.1	5.1	3.3
All sites Total	All	105.9	123.9	110.9	109.1	99.3	102.8	83.3	88.1
All sites but C44	Not C44	98.2	117	105.1	106	95.9	99	77.7	84.2

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lable <i>(</i> : Age-ad	justed incidence	Rates in	Omanis,	1996-2003,	Females

Site	ICD (10th)	1996	1997	1998	1999	2000	2001	2002	2003
Tongue	C01-C02	1.7	0.2	0	0.9	0.5	0	0.1	0.4
Mouth	C03-C06	0.4	2	0.2	1	0.4	0.4	0.1	0.7
Salivary glands	C07-C08	0	0.1	0.5	0.4	0.2	0.3	0	1.2
Tonsil	C09	0	0	0	0	0	0	0	0
Other Oropharynx	C10	0	0	0	0	0	0	0	0.6
Nasopharynx	C11	0.3	0.4	0.2	0.8	0.2	0	0.4	0.7
Hypopharynx	C12-C13	0	0.4	0.4	0.4	0.2	0.4	0.2	0.5
Pharynx unspec.	C14	0	0	0	0	0	0.3	0	0
Oesophagus	C15	2.2	3	4.4	3.3	2.1	1.7	1.1	0.9
Stomach	C16	7.2	7.1	8.2	7	5.9	4.4	6.8	3.6
Small intestine	C17	0.5	0.3	0.3	0	0	0.7	0.5	0
Colon	C18	2.1	1.6	3.1	1	2.2	2.4	2.3	2.4
Rectum	C19-C20	1.1	1.6	2.1	0	2	1.5	2	2.1
Anus	C21	0	0	0	0	0.2	0	0.1	0.5
Liver	C22	0.6	3.6	3.3	4.1	3.1	2.5	1.7	1.9
Gallbladder etc.	C23-C24	1.3	1.2	1.1	1.4	0.8	1.1	0.3	0.5
Pancreas	C25	0.8	0.8	2.4	1.2	1.2	1.8	0.7	0.8
Nose, sinuses etc.	C30-C31	0	0.2	0.5	0	0	0.1	0.8	0.3
Larynx	C32	0.5	0.2	0.4	0	0.4	0.5	0.4	0.3
Trachea,Bronchus,Lung	C33-C34	4.1	2.8	1.6	2.1	2	3.2	1	2.2
Other Thoracic organs	C37-C38	0	0.4	0	0.1	0	0	0	0.3
Bone	C40-C41	0.4	1.1	0.2	0.6	0.4	0.4	0.2	0.6
Melanoma of Skin	C43	0.4	1.2	0.2	0.1	0.9	0	0.1	0.2
Other Skin	C44	3.4	2.6	3.1	5.5	4.8	3.3	1.5	2.2
Mesothelioma	C45	0	0	0	0	0.2	0	0	0
Kaposi sarcoma	C46	0	0	0.2	0.9	0.4	0	0.2	0.6
Connective,Soft tissue	C47;C49	1	1.9	0.3	1.1	1.5	0.4	1	0.5
Breast	C50	14.4	13.3	13.4	13.8	15.1	15.3	13.7	12.9
Vulva	C51	0.2	0.7	0	0.4	0.3	0.3	0.2	0.8
Vagina	C52	0	0.4	0.6	0	0.6	0.2	0.5	0
Cervix Uteri	053	6.6	6.8	7.2	6.3	/	5.2	3.5	7.4
	C54	0.5	1.0	0.9	0.2	0.8	1.5	1.8	1.7
Oterus unspec.	C55	2.3	1.8	1.3	1.8	0.5	1.9	0.7	0.7
Other Female Capital	C50	2.1	3.0	1.0	1	0	4.5	0.2	3.0
Other Female Genital	C57	0	0 1	0	0	0.6	0.2	0.2	0
Fideenta	C56	2 1	1.2	17	1	1.0	0.2	0.0	10
Ronal Polyic	C65	2.1	0	0	0	1.0	2	0.0	1.9
	C66	0	0	0	0	0	0.2	0	0
Bladder	C67	24	29	1.6	3.4	1.5	2.3	2.8	17
Other Urinary organs	C68	0	0	0	0.4	0	0	2.0	0
Eve	C69	0.7	0.4	0.8	0.9	0.2	0.2	0.3	0.2
Brain Nervous system	C70-C72	1.3	27	3	2.4	1.9	3.3	1 1	1.2
Thyroid	C73	6.9	7.4	6.8	5.9	4	7	6	5.1
Adrenal gland	C74	0.0	0.6	0.3	0.0	0.5	0.3	0.1	0.3
Other Endocrine	C75	0	0.0	0.0	0	0	0.1	0	0
Hodgkin disease	C81	2.1	0.7	0.5	2	1.9	0.7	1.2	1.6
Non-Hodgkin lymphoma	C82-C85:C96	3	6.3	3.8	3.3	5.4	5	4.5	4.7
Immunoproliferative dis	C88	0	0	0	0	0	0	0	0
Multiple Myeloma	C90	0.8	2.7	1.9	2.5	2.7	0.5	0.2	1
Lymphoid Leukemia	C91	1	1.4	2.1		1.3	1.7	1.3	1.7
Myeloid Leukemia	C92-C94	1.5	1.9	1	1.9	2.5	1.8	0.9	2.1
Leukemia unspec.	C95	0.3	0.1	0.6	0.4	0.7	1.2	1.6	2
Other & unspecified	Other	6.6	8.4	8.9	6.6	4.5	3.5	5.7	4.4
All sites Total	All	82.7	96.4	97.6	92.7	89.4	84.3	71.7	78.8
All sites but C44	Not C44	79.3	93.8	94.5	87.2	84.6	80.9	70.2	76.6

Overall Results

Table 6. Distribution Of Cancer Cases in Oman by Nationality							
Nationality	Frequency	Percentage (%)					
Omanis	841	95.0					
Non-Omanis	44	5.0					
Total	885	100					

Table 8: Distribution Of Cancer Cases in Oman by Nationality

The total number of cancer cases registered in 2003 in the Oman National Cancer Registry was 885(Table 8). Of these, 841 (95.0%) cases were among Omanis, and 44 (5.0%) cases were Non-Omanis. In two cases (0.2%), the nationality was unknown. Of the total of 841 cases, males accounted for 441 cases (52.4%), and females accounted for 400 cases (47.6%) (Table 9); the male : female ratio being 1.1 : 1. Eighty six cases (10.2%) were reported in children aged 14 years and below. The median age at diagnosis was 51.5 years. This was higher in males (median age 54 years) than in females (median age 50 years).

Gender	Frequency	Percentage (%)
Male	441	52.4
Female	400	47.6
Total	841	100

Table 9: Distribution of Cancer Cases Among Omanis by Gender

Tables 10 and 11 give the frequency distribution of incident cases of cancer by site and age group in Omani males and females respectively.

Incidence Rates

In 2003, the crude incidence rates for all cancers among Omanis was 49.0 per 100,000 for males and 45.4 per 100,000 for females. The age standardised rates, adjusted to the world standard population, was 88.1 per 100,000 for males and 78.8 per 100,000 for females (Tables 12 and 13). Figure 1 shows the age specific incidence rates for all cancers.

Basis Of Diagnosis

Table 14 gives the most valid basis of diagnosis of the various cancers for both males and females combined. The majority of cases 93.1% 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 4.5%. In 2.3% of cases, the basis of diagnosis was unknown.

Overall Results



Age specific incidence rates per 100,000

13

SITE	ALL	AGE	= 0-	5-	10-1	5-2	0-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	% of	ICD
	AGES	UNK	4	-9	-14-1	9 -2	24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-747	Total	(10th)	
Lip	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C00
Tongue	4	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0	0	0.90%	C01-C02
Mouth	4	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0.90%	C03-C06
Salivary glands	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.20%	C07-C08
Tonsil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C09
Other Oropharynx	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0.70%	C10
Nasopharynx	3	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0.70%	C11
Hypopharynx	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.20%	C12-C13
Pharynx unspec.	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.20%	C14
Oesophagus	9	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	2	1	2.00%	C15
Stomach	32	0	0	0	0	0	0	0	2	1	1	1	5	3	9	2	5	3	7.30%	C16
Small intestine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C17
Colon	13	0	0	0	0	0	0	1	2	0	0	2	3	1	1	1	2	0	2.90%	C18
Rectum	14	0	0	0	0	0	2	1	0	0	2	1	2	0	3	2	1	0	3.20%	C19-C20
Anus	3	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0.70%	C21
Liver	19	0	0	0	0	0	0	0	0	0	0	4	1	2	6	4	2	0	4.30%	C22
Gallbladder etc	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0.70%	C23-C24
Pancreas	6	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	2	0	1 40%	C25
Nose sinuses etc	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.50%	C30-C31
l anyny	7	0	0	0	0	0	0	0	0	0	0	0	3	0	1	1	2	0	1 60%	C32
Trachea Bronchus Lunc	1 27	0	0	0	0	0	0	0	0	0	1	1	5	4	2	6	2	4	6 10%	C33-C34
Other Theracic organs	1	0	0	0	0	0	0	1	0	0	0	0	0	4	2	0	4	4	0.10%	C37 C38
Papa	7	0	0	0	0	1	2	1	0	0	1	0	0	0	1	0	0	1	1 60%	C40 C41
Molonomo of Skin	2	0	0	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0.50%	C40-C41
Other Skin	2	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0.50%	C43
Other Skin	10	0	0	0	0	0	0	1	0	2	0	1	0	2	1	3	2	0	4.10%	045
Mesothelloma	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.20%	045
Kaposi sarcoma	4	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	0.90%	045
Connective,Soft tissue	- /	0	0	0	0	0	2	0	0	0	1	1	2	1	0	0	0	0	1.60%	050
Breast	6	0	0	0	0	0	0	0	0	1	0	1	0	2	2	0	0	0	1.40%	000
Penis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0.00%	060
Prostate	29	0	0	0	0	0	0	0	1	0	0	0	5	1	10	3	3	6	6.60%	000
lestis	4	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	0	0	0.90%	C62
Other male genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C63
Kidney	14	0	4	1	0	0	0	0	1	1	0	1	0	1	0	2	2	1	3.20%	C64
Renal Pelvis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C65
Ureter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C66
Bladder	20	1	0	0	0	0	0	0	1	0	1	0	5	1	4	2	3	2	4.50%	C67
Other Urinary organs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C68
Eye	4	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0.90%	C69
Brain, Nervous system	ı 22	0	2	1	3	0	1	2	1	1	1	0	2	1	1	2	2	2	5.00%	C70-C72
Thyroid	13	0	0	0	0	0	0	0	3	0	1	4	2	0	3	0	0	0	2.90%	C73
Adrenal gland	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50%	C74
Other Endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C75
Hodgkin disease	19	0	0	3	2	3	3	0	4	0	1	2	0	0	1	0	0	0	4.30%	C81
Non-Hodgkin lymphoma	49	0	0	3	2	2	1	3	3	3	1	2	7	9	4	3	3	3	11.10%	C82-C85;C96
Immunoproliferative dis	6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C88
Multiple Myeloma	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.20%	C90
Lymphoid Leukaemia	21	0	4	5	2	2	0	0	0	0	0	3	2	0	1	1	1	0	4.80%	C91
Myeloid Leukaemia	22	0	3	0	2	1	1	3	2	3	1	0	0	1	3	1	0	1	5.00%	C92-C94
Leukaemia unspec.	6	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1	2	0	1.40%	C95
Other & unspecified	17	1	2	0	0	0	0	2	0	0	2	1	1	1	3	0	3	1	3.90%	Other
All sites Total	441	3	17	14	12 1	0 ′	16	18	24	14	16	31	52	37	63	36	45	33	100.00%	All
All sites but C44	423	33	17	14	12 1	0 1	16	17	24	12	16	30	52	35	62	33	43	27	95.90%	Not C44

