Annual Cancer Report 1996 - 97

Malta National Cancer Registry

Department of
Health Information
MALTA

Malta National Cancer Registry

Annual Cancer Report
1996-1997

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Preface

The Cancer report for 1996 and 1997 represents the fifth annual publication by the National Cancer Registry. This report presents the incidence and mortality from cancer in the Maltese Islands during 1996 and 1997 and also from accumulated data for 5 years from 1993 to 1997. The rates calculated on this greater number of cases collected over five years have a greater statistical relevance than rates calculated on the basis of one year's data. This is especially relevant for Malta due to its small population.

For the first time this report will also be publishing information on the survival experience of cases diagnosed with selected cancer sites and types in Malta. This analysis used the data collected on the cases registered between 1993 and 1997 and general mortality data of the Maltese population from 1992 to 1998 acquired from the Central Office of Statistics, Malta. Relative survival was calculated by using a statistical software developed for cancer registries by the Finnish Cancer Registry and the Cancer Epidemiology Unit of the Karolinska Institute in Sweden.

This report will also be presenting updated comparisons of age-standardised incidence rates using the European Standard Population between the Maltese population (1993-1997) and the populations of the European Union member countries (1995) for selected cancer sites and types issued by the International Agency for Research on Cancer and the European Network of Cancer Registries in 1999.

Dr H Agius Muscat
Director, Health Information

Acknowledgements

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Acknowledgments are also due to the staff of the following private pathology laboratories and hospitals:

LABORATORIES	HOSPITALS
Biomed Laboratories, Attard	Capua Palace Hospital, Sliema
Clinipath Sevices Ltd., Pieta'	St. James' Hospital, Zabbar
Dr J.M. Deguara Laboratories, Ta' Xbiex	St. Philips' Hospital, Sta. Venera
Family Health Services, Rabat	
H.S.E. Diagnostic Laboratories, Msida	
Medical Lab. Services, Zabbar	

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Introduction

This is the fifth annual report on cancer incidence and mortality produced by the Malta National Cancer Registry, since its transition to a population-based registry in 1991. Each report aims at producing updated and comprehensive information on the cancer burden in the Maltese Islands by using the data collected on cancer on a nation-wide scale. This report presents cancer incidence and mortality data for 1996 and 1997 separately and also for the five years 1993 to 1997 together. Due to the relatively small number of cases registered annually for each specific cancer it is useful to present information and analysis on aggregated five year data to reduce the effect of year to year fluctuations on interpretation.

The registry tries to include new items of information in each subsequent report that it produces. This report will be publishing information on the survival experience of cases diagnosed with cancer in Malta for the first time. This analysis used the data collected on the cases registered between 1993 and 1997. Relative survival was calculated by using the statistical software SURV2: Relative Survival Analysis Program (Version 2.02β, 1998) prepared by the Finnish Cancer Registry and the Cancer Epidemiology Unit of the Karolinska Institute in Sweden. This analysis also necessitated the use of the General Mortality data of the Maltese population. This data was acquired from the information on mortality published in the Demographic Reviews for 1993 to 1997 by the Central Office of Statistics, Malta.

Incidence

Cancer incidence is defined as the occurrence of new cancers in a defined population during a specified period of time. For the purposes of this report, the incidence is based on those cancers registered as first diagnosed between 1st January 1996 and 31st December 1996 for 1996 and 1st January 1997 and 31st December 1997 for 1997 in the residents of the Maltese Islands. Tourists and persons who were not living in Malta for more than six months prior to their cancer diagnosis are not included in the register.

The incidence data in this report are the 1996 and 1997 statistics as they stood at the end of September 1999. Future publications and requests for data may not correspond exactly to the figures in this report, as they will reflect subsequent improvements to the data.

The Malta National Cancer Registry (MNCR) codes the sites, types and morphology of cancers using the International Classification of Diseases for Oncology (ICD-O), Second edition, 1990. Incidence reflects the number of primary tumours rather than the number of individuals with cancer. The MNCR database records multiple primary cancers in the same person. The registration of these tumours is guided by the recommendations issued in 1995 for the coding of Multiple Primaries by the International Agency for Research on Cancer (IARC) and the International Association of Cancer Registries (IACR).

Mortality and Survival

The National Mortality Registry regularly supplies the MNCR with a copy of the coded death certificates bearing the mention of a cancer anywhere on the document. This helps to update the cancer registry database with information on the death of cases which were already registered and also to initiate registrations when the first encounter is made from the death certificate. Every effort is made by the registry to obtain additional information about the latter cases so that the registration will not remain on the basis of a death certificate only (DCO). The cases registered on the basis of a DCO were excluded from the calculation of the survival figures published in this report.

The Mortality reported in this publication is defined as the number of cases whose death was attributed to cancer on their death certificate during the years 1993 to 1997. Hence only the cases where a cancer was designated as the underlying cause of death were included in the mortality figures. This information was obtained directly from the databases of the National Mortality Registry within the Department of Health Information (DHI). On the other hand the calculation of survival took into consideration all the cases that died prior to the 31st December 1998, whether or not the cancer was the underlying cause of their death.

Confidentiality

The registry collects and stores personal information on the registered cases such as names, addresses, date of birth and identification numbers. The primary aim for the collection of this data is to prevent multiple registrations for the same primary neoplasm and to help identify individuals for follow-up and survival analysis. The registry forms part of the DHI which houses a number of other national and hospital-based databases concerned with the collection of mortality and morbidity information on the Maltese population. Information is shared between these registries and databases for the mutual benefit of all. The major links are with the National Mortality Registry which supplies information about the deaths of cancer patients.

The registry supplies information in an anonymised format for requests made from agencies and individuals outside the DHI. Confidential information bearing identification data on the registered cases is only given to ethically approved studies, or requests approved by the Director General of the Health Division or to assist doctors in reviewing their own work on their own patients.

Links with other Cancer Registries

The MNCR has been a voting member of the IACR since 1995 and is an associate member of the European Network of Cancer Registries (ENCR). Full membership in the latter organisation is only accorded to cancer registries within the nations that are members of the European Union. Information on cancer in Malta is sent regularly to the above associations and is included within their publications and databases.

In 1998, the medical officer in charge of the MNCR attended the Annual Meeting of the IACR which was held in Atlanta, Georgia, USA. The presentations and discussions at this conference were mainly concerned with Genetics in Population-based Cancer Research. The Annual Meeting of the IACR for 1999 was held in Lisbon, Portugal. The programme of this conference was very extensive and included presentations concerned with Screening related to cancer registries, Tobacco and Young people, Genetic Epidemiology and Familial Cancer, Quality control on cancer registries, Cancer Mapping and Cancer Trends.

In February 1999 the ENCR held a workshop the role of cancer registries in organised cancer screening programmes in Luxembourg. The medical officer in charge of the MNCR participated in this workshop.

The MNCR was invited to participate in a Field Test Trial on a proposed third edition of the International Classification of Diseases for Oncology by IARC in June 1999. The registry accepted this invitation and more than 200 cases of cancer and another 200 cases of leukaemias and lymphoma registered during 1998 and 1999 were recoded using the new coding system and sent over to Lyon for analysis together with our comments on this new classification.

New cases of cancers registered in 1996 and 1997

A total of 1310 and 1495 malignant cases were newly registered in 1996 and in 1997 respectively. When the non-melanoma skin cancers were excluded the total number of new cases amounted to 1118 in 1996 and to 1229 in 1997. Table 1.1 gives the number of new cancers registered by the topography codes (C-codes) and by gender for 1996 and 1997 separately.

TABLE 1.1 Cancer in Malta: 1996 and 1997. Number of new cancer cases by site and gender.

		1996		1997	
ICD-O-2 C code	Cancer site	Males	Females	Males	Females
00	Lip	7	0	4	0
02	Tongue NOS	5	1	3	0
03	Gum	1	0	0	1
04	Floor of mouth	0	0	1	0
05	Palate	0	0	1	0
06	Mouth NOS	3	1	3	0
07	Parotid gland	2	2	1	1
08	Major salivary glands NOS	0	0	0	2
09	Tonsil	2	1	5	0
11	Nasopharynx	15	2	10	2
12	Pyriform sinus	0	0	1	0
15	Oesophagus	9	4	5	5
16	Stomach	29	23	38	17
17	Small intestine	3	5	2	1
18	Colon	40	28	43	52
19	Rectsigmoid junction	11	5	5	4
20	Rectum	23	16	14	19
21	Anus and anal canal	3	0	3	3
22	Liver and intrahepatic bile ducts	5	6	5	4
23	Gall bladder	0	0	1	3
24	Other and unspecified parts of biliary tract	1	2	1	2
25	Pancreas	12	13	20	13
26	Other and ill-defined digestive organs	1	1	1	2
30	Nasal cavity and middle ear	2	0	2	1
32	Larynx	15	1	18	1
34	Bronchus and lung	111	15	91	17
37	Thymus	0	2	0	1
38	Heart, mediastinum and pleura	2	1	6	1
40	Bones, joints and articular cartilages of limbs	2	1	3	0
41	Bones, joints and articular cartilages of other and NOS	1	0	0	1
42	Haematopoietic and reticuloendothelial systems	27	15	38	37
44	Skin	167	72	178	138
48	Retroperitoneum and peritoneum	3	0	1	0
49	Connective, subcutaneous and other soft tissues	3	8	4	1
50	Breast	4	179	3	206
51	Vulva	0	8	0	9
52	Vagina	0	2	0	1
53	Cervix uteri	0	10	0	9
54	Corpus uteri	0	36	0	41
55	Uterus NOS	0	4	0	4
56	Ovary	0	34	0	25
57	Other and unspecified female genital organs	0	0	0	1
60	Penis	2	0	6	0
61	Prostate	57	0	80	0
62	Testis	4	0	6	0
63	Other and unspecified male genital organs	0	0	1	0
64	Kidney	12	17	14	10
65	Renal pelvis	1	0	2	2
66	Ureter	1	0	0	0
67	Urinary bladder	57	12	59	16
69	Eye and adnexae	1	0	2	1
71	Brain	12	10	12	9
72	Spinal cord, cranial nerves and other parts of CNS	0	2	0	0
73	Thyroid gland	7	17	5	21
74	Adrenal gland	2	0	2	1
75	Other endocrine glands and related structures	0	0	0	1
76	Other and ill-defined sites	2	0	4	1
77	Lymph nodes	26	10	26	18
80	Unknown primary site	38	23	30	30
	All sites	721	589	761	734

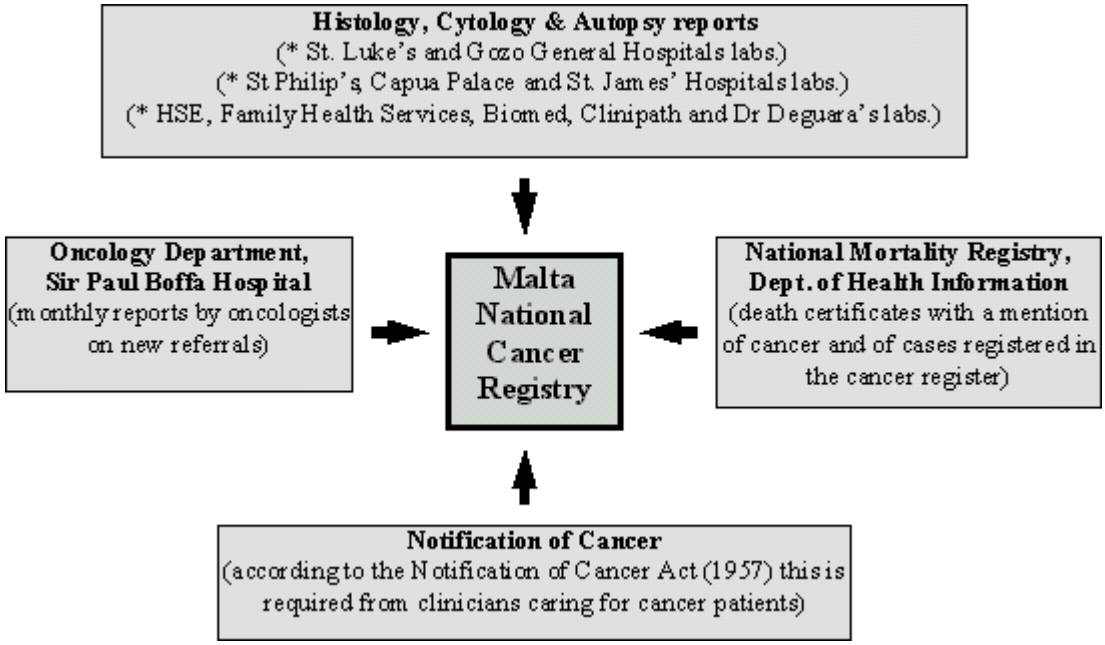
Cancer in Malta 1996 and 1997

Materials and Methods

Sources of Data

Information on cancer diagnoses in Malta is received at the MNCR from various sources. The major sources are the histology, cytology and autopsy reports, which are collected and received from the various pathology laboratories on the Islands. The cancer registry is in continuous contact with the National Mortality Registry which sends copies of all death certificates with a mention of cancer and provides details on the deaths of cases already registered in the cancer register. The Oncology Department sends monthly reports to the registry with information on all the new referrals seen by the oncologists. These reports also include information on the objectives, nature of initial treatment and the type of radiotherapy given to the cancer patients under their care.

Medical practitioners caring for cancer patients are required by law to notify their cases to the cancer registry. After an educational campaign conducted in early 1997, the notification rate increased from 19% in 1995 to 27% in 1997. Similar campaigns to encourage the clinicians to increase the notification rates will be repeated in the future.



Multiple sources of data assist in optimising:

1. Case ascertainment: to obtain information on all cancers diagnosed in the population,
2. Accuracy of data,
3. Timeliness of data: to have the most recent data available,
4. Completeness of data: to record a maximum number of data items on all cases.

Since each source has some information which is missing the input of multiple sources of information on most registrations will help the registry to attain the above goals. For example details on the morphology such as differentiation of a cancer are found on the histology forms but not in the notification, whereas the identification of the clinician caring for the patient is often more explicit on the notification than on the histology report. The latter information is essential with regards to confidentiality issues; since the clinicians can ask for information bearing the identification of the patients only for cases under their own care.

Classification and Coding

The cancer registry has been using the International Classification of Disease for Oncology - second edition (ICD-O-2) for all cases registered since 1st January 1993. The National Mortality Registry has also started coding the causes of death with ICD-10 since the beginning of 1995. This has facilitated the sharing of information between the two registries as these two systems are complimentary because the ICD-O-2 system is a special adaptation of the ICD-10 classification for oncological diseases.

Neoplasms included in the registry's database

The cancer registry database includes cases of malignant/ invasive neoplasms, precancerous/ carcinoma-in-situ lesions, tumours of uncertain behaviour whether benign or malignant, and a number of benign neoplasms especially those originating in the central nervous system. The classification of the behaviour of these tumours is made possible by the 5th digit of the morphology code of the ICD-O-2 coding system which identifies the neoplasm's malignant potential. The following table illustrates the four categories of registration of tumour behaviour as defined by the morphology codes.

Table 2.1: Cases registered in 1996 and 1997, by tumour behaviour status.

Tumour behaviour	Behaviour code	1996		1997	
		No. of cases	Site/ morphology of tumours	No. of cases	Site/ morphology of tumours
TOTAL	all codes	1469		1690	
Malignant	3	1310	Refer to Table 1.1	1495	Refer to Table 1.1
Precancerous/ non-invasive	2	88	including 51 - cervix uteri (CIN I:4; CIN II:20; CIN III:24; ca in-situ, nos:3) 9 - breast 6 - prostate 11 - urinary bladder	114	including 56 - cervix uteri (CIN I:15; CIN II:26; CIN III:15) 11 - breast 6 - prostate 18 - urinary bladder
Uncertain whether benign or malignant	1	37	including 3 - polycythaemia vera 4 - myelodysplastic syndrome 5 - mature teratoma, ovary 16 - urinary bladder 1 - carcinoid, appendix	50	including 1 - polycythaemia vera 15 - myelodysplastic syndrome 7 - mature teratoma, ovary 10 - urinary bladder 3 - carcinoid, appendix
Benign	0	34	including 6 - meningioma 1 - acoustic neuroma 11 - hydatitiform mole, placenta	31	including 9 - meningioma 1 - acoustic neuroma 4 - hydatitiform mole, placenta

Data Quality

Data quality is of utmost importance to cancer registries. The many uses of cancer registry data depend on the quality of the data in the registry's database. To ensure and improve the quality of its data and hence its output the registry undertakes the following measures:

1. Electronic validation checks:

Validation checks on the data are conducted using the checks issued by the IACR 'IARC-CHECK'. These seek to identify implausible combinations of age, gender, incidence date, site of primary, histology and behaviour of tumour and most valid basis of diagnosis. The registry's database is in dBase IV and the programme also has a few in-built checks mainly on the chronological order of the date of birth, incidence date, date of death and cancer registration number.

2. Investigation of death certificate initiated registrations:

A small proportion of registrations performed on the basis of a death certificate only (DCO) are reported by all cancer registries. The level of DCO registrations is regarded as a measure of the registry's performance in case ascertainment and hence as an index of data quality. A high DCO level indicates that the registry has a problem with case ascertainment and validity of its data and that it is missing cancers as they are diagnosed. On the other hand a very low level of DCO may reflect that the registry is receiving incomplete information on all deaths.

The registry employs a lot of effort to try to decrease the number of death certificate initiated entries to the smallest possible number of DCO registrations. This is mainly done by retrieval and examination of the hospital records of deceased patients, so that the date and a better basis for diagnosis may be identified. The resulting DCO rate was 1.5% and 1.1% for the cases registered for 1996 and 1997 respectively. This compares favourably with the DCO% reported by other registries as illustrated in Table 2.2. The DCO rates of the registries other than that for Malta were extracted from Cancer Incidence in Five Continents, Volume VII.

Table 2.2 Comparative levels of Death Certificate Only registrations from international cancer registries and the MNCR.

Registry	% of all registrations*
Iceland	0%
USA: SEER	1%
Finland	1%
Canada	2%
Denmark	2%
UK, Scotland	4%
Malta, 1996	1.5%
Malta, 1997	1.1%

* excluding non-melanoma skin cancers

3. Year to year case number consistency checks

Year to year fluctuations in the number of new cases especially for the rarer cancers are expected. However, these consistency checks are useful to detect gross differences over time mainly with respect to site, gender, age distribution and source of information. They help the registry to detect omissions especially in case ascertainment and completeness of its database.

4. Evaluation of the proportion of cases with Microscopic Verification (MV%), Mortality/ Incidence ratios (M:I) and Primary Site Unknown (PSU%)

In an ideal world all cancers should be histologically and/or cytologically verified. In reality some cancers are inevitably diagnosed and registered on the basis of clinical impression only or by other detection methods eg: radiology. The main value of the MV% as a quality indicator is in the evaluation of the validity of the diagnostic information. The accuracy of the stated diagnosis is likely to be higher if it is based on a histological examination by a pathologist. In most circumstances the higher the reported MV%, the higher is the validity of the data. However, a very high MV% - higher than it might be reasonably expected - suggests over-reliance on the pathology laboratories as source of information and failure to find cases diagnosed by other means. Table 2.3 illustrates and compares the MV% for all cancers (excluding non-melanoma skin cancers) reported by the MNCR for 1996 and 1997 with those of other registries from Cancer Incidence in Five Continents, Volume VII. Differences in the MV% reported by different registries may also reflect differences in the clinical practice in the regions covered in addition to variations in case ascertainment.

Table 2.3 Comparison of Microscopic Verified % from international cancer registries and the MNCR.

Registry	% of all registrations*
Iceland	97%
USA: SEER	95%
Finland	93%
Canada	84%
Denmark	93%
UK, Scotland	75%
Malta, 1996	87%
Malta, 1997	90%

* excluding non-melanoma skin cancers

The Mortality/ Incidence Ratio is an indicator of completeness and is an example of the independent case ascertainment methods suggested to reflect the data quality of a cancer registry. It is a ratio of the number of deaths attributed to a particular cancer obtained from the local mortality database to the number of new cases registered by the cancer registry for the same time period. When the quality of the mortality data is good, the M:I ratio is related to the case fatality which can be considered as an indirect indication of the survival from the particular cancer. Table 2.4 compares the M:I ratios for selected cancer sites reported by the MNCR for 1996 and 1997 compared with the ratios for the same sites for selected countries/ registries as published in the Cancer Incidence in Five Continents, Volume VII.

Table 2.4 Comparison of Mortality/ Incidence Ratios (%) for selected cancer sites from international cancer registries and the MNCR.

Cancer site	Registries					
	United Kingdom	Finland	Denmark	Canada	Malta, 1996	Malta, 1997
Lung, males	94	91	102	86	113	112
Breast, females	49	29	44	32	49	34
Colon, males	67	53	70	48	60	72
Colon, females	67	52	67	46	93	52
All sites, males *	72	60	69	52	70	64
All sites, females *	64	50	62	47	57	48

* excluding non-melanoma skin cancers

The percentage of cases registered with an unknown or ill-defined site is another indicator of data quality. These include cases with topography codes in the rubrics C26, C39, C76 and C80 in ICD-O-2. It is related to the quality of diagnostic information available to the registry. It can reflect completeness of abstraction of medical records or the extent to which the rules in ICD-O are followed, in particular for allocating specific rather than non-specific topography codes and identification of the likely primary from site-specific morphology terms. When abstraction and registration are adequate it reflects the characteristics of the health system related to the intensity of investigation, the availability or otherwise of sophisticated diagnostic methods, and the extent of the histological examination. Hence PSU percentages must be handled with care. Table 2.5 compares the PSU% for Malta in 1996 and 1997 by gender with those published in Cancer Incidence in Five Continents, Vol. VII for other European Registries.

Table 2.5 Comparison of Primary Site Unknown (PSU%) for the MNCR and other European registries.