Figure 10: Frequency of incident cases among Omani males, 2003

SITE	ALL	AGE	0-	5-	10-1	5-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	% of	ICD
	AGES	UNK.	4	-9	-14 -	19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-74	Total	(10th)	
Lip	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.20%	C00
Tonque	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.50%	C01-C02
Mouth	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0.80%	C03-C06
Salivary glands	7	0	0	1	0	0	3	0	0	0	0	0	1	1	0	1	0	0	1.80%	C07-C08
Toneil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C09
Other Orenhaniny	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.50%	C10
Neeenberger	2	0	0	0	0	2	0	0	0	1	1	1	0	0	0	0	0	0	1.00%	C10
Nasopharynx	0	0	0	0	0	2	0	0	0	0	1	0	0	0	1	0	0	0	0.50%	C12 C12
пурорпатупх	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0.50%	014
Pharynx unspec.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	014
Oesophagus	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	1.00%	C15
Stomach	17	0	0	1	0	0	1	0	0	0	2	1	5	1	2	0	2	2	4.20%	C16
Small intestine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C17
Colon	13	0	0	0	2	1	0	0	1	0	0	0	4	1	2	0	0	2	3.20%	C18
Rectum	9	0	0	0	0	0	1	0	0	0	1	2	0	0	2	1	1	1	2.20%	C19-C20
Anus	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.50%	C21
Liver	8	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	0	2	2.00%	C22
Gallbladder etc.	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0.50%	C23-C24
Pancreas	3	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0.80%	C25
Nose, sinuses etc.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.20%	C30-C31
Larynx	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.20%	C32
Trachea.Bronchus.Lun	a 9	0	0	0	0	0	0	0	0	0	2	1	1	2	1	1	0	1	2.20%	C33-C34
Other Thoracic organs	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.50%	C37-C38
Bone	6	0	0	0	4	1	0	0	0	0	0	0	0	0	1	0	0	0	1.50%	C40-C41
Melanoma of Skin	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.20%	C43
Other Skin	10	0	0	0	0	0	0	0	1	1	2	0	2	1	0	1	1	1	2 50%	C44
Mesothelioma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C45
Kanani aaraama	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0.00 %	C45
Connective Soft tissue	3	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0.00%	C40
Connective,Soit tissue	3	0	1	0	0	0	0	0	0	1	0	10	0	0	1	0	0	0	0.00%	050
Breast	60	1	0	0	1	0	2	3	1	3	6	12	9	1	1	2	2	4	15.00%	051
vuiva	4	0	0	0	0	0	1	0	0	0	0	1	0	1	1	0	0	0	1.00%	051
Vagina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C52
Cervix Uteri	33	0	0	0	0	0	0	1	1	6	4	4	2	0	9	2	2	2	8.20%	C53
Corpus Uteri	8	0	0	0	0	0	0	0	1	1	1	1	2	1	1	0	0	0	2.00%	C54
Uterus unspec.	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0.80%	C55
Ovary	17	0	0	0	1	1	3	0	0	0	1	1	2	0	2	3	2	1	4.20%	C56
Other Female Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C57
Placenta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C58
Kidney	9	0	1	0	0	0	0	0	1	1	2	0	0	1	1	1	0	1	2.20%	C64
Renal Pelvis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C65
Ureter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C66
Bladder	7	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	2	1	1.80%	C67
Other Urinary organs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C68
Eye	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50%	C69
Brain, Nervous svstem	8	0	1	0	1	1	1	0	1	0	0	0	1	1	1	0	0	0	2.00%	C70-C72
Thyroid	31	0	0	0	1	3	3	4	3	1	4	5	3	1	1	0	2	0	7.80%	C73
Adrenal gland	3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.80%	C74
Other Endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	C75
Hodakin disease	11	0	0	0	2	2	1	0	0	1	2	0	0	2	0	0	0	1	2.80%	C81
Non-Hodakin lymphoma	28	0	2	2	2	2	1	1	2	2	∠ 1	1	3	∠ 1	5	0	1	1	7 00%	C82-C85-C06
	20	0	4	2	2	0	4	0	2	2	0	0	0	0	0	0	0	0	0.00%	C88
Multiple Musleme	5. U	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%	000
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1.00%	C90
Lymphoid Leukaemia	12	0	5	2	1	U	1	0	0	0	0	0	0	0	1	1	0	1	3.00%	091
Myeloid Leukaemia	11	0	1	0	1	1	0	1	0	0	3	0	0	1	2	1	0	0	2.80%	C92-C94
Leukaemia unspec.	12	0	1	0	3	0	2	0	0	0	1	0	1	0	2	1	0	1	3.00%	C95
Other & unspecified	21	1	1	0	0	0	0	0	1	2	3	1	4	1	1	0	4	2	5.20%	Other
All sites Total	40	0 2	17	7	19	13	24	11	13	22	40	32	43	27	53	20	24	33	100.00%	All
All sites but C44	39	02	17	7	19	13	24	11	12	21	38	32	41	26	53	19	23	32	97.50%	Not C44

Figure 11: Frequency of incident cases among Omani females, 2003

SITE	ALL	AG	Е 0-	5-	10-1	5-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70- 75-	+ CF	RUDE	ASF	R ICD
	AGES	UN	к - 4	-9	-14-	19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-74RAT	E١	World	(101	th)
Lip	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C00
Tongue	4	0	0	0	0	0	0	0	0	0	3.4	0	9.8	0	5.8	0	0	0	0.4	0.9	C01-C02
Mouth	4	0	0	0	0	0	0	0	0	0	0	4.2	0	0	5.8	0	22.3	0	0.4	0.9	C03-C06
Salivary glands	1	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	C07-C08
Tonsil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C09
Other Oropharvnx	3	0	0	0	0	0	0	0	0	0	0	0	4.9	6.3	0	0	11.2	0	0.3	0.7	C10
Nasopharvnx	3	0	0	0	0 (0.8	0	1.4	0	0	3.4	0	0	0	0	0	0	0	0.3	0.4	C11
Hypopharynx	1	0	0	0	0	0	0	0	0	0	0	0	4.9	0	0	0	0	0	0.1	0.2	C12-C13
Pharvnx unspec.	1	0	0	0	0	0	0	0	0	0	0	4.2	0	0	0	0	0	0	0.1	0.3	C14
Oesophagus	9	0	0	0	0	0	0	0	0	0	0	0	4.9	12.6	17.4	0	22.3	9.4	1	2.1	C15
Stomach	32	0	0	0	0	0	0	0	4.2	2.8	3.4	4.2	24.5	18.8	52.2	19.3	55.8	28.2	3.6	7.2	C16
Small intestine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C17
Colon	13	0	0	0	0	0	0	14	42	0	0	84	14 7	6.3	5.8	9.6	22.3	0	14	28	C18
Rectum	14	0	0	0	0	0	19	1.4	0	0	6.8	4.2	9.8	0.0	17.4	19.3	11.2	0	1.4	2.0	C19-C20
Anus	3	0	0	0	0	0	0	0	0	0	0.0	4.2	49	0	0	0.0	0	94	0.3	0.7	C21
liver	19	0	0	0	0	0	0	0	0	0	0	16.9	4.0	12.6	34.8	38.5	22.3	0.4	2.1	4.8	C22
Gallbladder etc	3	0	0	0	0	0	0	0	0	0	0	10.0	ч.5 0	12.0	0.+0	9.6	0	9.1	0.3	0.7	C23_C24
Dalibiadder etc.	6	0	0	0	0	0	0	0	0	0	0	4.2	10	63	5.8	0.0	22.3	0.4	0.5	1 /	C25-C24
Nana ainuana ata	2	1	0	0	0	0	0.0	0	0	0	0	4.2	4.9	0.5	0.0	0	22.3	0	0.7	0.1	C20 C21
Nose, sinuses etc.	2	0	0	0	0	0	0.9	0	0	0	0	0	147	0	5 0	0.6	22.2	0	0.2	1.7	C30-C31
Laryin	1	0	0	0	0	0	0	0	0	0	2 4	4.2	14.7	25.4	11 6	9.0	22.3	27.6	0.0	1.7 G.F	C32
Other Theresis argons	21	0	0	0	0	0	0	1 4	0	0	0.4	4.2	24.0	20.1	0	57.0	44.7	37.0	0.1	0.5	C33-C34
Other Thoracic organs	1	0	0	0	0	0	1 0	1.4	0	0	24	0	0	0	5.0	0	0	0 4	0.1	0.1	C37-C36
Bone	7	0	0	0	00	J.8	1.9	1.4	0	0	3.4	10	0	0	5.8	0	0	9.4	0.8	0.9	040-041
Melanoma of Skin	2	0	0	0	0	0	0	0	0	2.8	0	4.2	0	0	0	0	0	0	0.2	0.4	043
Other Skin	18	0	0	0	0	0	0	1.4	0	5.6	0	4.2	0	12.6	5.8	28.9	22.3	56.3	2	3.9	044
Mesothelioma	1	0	0	0	0	0	0	0	0	0	0	0	0	6.3	0	0	0	0	0.1	0.3	045
Kaposi sarcoma	4	0	0	0	0	0	0	1.4	2.1	2.8	0	0	0	0	0	9.6	0	0	0.4	0.7	C46
Connective,Soft tissue	1	0	0	0	0	0	1.9	0	0	0	3.4	4.2	9.8	6.3	0	0	0	0	0.8	1.3	C47;C49
Breast	6	0	0	0	0	0	0	0	0	2.8	0	4.2	0	12.6	11.6	0	0	0	0.7	1.4	C50
Penis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C60
Prostate	29	0	0	0	0	0	0	0	2.1	0	0	0	24.5	6.3	58	28.9	33.5	56.3	3.2	6.6	C61
Testis	4	0	0	0	0	0	1.9	1.4	0	0	0	0	0	6.3	0	0	0	0	0.4	0.5	C62
Other male genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C63
Kidney	14	0	3.7	0.8	0	0	0	0	2.1	2.8	0	4.2	0	6.3	0	19.3	22.3	9.4	1.6	2.5	C64
Renal Pelvis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C65
Ureter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C66
Bladder	20	1	0	0	0	0	0	0	2.1	0	3.4	0	24.5	6.3	23.2	19.3	33.5	18.8	2.2	4.6	C67
Other Urinary organs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C68
Eye	4	0	0.9	0	0	0	0	0	0	0	0	0	0	6.3	5.8	0	11.2	0	0.4	0.8	C69
Brain, Nervous system	22	0	1.8	0.8	2.2	0	0.9	2.7	2.1	2.8	3.4	0	9.8	6.3	5.8	19.3	22.3	18.8	2.4	3.7	C70-C72
Thyroid	13	0	0	0	0	0	0	0	6.3	0	3.4	16.9	9.8	0	17.4	0	0	0	1.4	2.8	C73
Adrenal gland	2	0	0.9	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.2	C74
Other Endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C75
Hodgkin disease	19	0	0	2.5	1.5	2.3	2.8	0	8.4	0	3.4	8.4	0	0	5.8	0	0	0	2.1	2.3	C81
Non-Hodgkin lymphoma	49	0	0	2.5	1.5	1.5	0.9	4.1	6.3	8.4	3.4	8.4	34.4	56.5	23.2	28.9	33.5	28.2	5.4	9.5	C82-C85;C96
Immunoproliferative dis.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C88
Multiple Myeloma	1	0	0	0	0	0	0	0	2.1	0	0	0	0	0	0	0	0	0	0.1	0.1	C90
Lymphoid Leukaemia	21	0	3.7	4.1	1.5	1.5	0	0	0	0	0	12.7	9.8	0	5.8	9.6	11.2	0	2.3	3.1	C91
Myeloid Leukaemia	22	0	2.7	0	1.5 (0.8	0.9	4.1	4.2	8.4	3.4	0	0	6.3	17.4	9.6	0	9.4	2.4	3.3	C92-C94
Leukaemia unspec.	6	0	0	0	0.7	0	0	0	4.2	0	0	0	0	0	0	9.6	22.3	0	0.7	1.1	C95
Other & unspecified	17	1	1.8	0	0	0	0	2.7	0	0	6.8	4.2	4.9	6.3	17.4	0	33.5	9.4	1.9	3.3	Other
All sites Total	441	3	16	12	9	8	15	24	51	39	54	131	255	232	366	347	503	310	49	88.1	All
All sites but C44	423	33	16	12	9	8	15	23	51	34	54	127	255	220	360	318	480	254	47	84.2	Not C44