Registry	Males	Females
Malta, 1996	5.7	4.1
Malta, 1997	4.6	4.6
Finland	1.9	2.6
Iceland	3.0	3.2
Denmark	4.0	4.3
The Netherlands	4.6	4.3
UK, England & Wales	5.3	5.6
Spain, Basque Country	5.9	6.4

Demography of the Maltese Islands for 1996 and 1997

Total surface area of the Maltese Islands: 316 km^2
Number of Local Councils: 67

	1996[1]	1997[2]
Population	373958	376513
Population density/ km^2	1183	1191
Live births	4944	4835
Deaths	2765	2888
Emigrants	94	73
Immigrants	399	453
Population increase	2484	2327

Source: [1]Demographic Review of the Maltese Islands 1996-Central Office of Statistics, Malta 1997
[2]Demographic Review of the Maltese Islands 1997-Central Office of Statistics, Malta 1998

Age distribution of the Maltese Population

The pre-World War II population of the Islands has a shape similar to the pyramid of the World Standard Population. Post-WW2 there was a baby boom depicted by the population bars for age groups 40-49 years. Thereafter, the population pyramid approaches more the shape of the European Standard Population - see Figures 2.1 and 2.2.

Figure 2.1: Age distribution of the Maltese Population by gender at the end of 1996.

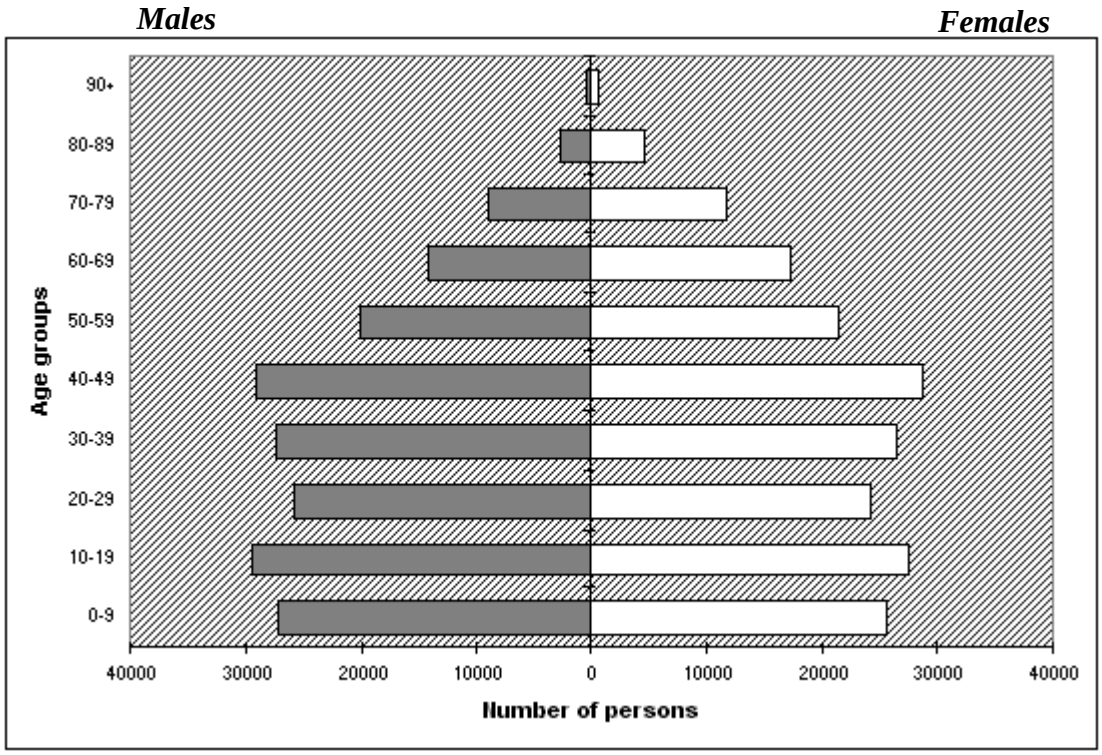
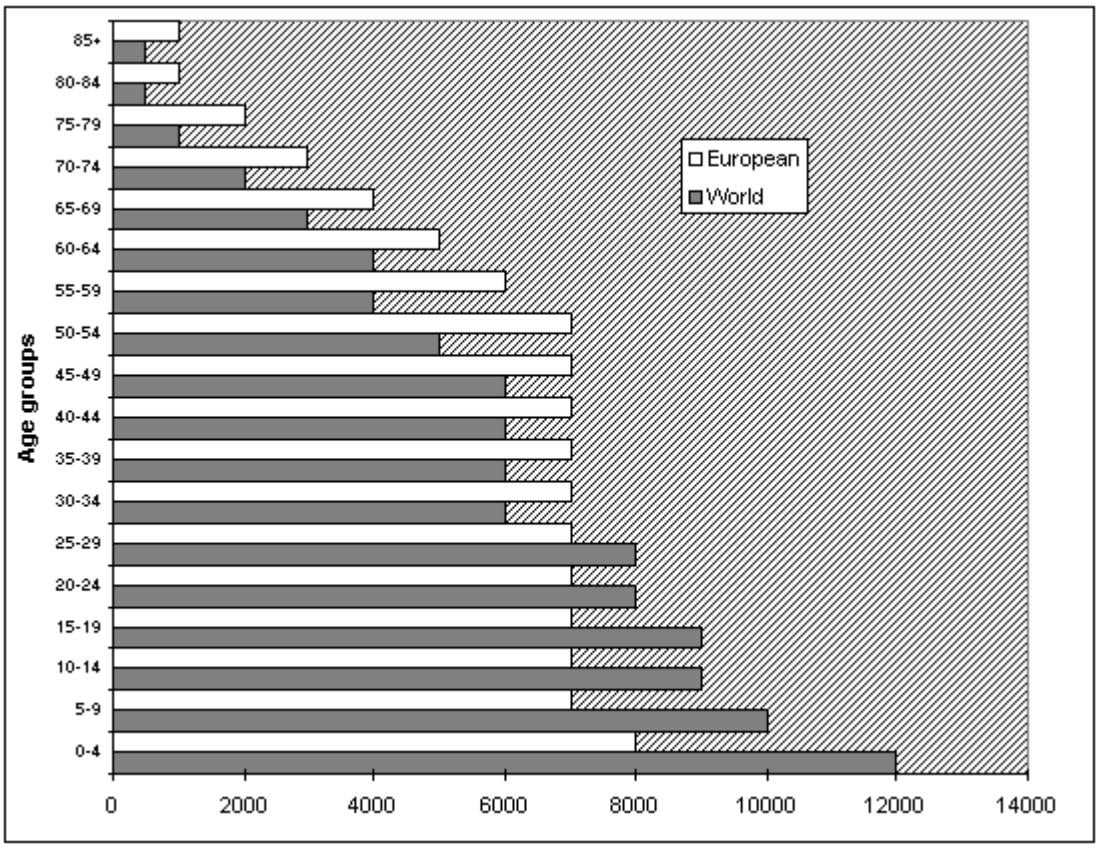


Figure 2.2: Age distribution of the World and European Standard Populations



ALL CANCERS

ICD-O-2 M code 5th digit: 3

A total of 6646 cases, 3505 males and 3141 females were registered with cancer in the Malta National Cancer Registry between 1993 and 1997. This corresponded to an average of about 700 men and 630 women being diagnosed with cancer every year. Lung, prostate and colorectal cancer were the most common cancers in males, while breast, colorectum and cancer of the body of the uterus were the most common cancers diagnosed in females. Figure 3.1 illustrate the most commonly diagnosed cancers in males and females.

Figure 3.1: Most common cancers (percentage of total) by gender, 1993-97

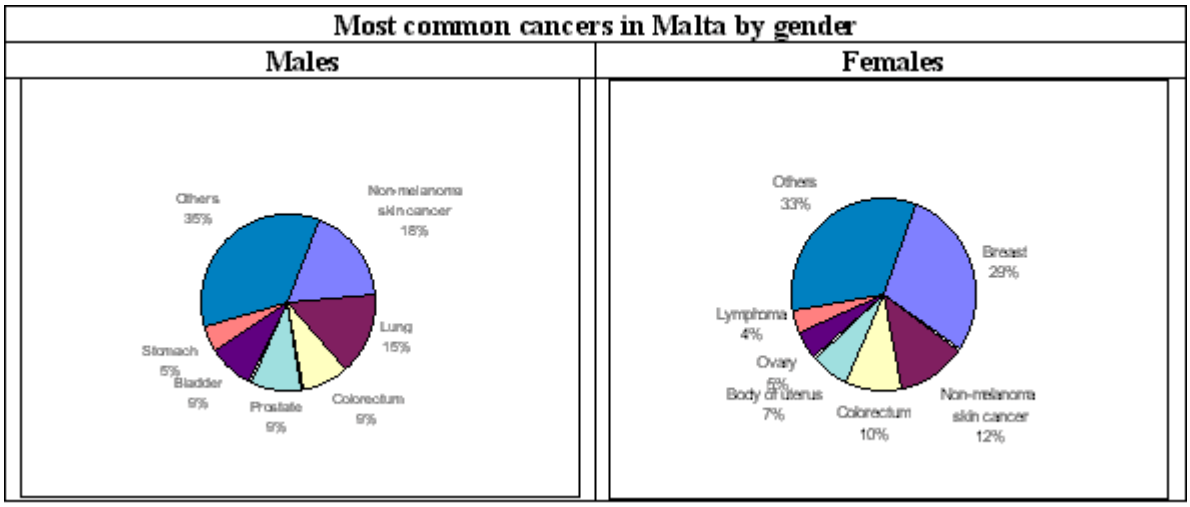


Table 3.1: Summary Statistics: All cancers

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	579	609	2870	539	620	2775
Crude rate (per 100,000)	313.29	327.43	313.06	286.39	327.62	296.9
Cumulative risk (0-74) (%)	29.37	27.97	28.37	21.42	22.94	22.65
Lifetime risk (0-74) (1 in :)	3.4	3.6	3.5	4.7	4.4	4.5
WASR (per 100,000)	241.66	248.22	246.66	194.67	215	204.52
EASR (per 100,000)	352.89	365.57	360.35	267.91	299.66	283.36
% of all registered cancers	80.31	80.03	81.88	91.51	84.47	88.35
Median age	68	69	68	63	64	63
MORTALITY						
Number of deaths	406	388	1923	307	295	1541
Crude rate (per 100,000)	219.68	208.61	209.76	163.1	155.88	164.82
Cumulative risk (0-74) (%)	19.01	16.04	17.58	11.61	10.36	11.25
Lifetime risk (0-74) (1 in :)	5.3	6.2	5.7	8.6	9.6	8.9
WASR (per 100,000)	163.75	151.27	159.96	98.44	92.8	101.8
EASR (per 100,000)	250.62	234.39	245.13	146.39	137.24	152.15
Median age	71	71	70	70	70	70
DATA QUALITY						
Mortality: Incidence ratio	0.7	0.6	0.7	0.6	0.5	0.6
% Death Certificate Only	1.4	1.1	1.5	1.7	1.1	1.2
% Microscopically Verified	86.8	89	86.4	88.6	92.5	90.3

Non-melanoma skin cancers (NMS) accounted for 15% (1001 cases) of all cancers registered between 1993 and 1997. These cancers are readily treatable and rarely cause death (10 deaths were attributed to NMS in these 5 years). Several cancer registries do not collect data on NMS and hence it is reasonable to exclude NMS when analysing data on all cancers. This permits the burden of the more serious cancers to be assessed more meaningfully.

Excluding NMS, leaves a remainder of 5645 cancers diagnosed in Malta over this period. Over half (50.8%) were diagnosed in males. Before the age of 75 years men have a 1in 3.5 chance of developing some form of cancer and a 1 in 4 chance if the less serious NMS are excluded. For females the corresponding risks are 1 in 4 for all cancers and 1 in 4.5 after excluding NMS. Males also suffer from higher cancer mortality rates than females. Males have a 1 in 6 chance of dying from cancer and females have a 1 in 9 chance before attaining 75 years of age.

Age Distribution

Excluding NMS, cancers were more common in younger females than males. Conversely, male cancers occurred predominantly in old age - 73% of the males but only 59% of the females were more than 60 years at diagnosis. Gender specific cancers were largely responsible for this differing pattern in the age distribution of all cancers between the sexes. The protagonists were mainly cancer of the breast in females with a relatively young median age of 60 years and cancer of the prostate in males that had a median age of 74 years. Age-specific rates were highest in the oldest age groups for both sexes although the male rates in the 85+ group was almost double the rate for females.

Figure 3.2: Age distribution of new cases registered in 1993-97, All Cancers (excluding NMS)

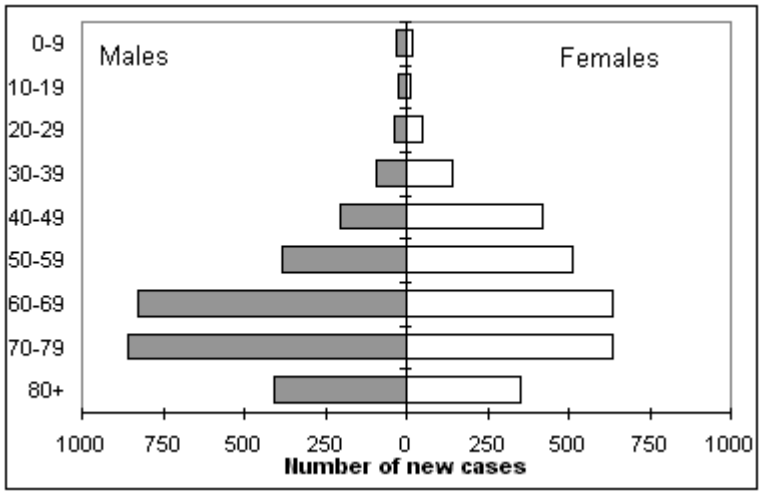
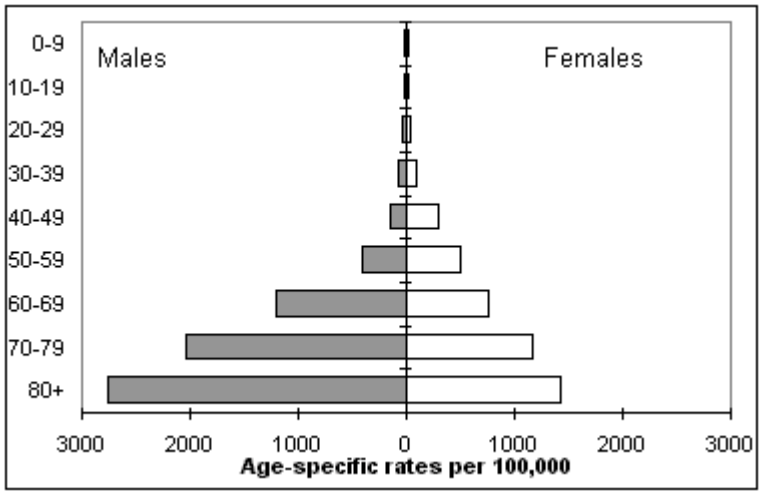


Figure 3.3: Age specific rates (per 100,000 population) of new cases in 1993-97, All Cancers (excluding NMS)

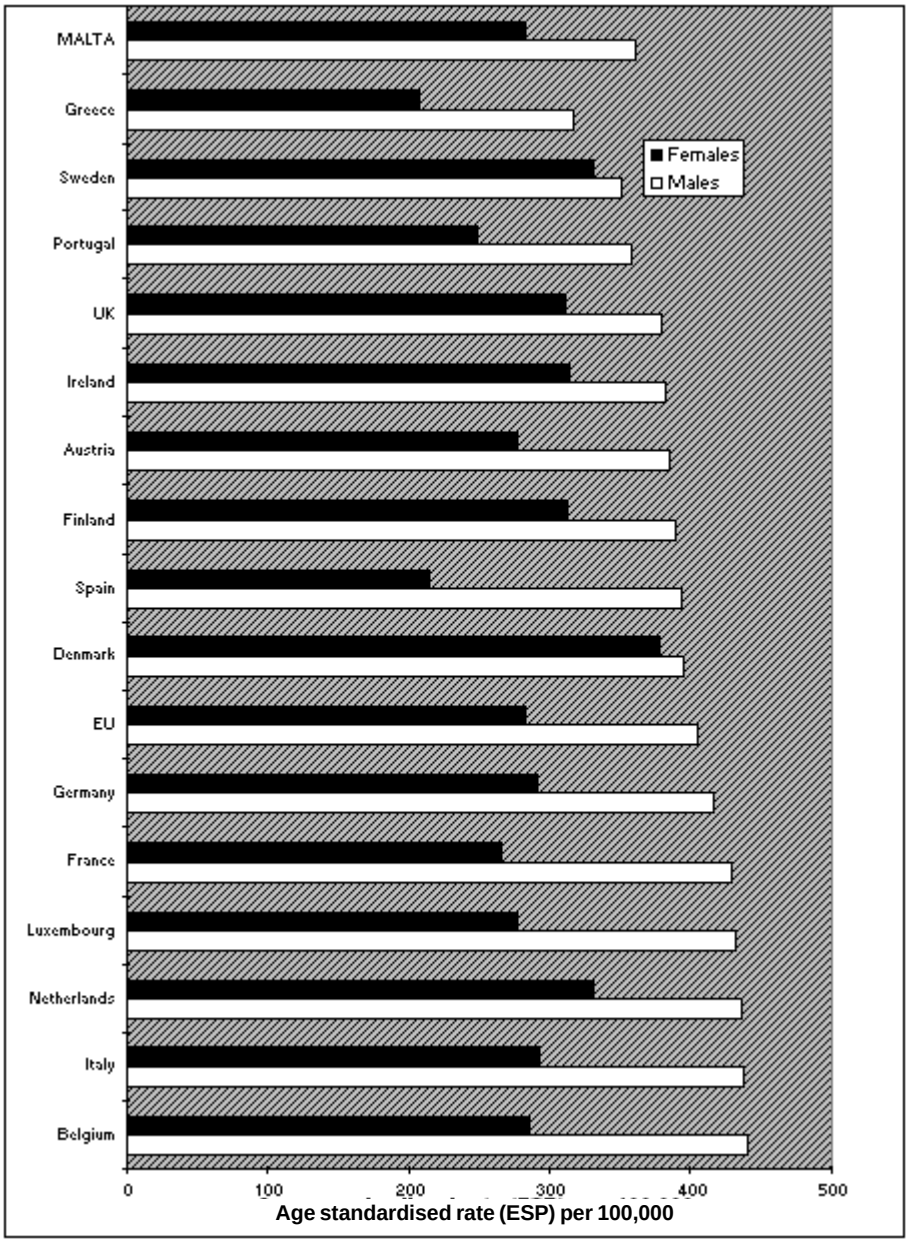


Data Quality

Overall the MV% for all cancers was 88% for the cases registered between 1993 and 1997, while the DCO% was 1.3%. These indices compared well with those reported in the Volume VII of the Cancer Incidence in Five Continents for southern European countries. However, many countries in Europe like France, Switzerland, the Netherlands and the Scandinavian countries reported an MV% well above 90%. The MNCR is committed to improve on these quality indices in the future. However, success with regards to the attainment of this target also depends on a continued change in mentality of both clinicians and pathologists whereby more tumours are confirmed by the provision of tissues for microscopic verification.

International comparisons

Figure 3.4: International age-standardised (World Standard Population) incidence rates of All Cancers (excluding NMS)

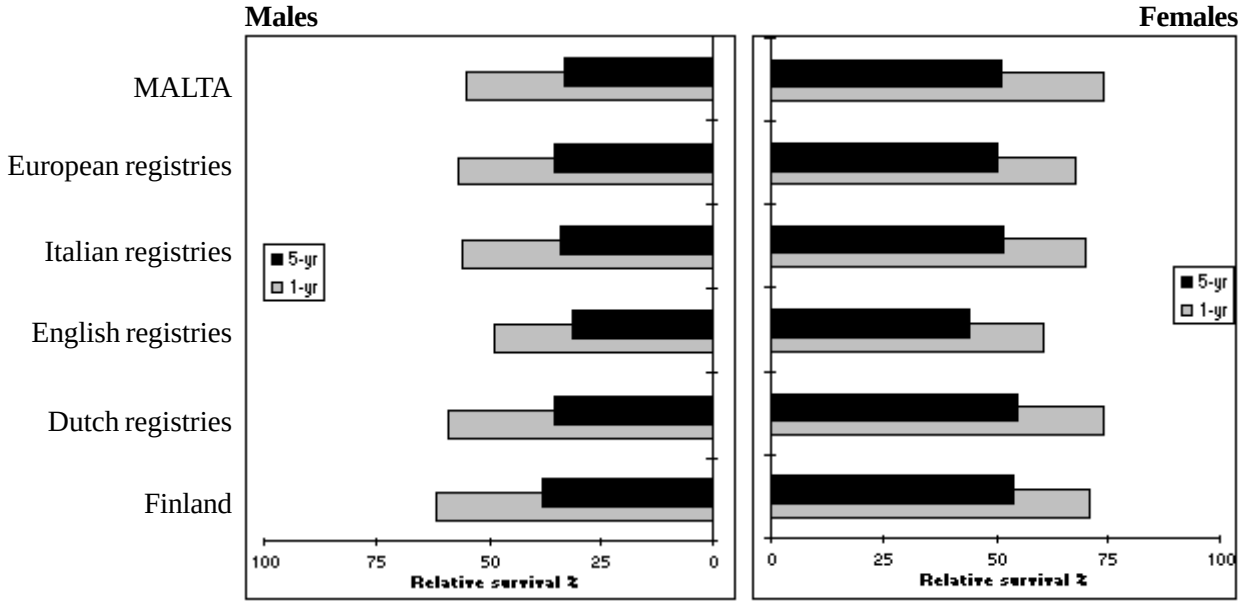


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

There is no distinct geographical pattern in the distribution incidence rates for all cancers in Europe. However, the incidence rates are more or less affected by the pattern of the incidence of the most common cancers diagnosed. Thus, the incidence in males for all cancers excluding NMS is rather similar to that of lung cancer with Belgium topping the list while Sweden being nearer to the bottom ranks. Simultaneously, the incidence of all cancers in females resembles that of the female breast with Denmark and the Netherlands reporting the highest incidence rates while the southern European countries, namely Greece, Spain and Portugal showing the lowest incidence. The incidence for all cancers for the Maltese population were below the EU average for males and equal to the EU average for females.