Figure 12: Age-specific incidence rate among Omani males, 2003

SITE	ALL	AG	e 0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75+	CRUDE	ASR	ICD
	AGES	UNI	k -4	-9	-14-	-19	-24	-29	-34	-39	-44	-49	-54	-59	-64	-69	-74F	RATE	World	(10th)	
Lip	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.1	0.1	0.2	C00
Tongue	2	0	0	0	0	0	0	0	0	2.7	3.2	0	0	0	0	0	0	0	0.2	0.4	C01-C02
Mouth	3	0	0	0	0	0	0	0	0	0	0	0	0	6.6	6.8	0	0	9.1	0.3	0.7	C03-C06
Salivary glands	7	0	0	0.9	0	0	2.8	0	0	0	0	0	4.5	6.6	0	12.5	0	0	0.8	1.2	C07-C08
Tonsil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C09
Other Oropharynx	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.5	0	9.1	0.2	0.6	C10
Nasopharynx	5	0	0	0	0	16	0	0	0	27	32	37	0	0	0	0	0	0	0.6	0.7	C11
Hypopharynx	2	0	0	0	0	0	0	0	0	0	3.2	0.1	0	0	6.8	0	0	0	0.2	0.5	C12-C13
Pharvny unspec	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0.0	0	0	0	0.2	0	C14
Oesonhagus	4	0	0	0	0	0	0	0	0	0	0	0	45	0	6.8	0	0	18.3	0.5	0 9	C15
Stomach	17	0	0	0.0	0	0	00	0	0	0	63	37	22 /	6.61	13.5	0	25.1	18.3	1 0	3.6	C16
Small intestine	0	0	0	0.0	0	0	0.0	0	0	0	0.0	0.7	0	0.0	0.0	0	20.1	0.0	0	0	C17
Colon	12	0	0	0	15		0	0	22	0	0	0	17.0	6.61	13 5	0	0	10.2	1.5	24	C18
Destum	0	0	0	0	1.5	0.0	0	0	2.2	0	2.0	7 5	17.9	0.0	13.5	10 5	10 5	0.1	1.0	2.4	
Apus	9	0	0	0	0	0	0.9	0	0	0	3.Z	7.5	0	0	13.5	12.5	12.0	9.1	0.0	2.1	C19-C20
Anus	2	0	0	0	0	0	0	0	0	0	0	0	0	0	07	0	20.1	10.0	0.2	0.5	021
Liver	8	0	0	0	0	0	0	0	0	0	0	0	9	0	21	0	0	18.3	0.9	1.9	022
Galibladder etc.	2	0	0	0	0	0	0	0	0	0	0	0	0	13.2	0	0	0	0	0.2	0.5	023-024
Pancreas	3	0	0	0	0	0	0	1.3	0	0	0	0	0	0	6.8	12.5	0	0	0.3	0.8	C25
Nose, sinuses etc.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.5	0	0.1	0.3	C30-C31
Larynx	1	0	0	0	0	0	0	0	0	0	0	0	0	6.6	0	0	0	0	0.1	0.3	C32
Trachea, Bronchus, Lung	9	0	0	0	0	0	0	0	0	0	6.3	3.7	4.5	13.2	6.8	12.5	0	9.1	1	2.2	C33-C34
Other Thoracic organs	2	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.1	0.2	0.3	C37-C38
Bone	6	0	0	0	3	0.8	0	0	0	0	0	0	0	0	6.8	0	0	0	0.7	0.6	C40-C41
Melanoma of Skin	1	0	0	0	0	0	0	0	0	0	0	3.7	0	0	0	0	0	0	0.1	0.2	C43
Other Skin	10	0	0	0	0	0	0	0	2.2	2.7	6.3	0	9	6.6	0	12.5	12.5	9.1	1.1	2.2	C44
Mesothelioma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C45
Kaposi sarcoma	3	0	0	0	0	0	0	0	0	2.7	0	0	0	0	6.8	0	0	9.1	0.3	0.6	C46
Connective,Soft tissue	3	0	0.9	0	0	0	0	0	0	2.7	0	0	0	0	6.8	0	0	0	0.3	0.5	C47;C49
Breast	60	1	0	0	0.8	0	1.9	4	2.2	8	19	44.7	40.4	46.14	17.3	25	25.1	36.6	6.8	12.9	C50
Vulva	4	0	0	0	0	0	0.9	0	0	0	0	3.7	0	6.6	6.8	0	0	0	0.5	0.8	C51
Vagina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C52
Cervix Uteri	33	0	0	0	0	0	0	1.3	2.2	16.1	12.7	14.9	9	06	8.06	25	25.1	18.3	3.7	7.4	C53
Corpus Uteri	8	0	0	0	0	0	0	0	2.2	2.7	3.2	3.7	9	6.6	6.8	0	0	0	0.9	1.7	C54
Uterus unspec.	3	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	12.5	12.5	0	0.3	0.7	C55
Ovary	17	0	0	0	0.8	0.8	2.8	0	0	0	3.2	3.7	9	01	13.5	37.6	25.1	9.1	1.9	3.6	C56
Other Female Genital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C57
Placenta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C58
Kidnev	9	0	0.9	0	0	0	0	0	2.2	2.7	6.3	0	0	6.6	6.8	12.5	0	9.1	1	1.9	C64
Renal Pelvis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C65
Ureter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C66
Bladder	7	0	0	0	0	0	0	0	0	0	6.3	0	0	0	6.8	12.5	25.1	9.1	0.8	1.7	C67
Other Urinary organs	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	C68
Evo	2	0	ng	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.2	C69
Brain Nervous system	8	0	0.0	0.0	0.8	0 8	0 0	0	22	0	0	0	15	6.6	8 8	0	0	0	0.2	1.2	C70-C72
Thuroid	21	0	0.3	0	0.0	2.4	2.9	5.4	6.6	27	127	18.6	12.5	6.6	6.8	0	25.1	0	3.5	5.1	070-072
Adronal gland	2	0	10	0	0.0	2.4	2.0	0.4	0.0	2.1	0	10.0	13.5	0.0	0.0	0	23.1	0	0.3	0.3	C74
Auterial gianu	0	0	1.9	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	074
	11	0	0	0	1 5	1 6	0	0	0	2.7	6.2	0	0	12.0	0	0	0	0 1	1.0	1.6	C75
Hougkin uisease	11	0	0	17	1.5	1.0	0.9	0	0	2.1	0.3	0	40.5	13.2	0	0	40.5	9.1	1.2	1.0	
	28	0	1.9	1./	1.5	0	3.1	1.3	4.4	5.4	3.2	3.1	13.5	0.0	33.8	0	12.5	9.1	3.2	4./	082-085;096
immunoproliterative dis.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	000
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.5	12.5	18.3	0.5	1	090
Lymphoid Leukaemia	12	0	4.7	1.7	0.8	0	0.9	0	0	0	0	0	0	0	6.8	12.5	0	9.1	1.4	1.7	C91
Myeloid Leukaemia	11	0	0.9	0	0.8	0.8	0	1.3	0	0	9.5	0	0	6.61	13.5	12.5	0	0	1.2	2.1	C92-C94
Leukaemia unspec.	12	0	0.9	0	2.3	0	1.9	0	0	0	3.2	0	4.5	01	13.5	12.5	0	9.1	1.4	2	C95
Other & unspecified	21	1	0.9	0	0	0	0	0	2.2	5.4	9.5	3.7	17.9	6.6	6.8	0	50.2	18.3	2.4	4.4	Other
All sites Total	400	2	16	6	14	10	22	15	29	59	127	119	193	178	358	250	301	302	45.4	78.8	All
All sites but C44	390	2	16	6	14	10	22	15	27	56	121	119	184	171	358	238	289	292	44.3	76.6	Not C44

Figure 13: Age-specific incidence rate among Omani females, 2003

Site	A*	B*	C*	D*	Total
Lip	0	0	1	0	1
Tongue	0	0	5	1	6
Mouth	0	0	8	0	8
Salivary Glands	0	0	8	0	8
Oropharynx	0	1	4	0	5
Nasopharynx	0	0	6	2	8
Hypopharynx	0	0	3	0	3
Oesophagus	0	1	12	0	13
Stomach	1	5	43	1	50
Colon	0	0	26	0	26
Rectum	0	1	21	1	23
Anus	0	0	5	0	5
Liver	0	4	19	4	27
Gall Bladder	0	0	5	0	5
Pancreas	0	1	7	1	9
Nose, Sinuses	0	0	3	0	3
Larynx	0	0	8	0	8
Bronchus, Lung	0	2	32	2	36
Other Thoracic Organs	0	1	1	0	2
Bone	0	1	11	0	12
Melanoma	0	0	3	0	3
Skin	0	1	33	0	34
Kaposi's Sarcoma	0	0	7	0	7
Connective Tissue	0	1	8	0	9
Breast	0	1	64	1	66
Vulva	0	0	4	0	4
Vagina	0	0	0	0	0
Cervix uteri	0	1	32	0	33
Uterus Unspecified	0	0	11	0	11
Ovary	0	3	14	0	17
Prostate	0	4	23	2	29
Testis	0	0	4	0	4
Kidney	0	2	20	1	23
Bladder	0	2	24	1	27
Eye	0	0	5	1	6
Brain, Nervous System	0	3	27	0	30
Thyroid	0	0	44	0	44
Hodgkin's Disease	0	1	29	0	30
Non Hodgkin's Disease	0	0	77	0	77
Leukemia	0	0	84	0	84
Other and Unspecified	0	2	42	1	45
Total	1	38	783	19	841
Percentage of total	0.1	4.5	93.1	2.3	100.00

Table 14: Incident Cases by most valid basis of diagnosis among Omanis, 2003

*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, and histology of metastasis

D = Unknown

Common Cancers in Omanis

Table 15: Ten Most Common Cancers among Omanis (Males & Females)

Topography	Frequency
Leukemia	84
Non-hodgkin's lymphoma	77
Breast*	66
Stomach	49
Thyroid	44
Trachea, bronchus, lung	36
Cervix uteri	33
Brain and nervous system	30
Hodgkin's lymphoma	30
Prostate	29

* includes 6 cases of male breast cancer

Overall, the commonest cancer in the Omani population was Leukemia followed by Nonhodgkin's lymphoma and breast cancer (Table 15). There were equal number of males with leukemia and non-hodgkin's lymphoma which were the most common cancers followed by stomach cancer (Table 16). In females, the most common cancer was breast cancer followed by leukemia and cervical cancer (Table 17). The totals of each cancer by site in tables 15, 16, 17 do not include lymphomas, since they are categorized as a separate entity.

Topography	Frequency	Percentage (%)
Leukemia	49	11.1
Non-hodgkin's lymphoma	49	11.1
Stomach	32	7.3
Prostate	29	6.6
Trachea, bronchus, lung	27	6.1
Brain, nervous system	22	5.0
Bladder	20	4.5
Hodgkin's lymphoma	19	4.3
Liver	19	4.3
Other skin	18	4.1

Table 16 : Ten Most Common Cancers among Omani Males

Table 17: Ten Most Common Cancers among Omani Females

Topography	Frequency	Percentage (%)
Breast	60	15.0
Leukemia	35	8.7
Cervix uteri	33	8.2
Thyroid	31	7.8
Non-hodgkin's lymphoma	28	7.0
Stomach	17	4.2
Ovary	17	4.2
Colon	13	3.2
Uterus	11	2.7
Hodgkin's lymphoma	11	2.7

Overall Results



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Regional Distribution

The incidence rate in the various regions varied from 24.6 per 100,000 population to 47.7 per 100,000 population. The highest incidence was seen in Dhofar region and the lowest in Musandam region. Table 18 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.