Survival

Figure 3.5: Relative 1- and 5-year survival of All Cancers (excluding NMS) in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival from all cancers also demonstrates a relationship to the survival from the two most common cancers, namely lung and female breast, which are characterised by a poor and moderately good survival respectively. Thus for males where lung cancer is the most common cancer diagnosed, general survival from all cancers (excluding NMS) is worse than the general survival for females where cancer of the female breast is the most common cancer site registered. The life time median for Maltese males was 1.24 years while for females it was greater than 5 years. Figure 3.5 shows this marked difference both in 1 year and 5 year survival from all cancers between the genders. The survival from all cancers experienced by the Maltese patients diagnosed from 1993-97 compares well to the selected survival rates published in the EUROCARE-2 study.

CANCER OF THE OESOPHAGUS

ICD-O-2 C15

On average over the 1993-97 period 12 new cases of cancer of the oesophagus were registered each year. This ranked incidence of the cancer of the oesophagus as the twelfth most common cancer in males and sixteenth in females. There were exactly twice as many cases in males as in females (sex ratio 2:1).

Females were diagnosed with cancer of the oesophagus at a relatively older age than males. Median age at diagnosis was 6.5 years older in females than in males. The mortality: incidence ratio reflects a poor survival.

Table 4.1: Summary Statistics: Oesophagus

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	9	5	42	4	5	21
Crude rate (per 100,000)	4.87	2.69	4.58	2.12	2.64	2.25
Cumulative risk (0-74) (%)	0.76	0.06	0.48	0.06	0.16	0.1
Lifetime risk (0-74) (1 in :)	131	1586	211	1582	622	992
WASR (per 100,000)	3.94	1.59	3.56	0.94	1.52	1.21
EASR (per 100,000)	5.46	2.81	5.26	1.64	2.32	1.89
% of all registered cancers	1.25	0.66	1.2	0.68	0.68	0.67
Median age	69	79	68.5	79.5	70	75
MORTALITY						
Number of deaths	11	7	46	2	5	18
Crude rate (per 100,000)	5.95	3.76	5.02	1.06	2.64	1.92
Cumulative risk (0-74) (%)	0.48	0.27	0.46	-	0.19	0.07
Lifetime risk (0-74) (1 in :)	209	366	215	-	513	1361
WASR (per 100,000)	4.31	2.55	5.84	0.35	1.4	0.94
EASR (per 100,000)	6.83	3.99	3.88	0.69	2.17	1.56
% of all cancer deaths	2.71	1.8	2.39	0.65	1.69	1.18
Median age	73	70	69	80	71	80
DATA QUALITY						
Mortality: Incidence ratio	1.2	1.4	1.1	0.5	1	0.9
% Death Certificate Only	0	0	0	0	0	0
% Microscopically Verified	67	80	78.6	75	100	90.5

Oesophageal cancer is a distressing condition with a bad prognosis. Symptoms such as difficulty and pain on swallowing develop slowly and this cancer is often diagnosed at an advanced stage and is rarely curable. The patient life time median of survival was less than 1 year for the cases diagnosed between 1993-97, for both genders (see figure 4.4). The incidence of oesophageal cancer was shown to be decreasing in many developed countries but most countries in Europe have shown a rising trend in mortality in the last decades, especially in males.

The risk factors are well established. The major factors are alcohol consumption (especially hard liquor) and cigarette smoking. These two risk factors exhibit a synergistic effect, i.e. if both together are present the risk increases more than would be expected from either on its own. Predisposing conditions such as Barrett's oesophagus and sliding hiatus hernia may increase risk. A diet rich in fresh fruit and vegetables can be protective.

Age distribution

Oesophageal cancer is predominantly a cancer of old age - only 26% of cases in males and less than 10% of new cases in females occurred before age 60 - see figure 4.1. The age specific rates increased with age, the highest rates occurring in both sexes in the over 80 years age groups.

Figure 4.1: Age distribution of new cases registered in 1993-97, Cancer of the Oesophagus

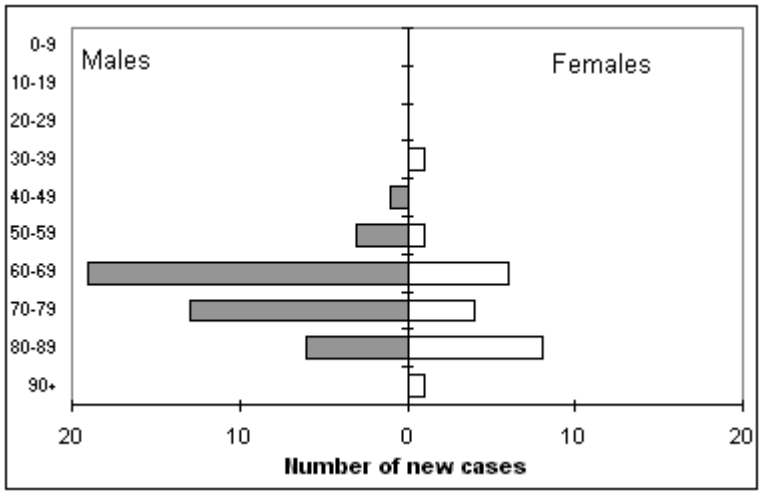
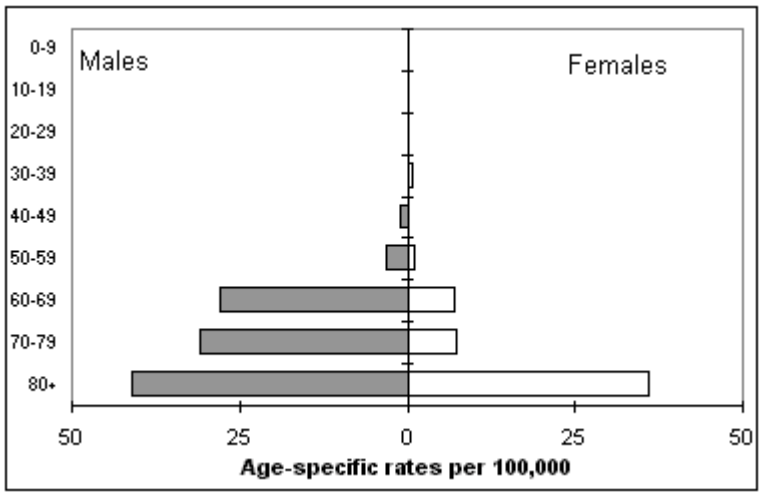


Figure 4.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Oesophagus



Subsite and Morphology

Table 4.2: Distribution of new cases of Cancer of the Oesophagus (1993-97) by subsite and histological type (% in brackets)

	Histological type				
Subsite (ICD)	**Squamous**	**Adenoca**	**Other**	**Unknown**	**N (% of total)**
Upper (C15.0+3)	3 (75)	0	1 (25)	0	4 (6)
Middle (C15.1+4)	1 (50)	0	0	1 (50)	2 (3)
Lower (C15.2+5)	1 (9)	6 (55)	1 (9)	3 (27)	11 (17)
Unknown (C15.8+9)	22 (48)	11 (24)	3 (6)	10 (22)	46 (73)
All sites	27 (43)	17 (27)	5 (8)	14 (22)	63 (100)

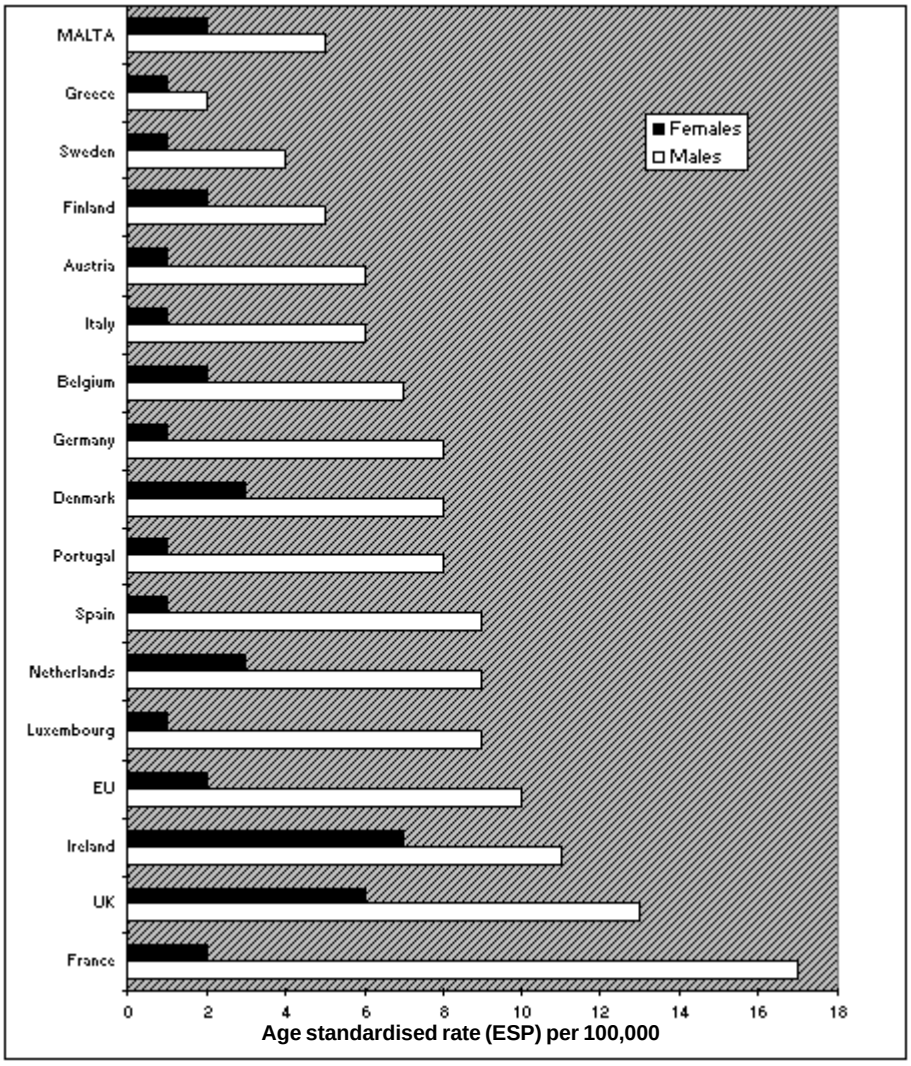
Note: Assignment of site between stomach and oesophagus pose problems for many cancer registries. This problem arises in tumours at or near the oesophago-gastric junction and results in small proportions of oesophageal and stomach cancers being possibly wrongly assigned despite the best efforts to minimise this problem.

Data Quality

According to Volume VII of the Cancer Incidence in Five Continents many registries in Europe especially in the north reported that 99% of their cases were microscopically verified. The MV% for Maltese cases was 79 for males and 91 for females. None of the 63 cases in this series is registered on the basis of a Death Certificate Only.

International comparisons

Figure 4.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Oesophagus



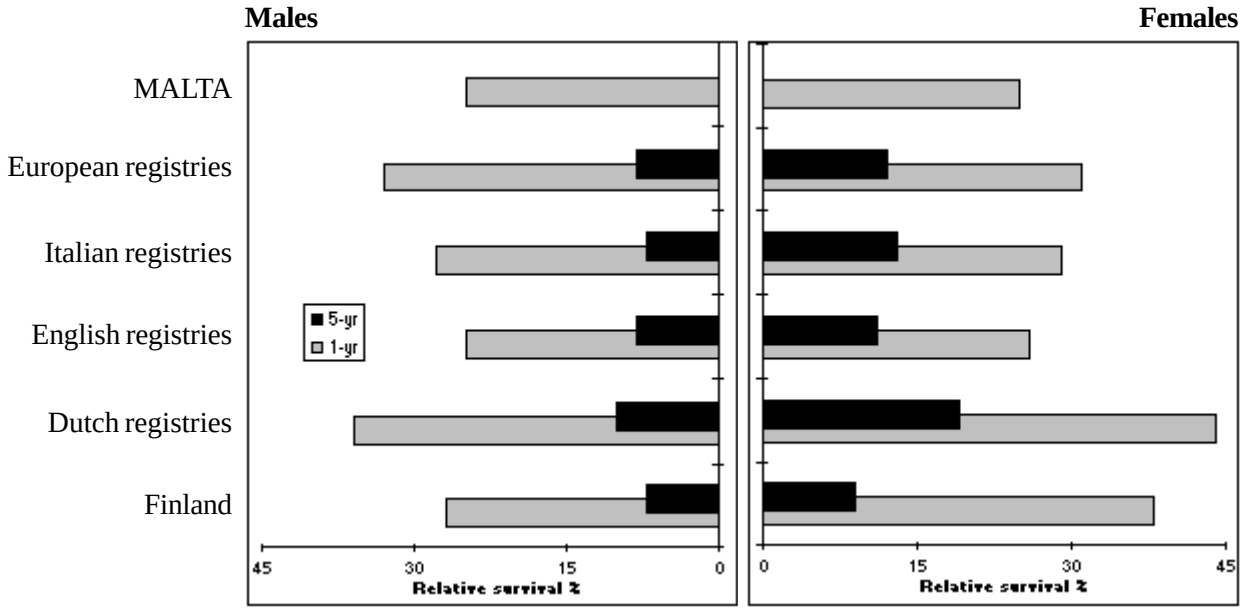
Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Within Europe the incidence was highest in males in various regions of France, especially in Calvados. In females the highest rates were from Ireland.

Survival

Figure 4.4: Relative 1- and 5-year survival of Cancer of the Oesophagus in Malta and in Europe

The one year survival of the oesophagus cancer diagnosed in Maltese patients was lower than the survival



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

experienced in many European countries. Females generally experienced a higher 1-year survival than males. None of the Maltese patients survived 5 years from diagnosis.

CANCER OF THE STOMACH

ICD-O-2 C16

On average over the 1993-97 period 52 new cases of cancer of stomach were registered each year. This ranked incidence of the cancer of the stomach as the sixth most common cancer both in males and in females. Cancer of the stomach accounted for almost 5% of all cancers in males and 3% in females with a sex ratio of 1.8:1 (the sex ratio for deaths is similar).

The Mortality:Incidence ratio was quite high, indicative of the relative poor survival associated with this cancer. This is related to the late stage at diagnosis in most cases. The median ages at incidence and death of cancer of the stomach were similar in both genders.

Table 5.1 Summary Statistics: Stomach

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	29	38	165	23	17	94
Crude rate (per 100,000)	15.69	20.43	18	12.21	8.93	10.05
Cumulative risk (0-74) (%)	1.37	1.88	1.59	0.72	0.4	0.7
Lifetime risk (0-74) (1 in :)	73	53	63	138	253	142
WASR (per 100,000)	11.58	15.16	13.53	6.06	4.52	5.81
EASR (per 100,000)	18.03	23.05	21.03	9.9	7.49	9.06
% of all registered cancers	4.02	4.99	4.71	3.9	2.32	2.99
Median age	71	69	71	74	76	73
MORTALITY						
Number of deaths	37	32	145	20	15	80
Crude rate (per 100,000)	20.02	17.2	15.82	10.62	7.93	8.56
Cumulative risk (0-74) (%)	1.4	1.37	1.28	0.81	0.37	0.56
Lifetime risk (0-74) (1 in :)	71	73	78	127	272	178
WASR (per 100,000)	13.68	12.19	11.51	6.26	3.8	4.87
EASR (per 100,000)	22.78	19.25	18.47	9.32	6.37	7.72
% of all cancer deaths	9.11	8.24	7.54	5.08	6.51	5.55
Median age	75	73.5	73	70.5	78	73
DATA QUALITY						
Mortality: Incidence ratio	1.3	0.8	0.9	0.9	0.9	0.9
% Death Certificate Only	0	0	3	8.7	5.9	5.3
% Microscopically Verified	89.6	84.2	86.1	73.9	76.5	78.7

In the Western developed countries stomach cancer incidence has shown a steady decrease over the last four decades. This has been often attributed to the advent of refrigeration which has improved food hygiene and preservation, with the consequent decrease in the consumption of salted, smoked and pickled food items and the increase intake of more fresh fruit and vegetables. Chronic Helicobacter pylori infection has been recognised as a factor which promotes tumour development. This chronic infection is more prevalent in the lower socio-economic classes.

Age distribution

The percentage of cases diagnosed with cancer of the stomach after the age of 70 years was 56% in males and 64% in females. The age specific rates were the highest in the oldest age group for both genders.

Figure 5.1: Age distribution of new cases registered in 1993-97, Cancer of the Stomach

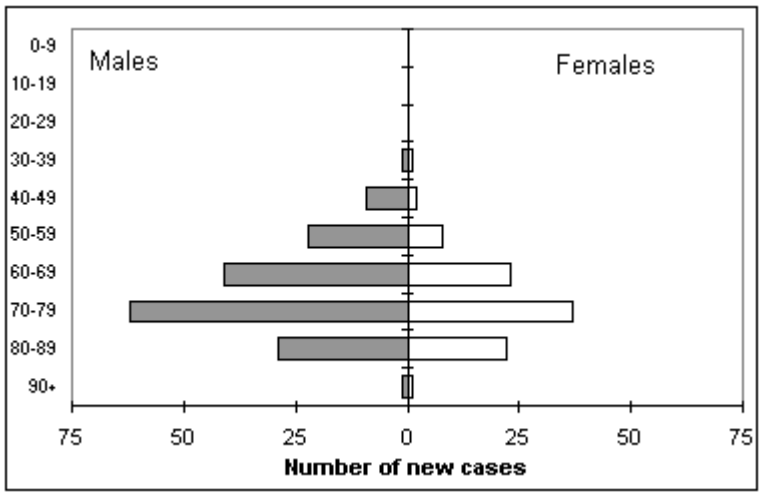
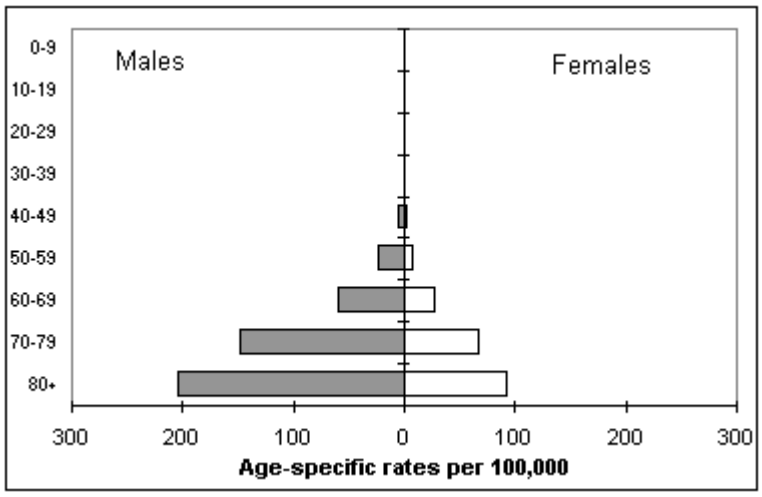


Figure 5.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Stomach



Subsite and Morphology

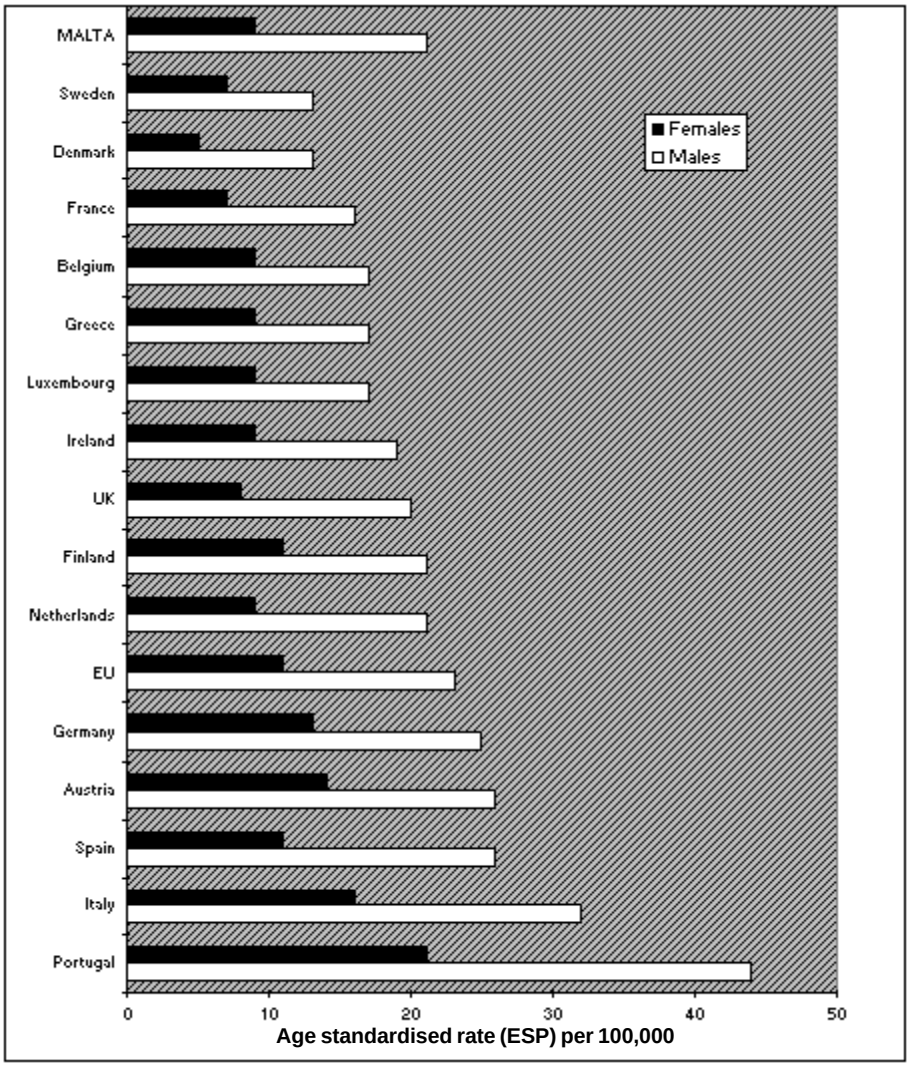
The subsite in the stomach of 82% of the registered cases between 1993-97 was not recorded. Of the rest 28 cases (11%) occurred in the cardia area, 7 in pyloric region and 12 in the middle part of the stomach. Morphologically, 165 cases (64%) were adenocarcinomas. These included 17 cases of signet ring cell carcinoma, 14 cases of tubular adenocarcinoma and 4 cases of mucinous adenocarcinoma. Lyphomas of the stomach accounted for 21 (8%) cases.

Data Quality

In females the MV% was lower while the DCO% was higher than in males. This may partly be explained by the relatively older age at diagnosis of the female patients. Both the MV% and the DCO% compare well with the indices published in the Cancer Incidence in Five Continents, Vol. VII for other registries in the southern part of Europe like Italy and Spain.

International comparisons

Figure 5.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Stomach

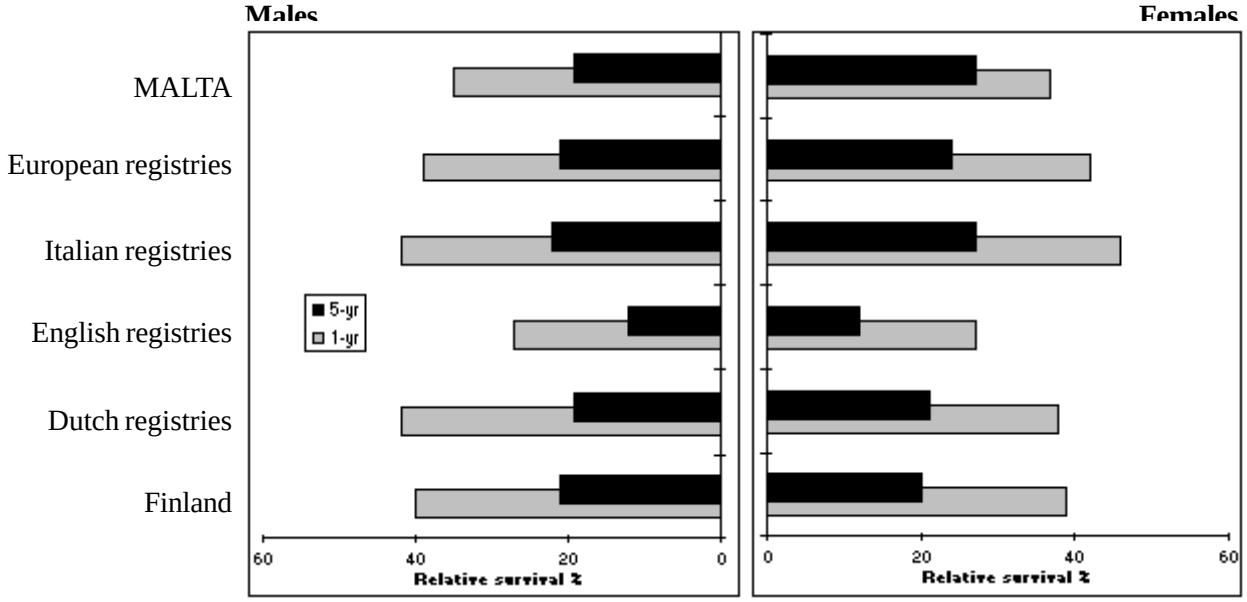


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Worldwide the incidence of cancer of the stomach is highest in Japan and in other communities of the Far East. Black people of the US also show a higher incidence than the white population living in the same area. Within Europe incidence is highest in some regions of Portugal, Spain and Italy. The rates for the Maltese population are nearer to the EU average and the rates for the United Kingdom than to those of its geographically nearer nations.

Survival

Figure 5.4: Relative 1- and 5-year survival of Cancer of the Stomach in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival of patients diagnosed with cancer of the stomach is generally poor. The patient lifetime median or the time from diagnosis when half of the patients are dead was only 9 months for both genders for the cases registered between 1993-97 in Malta. However, the one and five year survival of the stomach cancer diagnosed in Maltese patients was well comparable to the survival published from other European countries. Survival from stomach cancer is a little better in females than in males and a better survival was reported in the EUROCARE-2 study from countries in the south of Europe like France, Spain and Italy.

CANCER OF THE COLORECTUM (LARGE BOWEL)

ICD-O-2 C18-C20

Colon (C18)

On average, during the 1993-97 period, 82 colon cancers were registered each year, just over half of these (50.7%) occurred in females. Excluding non-melanocytic skin cancers, cancer of the colon was the third most commonly diagnosed cancer in females and the fifth in males and accounted to just more than 7% of all cancers diagnosed. The Mortality: Incidence ratios (0.8 for males, 0.7 for females) reflect a modest survival.

Table 6.1: Summary Statistics: Colon

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	40	43	203	28	50	209
Crude rate (per 100,000)	21.64	23.12	22.14	14.87	26.42	22.35
Cumulative risk (0-74) (%)	2	1.63	1.99	1.31	1.78	1.71
Lifetime risk (0-74) (1 in :)	50	61	50	76	56	58
WASR (per 100,000)	16.64	16.08	17.14	9.83	15.76	14.6
EASR (per 100,000)	24.39	25.16	25.79	13.86	23.26	20.98
% of all registered cancers	5.55	5.65	5.79	4.75	6.81	6.65
Median age	67	70	69	66	68	67
MORTALITY						
Number of deaths	24	31	160	26	26	139
Crude rate (per 100,000)	12.99	16.67	17.45	13.81	13.74	14.87
Cumulative risk (0-74) (%)	1.14	1.03	1.45	0.8	0.82	0.88
Lifetime risk (0-74) (1 in :)	88	97	69	125	122	113
WASR (per 100,000)	10.05	11.79	13.1	7.8	7.27	8.54
EASR (per 100,000)	15.35	18.57	20.38	12.04	11.42	13.26
% of all cancer deaths	5.91	8	8.32	8.47	8.81	9.65
Median age	68.5	70	71	73.5	72.5	73
DATA QUALITY						
Mortality: Incidence ratio	0.6	0.7	0.8	0.9	0.5	0.7
% Death Certificate Only	2.5	0	3.9	0	4	1.9
% Microscopically Verified	90	93	89.2	96.3	92	90.9

The causes of colonic cancer are complex and not completely understood. There are at least three major recognised groups of risk factors. These include:

i. genetic as in Familial Adenomatosis Polyposis (FAP) and Hereditary non-Polyposis Colorectal Cancer (HNPCC).
ii. related to chronic bowel disease such as Ulcerative Colitis.
iii. environmental factors especially dietary and related to lack of physical exercise. Dietary habits involving high fat intake and low intake of fruit and vegetables are thought to contribute to an increase in risk of colonic cancer. These are probably the most important factors in the vast majority of colon cancers.

Age distribution

The median age at diagnosis of cancer of the colon was 69 years for males and 67 years for females. There were more females than males in the 40-49 year age group and again in the 60-69 year group. The highest age-specific rate was for males was the 70-79 year age group - see Figures 6.1 and 6.2.

Figure 6.1: Age distribution of new cases registered in 1993-97, Cancer of the Colon

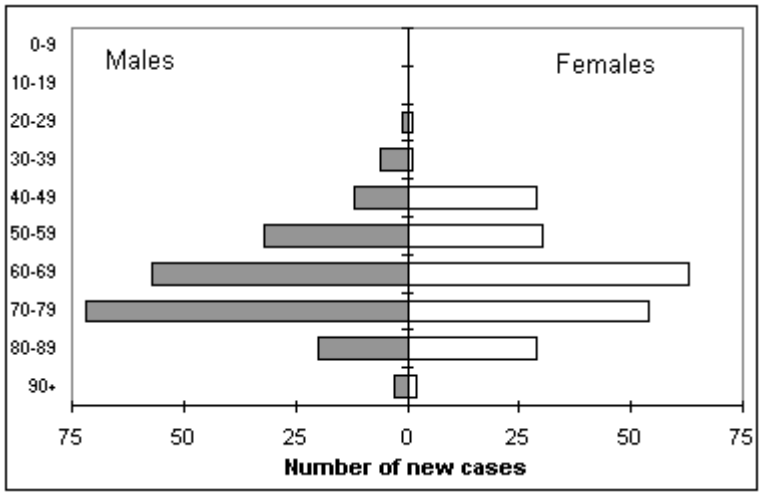
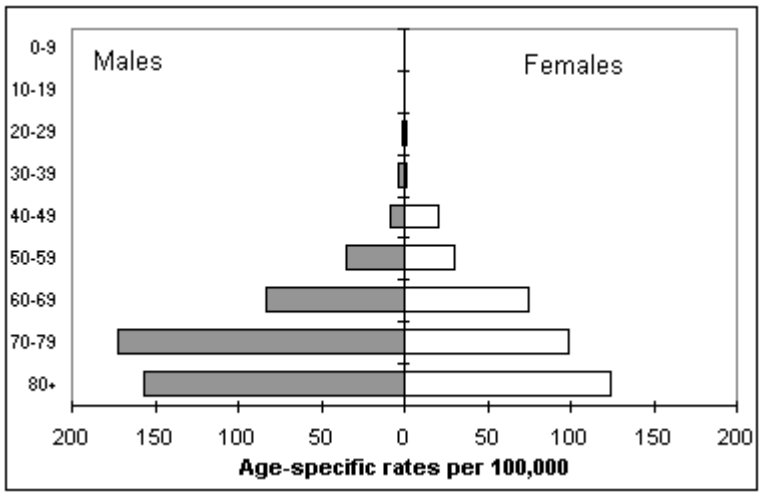


Figure 6.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Colon



Subsite and Morphology

The majority of tumours (88%) were classified as adenocarcinomas. Carcinoid tumours were diagnosed in 1% of cases that were verified microscopically. This excludes carcinoid tumours of the appendix which were considered of borderline malignancy. In 10% of cases no specific histological description was reported. The majority of the latter cases were not histologically verified.

Table 6.2: Distribution of new cases 1993-97 of Cancer of the Colon by subsite.

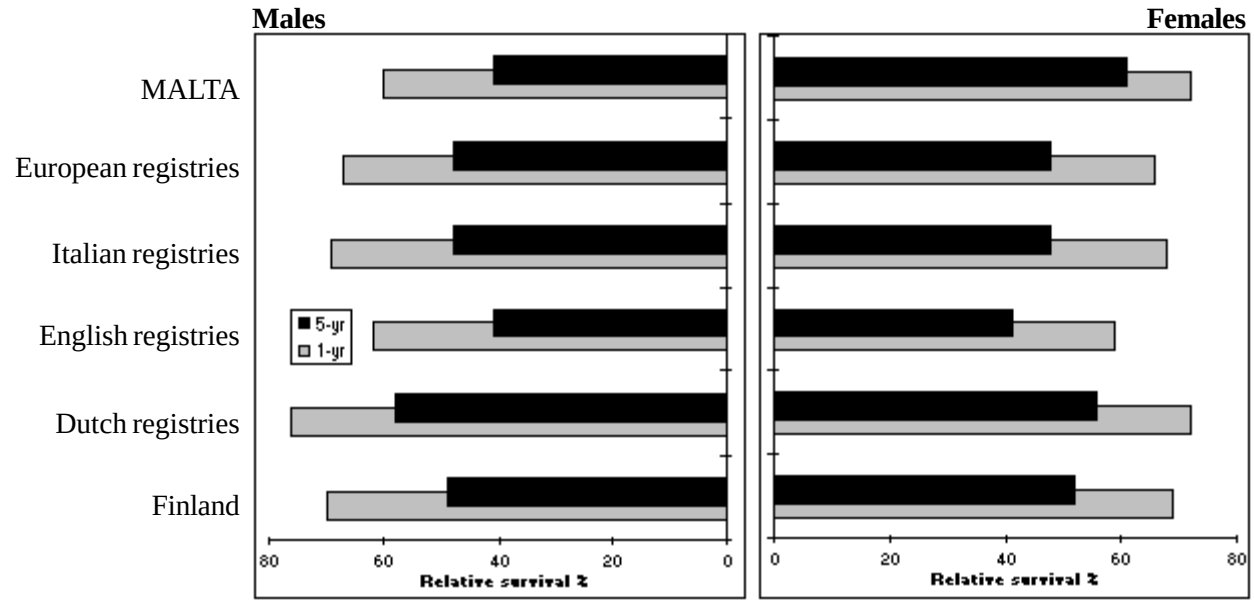
Subsite	ICD	No. of cases	% of total
Caecum	C18.0	66	16
Appendix	C18.1	3	1
Ascending colon	C18.2	39	9
Hepatic flexure	C18.3	8	2
Transverse colon	C18.4	23	6
Splenic flexure	C18.5	8	2
Descending colon	C18.6	20	5
Sigmoid colon	C18.7	119	29
Colon, nos	C18.9	126	30

Data Quality

Microscopical verification of colonic cancers is improving. In 1997, 93% of cases in males and 92%in females (more than 96% in 1996) were verified histologically. Many countries in the north and centre of Europe like Iceland, France, Switzerland and Sweden reported MV% at or near to 99% in the Vol. VII of the Cancer Incidence in Five Continents. The proportion of cases registered on the basis of Death Certificate Only (DCO) was higher in males (4%), than in females (2%) perhaps reflecting the later age at diagnosis in males.

Survival

Figure 6.3: Relative 1- and 5-year survival of Cancer of the Colon in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival of male cases of colon cancer in Malta was below the rates published for European Registries in the EUROCARE-2 study. On the other hand the survival of females ranked with the highest published relative survival rates in this study.

Rectum (C19-C20)

During the 1993-97 period, 44 rectal cancers were registered each year. More cases were registered in males than females (M:F ratio was 1.3:1). It accounted to almost 4% of males cancers and about 3% of female cancers. Excluding non-melanocytic skin cancers, cancer of the rectum was the sixth most commonly diagnosed cancer in males and the fifth in females and accounted to just over 3% of all cancers diagnosed. The causes of rectal cancer are thought to be similar to those of cancer of the colon.

Table 6.3: Summary Statistics: Rectum

	Males			Females		
	1996	1997	1993-97	1996	1997	1993-97
INCIDENCE						
Number of new cases	34	19	126	21	23	94
Crude rate (per 100,000)	18.4	10.22	13.74	10.63	12.15	10.05
Cumulative risk (0-74) (%)	1.63	1.17	1.22	0.57	0.75	0.73
Lifetime risk (0-74) (1 in :)	61	85	82	176	134	136
WASR (per 100,000)	14.24	8.68	10.89	6.46	7.36	6.37
EASR (per 100,000)	21.74	12.5	16.14	9.51	11.1	9.25
% of all registered cancers	4.72	2.5	3.57	3.57	3	2.99
Median age	69.5	60	66	65.5	70	69
MORTALITY						
Number of deaths	8	12	57	10	8	40
Crude rate (per 100,000)	4.33	6.45	6.22	5.31	4.23	4.28
Cumulative risk (0-74) (%)	0.45	0.54	0.53	0.24	0.32	0.3
Lifetime risk (0-74) (1 in :)	222	186	190	418	308	331
WASR (per 100,000)	3.39	4.78	4.72	3.05	2.79	2.71
EASR (per 100,000)	4.57	7.61	7.14	4.79	3.91	4.07
% of all cancer deaths	1.97	3.09	2.96	3.26	2.72	2.78
Median age	63	72.5	71	74.5	63	69.5
DATA QUALITY						
Mortality: Incidence ratio	0.2	0.6	0.4	0.5	0.3	0.4
% Death Certificate Only	0	0	5.3	0	0	0
% Microscopically Verified	94.1	94.7	90.5	95.2	91.3	90.4

Age distribution

The median age at diagnosis of cancer of the rectum was 66 years for males and 69 years for females. Similar to cancer of the colon there was a small peak in females in the 40-49 year age group. Age-specific rates were low below 50 years after which they constantly rose into old age and at a faster rate in males.

Figure 6.4: Age distribution of new cases registered in 1993-97, Cancer of the Rectum

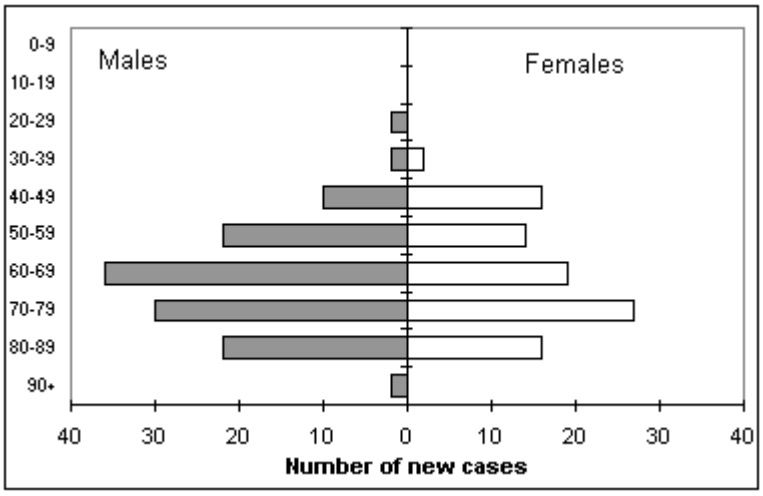
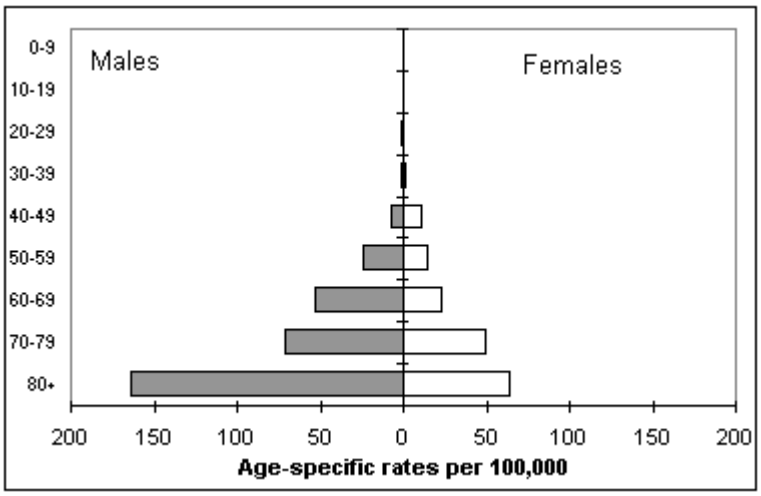


Figure 6.5: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Rectum



Morphology

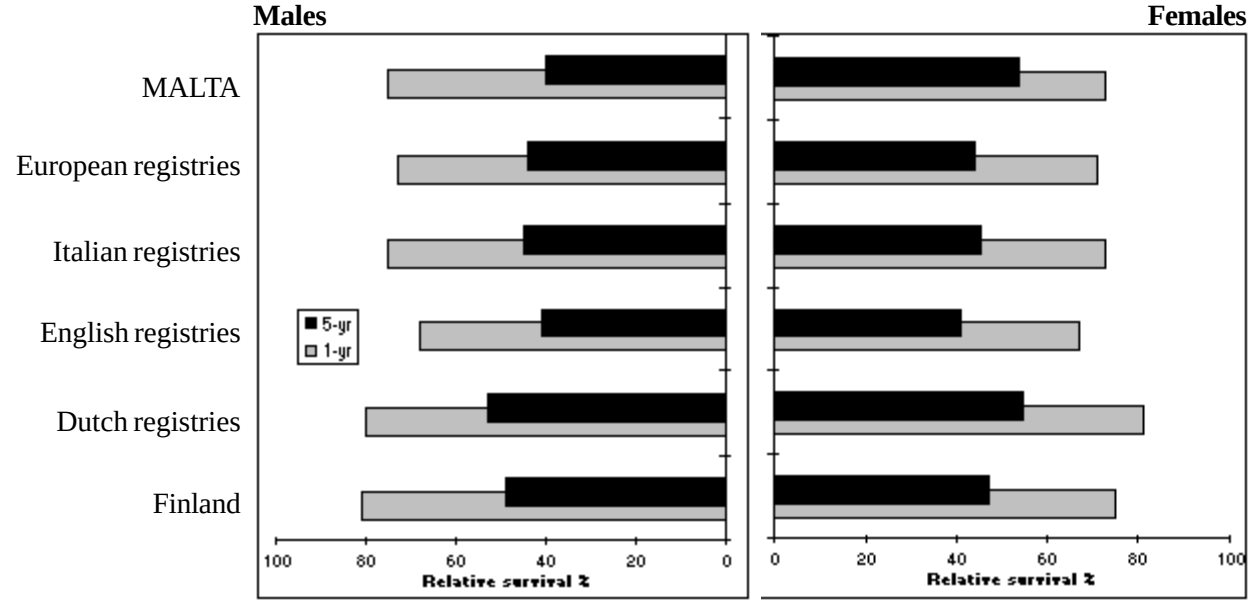
Out of the 220 cases of cancer of the rectum registered between 1993-97, over 91% had their histological type specified in their reports. Adenocarcinoma, not otherwise specified was reported in 64% of these cases. The rest included 39 cases (18%) of tubular adenocarcinoma, 9 cases of mucinous adenocarcinoma, 8 cases of adenocarcinoma in an adenoma (of various types) and 2 cases of carcinoid tumour of the rectum.

Data Quality

The MV% reported by most European countries in Vol. VII of Cancer Incidence in Five Continents were higher (~ 97%) than those reported for cancer of the colon. In this Maltese series the MV% was just over 90% for both genders. This needs improving especially when considering that access to tumours in the rectum is easier than to cancers found in the rest of the large bowel.