Region	Frequency	Incidence*
Al Wusta	5	29.7
Adh Dhahirah	99	42.1
Ad Dakhliyah	68	46.0
Dhofar	72	47.7
Musandam	5	24.6
Muscat	180	47.2
North Al Batinah	146	41.6
North Ash Sharqiyah	38	30.9
South AI Batinah	77	36.1
South Ash Sharqiyah	67	47.3
Unknown	84	
Total	841	

Table 18 : Regional Distribution of Cancer Cases among Omanis

*Per 100,000 population

Figure 3: Regional distribution of Incident Cases, 2003

(Incidence rates are per 100,000 population)



This diagram is not an authority on international boundaries

Lymphoma

There were 107 cases of lymphomas reported in 2003. Of these 77 cases (72.0%) were Non-Hodgkin's lymphomas and 30 cases (28%) were Hodgkin's lymphomas. Non-Hodgkin's lymphomas formed the second most common cancer among the Omani population. The male : female ratio was 1.8:1 for Non-Hodgkin's lymphomas and 1.7:1 for Hodgkin's lymphomas.

The highest incidence rate for Non-Hodgkin's Lymphoma was seen in Dhofar region (5.3 per 100,000) followed by South Ash Sharqiyah (4.9 per 100,000). The highest incidence rate for Hodgkin's lymphomas was seen in Musandam (4.9 per 100,000) followed by South Ash Sharqiyah (3.5 per 100,000). The regional distribution, gender distribution and the morphology of lymphomas reported are presented in Tables 19 - 22 respectively.

	Lyı	mphoma
Region	Hodgkin's	Non-Hodgkin's
Al Wusta	0	0
Ad Dakhliyah	6	9
Adh Dhahirah	3	7
Dhofar	2	8
Musandam	1	0
Muscat	4	16
North Al Batinah	5	16
North Ash Sharqiyah	1	4
South Al Batinah	0	6
South Ash Sharqiyah	5	7
Unknown	3	4
Total	30	77

Table 20: Gender Distribution Of Lymphomas

	Hodgkin's	s Lymphoma	Non-Hodgki	n's Lymphoma
Gender	Frequency	Incidence ⁺	Frequency	Incidence*
Male	19	2.3	49	9.5
Female	11	1.6	28	4.7
Total	30		77	

*Incidence per 100,000 per year

Figure 4: Incidence of Hodgkin's Lymphoma by Region

(Incidence rates are per 100,000 population)



This diagram is not an authority on international boundaries

Figure 5: Incidence of Non-Hodgkin's Lymphoma by Region

(Incidence rates are per 100,000 po pulation)



This diagram is not an authority on international boundaries

Table 21: Morphology of Hodgkin's Disease

	Morphology	Frequency
1	Lymphocytic predominance	1
2	Nodular sclerosis	12
3	Mixed cellularity	1
4	Lymphocytic depletion	0
5	Unspecified Hodgkin's disease	16
	Total	30

Table 22: Morphology of Non-Hodgkin's lymphoma

Morphology	Frequency
Malignant lymphoma, NOS*	9
Non- Hodgkin's lymphoma, NOS*	33
Composite Hodgkin's and Non-hodgkin's lymphoma	3
Mantle cell lymphoma	1
Marginal zone B-cell lymphoma	1
Malignant lymphoma, large B-cell, diffuse, NOS*	15
Malignant lymphoma, large B-cell, diffuse, immunoblastic, NOS*	1
Cutaneous T-cell Lymphoma, NOS*	2
Burkitt's lymphoma, NOS*	3
Anaplastic large cell lymphoma, T-cell & Null cell type	2
Follicular lymphoma, NOS*	4
Mycosis fungoides	1
Precursor cell lymphoblastic lymphoma, NOS	2
Total	77

*NOS - not otherwise specified

Stomach

This year gastric cancer formed the fourth most common cancer among the Omanis. In 2003, there were 57 cases of gastric cancer. Among these 37 were males and 20 were females, giving the male : female ratio of 1.9:1. The highest incidence rate was seen in North Al Batinah and Dhofar(4.6 per 100,000) followed by South Ash Sharqiyah (4.2 per 100,000). The regional distribution, gender distribution and the morphological types of stomach cancer cases reported are presented in tables 23-25 respectively.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	3
Adh Dhahirah	3
Dhofar	7
Musandam	0
Muscat	12
North Al Batinah	16
North Ash Sharqiyah	2
South AI Batinah	3
South Ash Sharqiyah	6
Unknown	5
Total	57

Table 23: Regional Distribution Of Gastric Cancer

*includes malignant lymphomas

Table 24: Gender Distribution Of Gastric Cancer

Gender	Frequency	Incidence/100,000
Male	37	4.1
Female	20	2.2
Total	57	

Table 25: Morphology of Stomach cancer

Morphology	Frequency
Adenocarcinoma, NOS*	34
Mucin-producing adenocarcinoma	3
Carcinoid tumour	2
Carcinoma, diffuse type	1
Epitheloid leiomyosarcoma	1
Kaposi's sarcoma	1
Malignant Lymphoma, large B-cell, diffuse, NOS	1
Marginal zone B-cell lymphoma	1
Malignant Lymphoma, non-Hodgkins, NOS*	5
Squamous Carcinoma	1
Unspecified carcinoma	5
Unspecified cancer	2
Total (including lymphoma)	57
*NOS not otherwise encoified	

*NOS - not otherwise specified
Figure 6: Incidence of Stomach Cancer by Region



Breast

Breast cancer was the most common cancer among Omani females. In all there were 67 cases of breast cancer, 61 cases among females and only 6 among males. The incidence rate (Figure 7) was highest in Musandam (21.1 per 100,000) followed by Ad Dakhliyah (11.8 per 100,000) and Muscat (9.8 per 100,000). The regional distribution and the morphology of breast cancer cases reported, are presented in Tables 26-27 respectively.

Frequency*
0
14
5
3
2
18
8
4
6
2
5
67

Table 26: Regional Distribution of Breast Cancer

* includes malignant lymphoma

Table: 27: Morphology of breast cancer in Oman

Morphology	Frequency
Infiltrating duct carcinoma	37
Adenocarcinoma	1
Papillary carcinoma	2
Cribriform carcinoma	1
Comedocarcinoma	1
Medullary carcinoma, NOS*	1
Lobular carcinoma, NOS*	2
Infiltrating duct mixed with other type of carcinoma	1
Phyllodes tumor, malignant	2
Malignant lymphoma, non-Hodgkin, NOS*	1
Unspecified carcinoma	11
Unspecified cancer	7
Total	67

*NOS - not otherwise specified

Figure 7: Incidence of Breast Cancer by Region



Lung and Bronchus

There were 37 cases of cancer of the lung & bronchus. Of these 28 were males and 9 were females, with the male: female ratio being 3.1:1. This cancer formed the sixth most common cancer among Omani males. The highest incidence rate (Figure 8) was seen in Muscat (2.9 per 100,000), followed by South Al Batinah (2.3 per 100,000) and South Ash Sharqiyah (2.1 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported, are presented in tables 28-30 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	2
Adh Dhahirah	3
Dhofar	2
Musandam	0
Muscat	11
North Al Batinah	2
North Ash Sharqiah	2
South Al Batinah	5
South Ash Sharqiah	3
Unknown	7
Total	37

Table 28: Regional Distribution of Lung & Bronchial Cancer

Table 29: Gender Distribution of Lung & Bronchial Cancer

Gender	Frequency	Incidence/100,000
Male	28	3.1
Female	9	1.0
Total	37	

Figure 8: Incidence of Lung Cancer by Region



	Morphology	Number
1	Carcinoma	
	1.1Squamous cell carcinoma	6
	1.2 Adenocarcinoma	5
	1.3 Small-cell carcinoma	3
	1.4 Large-cell carcinoma (include giant cell, clear cell	4
	and large cell undifferentiated carcinoma)	
	1.5 Other specified carcinomas (include adenoid cystic,	10
	mucoepidermoid, and large cell neuroendocrine	
	carcinomas, and carcinoid tumour)	
	1.6 Unspecified carcinoma	2
2	Sarcoma	-
3	Other specified cancer (include pulmonary blastoma)	1
4	Unspecified cancer	6
	Total	37

Table 30: Morphology of Lung and Bronchus Cancer

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

Urinary Bladder

Cancer of the urinary bladder was diagnosed in 27 cases. Among these there were 20 males and 7 females, the male: female ratio being 2.9 : 1. The highest incidence rate (Figure 9) was observed in Ad Dakhliyah (2.5 per 100,000) followed by Dhofar (2.0 per 100,000) and Adh Dahirah and South Ash Sharqiyah (1.4 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported, are presented in tables 31-33 respectively. Transitional cell carcinomas constituted 74.1% of the tumours.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	6
Adh Dhahirah	2
Dhofar	3
Musandam	0
Muscat	3
North Al Batinah	2
North Ash Sharqiyah	0
South Al Batinah	2
South Ash Sharqiyah	2
Unknown	7
Total	27

Table 31: Regional Distribution of Malignancies of the Urinary Bladder

Table 32: Gender Distribution of Malignancies of the Urinary Bladder

Gender	Frequency	Incidence/100,000
Male	20	4.6
Female	7	1.7
Total	27	



Figure 9: Incidence of Urinary Bladder Cancer by Region

(Incidence rates are per 100,000 population)

Table 33: Morphology of Bladder Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Squamous cell carcinoma	-
	1.2 Transitional cell carcinoma (include transitional cell	20
	carcinoma with squamous and/or glandular differentiation)	
	1.3 Adenocarcinoma	1
	1.4 Other specified carcinoma	-
	1.5 Unspecified carcinoma	5
2	Sarcoma	-
3	Other specified cancer (include phaeochromocytoma,	
	malignant paraganglioma, melanoma, carcinosarcoma)	-
4	Unspecified cancer	1
	Total	27

Prostate

Carcinoma of the prostate was the fourth commonest cancer among Omani males, with 29 cases being reported. The highest incidence rate (Figure 10) was seen in South Ash Sharqiyah (5.7 per 100,000) followed by Ad Dakhliyah (4.3 per 100,000) and North Al Batinah (4.0 per 100,000). The regional distribution and the morphology of this cancer reported are presented in tables 34 and 35 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	5
Adh Dhahirah	2
Dhofar	0
Musandam	0
Muscat	5
North Al Batinah	7
North Ash Sharqiyah	0
South Al Batinah	4
South Ash Sharqiyah	4
Unknown	2
Total	29

Table 34: Regional Distribution of Carcinoma of the Prostate

Table 35: Morphology of Prostatic cancer

Morphology	Frequency
Adenocarcinoma, NOS*	20
Mucin producing adenocarcioma	1
Transitional cell carcinoma	1
Unspecified carcinoma	4
Unspecified cancer	3
Total	29

*NOS - not otherwise specified

Figure 10: Incidence of Prostatic Cancer by Region



Skin

The frequency of skin cancers, including melanomas, in 2003 was 39. Among these 23 were males and 16 were females, with the male: female ratio being 1.4:1. The highest incidence rate (Figure 11) was seen in South Al Batinah (3.8 per 100,000) followed by Muscat (3.1 per 100,000). The regional distribution, gender distribution and the morphology of skin cancers reported, are presented in tables 36-38 respectively. Basal cell carcinomas constituted 30.8% and squamous cell carcinomas 20.5 % of the skin cancers.

Table 50. Regional Distribution of Skill Cancel		
Region	Frequency*	
Al Wusta	0	
Ad Dakhliyah	3	
Adh Dhahirah	3	
Dhofar	3	
Musandam	0	
Muscat	12	
North Al Batinah	7	
North Ash Sharqyah	0	
South AI Batinah	8	
South Ash Sharqiah	0	
Unknown	3	
Total	39	
* includes access of maline and human		

Table 36: Regional Distribution of Skin Cancer

* includes cases of malignant lymphomas

Table 37: Gender Distribution of Skin Cancer

Gender	Frequency	Incidence/100,000
Male	23	2.6
Female	16	1.8
Total	39	

Table 38: Morphology of Skin cancer

Morphology	Frequency
Spindle cell carcinoma	1
Squamous cell carcinoma	8
Basal cell carcinoma	12
Trichilemmal carcinoma	2
Malignant eccrine spiradenoma	1
Nodular melanoma	1
Amelanotic melanoma	1
Dermatofibrosarcoma	1
Spindle cell sarcoma	1
Peripheral nerve sheath tumour	1
Kaposi's sarcoma	5
Malignant lymphoma, non-hodgkin's	1
Mycosis fungoides	1
Cutaneous T -cell lymphoma	2
Total	39
*NOC not otherwise encodied	

*NOS - not otherwise specified

Figure 11: Incidence of Skin Cancer by Region



Colon

A total of 27 cases of cancer of the colon were reported. Of these, 14 were males and 13 were females, the male: female ratio being 1.1:1 Adenocarcinomas constituted the majority of these cancers (73.1%). The incidence rate (Figure 12) was the highest in Musandam (4.9 per 100,000) followed by Adh Dhahirah (2.0 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported are presented in tables 39 - 41.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	4
Adh Dhahirah	3
Dhofar	0
Musandam	1
Muscat	5
North Al Batinah	5
North Ash Sharqiyah	2
South Al Batinah	1
South Ash Sharqiyah	2
Unknown	4
Total	27
Muscat North Al Batinah North Ash Sharqiyah South Al Batinah South Ash Sharqiyah Unknown Total	5 5 2 1 2 4 27

Table 39: Regional Distribution of Carcinoma of the Colon

* includes cases of malignant lymphomas

Table 40: Gender Distribution of Carcinoma of Colon

Gender	Frequency	Incidence/100,000
Male	14	1.6
Female	13	1.5
Total	27	

Table 41: Morphology of Colon cancer

Morphology	Frequency
Adenocarcinoma, NOS*	15
Mucin- producing adenocarcinoma	2
Papillary adenocarcinoma	2
Carcinoid tumour	4
Follicular Lymphoma	1
Unspecified carcinoma	1
Unspecified cancer	2
Total	27

*NOS - not otherwise specified

Figure 12: Incidence of Cancer of the Colon by Region



Rectum and Anal Canal

Twenty nine cases were reported as cancer of the rectum and anal canal. Eighteen of them were males and 11 were females and the male female ratio was 1.6 : 1. Adenocarcinomas constituted the majority of these cancers (65.5%). The highest incidence rate (Figure 13) was seen in Musandam (4.9 per 100,000) followed by Adh Dhahirah (3.4 per 100,000) and South Ash Sharqiyah (2.8 per 100,000). The regional distribution, gender distribution and the morphology of these cases reported are presented in tables 42 - 44 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	3
Adh Dhahirah	5
Dhofar	2
Musandam	1
Muscat	7
North Al Batinah	1
North Ash Sharqyah	1
South Al Batinah	3
South Ash Sharqiah	4
Unknown	2
Total	29

Table 42: Regional Distribution of Carcinoma of the Rectum and Anal Canal

Table 43: Gender Distribution of Carcinoma of the Rectum and Anal Canal

Gender	Frequency	Incidence/100,000
Male	18	2.0
Female	11	1.2
Total	29	

Table 44: Morphology of Rectal Cancer

Morphology	Frequency
Squamous cell carcinoma, NOS*	3
Adenocarcinoma, NOS*	19
Mucin-producing adenocarcinoma	1
Basaloid carcinoma	1
Signet ring cell carcinoma	1
Malignant lymphoma, non-hodgkin's	1
Unspecified carcinoma	3
Total	29

*NOS - not otherwise specified

Figure 13: Incidence of Cancer of the Rectum and Anal Canal

(Incidence rates are per 100,000 population)



Bone

There were 13 cases of bone cancer in 2003, 7 male and 6 female. The male:female ratio was 1.2:1. Four of these cases were osteosarcoma. The highest incidence rate (Figure 14) was seen in Dhofar and Muscat (1.3 per 100,000) followed by North Ash Sharqiyah (0.8 per 100,000). The regional distribution, gender distribution and the morphology of bone cancer reported are presented in tables 45-47 respectively.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	1
Adh Dhahirah	0
Dhofar	2
Musandam	0
Muscat	5
North Al Batinah	2
North Ash Sharqiyah	1
South Al Batinah	0
South Ash Sharqiyah	1
Unknown	1
Total	13

Table 45: Regional Distribution of Bone Malignancies

Table 46: Gender Distribution of Bone Malignancies

Gender	Frequency	Incidence/100,000
Male	7	0.8
Female	6	0.7
Total	13	

Table 47: Morphology of Bone Cancer

	Morphology	Frequency
1	Sarcoma	
	1.1 Osteosarcoma	4
	1.2 Chondrosarcoma	1
	1.3 Ewing sarcoma	3
	1.4 Fibrosarcoma and malignant fibrous histiocytoma	0
	1.5 Other specified sarcomas (include angiosarcoma,	0
	malignant giant cell tumour and PNET)	
	1.6 Unspecified sarcoma	0
2	Other specified cancer (include chordoma, adamantinom	a 3
	of long bones)	
3	Unspecified cancer	2
	Total	13

Figure 14: Incidence of Bone Cancer by Region



Thyroid

A diagnosis of cancer of the thyroid was made in 44 cases this year. Among these 13 were males and 31 were females, the male: female ratio being 1:2.4. Carcinoma of the thyroid formed the fourth most common tumour among Omani women. The incidence rate (Figure 15) was the highest in South Ash Sharqiyah (5.7 per 100,000) followed by Dhofar (3.3 per 100,000) and North Al Batinah (2.8 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported, are presented in tables 48 - 50 respectively. The commonest thyroid neoplasm was papillary carcinoma, which constituted 61.4% of the cases.

Region	Frequency
Al Wusta	0
Ad Dakhliyah	5
Adh Dhahirah	4
Dhofar	5
Musandam	0
Muscat	5
North Al Batinah	10
North Ash Sharqiyah	3
South Al Batinah	1
South Ash Sharqiyah	8
Unknown	3
Total	44

Table 48: Regional Distribution of Thyroid Cancers

Table 49: Gender Distribution of Thyroid Cancers

Gender	Frequency	Incidence/100,000
Male	13	1.4
Female	31	3.5
Total	44	

Figure 15: Incidence of Cancer Thyroid by Region



Table 50 : Morphology of Thyroid Cancer

	Morphology	Frequency
1	Carcinoma	
	1.1 Follicular carcinoma	1
	1.2 Papillary carcinoma	27
	1.3 Medullary carcinoma	-
	1.4 Anaplastic carcinoma (include undifferentiated	2
	carcinoma, giant cell carcinoma)	
	1.5 Other specified carcinoma	8
	1.6 Unspecified carcinoma	2
2	Sarcoma	-
3	Other specified cancer	-
4	Unspecified cancer	4
	Total	44

Leukemia

Leukemia was reported in 84 cases. Of these, 49 were males and 35 were females, the male: female ratio being 1.4:1. Leukemia formed the commonest cancer in children 14 years and below. The incidence rate (Figure 16) was the highest in Al Wusta (5.9 per 100,000) followed by South Ash Sharqiyah (5.7 per 100,000) and Adh Dhahirah (5.4 per 100,000). The regional distribution, gender distribution and the morphology of leukemia reported, are presented in tables 51 - 53 respectively.

<u> </u>	
Region	Frequency
Al Wusta	1
Ad Dakhliyah	9
Adh Dhahirah	8
Dhofar	7
Musandam	0
Muscat	18
North Al Batinah	14
North Ash Sharqiyah	4
South Al Batinah	11
South Ash Sharqiyah	8
Unknown	4
Total	84

Table 51: Regional Distribution of Leukemia

Table 52: Gender Distribution of Leukemia

Gender	Frequency	Incidence/100,000
Male	49	5.4
Female	35	4.0
Total	84	

Figure 16: Incidence of Leukemia by Region

(Incidence rates are per 100,000 population)



		_	
Table 53	Morpho	ology of	Leukemia

	Morphology	Frequency
	Leukemia	
1	Lymphoid◊	
	1.1 Acute	0
	1.2 Chronic	8
	1.3 Other specified leukemia	25
	1.4 Unspecified	0
2	Myeloid	
	2.1 Acute	28
	2.2 Chronic	2
	2.3 Other specified (includes granulocytic sarcoma)	0
	2.4 Unspecified	2
3	Monocytic	
	3.1 Acute	-
	3.2 Chronic	-
	3.3 Other specified	-
	3.4 unspecified	-
4	Other specified leukemia≈	
	4.1 Acute	-
	4.2 Chronic	-
	4.3 Other	-
5	Unspecified leukemia	18
	Total	84

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

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

Brain and Spinal Cord

There were 33 cases of brain and spinal cord tumours. Astrocytoma tumour constituted 42.4%). The highest incidence rate (Figure 17) was seen in North Al Batinah (2.8 per 100,000) followed by Dhofar (2.6 per 100,000), Muscat (1.8 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported, are presented in tables 54-56 respectively.

Region	Frequency*
Al Wusta	0
Ad Dakhliyah	3
Adh Dhahirah	1
Dhofar	4
Musandam	0
Muscat	7
North Al Batinah	10
North Ash Sharqiyah	0
South Al Batinah	2
South Ash Sharqiyah	2
Unknown	4
Total	33

Table 54: Regional Distribution of Brain & Spinal Cord Tumours

* includes cases of malignant lymphomas

Table 55: Gender Distribution of Brain & Spinal Cord Tumours

Gender	Frequency	Incidence/100,000
Male	23	2.6
Female	10	1.1
Total	33	

Figure 17: Incidence of Brain and Spinal Cord Tumours by Region

(Incidence rates are per 100,000 population)



	Morphology	Frequency	
1	Tumours of Neuroepithelial Tissue		
	1.1 Gliomas		
	1.1.1 Astrocytic tumours	14	
	1.1.2 Oligodendroglial tumours and mixed glio-mas	3	
	1.1.3 Ependymal tumours	2	
	1.1.4 Gliomas of uncertain origin	2	
	1.2 Embryonal tumours		
	1.2.1 Medulloblastoma	2	
	1.2.2 Other	1	
	1.3 Other neuroepithelial tumours	-	
	1.3.1 Choroid plexus tumours	-	
	1.3.2 Neuronal & mixed neuronal glial tumours	-	
	1.3.3 Olfactory tumours	-	
	1.3.4 Pineal parenchymal tumours	-	
2	Tumours of cranial nerves	-	
3	Tumours of meningeal & related tissue	-	
	3.1 Meningioma	-	
	3.2 Soft tissue	-	
	3.3 Melanoma	-	
4	Germ cell tumours	-	
	4.1 Germinoma	-	
	4.2 Other	-	
5	Sellar Region		
	5.1 Pituitary tumours	1	
	5.2 Craniopharyngioma		
6	Other specified tumours	3	
7	Unspecified tumours	5	
	Total	33	

Table 56: Morphology of Brain & Central Nervous System Cancer in Oman

Cervix

Cervical cancer was diagnosed in 33 cases. The highest incidence rate (Figure 18) was in South Al Batinah (4.7 per 100,000) followed by Ad Dakhliyah (3.4 per 100,000) and Muscat (3.3 per 100,000). The regional distribution and the morphology of cervical cancer reported are presented in tables 57 and 58 respectively.

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Region	Frequency
Al Wusta	0
Ad Dakhliyah	4
Adh Dhahirah	2
Dhofar	2
Musandam	0
Muscat	6
North Al Batinah	5
North Ash Sharqiyah	0
South Al Batinah	5
South Ash Sharqiyah	2
Unknown	7
Total	33

Table 57: Regional Distribution of Carcinoma of the Cervix

Table 58 : Morphology of Cervical Cancer

	Morphology	Frequency
1	Carcinoma	
	1.1 Squamous cell carcinoma	24
	1.2 Adenocarcinoma (include adenosquamouscarcinoma	а, 6
	adenocarcinoma with squamous differentiation,	
	mucoepidermoid and adenoid cystic carcinomas)	
	1.3 Other specified carcinomas	-
	1.4 Unspecified carcinoma	1
2	Sarcoma	-
3	Other specified cancer (include mullerian mixed	-
	tumour, carcinosarcoma , melanoma)	
4	Unspecified cancer	2
	Total	33

Figure 18: Incidence of Cancer of the Cervix by Region



Liver

Liver cancer was diagnosed in 27 cases. Among these, 19 were males and 8 were females, giving a male: female ratio of 2.4:1. Hepatocellular carcinoma was the commonest cancer and constituted 60%. The highest incidence rate (Figure 19) was seen in Al Wusta (11.9 per 100,000) followed by Ad Dakhliya(1.7 per 100,000) and Muscat and North Ash Sharqiyah(1.6 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported, are presented in tables 59 - 61 respectively.