Survival

Figure 6.6: Relative 1- and 5-year survival of Cancer of the Rectum in Malta and in Europe

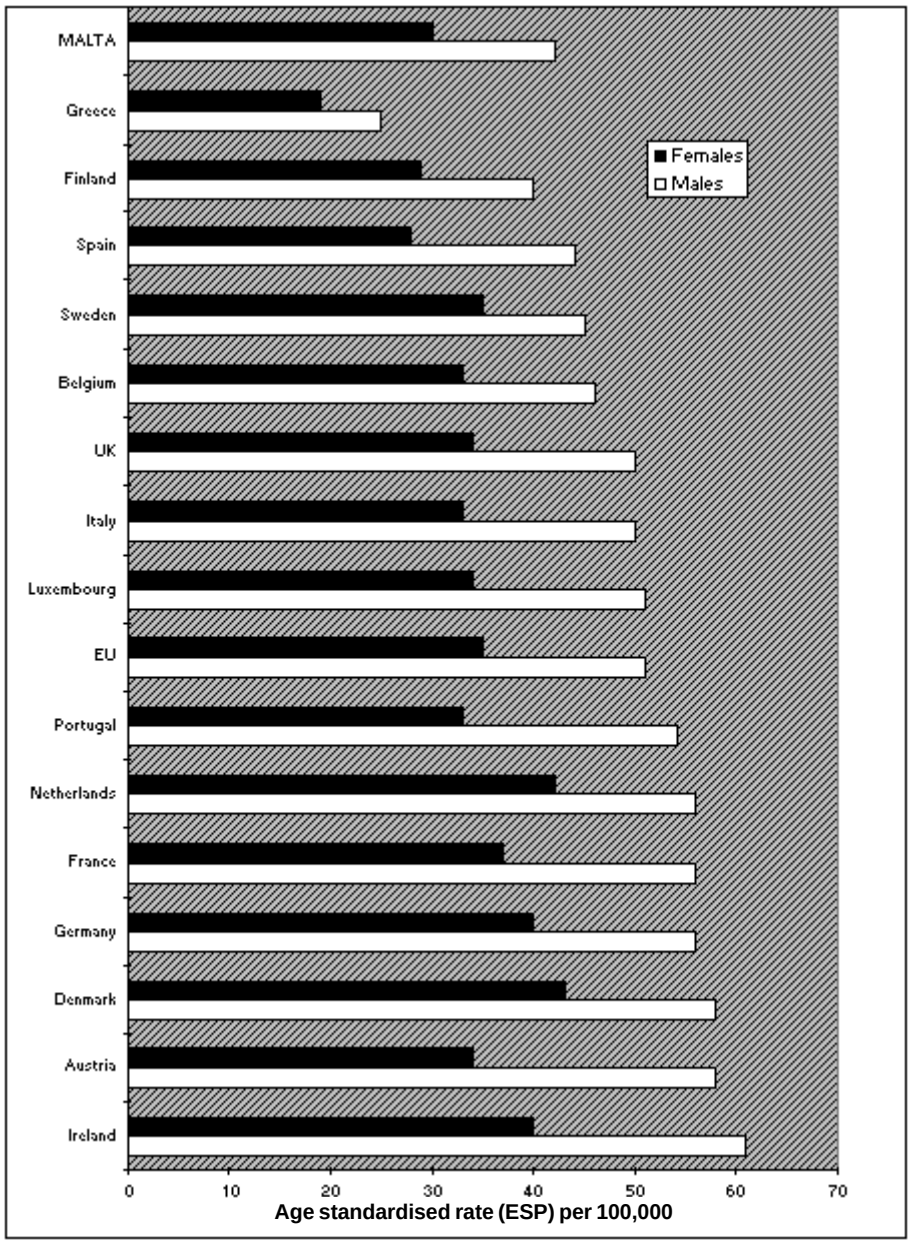


Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The one year survival from cancer of the rectum is generally better than that for cancer of the colon. The survival of both male and female cases of rectal cancer in Malta compared well with the rates published in the EUROCARE-2 study.

International comparisons

Figure 6.7: International age-standardised (European Standard Population) incidence rates of Cancer of the Colorectum (C18-C20).



Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

The distribution of the incidence of colorectal cancer throughout Europe is fairly homogenous. The highest incidence rates were observed in Ireland for males and in Denmark for females.

CANCER OF THE LUNGS

ICD-O-2 C34

Between 1993 and 1997, an average of 108 male cases and 15 females cases of cancer of the lungs were diagnosed per year. The male: female ratio was very high at 7:1 (7 males to 1 female). This is far higher than that found in some other European countries, where the number of female cases has increased over the past years. Lung cancer accounted to more than 15% of all cancer in males and just over 2% of all cancers in females. After non-melanocytic skin cancers, it was the most commonly diagnosed cancer in men. In females it ranked as the tenth most common cancer site.

The Mortality: Incidence ratio was 100% for both genders. This reflects the poor survival from this cancer and will be confirmed in the relative survival calculated for this group of patients (see page 30).

Table 7.1: Summary Statistics: Lung

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	111	91	538	15	17	74
Crude rate (per 100,000)	60.06	48.93	58.79	7.97	8.93	7.91
Cumulative risk (0-74) (%)	5.68	4.78	5.69	0.68	0.67	0.6
Lifetime risk (0-74) (1 in :)	18	21	18	148	150	166
WASR (per 100,000)	45.65	36.1	45.86	5.16	5.65	5.13
EASR (per 100,000)	67.65	54.16	68.36	7.32	7.99	7.5
% of all registered cancers	15.4	11.96	15.35	2.55	2.32	2.36
Median age	68	69	68	68	68	68
MORTALITY						
Number of deaths	125	102	531	21	13	78
Crude rate (per 100,000)	67.64	54.84	58.36	11.16	6.87	8.34
Cumulative risk (0-74) (%)	6.47	4.81	5.4	0.85	0.52	0.58
Lifetime risk (0-74) (1 in :)	15	21	18	118	190	173
WASR (per 100,000)	51.38	39.11	45.28	7.06	4.29	5.08
EASR (per 100,000)	77.7	60.49	68.46	10.23	6.23	7.75
% of all cancer deaths	30.79	26.29	27.61	6.84	4.41	5.41
Median age	69	71	69	68	66	70.5
DATA QUALITY						
Mortality: Incidence ratio	1.1	1.1	1	1.4	0.8	1
% Death Certificate Only	3.6	6.6	2.6	0	0	1.3
% Microscopically Verified	71.2	72.5	76.4	46.7	70.6	68.9

Studies have shown that more than 90% of all lung cancers are caused by tobacco smoking. The relationship between smoking and squamous cell and small cell carcinomas is higher than for adenocarcinomas.

The latency time or the period between exposure and disease presentation has been calculated at about 2-3 decades. Hence due to this long delay correlations are more clearly shown between current rates and the smoking patterns that existed twenty to thirty years ago.

This may explain the current low level of lung cancer in Maltese female population. There has been a notable increase in the number of female smokers over the past 10-15 years and hence a forecast of a large increase of lung cancer in Maltese women is highly probable. Smoking is more common in the lower socio-economic classes and certain occupations are related to an increased risk for lung cancer. The occupational exposure may even augment the effect of smoking as in occupations associated with asbestos handling.

Age distribution

The median age at diagnosis of cancer of the lung was 68 years for both genders. Figure 7.1 shows that the number of lung cancer peak in the 60-79 years age group in males and illustrates the big gender difference in the number of incident lung cancer cases. The biggest age-specific rate in males was in the 70-79 year age group.

Figure 7.1: Age distribution of new cases registered in 1993-97, Cancer of the Lung

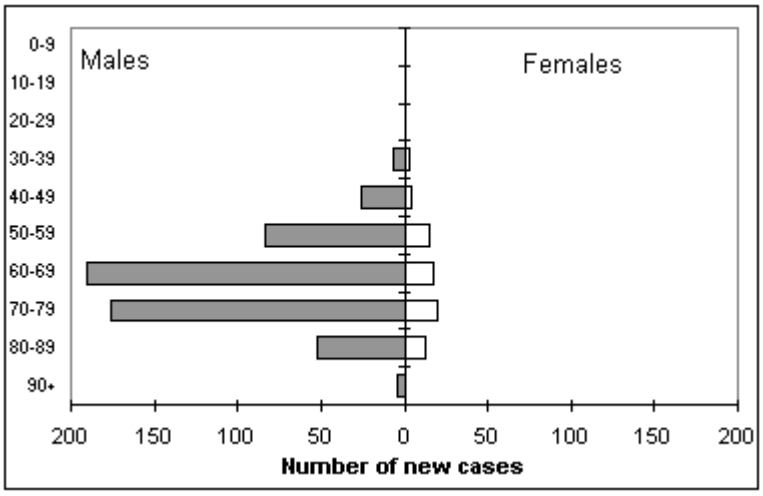
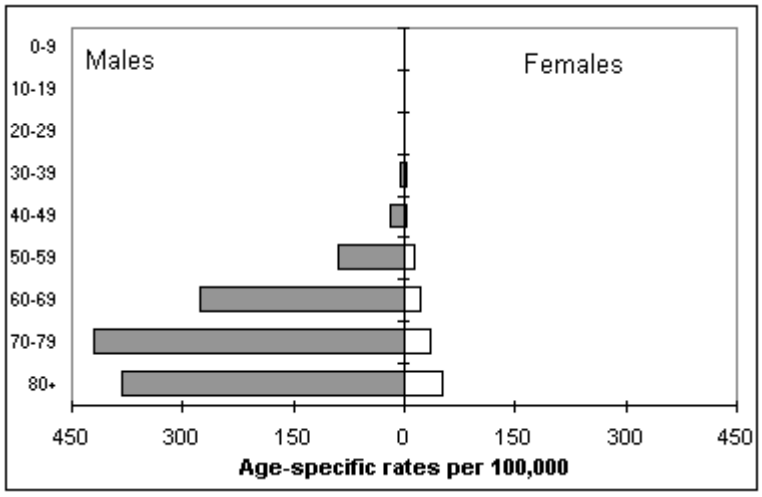


Figure 7.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Lung



Morphology

Microsopical verification of the lung cancers in this group was higher in males (76%) than in females (69%). Of those with histological verification, squamous cell carcinomas were the most commonly diagnosed in males accounting for 30% of the tumours. Adenocarcinomas accounted to 18% of male cases. In females, adenocarcinomas were the commonest with 20 cases followed by squamous cell with 14 cases. Small/ oat cell carcinomas were microscopically confirmed in 14% of male cases and 11% of female cases. There were 3 carcinoid tumours, a case of pulmonary blastoma and another of peripheral T-cell lymphoma in the lung.

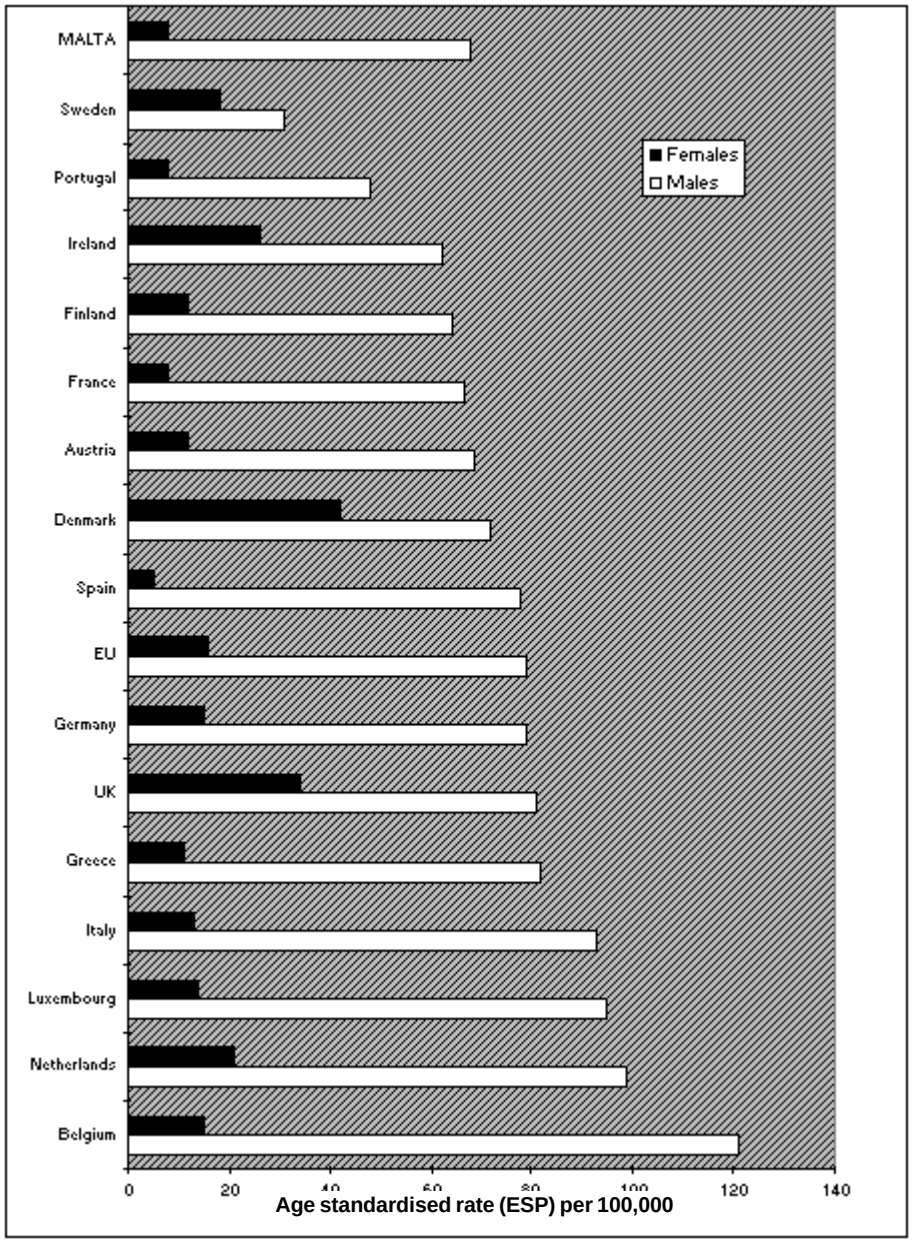
Data Quality

The MV% reported by most European countries in Vol. VII of Cancer Incidence in Five Continents were higher than the MV% reported for the Maltese population in this group. Many countries have over 80% microscopical verification of their tumours while in some places in France and Switzerland the MV% approached 98%. The registrations made on the basis of a death certificate only (3% in males and 1% in females) were at a very acceptable low level when compared to the DCO% presented in the above publication.

International comparisons

The incidence of lung cancer in males was highest in the Pays Bas countries followed by Italy and Greece. In females the incidence was very high in Denmark followed by the United Kingdom and Ireland. Sweden had an exceptionally low incidence of lung cancer especially in men. The rates for the Maltese population were lower than the EU average for both genders, especially in females.

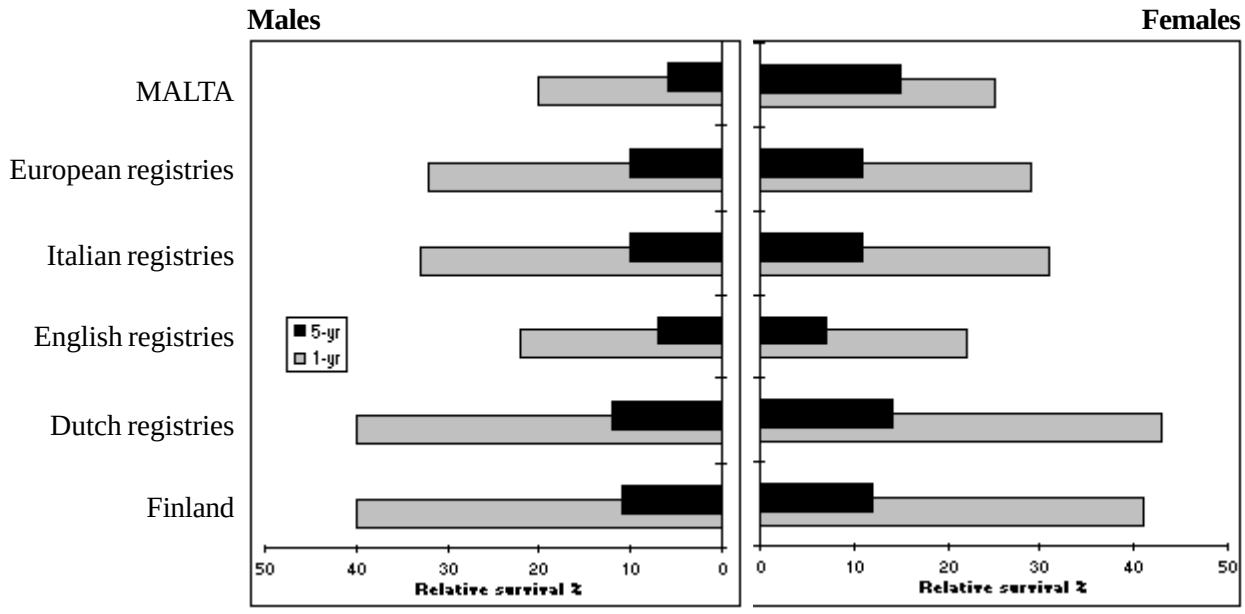
Figure 7.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Lung.



Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Survival

Figure 7.4: Relative 1- and 5-year survival of Cancer of the Lung in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

Cancer of the lung is rarely curable and the survival following the diagnosis is generally poor. As yet no screening test for this disease has been proven effective on a population basis. Figure 7.4 shows that less than half the patients survive on year from diagnosis in the best of places such as in Finland and the Netherlands. In Malta the survival is more dismal with only one fifth of the males and one fourth of the females living for more than one year after diagnosis.

MALIGNANT MELANOMA OF SKIN

ICD-O-2 C44, M872-M879

On average, between 1993 and 1997, 19 new cases on malignant melanoma of the skin were registered every year. This cancer accounted for 1% of all cancers diagnosed in males and 2% in females. It was the twelfth most common cancer registered in females and thirteenth in males during the same time period. The male: female ratio was 0.6 (3 females diagnosed for every 2 males). The mortality: incidence ratio was 0.2 for both genders and reflects a high level of survival from the disease.

Table 8.1: Summary Statistics: Malignant Melanoma of Skin

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	11	11	37	14	16	57
Crude rate (per 100,000)	5.95	5.91	4.04	7.44	8.45	6.1
Cumulative risk (0-74) (%)	0.51	0.57	0.38	0.61	0.71	0.52
Lifetime risk (0-74) (1 in :)	194	175	262	164	140	193
WASR (per 100,000)	5.03	4.99	3.46	6.16	7.05	5.09
EASR (per 100,000)	6.3	6.56	4.51	7.5	8.23	6.04
% of all registered cancers	1.9	1.81	1.01	2.6	2.58	1.81
Median age	52	58	58	44	47	46
MORTALITY						
Number of deaths	1	2	7	1	3	10
Crude rate (per 100,000)	-	-	0.76	-	-	1.07
Cumulative risk (0-74) (%)	-	-	0.06	-	-	0.09
Lifetime risk (0-74) (1 in :)	-	-	1624	-	-	1076
WASR (per 100,000)	-	-	0.58	-	-	0.82
EASR (per 100,000)	-	-	0.81	-	-	1.07
% of all cancer deaths	0.25	0.51	0.36	0.33	1.02	0.69
Median age	-	-	51	-	-	57.5
DATA QUALITY						
Mortality: Incidence ratio	0.1	0.2	0.2	0.1	0.2	0.2
% Death Certificate Only	0	0	0	0	0	0
% Microscopically Verified	100	100	97.3	100	100	100

Malignant melanoma occurs mainly in the epidermis and rarely in the conjunctiva of the eye, epithelium of the vagina, respiratory or digestive tracts. Worldwide marked increases in incidence have been reported in many regions. These were mainly observed among Caucasians with fair, blond or red hair, who seem to be at increased risk following prolonged exposures especially at a young age.

Age distribution

Malignant melanoma of the skin was more frequent in young females than young males - the median age at diagnosis was 46 years for the women and 58 years for the men registered between 1993 and 1997. Also over 28% of cases in females were below 40 years old at diagnosis, compared with only about 13% in males. Age specific rates were relatively stable across all adult life in females but showed a considerable peak in the 60-69 years age group in males - see Fig. 8.1 and 8.2.

Figure 8.1: Age distribution of new cases registered in 1993-97, Malignant melanoma of skin

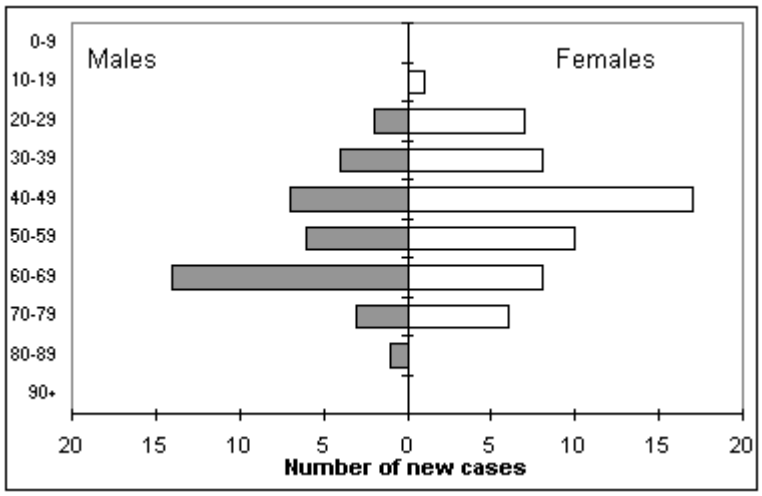
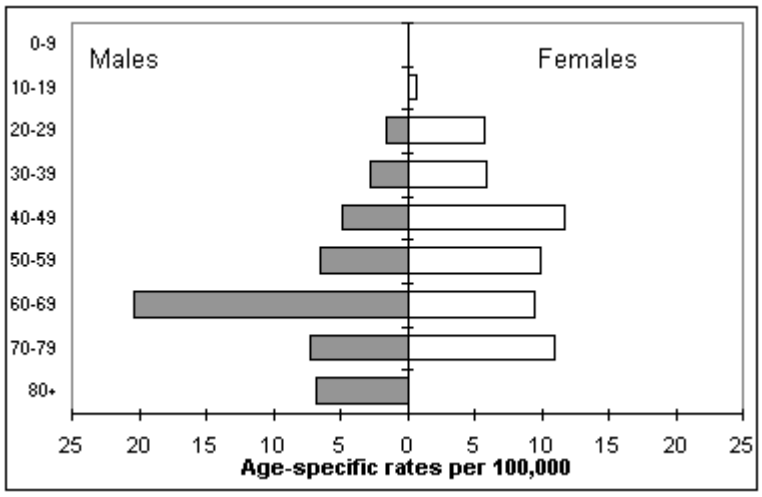


Figure 8.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Malignant melanoma of skin



Morphology

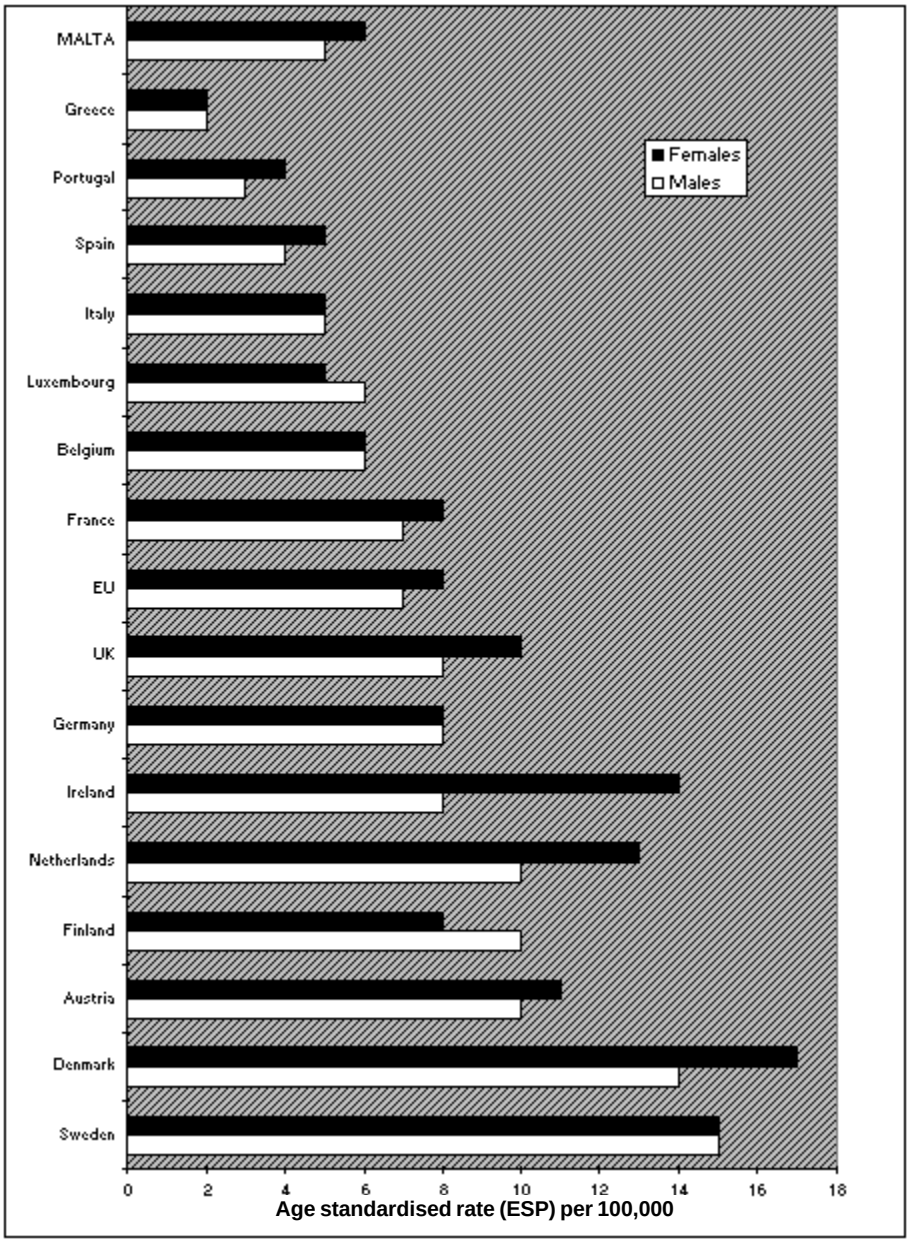
All tumours but one were microscopically verified. In addition to the 94 cases of invasive cutaneous melanoma, 8 non-invasive/ in-situ cases (5 female and 3 male) were also registered for the period 1993-97. Histology reports did not further specify the type of malignant melanoma in 59 (63%) of cases. The remainder included 20 cases of the superficial spreading type and 9 cases of nodular malignant melanoma.