Region	Frequency
Al Wusta	2
Ad Dakhliyah	4
Adh Dhahirah	1
Dhofar	2
Musandam	0
Muscat	8
North Al Batinah	1
North Ash Sharqiyah	2
South Al Batinah	2
South Ash Sharqiyah	1
Unknown	4
Total	27

Table 59: Regional Distribution of Liver Cancer

Table 60: Gender Distribution of Liver Cancer

Gender	Frequency	Incidence/100,000
Male	19	2.1
Female	8	0.9
Total	27	

Figure 19: Incidence of Cancer of the Liver by Region



Table 61: Morphology of Liver Cancer

	Morphology	Frequency
1	Carcinoma	
	1.1 Hepatocellular carcinoma	18
	1.2 OCholangiocarcinoma (all intrahepatic biliary	2
	carcinomas, i.e. all adenocarcinomas and	
	adenosquamous carcinoma)	
	1.3 Other specified carcinomas (include combined	1
	hepatocellular and cholangiocarcinoma, carcinoid)	
	1.4 Unspecified carcinoma	3
2	Hepatoblastoma	-
3	Sarcoma	
	3.1 Haemangiosarcoma	-
	3.2 Other sarcomas	-
4	Other specified cancer	-
5	Unspecified cancer	3
	Total	27

◊The 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

Esophagus

There were 14 cases of carcinoma of the esophagus. Ten of these were males and 4 were females, the male:female ratio being 2.5:1. The incidence rate was (Figure 20) the highest in Ad Dakhliyah (1.7 per 100,000) followed by North Al Batinah (1.1 per 100,000) .The regional distribution, gender distribution and the morphology of esophageal cancer reported, are presented in tables 62 - 64 respectively. The majority of cancers were squamous cell carcinoma (57.1%).

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

Table 62: Regional Distribution of Cancer of the Esophagus

Table 63: Gender Distribution of Carcinoma of the Esophagus

Gender	Frequency	Incidence/100,000
Male	10	1.1
Female	4	0.5
Total	14	

Table 64: Morphology of Esophageal Cancer

	Morphology	Frequency
1	Carcinoma	
	1.1 Squamous cell carcinoma	8
	1.2 Adenocarcinoma (include adenosquamous,	2
	muci-nous, adenoid cystic, mucoepidermoid	
	and Barret carcinoma)	
	1.3 Other specified carcinomas	-
	1.4 Unspecified carcinoma	3
2	Sarcoma	-
3	Other specified cancer (include melanoma, carcinosarcor	na 1
4	Unspecified cancer	-
	Total	14

Figure 20: Incidence of Cancer of the Esophagus by Region



Kidney and Ureter

Cancer of the kidney & ureter were reported in 24 cases. There were 14 cases in males and 10 cases in females and the male:female ratio was 1.4 : 1. Renal cell carcinoma constituted 41.7% and nephroblastomas 21.0% of the cases. The highest incidence rate (Figure 21) was seen in Al Wusta (5.9 per 100,000) followed by South Ash Sharqiyah (2.8 per 100,000) . The regional distribution, gender distribution and the morphology of the cancer reported, are presented in tables 65-67 respectively.

Region	Frequency
Al Wusta	1
Ad Dakhliyah	2
Adh Dhahirah	1
Dhofar	4
Musandam	0
Muscat	3
North Al Batinah	5
North Ash Sharqiyah	1
South Al Batinah	1
South Ash Sharqiyah	4
Unknown	2
Total	24

Table 65: Regional Distribution of Carcinoma of the Kidney & Ureter

Table 66: Gender Distribution of Carcinoma of the Kidney & Ureter

		· · · · · · · · · · · · · · · · · · ·
Gender	Frequency	Incidence/100,000
Male	14	1.6
Female	10	1.1
Total	24	
Figure 21: Incidence of Kidney and Ureter Cancer by Region

(Incidence rates are per 100,000 population)



This diagram is not an authority on international boundaries

Table 67: Morphology of Kidney Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Squamous, transitional cell carcinomas	2
	(epithelial tumours of renal pelvis)	
	1.2 Renal cell carcinoma	10
	1.3 Other specified carcinoma	-
	1.4 Unspecified carcinoma	4
2	Nephroblastoma (Wilms tumour) (include rhabdoid	5
	tumour, clear cell sarcoma)	
3	Sarcoma	-
4	Other specified cancer	2
5	Unspecified cancer	1
	Total	24

Pancreas

Pancreatic cancers were reported in 9 cases. Of these, 6 were in males and 3 in females, the male:female ratio being 2:1. The highest incidence rate (Figure 22) was observed in Muscat (1.0 per 100,000) followed by South Al Batinah (0.9 per 100,000) and Dhofar (0.7 per 100,000). The regional distribution, gender distribution and the morphology of pancreatic cancer cases reported, are presented in tables 68-70 respectively.

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

Table 68: Regional Distribution of Carcinoma of the Pancreas

Table 69: Gender Distribution of Carcinoma of the Pancreas

Gender	Frequency	Incidence/100,000
Male	6	0.7
Female	3	0.3
Total	9	

Table 70: Morphology of Pancreatic cancer

Morphology	Frequency
Adenocarcinoma, NOS*	4
Unspecified carcinoma	4
Unspecified cancer	1
Total	9

*NOS - not otherwise specified

Figure 22: Incidence of Pancreatic Cancer by Region

(Incidence rates are per 100,000 population)



This diagram is not an authority on international boundaries

Ovary

A diagnosis of ovarian cancer was made in 17 cases. These constituted the 7th most common cancer among Omani females. The highest incidence rate (Figure 23) was seen in Al Wusta (12.8 per 100,000) followed by Adh Dhahirah (4.1 per 100,000) and North Ash Sharqiyah (3.2 per 100,000). The regional distribution of ovarian cancer and their morphology are reported, in tables 71 and 72 respectively.

RegionFrequencyAl Wusta1Ad Dakhliyah0Adh Dhahirah3Dhofar1Musandam0Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah1Unknown1Total17	U	
Al Wusta1Ad Dakhliyah0Adh Dhahirah3Dhofar1Musandam0Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah1Unknown1Total17	Region	Frequency
Ad Dakhliyah0Adh Dhahirah3Dhofar1Musandam0Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	Al Wusta	1
Adh Dhahirah3Dhofar1Musandam0Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	Ad Dakhliyah	0
Dhofar1Musandam0Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	Adh Dhahirah	3
Musandam0Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	Dhofar	1
Muscat5North Al Batinah1North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	Musandam	0
North Al Batinah1North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	Muscat	5
North Ash Sharqiyah2South Al Batinah2South Ash Sharqiyah1Unknown1Total17	North Al Batinah	1
South Al Batinah2South Ash Sharqiyah1Unknown1Total17	North Ash Sharqiyah	2
South Ash Sharqiyah1Unknown1Total17	South Al Batinah	2
Unknown1Total17	South Ash Sharqiyah	1
Total 17	Unknown	1
	Total	17

Table 71: Regional Distribution of Ovarian Cancer

Table 72: Morphology of Ovarian Cancer

	Morphology	Number
1	Carcinoma	
	1.1 Serous carcinoma*	4
	1.2 Mucinous carcinoma*	1
	1.3 Endometrioid carcinoma	-
	1.4 Clear cell carcinoma	-
	1.5 Adenocarcinoma NOS	2
	1.6 Other specified carcinomas	-
	1.7 Unspecified carcinoma	2
2	Sex cord-stromal tumours	1
3	Germ cell tumours	5
4	Other specified cancers (include malignant Brenner	
	tu-mour, mullerian mixed tumour, carcinosarcoma)	-
5	Unspecified cancer	2
	Total	17

* 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)



This diagram is not an authority on international boundaries

Larynx & Trachea

There were 8 cases of carcinoma of the larynx and trachea reported of which seven were male and one female. The male:female ratio was 7:1. Only Three regions reported this cancer-Adh Dhahirah (2.7 per 100,000) then North Al Batinah (0.9 per 100,000) and Dhofar (0.7 per 100,000). The regional distribution, gender distribution and the morphology of this cancer reported, are presented in tables 73-75 respectively. All the cases were diagnosed as squamous cell carcinoma.

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

Table 73: Regional Distribution of Carcinoma of the Larynx & Trachea

Table 74: Gender Distribution of Carcinoma of the Larynx & Trachea

Gender	Frequency	Incidence/100,000
Male	7	0.8
Female	1	0.1
Total	8	

Table 75: Morphology of Laryngeal cancer

Morphology	Frequency
Squamous cell carcinoma, NOS*	8
Total	8
*NIOO ((())	

*NOS (not otherwise specified)

Figure 24: Incidence of Cancer of the Larynx by Region

(Incidence rates are per 100,000 population)



This diagram is not an authority on international boundaries

Uterus

There were 11 cases of uterine cancer in 2003. This includes Corpus Uteri(C 54) as well as 'Uterus, Not Otherwise Specified' (C 55.9). The highest incidence was in North Ash Sharqiyah (3.2 per 100,000) followed by Muscat and Dhofar (2.7 per 100,000). The regional distribution and morphology of this cancer reported are presented in tables 76 and 77 respectively. Eight of these cancers were carcinoma (72.7%).

Region	Frequency
Al Wusta	0
Ad Dakhliyah	0
Adh Dhahirah	0
Dhofar	2
Musandam	0
Muscat	5
North Al Batinah	2
North Ash Sharqiyah	2
South AI Batinah	0
South Ash Sharqiyah	0
Unknown	0
Total	11

Table 76: Regional Distribution of Uterine Cancer

Table 77: Morphology of Uterine Cancer

	Morphology	Frequency
1	Carcinoma	
	1.1 Adenocarcinoma (include adenosquamous	5
	car-cinoma and adenocarcinoma with squamous	
	dif-ferentiation)	
	1.2 Other specified carcinoma (include squamous cell	3
	carcinoma, clear-cell carcinoma)	
	1.3 Unspecified carcinoma	-
2	Sarcoma (include leiomyosarcoma, endometrial	2
	Stromal sarcoma)	
3	Other specified cancer (include mullerian mixed	1
	tumour, carcinosarcoma, adenocarcinoma)	
4	Unspecified cancer	-
	Total	11

Figure 25: Incidence of Cancer of the Uterus by

(Incidence rates are per 100,000 population)



This diagram is not an authority on international boundaries

Childhood Cancers

Of the 841 cases reported during 2003, 86 cases were among children aged 14 years and below, constituting 10.2% of the total cancers reported. Leukemias, lymphomas followed by neuroblastoma, were the commonest tumours seen in this age group. Tables 78-80 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 81. The age standardized rates were 98.2 per million for males and 105.8 per million for females.

Topography	Frequency	Percentage (%)
Lymphoid leukemia	19	22.1
Acute non-lymphocytic leukemia	7	8.1
Hodgkin's lymphoma	7	8.1
Neuroblastoma	7	8.1
Non-hodgkin's lymphoma	6	7.0
Unspecified leukemia	5	5.8
Wilm's tumour	5	5.8
Unspecified carcinoma	5	5.8
Unspecified lymphoma	3	3.5
Burkitt's lymphoma	2	2.3

Table 78: Frequency of Ten Common Cancers in Omani Children

Table 79: Frequency of Ten Common Cancers in Omani Boys

Topography	Frequency	Percentage (%)
Lymphoid leukemia	11	25.6
Acute non-lymphocytic leukemia	5	11.6
Hodgkin's lymphoma	5	11.6
Wilm's tumour	5	11.6
Neuroblastoma	4	9.3
Burkitt's lymphoma	2	4.7
Unspecified lymphoma	2	4.7
Primary neuroectodermal tumour	2	4.7
Non-hodgkin's lymphoma	1	2.3
Unspecified leukemia	1	2.3

Topography	Frequency	Percentage (%)
Lymphoid leukemia	8	18.6
Non-hodgkin's lymphoma	5	11.6
Unspecified carcinoma	5	11.6
Unspecified leukemia	4	9.3
Neuroblastoma	3	7.0
Acute non-lymphocytic leukemia	2	4.7
Hodgkin's lymphoma	2	4.7
Osteosarcoma	2	4.7
Unspecified lymphoma	1	2.3
Ependymoma	1	2.3

Table 80: Frequency of Ten Common Cancers in Omani Girls

Childhood Cancers



Morphology

77

Site	Male Female											
	0-	5-	10-	All	*CR	*ASR	0-	5-	10-	All	*CR	*ASR
Leukemia	7	5	5	17	46.1	38.8	7	2	5	14	39.4	34.4
Lymphoid	4	5	2	11	29.9	25.1	5	2	1	8	22.5	19.7
Acute non-lymphocytic	3	0	2	5	13.6	11.4	1	0	1	2	5.6	4.9
Chronic myeloid	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	0	1	1	2.1	2.3	1	0	3	4	11.3	9.8
Lymphomas	0	6	4	10	27.1	22.8	2	2	4	8	22.5	19.7
Non-Hodakin lymphomas	0	3 1	2	5 1	2.7	2.3	2	1	2	2	0.0 1/ 1	4.9
Burkett's lymphoma	0	1	1	2	5.4	4.6	0	0	0	0	28	2.5
Miscellaneous lymphoreticular neoplasms	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Unspecified	0	1	1	2	5.4	4.6	0	1	0	1	2.8	2.5
Brain and Spinal Neoplasms	1	1	3	5	13.6	11.4	2	0	1	3	8.5	7.4
Ependymoma	0	0	1	1	2.7	2.3	0	0	1	1	2.8	2.5
Astrocytoma	1	0	0	1	2.7	2.3	1	0	0	1	2.8	2.5
Primitive neuroectodermal tumours	0	0	2	2	5.4	4.6	0	0	0	0	0.0	0.0
Other gliomas	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Other specified	0	1	0	1	0.0	0.0	1	0	0	1	2.8	2.5
Unspecified	0	1	0	-	2.1	2.3	0	0	0	0	0.0	0.0
Sympathetic Nervous System Tumours	3	1	0	4	10.9	9.1	3	0	0	3	8.5	7.4
Other	3	0	0	4	10.9	9.1	3	0	0	3	8.5	7.4
Betineklasterre	4	0	0	4	0.0	0.0	0	4	0	4	2.0	0.0
Retinoblastoma	1	0	0	-	2.1	2.3	0	1	0	1	2.0	2.5
Renal Tumours	4	1	0	5	13.6	11.4	1	0	0	1	2.8	2.5
Repair carcinoma	4	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	2.8	2.5
Henatic Tumours	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Hepatoblastoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Hepatic 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	0	0	0	0	0.0	0.0
Malignant Bone Tumours	0	0	0	0	0.0	0.0	0	0	4	4	11.3	9.8
Osteosarcoma	0	0	0	0	0.0	0.0	0	0	2	2	5.6	4.9
Chondrosarcoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Ewing's sarcoma	0	0	0	0	0.0	0.0	0	0	1	1	2.8	2.5
Unspecified	0	0	0	0	0.0	0.0	0	0	1	1	2.8	2.5
Soft Tissue Saraamaa	0	0	0	0	0.0	0.0	0	0	0	0	2.0	2.0
Rhabdomyosarcoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Fibrosarcoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Kaposi's sarcoma	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	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Germ Cell and Gonadal Neoplasms	1	0	0	1	2.7	2.3	1	0	1	2	5.6	4.9
Intracranial and intraspinal germ cell	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Other & unspecified non-gonadal germ cell	1	0	0	1	2.7	2.3	1	0	0	1	2.8	2.5
Gonada germ cell	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	1	1	2.8	2.5
Carcinomas and Enithelial Neonlasms	0	0	0	0	0.0	0.0	0	2	1	6	16.0	1/ 9
Adrenocortical	0	0	0	0	0.0	0.0	0	0	4	0	0.0	0.0
Thyroid	0	0	0	0	0.0	0.0	0	0	1	1	2.8	2.5
Nasopharyngeal	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Melanoma	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
Skin	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	2	3	5	14.1	12.3
Other and Unspecified Neoplasms	0	0	0	0	0.0	0.0	1	0	0	1	2.8	2.5
Other unspecified	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0
	17	14	12	13	116.7	0.0	17	7	10	/2	2.0	105.9
Total	17	1.44	14		110.7	30.2	17	1	13	-+J	141.1	105.0

Table 81 : Frequency Distribution of Childhood Cancers in Oman, 2003 (International Classification of Childhood Cancers)

* CR Crude incidence rate; ASR Age-standardised 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 23.9% of the total population of Oman. In 2003 there were 44 cases of cancer among the expatriate population giving a crude incidence rate of 7.9 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 leukemia and skin cancer. 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 82-87 respectively.

Gender	Frequency
Male	20
Female	24
Total	44

Table 82: Gender Distribution of Cancer Cases among Non-Omanis

Topography	Frequency	Percentage (%)
Breast	6	13.6
Leukemia	4	9.1
Skin	4	9.1
Liver	3	6.8
Prostate	3	6.8
Lymphoma	2	4.5
Cervix uteri	2	4.5
Uterus	2	4.5
Bladder	2	4.5
Rectum	2	4.5

Table 83: Ten Most Common Cancers in Non-Omanis (Males & Females)

Topography	Frequency	Percentage (%)
Liver	3	15.0
Prostate	3	15.0
Leukemia	2	10.0
Rectum	2	10.0
Skin	2	10.0
Bladder	2	10.0
Stomach	1	5.0
Brain	1	5.0
Lymphoma	1	5.0
Larynx	1	5.0

Table 84: Ten Most Common Cancers in Non-Omanis (Males)

Table 85: Ten Most Common Cancers among Non-Omanis (Females)

Topography	Frequency	Percentage (%)
Breast	6	25.0
Leukemia	2	8.3
Cervix uteri	2	8.3
Uterus	2	8.3
Skin	2	8.3
Ovary	1	4.2
Kidney	1	4.2
Lymphoma	1	4.2
Thyroid	1	4.2
Bronchus and lung	1	4.2

Table 86: Regional Distribution of Cancer Cases among Non-Omanis

Region	Frequency
Al Wusta	0
Ad Dakhliyah	0
Adh Dhahirah	0
Dhofar	6
Musandam	0
Muscat	23
North Al Batinah	7
North Ash Sharqiyah	0
South Al Batinah	2
South Ash Sharqiyah	3
Unknown	3
Total	44

Country	Frequency
India	17
Egypt	7
Pakistan	3
Bangla Desh	2
Phillipines	2
UK	2
Jordan	1
Yemen	1
Czech Republic	1
Iraq	1
Unknown	7
Total	44

Table 87: Distribution of Cancer Cases among Non-Omanis by Nationality

Deaths due to cancer

Table 88: Hospital-based deaths due to cancer in 2003

	Male	Female	Total
Malignant neoplasm of lip, oral cavity, pharynx & esophagus	9	3	12
Malignant neoplasm of stomach	12	3	15
Malignant neoplasm of other sites of digestive organs	6	2	8
Malignant neoplasm of colon	4	5	9
Malignant neoplasm of rectum, rectosigmoid junction and anu	ıs 3	0	3
Malignant neoplasm of liver & intraheptic bile ducts	16	7	23
Malignant neoplasm of pancreas	4	4	8
Malignant neoplasm of other respiratory & intrathoracic organ	is 1	0	1
Malignant neoplasm of larynx	3	0	3
Malignant neoplasm of trachea, bronchus and lung	12	4	16
Malignant neoplasm of bone & articular cartilage	1	0	1
Malignant neoplasm of retroperitoneum & peritoneum	0	1	1
Malignant neoplasm of breast	0	8	8
Malignant neoplasm of other female genital organs	0	5	5
Malignant neoplasm of cervix uteri	0	3	3
Malignant neoplasm of other & unspecified parts of uterus	0	1	1
Malignant neoplasm of prostate	7	0	7
Other malignant neoplasm of urinary Tract	3	2	5
Malignant neoplasm of urinary bladder	1	3	4
Malignant neoplasm of eye & adnexa	1	0	1
Malignant neoplasm of other parts of central nervous system	1	2	3
Malignant neoplasm of brain	8	9	17
Malignant neoplasm of thyroid & endocrine glands	1	2	3
Malignant neoplasm of ill-defined, secondary & unspecified sites	27	22	49
Hodgkin's diseases	0	1	1
Non Hodgkin's lymphoma	10	5	15
Other malignant neoplasm of lymphatic & haemopoietic tissue	e 3	2	5
Leukemia	10	6	16
Other In situ neoplasms	2	0	2
Carcinoma in situ of Cervix Uteri	1	0	1
Other benign neoplasm	1	1	2
Benign neoplasm of urinary organs	1	0	1
Neoplasms of uncertain or unknown behavior	2	2	4
TOTAL	150	103	253

Note: The above data are deaths of cancer patients which occurred in hospitals of the Ministry of Health only.



Cancer Incidence in five continents

Volume VIII

Edited by D.M Parkin, S.L. Whelan, J. Ferlay & L. Teppo and D.B. Thomas

Oman

Registration Area

The Sultanate of Oman is located in the south eastern corner of the Arabian peninsula. It has a costal line extending almost 1,700 km from the Strait of Hormuz in the north to the borders of the Republic of Yemen in the south and overlooks three seas; the Arabian Gulf the Gulf of Oman and the Arabian Sea. The Sultanate of Oman borders the Kingdom of the Saudi Arabia and United Arab Emirates in the west, the Republic of Yemen in the south, the Strait of Hormuz in the north and the Arabian Sea in the east. 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 km sq., making it 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 densely populated and agriculturally fertile area is plain overlooking the Gulf of Oman and the Arabian Sea (3 per cent of the total area). The mountain ranges occupy almost 15 per cent of the total land of Oman and are inhabited by about 5 per cent of the population. The remaining area is mainly sand, wadis and desert (about 82 per cent of the total area). The climate deffers from one area to another: it is hot and humid in the costal areas in summer, hot and dry in the interior with exception of higher mountains and southern regions of Dhofar, which enjoy a moderate climate throughout the vear.

The first population census was done in December 1993. The estimated Omani population in 1999 was 1,729,330 with a gender ration of 103 males per 100 females. About 15 per cent of the population is under 5 years of age and 46 per cent is under 15 years. Only 4.5 per cent of the total Omani population is above the age of 60 years.

Registry Structure and Methods

The cancer registry in Oman was established in 1985 in Al Nahdha Hospital as a hospital based registry. In 1996 it was moved to the Department of Non-Communicable Diseases Control at the Ministry of Health Headquarters. Since then the Oman National Cancer Registry functions as a population based registry covering the entire Sultanate of Oman. New cancer notification forms were developed and distributed to all regional hospitals and sister institutions for reporting.

Sources of cancer information for the Registry include passive reporting by the diagnosing physicians from different hospitals including University, Police and Armed Forces Hospitals, histopathology and cytology reports from the three main laboratories in the country and the outpatient logbooks of the Oncology Department at the main tertiary facility, the Royal Hospital, in addition discharge diagnosis and monthly hospital mortality lists of patients with diagnosis of cancer are obtained from different hospitals in the country. With the exception of the radiotherapy other modalities for treatment for cancer exist in Oman. Details of the patient sent abroad for treatment (mainly for radiotherapy) are obtained from the Department of Treatment Abroad and from Tuwam Hospital (main referral hospital for radiotherapy in the neighbouring United Arab Emirates).