Data Quality

The MV% for cutaneous melanoma of the skin was high for both genders and compared well with the rates reported in the Volume VII of the Cancer Incidence in Five Continents for most centres in Europe.

International comparisons

Figure 8.3: International age-standardised (European Standard Population) incidence rates of Malignant melanoma of skin

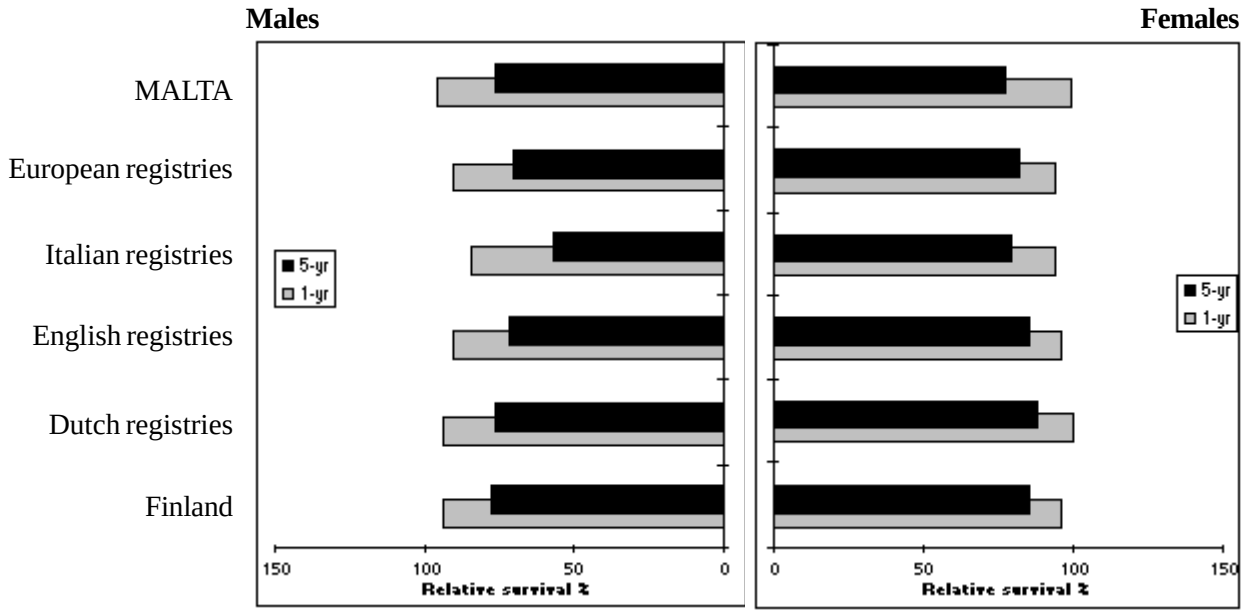


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Figure 8.3 shows that the incidence of cutaneous melanoma has a distinct geographic distribution within Europe. The Scandinavian countries are all clustered at the upper end and the southernmost countries at the lower end of the spectrum. Malta has similar rates to those of its geographical neighbours. The gender ratio in favour of females is visible in several countries. However, in Luxembourg and Finland the predominance of malignant melanoma for females is reversed.

Survival

Figure 8.4: Relative 1- and 5-year survival of Malignant melanoma of skin in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival from malignant melanoma of the skin is generally excellent. Five year survival approached 80% in most centres that participated in the EUROCARE-2 study. The survival rates for the Maltese patients compared well with the rates published in this study although the 5 year survival for the Maltese women was below the European average.

CANCER OF THE BREAST

ICD-O-2 C50

Cancer of the female breast is the most commonly diagnosed cancer in Maltese women. On average, about 184 new cases of breast cancer and 90 deaths attributed to this cancer are registered per year. Cancer of the mammary organ has a huge gender difference with a male female ratio of 0.012 or 84 female to one male case. Cancer of the female breast accounted for almost 30% of all new cancers registered in women between 1993 to 1997. It was also the underlying cause of death in 31% of all cancer deaths in females during the same time period.

Table 9.1 Summary Statistics: Breast

	Males			Females		
	1996	1997	1993-97	1996	1997	1993-97
INCIDENCE						
Number of new cases	4	3	11	176	206	921
Crude rate (per 100,000)	2.16	1.61	2	93.5	108.85	98.5
Cumulative risk (0-74) (%)	0.16	0.17	0.09	7.32	7.89	7.66
Lifetime risk (0-74) (1 in :)	634	583	1096	14	13	13
WASR (per 100,000)	1.75	1.12	0.96	64.75	72.86	68.31
EASR (per 100,000)	2.58	1.73	1.43	88.6	101.98	94.82
% of all registered cancers	0.55	0.39	0.31	29.88	28.07	29.3
Median age	58.5	67	67	59	61	60
MORTALITY						
Number of deaths	3	0	4	86	70	445
Crude rate (per 100,000)	-	-	0.44	46.22	37	47.59
Cumulative risk (0-74) (%)	-	-	0.03	3.42	2.12	3.18
Lifetime risk (0-74) (1 in :)	-	-	3077	29	47	31
WASR (per 100,000)	-	-	0.3	28.47	22.01	30.34
EASR (per 100,000)	-	-	0.49	42.38	32.73	45
% of all cancer deaths	0.74	0	0.21	28.01	23.73	30.88
Median age	75	-	73	69	67.5	67
DATA QUALITY						
Mortality: Incidence ratio	0.8	0	0.4	0.5	0.3	0.6
% Death Certificate Only	0	0	0.6	1.1	0	0.6
% Microscopically Verified	75	66.7	90.9	94.3	98.1	93.1

The remainder of this chapter will deal with cancer of the female breast only, since the number of male cases is too small to make any further analysis worthwhile.

Incidence of female breast cancer is generally increasing worldwide and especially in the developed nations. Some of this increase is attributable to earlier detection due to the spread and availability of screening services for the disease especially where mass population screening programmes have been implemented. However, there also seems to be a real, though small increase in incidence internationally.

The knowledge about the causes of breast cancer is incomplete. Less than 10% of all breast cancers are primarily due to hereditary factors. However, females with a strong family history have an increased risk of getting the disease at younger ages and of having bilateral cancers. Migration studies show that descendants of those who migrate tend to attain the incidence rates of females living in the host country within a couple of generations. Hormonal factors have been extensively studied and females who have their first pregnancy early in life have reduced risk. A diet rich in saturated fats has also been associated with an increased risk for breast cancer. However, the protective effect of a low fat diet seems to operate before adult life, and that the dietary habits adopted in childhood are the main determinants of this risk.

Age distribution

The median age at diagnosis of cancer of the female breast was 60 years and 27% were below the age of 50 years of age. The biggest number of cases were in the 50-59 year age group. Age-specific rates show a consistent rise with age, peaking in the oldest age group - see Fig. 9.1 and 9.2.

Figure 9.1: Age distribution of new cases registered in 1993-97, Cancer of the Female Breast

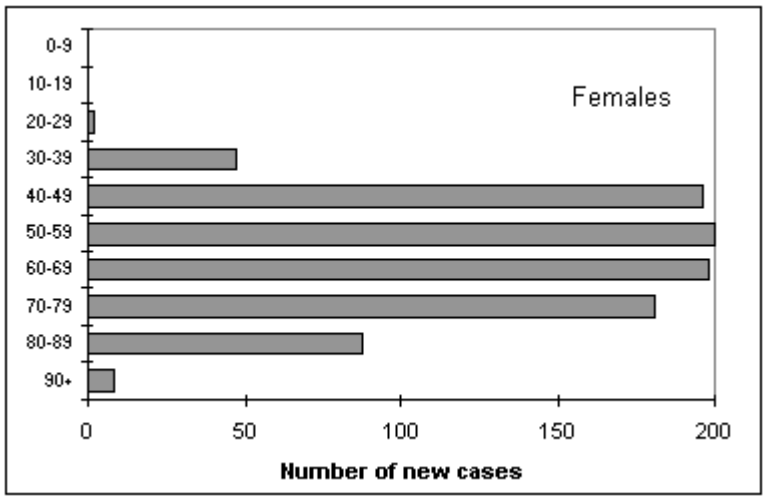
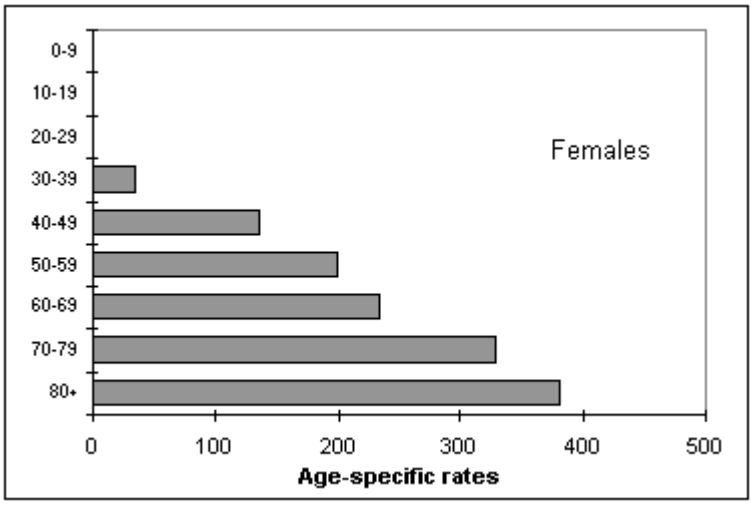


Figure 9.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Female Breast



Subsite and Morphology

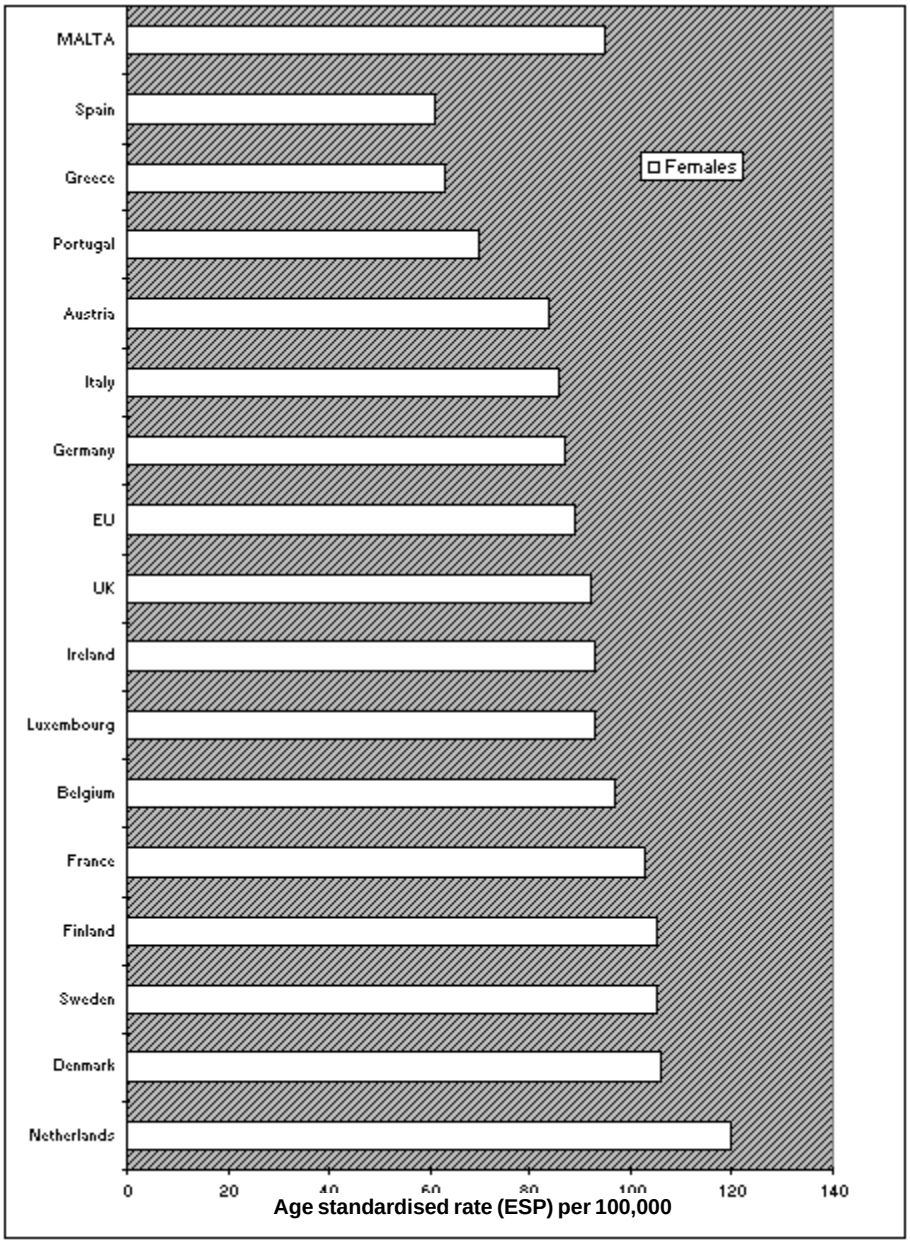
Only about 20% of the cases registered between 1993 and 1997 had the location of the tumour site within the breast specified. Of these the most common subsite was the outer-upper quadrant (C50.4) with more than 52% (93 cases) of the patients. Fourteen cases were registered with bilateral breast disease diagnosed within the same time period. More than 88% of cases had their histological type specified. The largest group consisted of the ductal carcinomas with 655 cases; (81%), followed by the lobular carcinomas with 72 cases (9%). There were also 10 cases each of medullary and mucinous/ colloid carcinoma, 2 cases each of carcinoid tumour, lymphoma and sarcoma of the breast and a case of malignant phylloides tumour. There were 6 cases of phylloides tumour of the female breast registered between 1993-97; one was malignant, two showed uncertain behaviour whether benign or malignant and three were benign.

Data Quality

The MV% for cancer of the female breast in this series was 93%. There has been a consistent improvement in this index of data quality for the local cancer registry over the past few years. Both MV% and DCO% are favourably comparable with the indices published for other European countries in the Volume VII of the Cancer Incidence in Five Continents.

International comparisons

Figure 9.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Female Breast

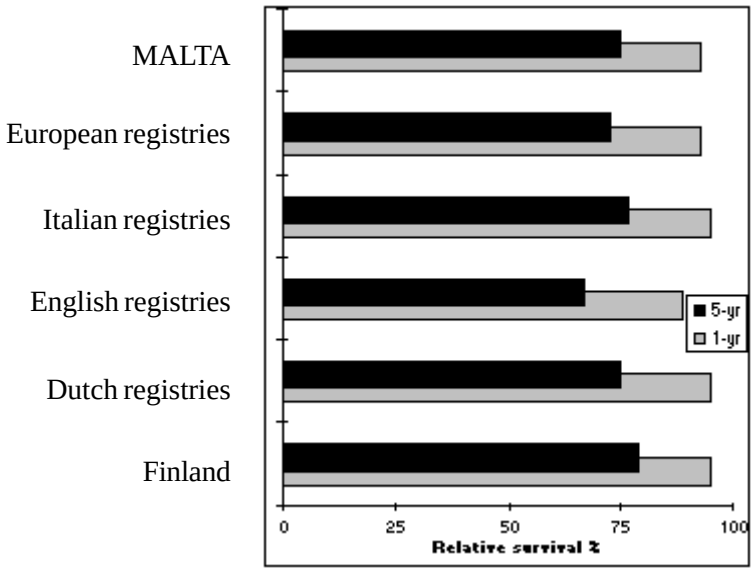


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

The incidence of female breast cancer is highest in the northern European countries; the Netherlands and the Scandinavian countries and lowest in the southern countries like Portugal, Spain and Greece. The incidence rates for Malta are higher than the European average and approach more to those of the northern countries than the rates of our geographical neighbours. Many countries in the EU have established organised breast cancer screening programmes. The incidence in such regions could be higher than that of areas where these programmes have not been implemented due to the inclusion of tumours that would not have been diagnosed outside the screening process.

Survival

Figure 9.4: Relative 1- and 5-year survival of Cancer of the Female Breast in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival rates published in the EUROCARE-2 study were calculated for cases diagnosed between 1985 and 1989. During this period organised breast cancer screening programmes were still either in the earlier stages of their implementation as in the United Kingdom or in the pre-implementation phase as in the Netherlands. Both 1 year and 5 years survival for Maltese patientscompared well with most of the rates published for other European registries.

CANCER OF THE CERVIX UTERI

ICD-O-2 C53

This chapter includes information about invasive and microinvasive cases of cervical cancer but not CIN I, II, and III. The number of cases registered with CIN III are reported separately at the foot of Table 10.1. On average about 15 new cases were diagnosed with invasive cancer of the cervix uteri per annum between 1993 and 1997. In 1994 there were 25 cases registered, 16 cases in 1995 and 13 cases in 1993. This accounted to just over 2% of all cancer cases in females and ranked as the eleventh most common cancer diagnosed in females from 1993 to 1997. There were about 2.5 times more new cases than deaths for this time period.

Table 10.1: Summary Statistics: Cervix uteri

	Females		
	1996	**1997**	**1993-97**
INCIDENCE			
Number of new cases	10	9	73
Crude rate (per 100,000)	5.31	4.76	7.81
Cumulative risk (0-74) (%)	0.39	0.46	0.62
Lifetime risk (0-74) (1 in :)	254	217	160
WASR (per 100,000)	4.6	3.37	6.06
EASR (per 100,000)	5.4	4.52	7.85
% of all registered cancers	1.7	1.23	2.32
Median age	42.5	54	53
MORTALITY			
Number of deaths	6	9	30
Crude rate (per 100,000)	3.19	4.76	3.21
Cumulative risk (0-74) (%)	0.22	0.35	0.24
Lifetime risk (0-74) (1 in :)	446	285	425
WASR (per 100,000)	2.27	3.67	2.33
EASR (per 100,000)	3	4.88	3.2
% of all cancer deaths	1.95	3.05	2.08
Median age	50.5	52	55.5
DATA QUALITY			
Mortality: Incidence ratio	0.6	1	0.4
% Death Certificate Only	0	0	0
% Microscopically Verified	100	100	94.5
CIN III lesions			
(non-invasive cervical intra-epithelial neoplasia)	27	15	123

The risk of cervical cancer is closely associated with infection by various types of Human Papilloma Virus (HPV). Different types of HPV have been also associated with different histologies of the tumours such as: HPV type 16 with squamous cell carcinoma and type 18 with adenocarcinoma. Early onset in life of sexual activity, multiple sexual partners and smoking facilitate development which is also related to social class.

Age distribution

The median age at diagnosis of cancer of the cervix was relatively young at 53% years of age. The biggest number of cases were in the 40-49 years age group. There were two peaks in the age-specific rates, one at the 50-59 years age group and another in the oldest age group - see Fig. 10.1 and 10.2.