Between 1985 and 1997, the registry used Dbase software for data entry. In 1998 the whole data base converted to the IARC/IACR CanReg software programme.



Sources of population

1993 census at 30 November - 1 December data for 1994 to 1997 are annual projection based on the Cohort Component Technique, using WEST UN LIFE TABLE MODEL and based on the 1993 census.

Notes on the data

The proportion of the cases with morphological verification is 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.

			M	ALE					F	EMALE			
	No.	(Crude	ASR	Cum.	Rates	No.		Crude	e ASR	Cum.	Rates	
SITE	cases	Freq	rate	world	0-64	0-74	cases	Freq	rate	world	0-64	0-74	
		(%)	(per	100,00	0) (p	ercent)	(%)	(per	100,000) (per	cent)	ICD-10
Lip	7	0.3	0.2	0.3	0.02	0.02	2	0.1	0.1	0.1	0.00	0.02	C00
Tonque	20	1.0	0.5	1.0	0.07	0.11	15	0.9	0.4	0.9	0.10	0.10	C01-02
Mouth	26	1.3	0.7	1.3	0.08	0.18	19	0.1	0.5	1.1	0.07	0.13	C03-06
Salivary glands	5	0.2	0.1	0.2	0.02	0.03	4	0.2	0.1	0.2	0.01	0.01	C07-08
Tonsils	1	0.0	0.0	0.1	0.01	0.01	0	0.0	0.0	0.0	0.00	0.00	C09
Other Oropharynx	2	0.1	0.1	0.1	0.00	0.00	0	0.0	0.0	0.0	0.00	0.00	C10
Nasopharynx	20	1.0	0.5	0.9	0.09	0.09	4	0.2	0.1	0.2	0.02	0.02	C11
Hypopharynx	6	0.3	0.2	0.3	0.02	0.03	1	0.1	0.0	0.1	0.00	0.02	C12-13
Pharynx Unspec.	7	0.3	0.2	0.3	0.03	0.03	2	0.1	0.1	0.1	0.01	0.01	C14
Oesophagus	58	2.8	1.5	3.1	0.23	0.41	35	2.1	0.9	1.9	0.12	0.24	C15
Stomach	248	12.0	6.3	13.4	0.87	1.75	122	7.3	3.2	7.1	0.48	0.92	C16
Small Intestine	7	0.3	0.2	0.3	0.03	0.03	2	0.1	0.1	0.1	0.01	0.01	C17
Colon	62	3.0	1.6	3.1	0.26	0.32	27	1.6	0.7	1.6	0.10	0.20	C18
Rectum	42	2.0	1.1	2.2	0.14	0.28	18	1.1	0.5	1.0	0.07	0.13	C19-20
Anus	0 100	0.4	0.2	0.4	0.03	0.07	12	0.1	0.1	0.2	0.01	0.02	021
Call Bladdor etc	109	0.0	2.0	0.5	0.37	0.09	40	2.0	1.1	2.2	0.13	0.29	C22 24
Pancreas	38	0.4	1.0	2.0	0.03	0.00	16	1.0	0.5	0.7	0.04	0.09	C25-24
Nose Sinuses etc	10	0.5	0.3	0.5	0.03	0.23	2	0.1	0.4	0.3	0.00	0.00	C30-31
l arvnx	30	1.4	0.8	1.6	0.08	0.19	5	0.3	0.1	0.2	0.03	0.03	C32
Trachea, bronchus,lung	144	6.9	3.6	7.7	0.55	0.19	46	2.7	1.2	2.6	0.20	0.35	C33-34
Other thoracic organs	19	0.9	0.5	1.0	0.07	0.14	12	0.7	0.3	0.6	0.06	0.06	C37-38
Bone	30	1.4	0.8	1.1	0.07	0.12	20	1.2	0.5	0.6	0.04	0.06	C40-41
Melanoma of skin	12	0.6	0.3	0.7	0.04	0.08	9	0.5	0.2	0.5	0.02	0.07	C43
Other skin	114		2.9	6.0	0.45	0.78	57		1.5	2.9	0.22	0.32	C44
Mesothelioma	1	0.0	0.0	0.0	0.00	0.00	0	0.0	0.0	0.0	0.00	0.00	C45
Kaposi's sarcoma	19	0.9	0.5	0.9	0.06	0.11	0	0.0	0.0	0.0	0.00	0.00	C46
Connective and soft tissue	e 47	2.3	1.2	1.8	0.13	0.16	38	2.3	1.0	1.4	0.12	0.12	C47+C49
Breast	12	0.6	0.3	0.6	0.06	0.07	243	14.5	6.4	12.7	1.05	1.36	C50
Vulva							3	0.2	0.1	0.2	0.00	0.03	C51
Vagina							1	0.4	0.2	0.3	0.02	0.05	C52
							154	9.2	4.0	1.1	0.01	0.88	C53
							9 27	1.6	0.2	0.0	0.04	0.05	C54 C55
Ovary							66	0.9	17	2.8	0.03	0.03	C56
Other female genital organ	ns					0	0.0	0.0	0.0	0.00	0.00	C57	000
Placenta	10					0	25	1.5	0.7	0.9	0.07	0.07	C58
Penis	1	0.0	0.0	0.0	0.00	0.00			•	0.0	0.01	0.01	C60
Prostate	164	7.9	4.2	8.9	0.48	1.12							C61
Testis	15	0.7	0.4	0.6	0.04	0.05							C62
Other male genital organs	0	0.0	0.0	0.0	0.00	0.00							C63
Kidney	25	1.2	0.6	1.1	0.06	0.11	30	1.8	0.8	1.1	0.08	0.14	C64
Renal pelvis	2	0.1	0.1	0.1	0.01	0.02	0	0.0	0.0	0.0	0.00	0.00	C65
Ureter	0	0.0	0.0	0.0	0.00	0.00	0	0.0	0.0	0.0	0.00	0.00	C66
Bladder	103	5.0	2.6	5.5	0.36	0.69	39	2.3	1.0	2.3	0.13	0.31	C67
Other urinary organs	1	0.0	0.0	0.1	0.01	0.01	1	0.1	0.0	0.0	0.00	0.00	C68
Eye Drain nomination overland	21	1.0	0.5	1.0	0.07	0.14	19	1.1	0.5	6.6	0.04	0.05	C69
Brain, nervous system	20	3.1	1.9	2.5	0.19	0.23	48	2.9	1.3	1.7	0.12	0.15	C70-72
Adrenel gland	30	1.4	0.0	1.5	0.10	0.17	110	0.9	0.0	0.0	0.43	0.00	C73
Other endocrine	2	0.2	0.1	0.1	0.01	0.01	2	0.7	0.5	0.3	0.02	0.02	C75
Hodakin's disease	61	29	15	1.8	0.00	0.02	34	2.0	0.1	13	0.01	0.01	C81
Non-hodgkin's lymphoma	208	10.0	5.3	8.1	0.10	0.10	134	8.0	3.5	5.7	0.38	0.10	C82-85 C96
Immunoproliferative disea	ses 3	0.1	0.1	0.1	0.01	0.01	0	0.0	0.0	0.0	0.00	0.00	C88
Multiple myeloma	48	2.3	1.2	2.5	0.19	0.30	23	1.4	0.6	1.4	0.10	0.05	C90
Lymphoid leukemia	92	4.4	2.3	2.2	0.14	0.19	43	2.6	1.1	1.1	0.04	0.10	C91
Myeloid leukemia	37	1.8	0.9	1.6	0.09	0.20	40	2.4	1.0	1.6	0.13	0.16	C92-94
Leukemia unspec.	18	0.9	0.5	0.6	0.06	0.06	11	0.7	0.3	0.3	0.02	0.03	C95
Other and unspec.	161	7.8	4.1	8.3	0.65	1.00	138	8.2	3.6	7.5	0.51	0.97	O&U
All sites	2187		55.4	104.2	7.10	12.39	1734		45.5	83.6	6.09	9.50	ALL
All sites but C44	2073	100.0	52 5	98.1	6.65	11.61	1677 1	0 0 0	44 0	80 7	5 87	9.17	ALLbC44

*OMAN:OMANI (1993-1997)

Members of the National Cancer Control Committee

Dr. Ali Jaffer Mohammed	Director General of Health Affairs	Chairman
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	DG Planning	
Dr. Salim Al-Wahibi	Director, Environmental Health &	Member
	Malaria Eradication	

Annex 1

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



Re All requests should be s D	quest for Data from the Oman National Cancer Registrysubmitted to the attention of the Director, Department of Non-Communicable Disease Surveillance and ControlGHA (HQ), Post Box 393, Area Code 113, Muscat, Sultanate of Oman Tel : (968) 696187Fax : (968) 695480
	Date Submitted :
Name :	
Department :	
Institution :	
Telephone No :	Fax No :
Information Requ (Specify patient pop	lested: Julation, Time period, Year/s, Anatomic site/Histology, Region / Wilayat etc.)
Purpose of Requi (Specify presentatio	est: n at conference/meeting/publication, clinical/epidemiological study, personal information, etc.
Collaborators and	d Co-authors:
Requester's affirm	nation statement:
I hereby, the reque Registry will be tro data given to me w but rather can be	ester of the above data affirm that the data given to me by the Oman National Cance eated with utmost confidentiality in relation to patient's identity, I also affirm that t <i>i</i> ll not be presented or published by me or any of my collaborators as an original wor cited in my presentation and / or publication with acknowledgement to the ONCR.
Requester's signat	ure : Date :
For official use of	nly:
Request :	Approved :
Signature of the	Director of Department of Non-Communicable Disease Surveillance and Control
	Date :



Annex 2

OMAN NATIONAL CANCER REGISTRY FORM

To: Directorate General of Health Affairs Non-Communicable Disease Surveillance & Control Sectio	DGHA, Muscat n 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			
3. Patient's Hospital File No. 4. National / Civil No.			
5. Hospital Name 6. Department of 6. Dep			
7. First Name 8. Father's Name 9.	9. Grandfather's Name 10. Tribe Name		
11. Sex 1=M 1=Single 15 2=F 12. Marital Status 3=Divorced 4=widowed 9=Unknown 9=Unknown 9=Unknown	3. Age 14. Nationality or ear of Birth 1=Omani, 2=Expatriate, 9=Unknown		
15. Country of Birth 16. Religion 1=Muslim, 2=Christian 3=Hindu, 4-Jewish 5=Others. 9=Not known	17. Ethnic Group 1=Arab, 2=Asian 18. Occupation 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			
26. Histological type of Cancer			
27. Laterality 28. Extent of Disease 0=Not a Paired Site, 0=In Situ Unknown or ill-defined Site 1=Localized 1=Right : Origin of Primary 2=Regional by Direct Extension 2=Left : Orgin of Primary 3=Regional to Lymph Nodes 3=Bilateral Involvement 4=Regional, (both 2,3) 9=Paired Site, Laterality Unknown 5=Regional, (not specified) 7=Distant Metastasis/Systemic Disease 8=Not applicable (e.g. Leukemias) 9=Unstaged, Unknown or Unspecified 1	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 30. T Tx To Tis T1 T2 T3 T4 31. N	Mx N0 N1 N2 N3 32. M Mx M0 M1 33. Not applicable		
34. Stage : Ia Ib IIa IIb IIIa II	Ib IVa IVb 99 = Un-known, Un-Specified, Not Applicable		
35. Most valid basis of Diagnosis Microscopic 36. Sequence of treatment 1=Surgery 6=Bone Marrow Non-Microscopic 5=Cytological/Haematology 6=Histology of primary 7=Other Treatment 1=Clinical investigation (eg. X-ray, Isotopes) 7=Histology of Metastasis 36. Sequence of treatment 1=Surgery 6=Bone Marrow 3=Exploration surgery but without Histology 8=Autopsy 9=Not known 9=Not known 9=Not known			
37. Date of Death D M M Y			
39. Source of information 1 = Medical File 2 = Death Certificate 3 = Other 9 = Unknown			
Doctor's Name :	Doctor's Designation :		
Doctor's Signature : Departmemt :			
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