Figure 10.1: Age distribution of new cases registered in 1993-97, Cancer of the Cervix uteri

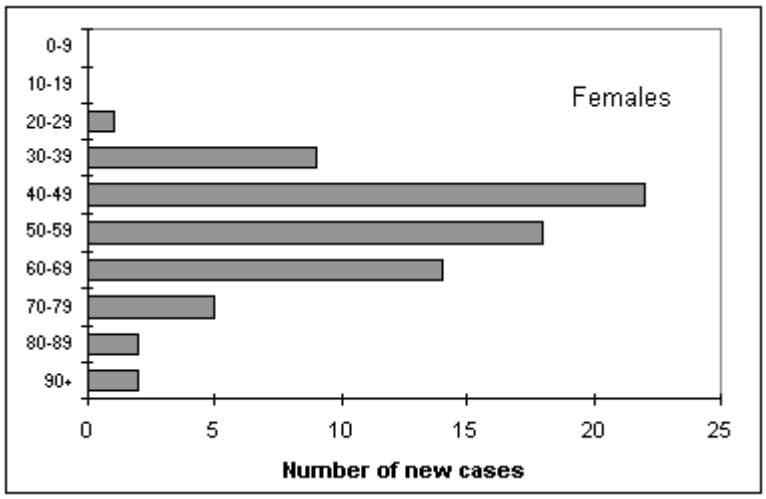
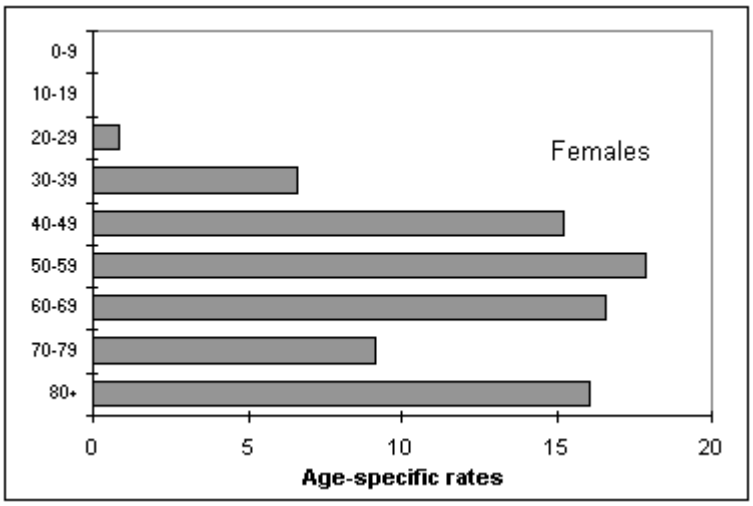


Figure 10.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Cervix uteri



Morphology

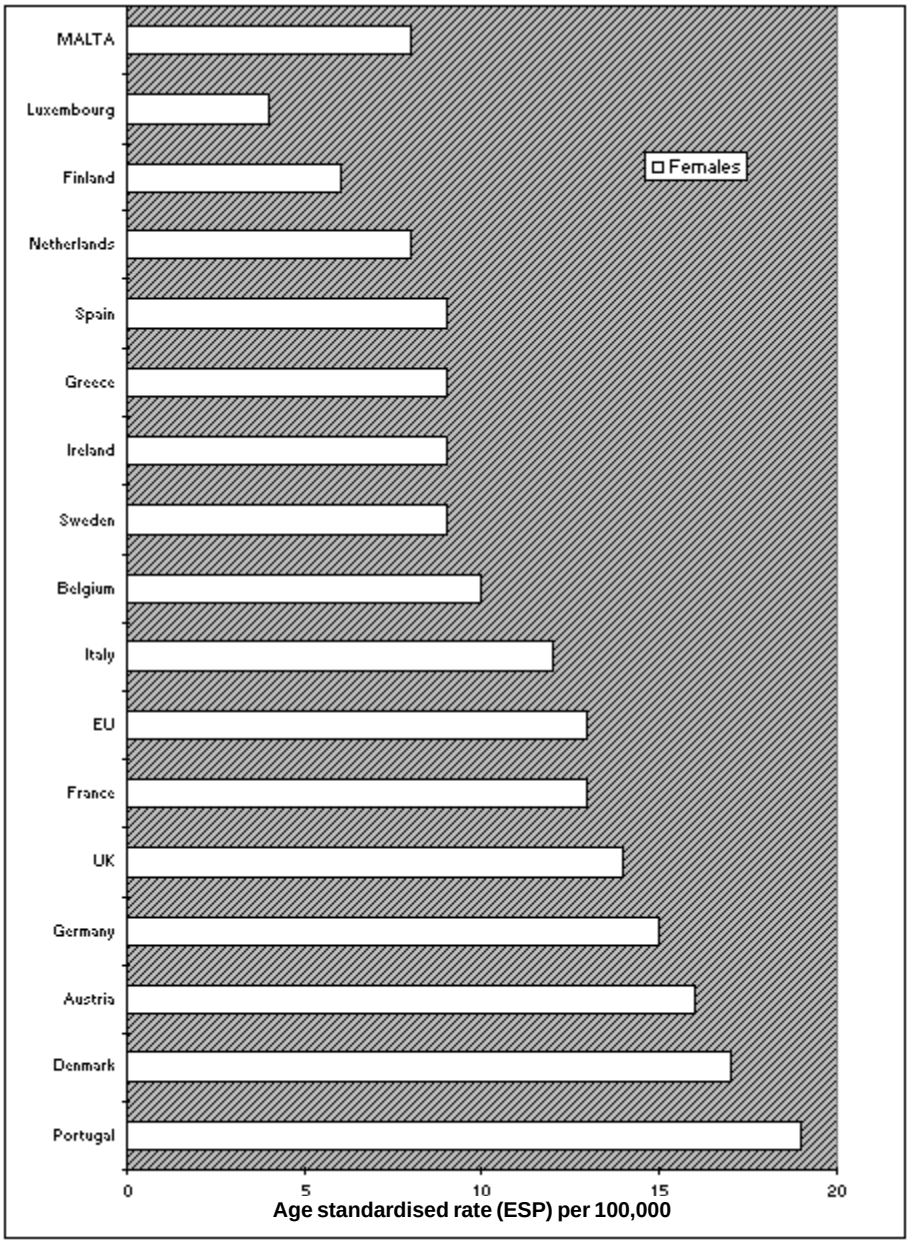
The majority of cancers (58 cases, 80%) were squamous cell carcinomas. Nine cases (12%) were adenocarcinomas, and there was one case of adenosarcoma.

Data Quality

The MV% for cancer of the cervix was 94.5% for the years 1993-97. In both 1996 and 1997 it was 100%. This compares well with the MV% published for most European centres in the Volume VII of the Cancer Incidence in Five Continents. None of the cases were registered on the basis of a death certificate only.

International comparisons

Figure 10.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Cervix uteri

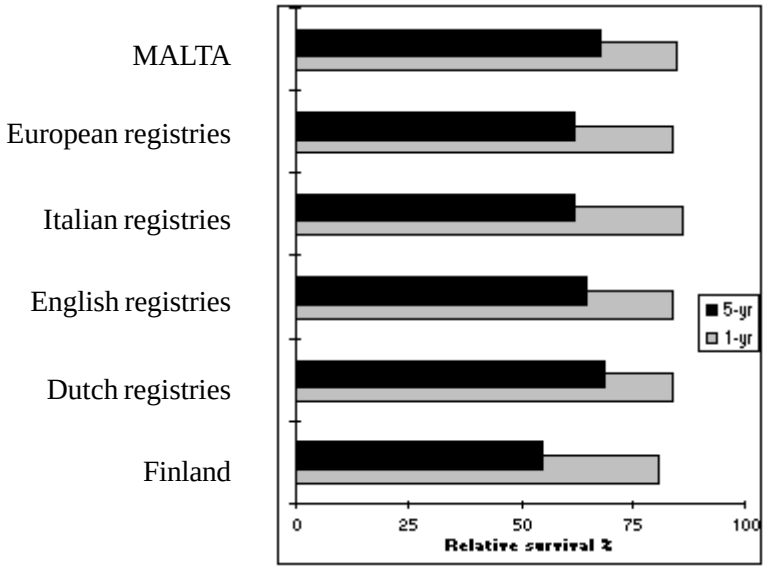


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

The highest incidence rates of cervical cancer is the European Union is found in Portugal, followed by Denmark and Austria. There is no distinct geographical difference in the incidence of cancer of the cervix between the north and south of Europe. The rates for Malta are near to the lowest rates published in the EUCAN database for cervical cancer. Similar to female breast cancer many countries in the EU have established organised cervical cancer screening programmes. The incidence in such regions could be higher than that of areas where these programmes have not been implemented due to the inclusion of tumours that could otherwise not have been diagnosed.

Survival

Figure 10.4: Relative 1- and 5-year survival of Cancer of the Cervix uteri in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival rates of Maltese cases of cervical cancer diagnosed between 1993 and 1997 compare well with the rates published in the EUROCARE-2 study. The survival experience for cancer of the cervix is fairly homogenous for all centres in Europe, with a one year survival above 80% and the five year survival between 60-70%.

CANCER OF THE CORPUS UTERI

ICD-O-2 C54 (C55)

There were an average of 43 new cases of cancer of the body of the uterus (C54) diagnosed every year between 1993 and 1997. The code C55 refers to Uterus, not otherwise specified. Between 1993 to 1997, 19 cases were registered with this topographic code due to unavailability of information that designated the specific site of the cancer within the uterus. This problem is more marked with the coding of the death certificates were 'Cancer of the Uterus' is the most commonly stated term relating to this cause of cancer death. The following figures calculated for the incidence of cancer of the corpus uteri refer to cases coded with C54 only. Cancer of the body of the uterus was the second most commonly diagnosed cancer in Maltese women after excluding non-melanoma skin cancer and accounted for 7% of all cancers diagnosed in females.

Table 11.1: Summary Statistics: Uterus

	Females					
	Corpus uteri (C54)			Corpus ut. & Uterus, nos (C54/C55)		
	1996	1997	1993-97	1996	1997	1993-97
INCIDENCE						
Number of new cases	36	41	216	40	45	235
Crude rate (per 100,000)	19.13	21.67	23.1	21.25	23.78	25.13
Cumulative risk (0-74) (%)	1.68	1.77	2.05	1.83	1.96	2.2
Lifetime risk (0-74) (1 in :)	59	56	49	55	51	45
WASR (per 100,000)	13.09	15.22	16.37	14.6	16.83	17.82
EASR (per 100,000)	18.6	20.56	22.88	20.82	22.75	24.96
% of all registered cancers	8.87	10.57	6.88	9.85	11.6	7.48
Median age	61	58	62	60	58	62
MORTALITY						
Number of deaths	6	7	27	16	12	69
Crude rate (per 100,000)	3.19	3.7	2.89	8.5	6.34	7.38
Cumulative risk (0-74) (%)	0.23	0.35	0.24	0.42	0.56	0.55
Lifetime risk (0-74) (1 in :)	427	287	414	236	177	180
WASR (per 100,000)	2.06	1.89	1.75	4.52	3.12	4.33
EASR (per 100,000)	3.08	2.95	2.67	7.27	4.99	6.71
% of all cancer deaths	1.95	2.37	1.87	5.21	4.07	4.79
Median age	68	74	72	76	74	71
DATA QUALITY						
Mortality: Incidence ratio	0.2	0.1	0.1	0.3	0.4	0.3
% Death Certificate Only	0	0	0	2.5	0	0.8
% Microscopically Verified	100	100	99.5	97.5	100	98.3

Cancer of the corpus uteri is usually associated with a good prognosis. Risk factors are associated with prolonged high oestrogen hormone levels either due to natural causes like nulliparity or to artificial causes such as postmenopausal oestrogens. Factors that raise endogenous oestrogen levels such as obesity and consumption of processed meat and fish are also associated with an increased risk.

Age distribution

Cancer of the corpus uteri was most commonly diagnosed in postmenopausal women. More than 87% of cases were older than 50 years at diagnosis and the median age was 62 years. The age-specific rates were highest in the 70-79 years age group - see Fig. 11.1 and 11.2.

Figure 11.1: Age distribution of new cases registered in 1993-97, Cancer of the Corpus uteri

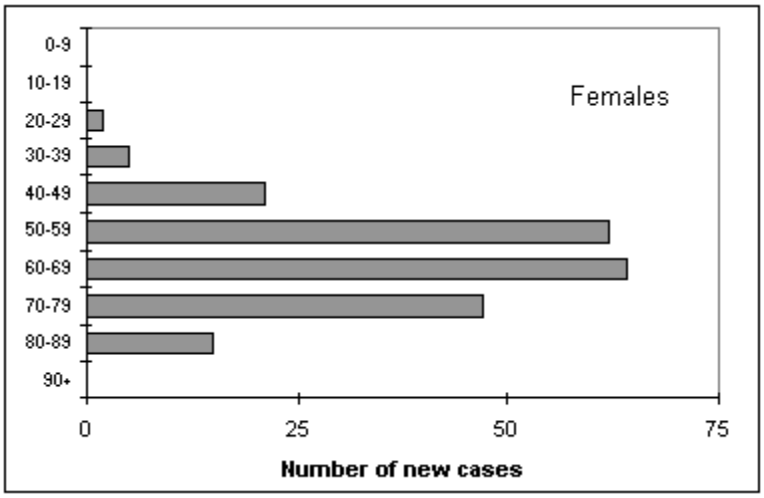
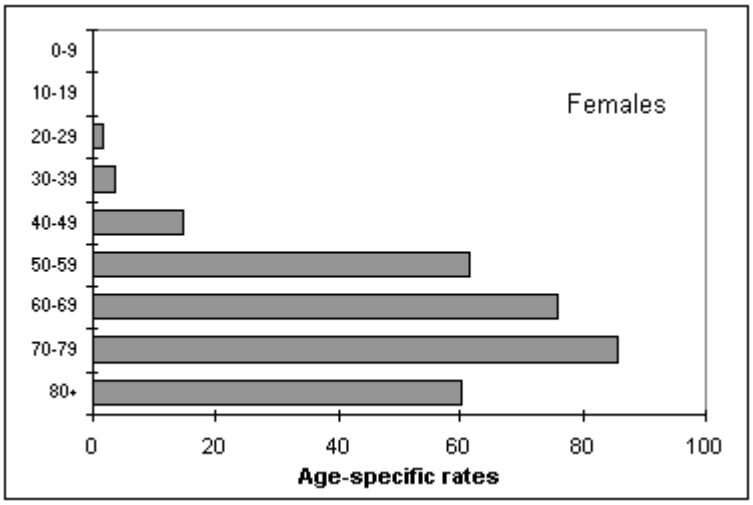


Figure 11.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Corpus uteri



Morphology

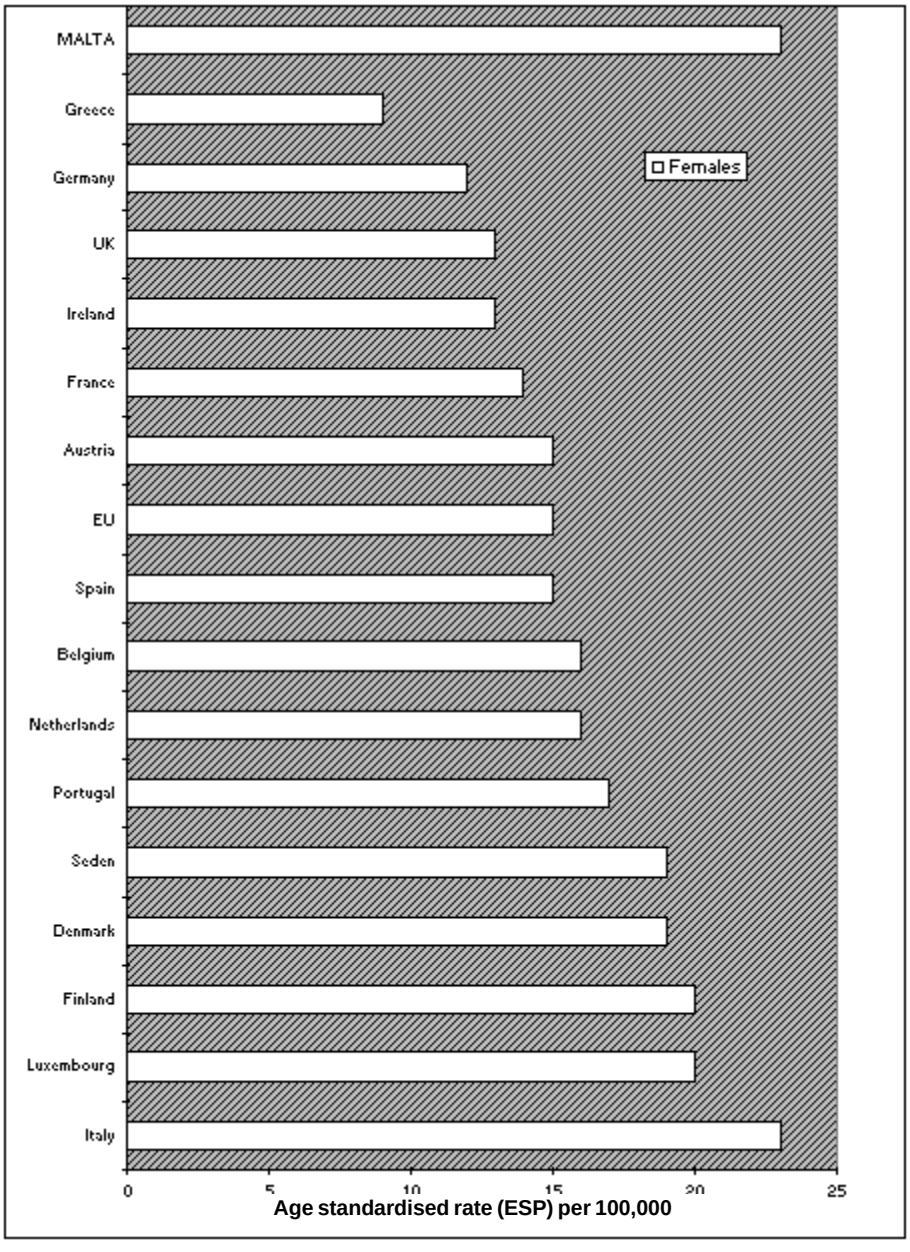
Over 90% of the cancers of the uterine body are adenocarcinomas. There were also 5 cases of Mullerian mixed tumour, 3 cases of leiomyosarcoma and 2 cases of endometrial stromal sarcoma. In the vast majority of cases, the cancer arose in the endometrium. A primary of the myometrium was documented in only one case in this series.

Data Quality

The MV% for cancer of the corpus uteri approached 100% for the cases registered between 1993-97. Most centres in the European region reported MV% close to 99% in the Volume VII of the Cancer Incidence in Five Continents. None of the registrations for cancer of the corpus uteri was performed on the basis of a death certificate only.

International comparisons

Figure 11.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Corpus uteri

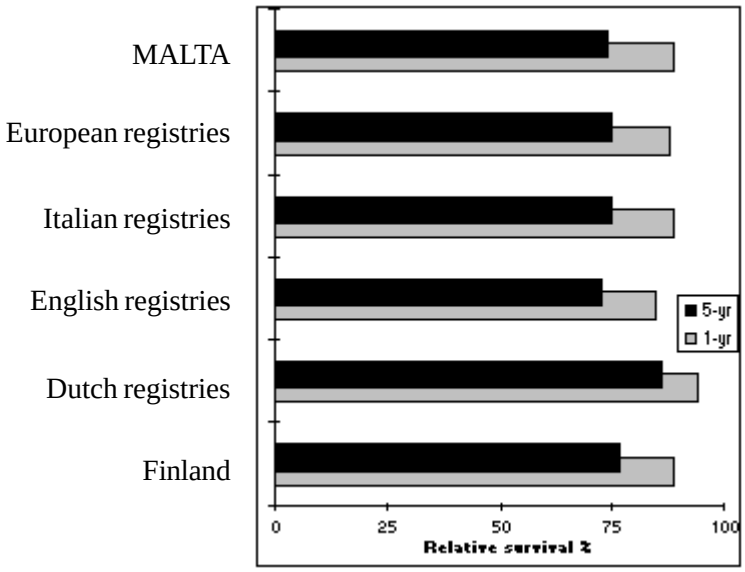


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

The incidence rate of cancer of the body of the uterus is near to the highest rate published in the EUCAN database which was for Italy at 23 per 100,000 population. High incidence for this cancer is also found in Luxembourg and the Scandinavian countries. The British Isles and Germany have the lowest reported incidence of this cancer site.

Survival

Figure 11.4: Relative 1- and 5-year survival of Cancer of the Corpus uteri in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

Cancer of the corpus uteri generally has a good prognosis. In fact most centres reported in the EUROCARE-2 study had a 5 year survival greater than 75%. The survival rates for the Maltese patients in this series were also good and compared well with the rates published in the above-mentioned study.

CANCER OF THE OVARY

ICD-O-2 C56

An average of about 32 cases of ovarian cancer were registered per annum. It accounted for 5% of all cancers in females and was the fourth most common cancer diagnosed in women between 1993 and 1997. Borderline tumours of the ovary are considered as malignant by the IARC and ICD-O-2 rules and have been included with these figures.

Table 12.1: Summary Statistics: Ovary

	Females		
	1996	**1997**	**1993-97**
INCIDENCE			
Number of new cases	34	25	161
Crude rate (per 100,000)	18.06	13.21	17.22
Cumulative risk (0-74) (%)	1.31	1.01	1.39
Lifetime risk (0-74) (1 in :)	76	101	72
WASR (per 100,000)	12.27	9.01	12.34
EASR (per 100,000)	16.95	12.03	16.72
% of all registered cancers	5.77	3.41	5.12
Median age	63	63	60
MORTALITY			
Number of deaths	28	15	102
Crude rate (per 100,000)	14.87	7.93	10.91
Cumulative risk (0-74) (%)	1.19	0.64	0.96
Lifetime risk (0-74) (1 in :)	84	157	104
WASR (per 100,000)	9.44	5.19	7.47
EASR (per 100,000)	13.43	7.34	10.51
% of all cancer deaths	9.12	5.08	7.08
Median age	66.5	62	64
DATA QUALITY			
Mortality: Incidence ratio	0.8	0.6	0.6
% Death Certificate Only	5.9	4	3.1
% Microscopically Verified	88.2	92	93.8

The causes of cancer of the ovary are poorly understood. Detection often occurs at a late stage and many patients have widespread disease at diagnosis. Consequently this cancer often has a poor prognosis and it has sometimes been called the 'silent killer'. Pregnancy, two or more children and oral contraceptive intake have been consistently shown to protect against the generation of this cancer. Extensive research is currently in progress to identify markers for these tumours in the hope of developing a screening test.

Age distribution

The median age at diagnosis of cancer of the ovary was 60 years. Cases occurred in all age groups, but they were most commonly detected between 40 and 79 years. The age-specific rates consistently rise with advancing age - see Fig. 12.1 and 12.2.

Figure 12.1: Age distribution of new cases registered in 1993-97, Cancer of the Ovary

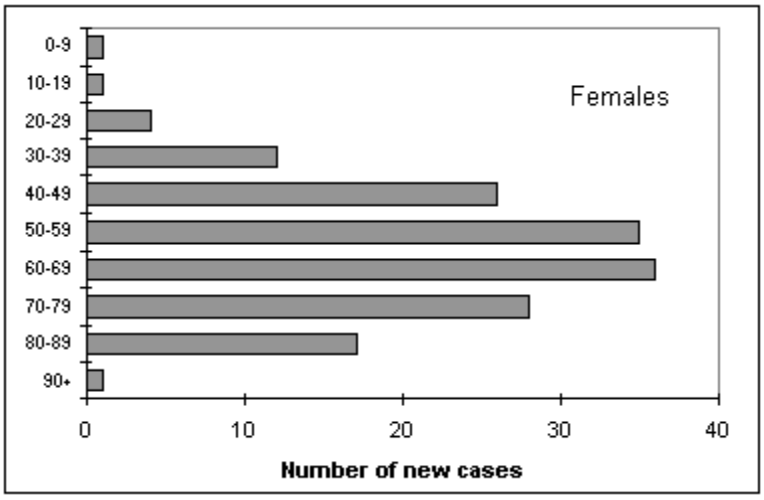
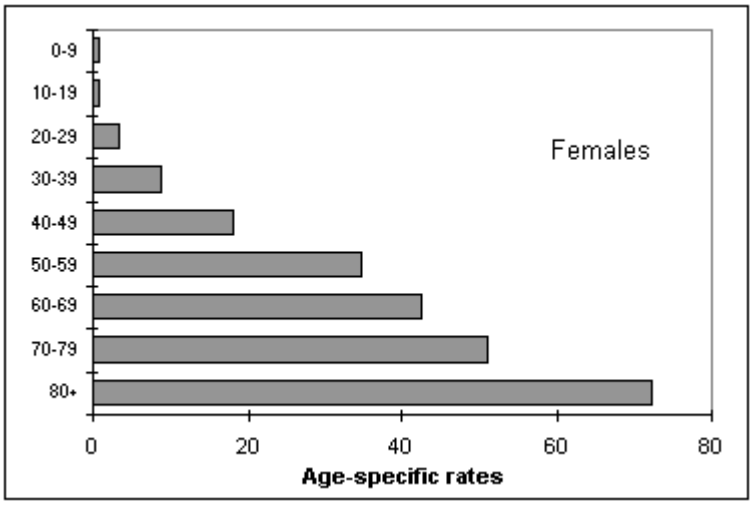


Figure 12.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Ovary



Morphology

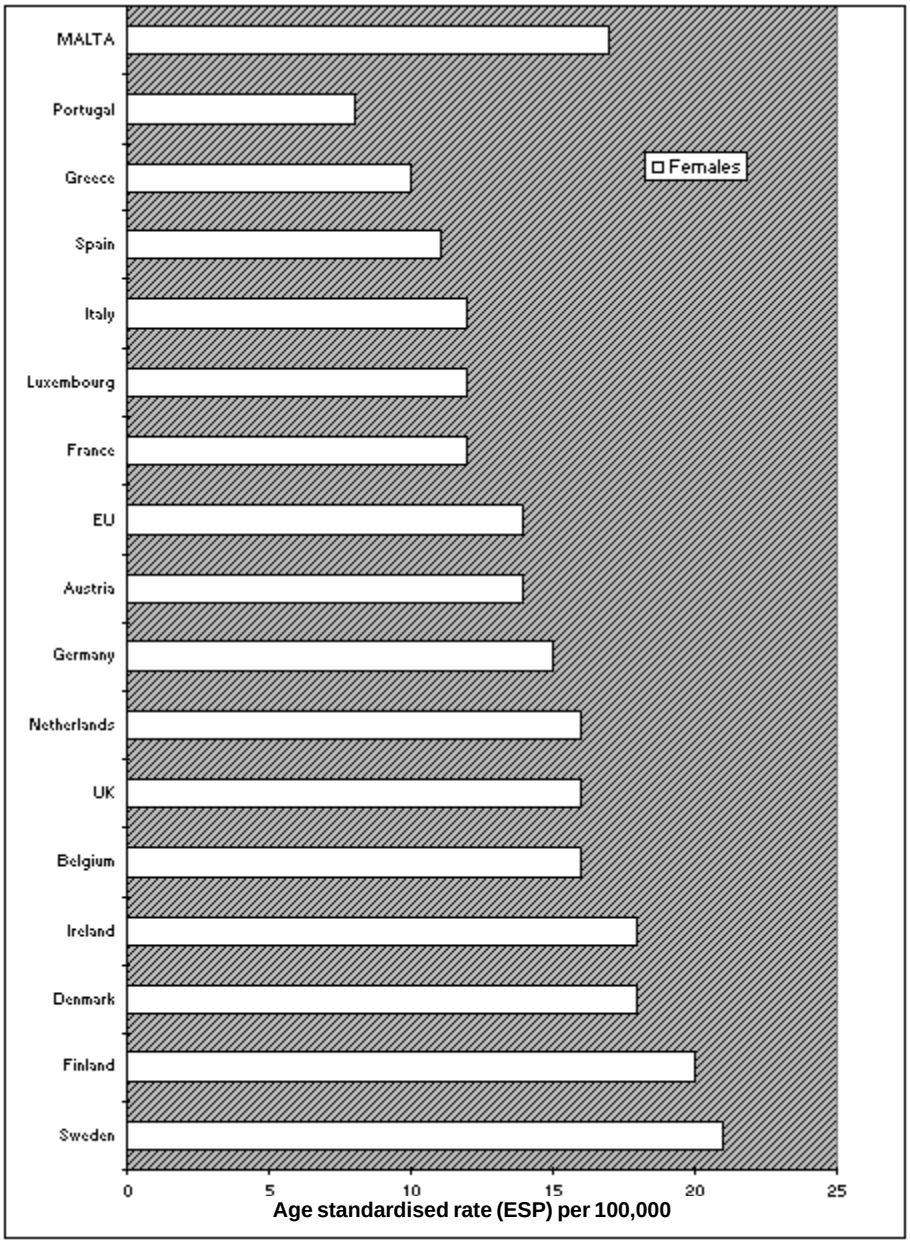
The majority of cancers (124 cases, 77%) were adenocarcinomas. Of these, 45% were cystadenocarcinomas (papillary serous or papillary mucinous or mucinous). Eight of these cases had borderline malignancy. There were 2 cases of granulosa cell tumours, and 2 cases of sarcomatous neoplasms. Six cases had germ cell tumours. Five of these cases were below 30 years of age at diagnosis.

Data Quality

The MV% for cancer of the ovary was about 94% for the years 1993-97. This figure is above the MV% reported in the Volume VII of the Cancer Incidence in Five Continents for most southern European centres and compares well with those of northern registries where the MV% approaches 96%. Five cases in this group were registered on the basis of a death certificate only.

International comparisons

Figure 12.3 International age-standardised (European Standard Population) incidence rates of Cancer of the Ovary

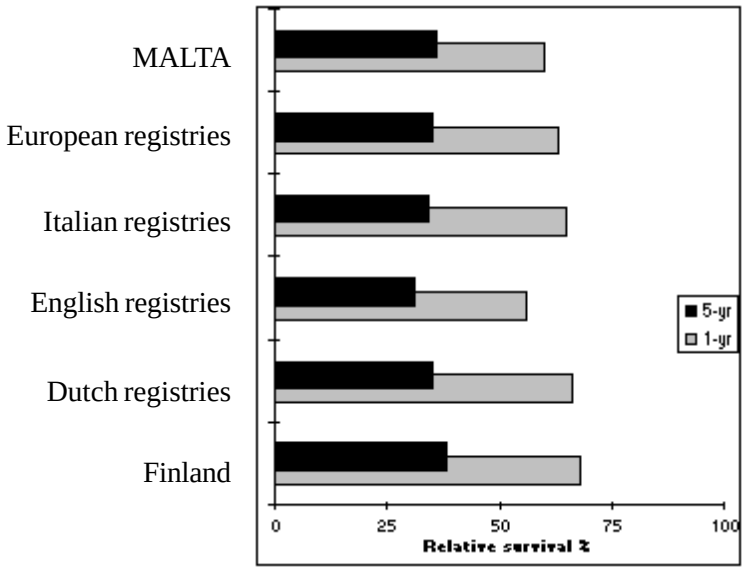


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

The Scandinavian countries reported the highest incidence rates of ovarian cancer is the European Union for 1995, whilst the southern European countries reported the lowest rates for the same time period. The incidence rate for Malta (1993-97) was 16.7 per 100,000 population and this was comparatively higher than that of our geographical neighbours. One reason for this difference is the coding system whereby we include the borderline malignant cases because we code according to ICD-O-2. If these 8 cases were excluded our national age-standardised rate would have been 15.9 per 100,000.

Survival

Figure 12.4: Relative 1- and 5-year survival of Cancer of the Ovary in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

Ovarian cancer generally has a rather poor prognosis. On average only one third of the cases survive 5 years after diagnosis in all centres reporting in the EUROCARE-2 study. The life time median or the elapsed period of time after diagnosis by which half of the cases have succumbed to the disease was less than 2 years for this group of Maltese patients diagnosed between 1993 and 1997.

CANCER OF THE PROSTATE

ICD-O-2 C61

About 66 new cases of invasive prostatic cancer were registered every year between 1993 and 1997. This accounted for more than 9% of all cancers diagnosed in males and was the second most commonly diagnosed cancer in Maltese men after excluding non-melanoma skin cancers. It is also an important cause of death and accounted to 9% of all cancer deaths during the same time period. There were twice as many new cases of cancer of the prostate as deaths, indicating moderate survival from the disease.

Table 13.1: Summary Statistics: Prostate

	Males		
	1996	**1997**	**1993-97**
INCIDENCE			
Number of new cases	57	80	328
Crude rate (per 100,000)	30.84	43.01	35.78
Cumulative risk (0-74) (%)	2.72	2.85	2.87
Lifetime risk (0-74) (1 in :)	37	35	35
WASR (per 100,000)	22.31	28.9	25.76
EASR (per 100,000)	35.29	48.38	41.78
% of all registered cancers	7.91	10.51	9.36
Median age	73	76	74
MORTALITY			
Number of deaths	40	26	174
Crude rate (per 100,000)	21.64	13.98	18.98
Cumulative risk (0-74) (%)	1.5	0.86	1.16
Lifetime risk (0-74) (1 in :)	67	116	86
WASR (per 100,000)	15.02	10.07	13.58
EASR (per 100,000)	25.98	16.75	23.53
% of all cancer deaths	9.85	6.7	9.05
Median age	75.5	76	77
DATA QUALITY			
Mortality: Incidence ratio	0.7	0.3	0.5
% Death Certificate Only	0	0	1.2
% Microscopically Verified	92.2	95	85.4

The causes of prostate cancer are not well understood. Environmental factors are thought to play a major role to genetic one as shown by migrant studies, whereby Asian men migrating to high incidence regions as in Hawaii developed, within one or two generations the higher disease rates of the host country. Evidence has also accumulated showing that endocrine/ hormonal factors also play a significant part.

Post-mortem studies have shown that up to about 40% of all men over 80 years of age have latent prostate cancer. The natural course of the disease is subject to considerable variation with both slowly progressive and rapidly metastasising fatal cancers. The issue of screening for asymptomatic prostate cancer is still highly controversial. Rectal examination, ultrasound or biochemical markers such as the Prostate Specific Antigen (PSA) are either insensitive or associated with high rates of false positives.

Age distribution

Cancer of the prostate affects mainly elderly men - half of the cases registered were over 74 years at the time of diagnosis, while more than one fourth of the cases were more than 80 years old. The age-specific rates rose sharply with age - see Fig. 13.1 and 13.2.

Figure 13.1: Age distribution of new cases registered in 1993-97, Cancer of the Prostate

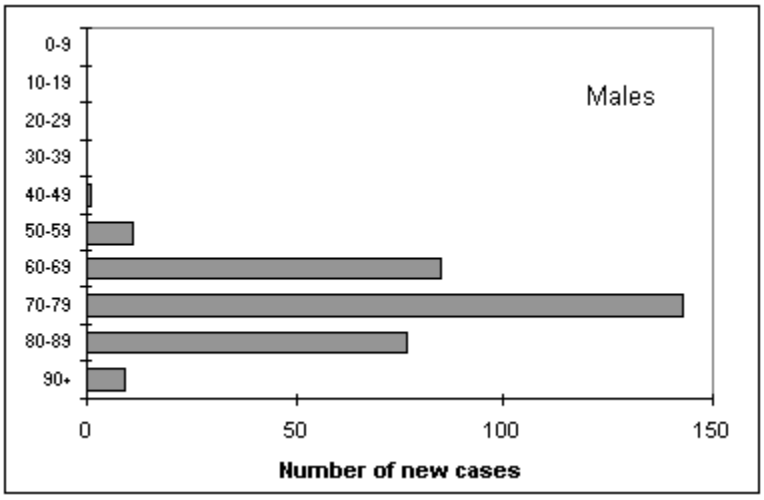
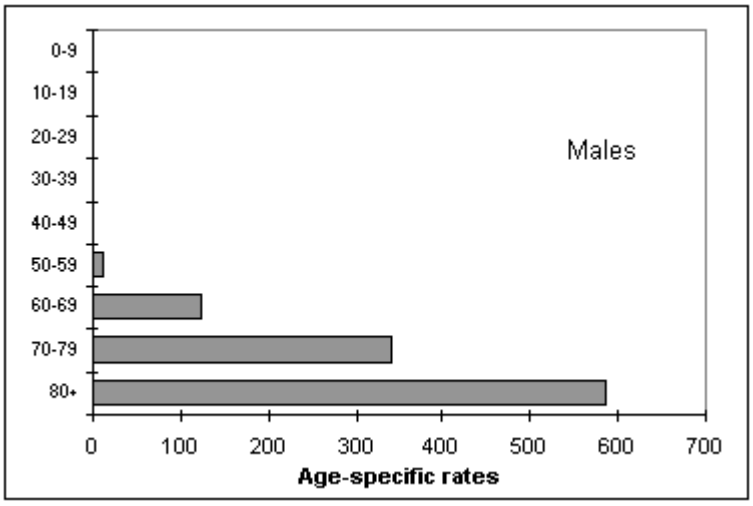


Figure 13.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Prostate



Morphology

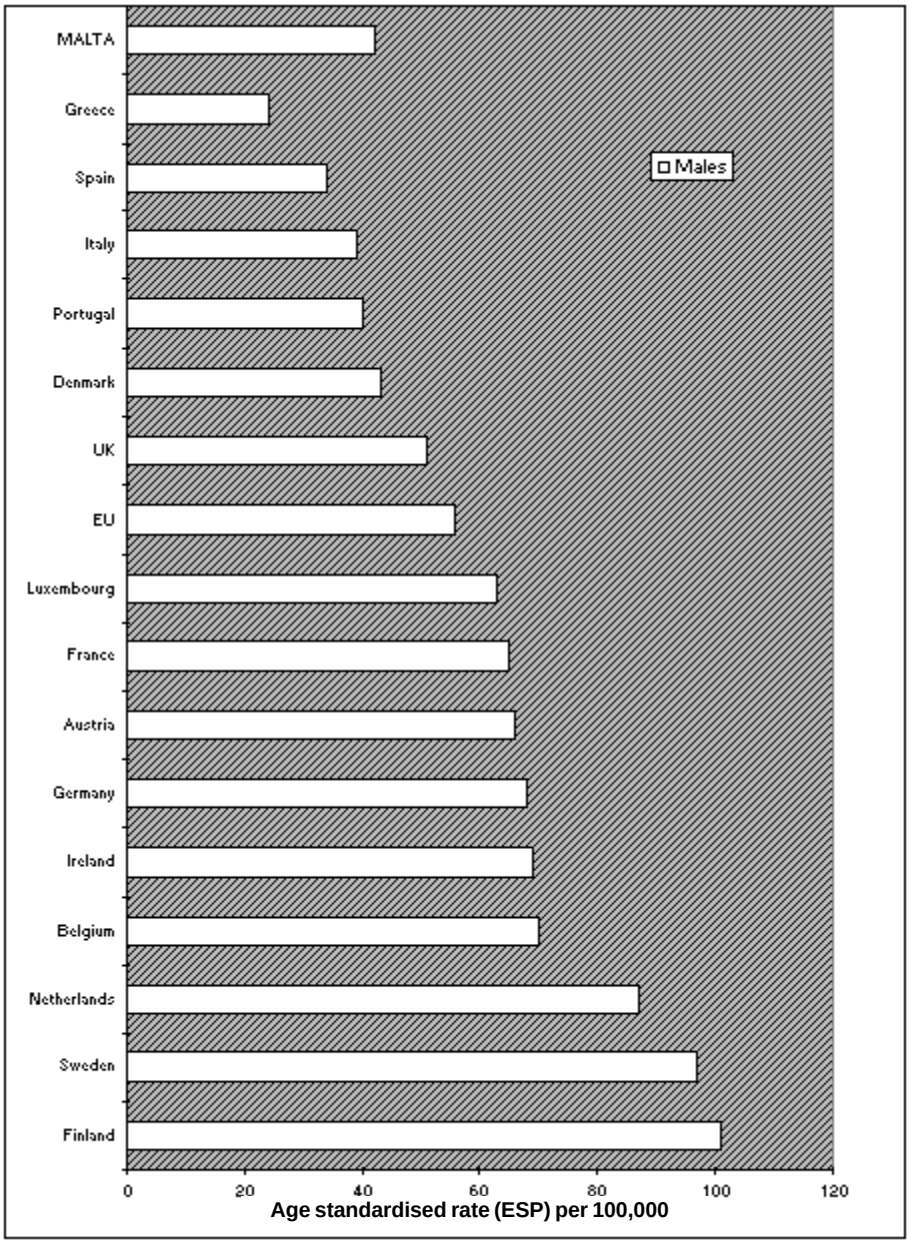
All cases that had their histological type specified in their pathology report were adenocarcinomas. The majority were classified as adenocarcinomas, not otherwise specified. Acinar cell adenocarcinomas accounted for 22 of these cases. The registry also had 23 cases of in-situ cancer of the prostate (PIN) registered between 1993 to 1997.

Data Quality

The MV% for cancer of the prostate was more than 84% for the cases registered between 1993-97. The proportion of cases that are microscopically verified is improving with time. Most centres in the north of Europe reported MV% approaching to 99% in the Volume VII of the Cancer Incidence in Five Continents. Two of the registrations for cancer of the prostate were performed on the basis of a death certificate only.

International comparisons

Figure 13.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Prostate

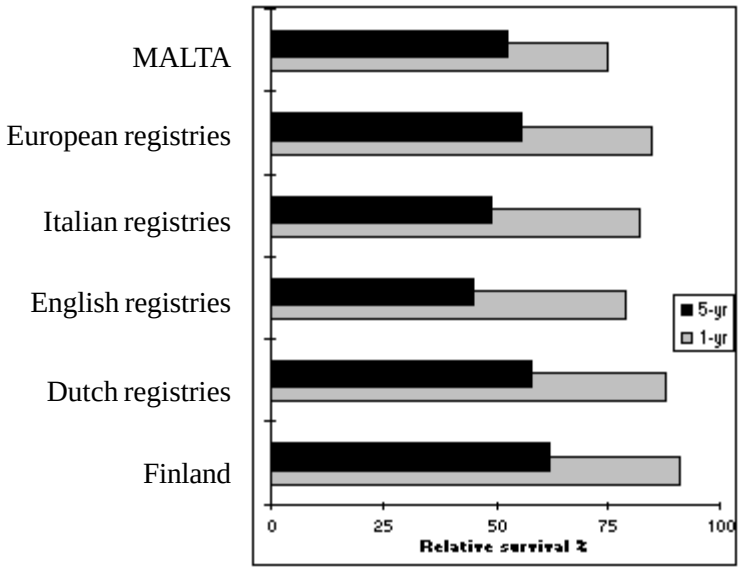


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Finland and Sweden have the highest rates of prostate cancers in the EU. There were big geographical differences in the incidence of this cancer all over Europe. The lowest incidence reported (Greece) was one fourth the incidence reported for Finland. The southern European countries all have relatively low incidence rates and the rates for Malta is similar to these. Active search for asymptomatic prostate cancer either by cancer screening for prostate cancer or more rigorous examination of prostate tissue material removed for benign conditions are more available and practised in the northern than the southern European countries. These might play a significant role in the big differences in incidence shown in Figure 13.3.

Survival

Figure 13.4: Relative 1- and 5-year survival of Cancer of the Prostate in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

Cancer of the prostate has a moderate prognosis with about half the patients surviving at least five years from diagnosis. The countries with the highest incidence also have the best survival and this confirms the probability that these countries are registering earlier and smaller tumours than the countries that report lower incidence. The five year survival rate for the Maltese patients in this series was similar to the average quoted for all European registries in the EUROCARE-2 study.

CANCER OF THE TESTIS

ICD-O-2 C62

On average 6 cases were diagnosed every year between 1993 to 1997. During the same period there were 10 times as many new cases to deaths registered, reflecting the very good survival which is usually experienced with this tumour site. The major reasons for this good survival are the major advances in the treatment of this cancer. It was the sixteenth most commonly diagnosed cancer in males, accounting for less than 1% of all cancers in men.

Table 14.1: Summary Statistics: Testis

	Males		
	1996	**1997**	**1993-97**
INCIDENCE			
Number of new cases	4	6	31
Crude rate (per 100,000)	2.16	3.22	3.38
Cumulative risk (0-74) (%)	0.15	0.28	0.26
Lifetime risk (0-74) (1 in :)	672	358	390
WASR (per 100,000)	2.09	2.95	3.04
EASR (per 100,000)	2.08	3.17	3.27
% of all registered cancers	0.55	0.79	0.88
Median age	27.5	36	34
MORTALITY			
Number of deaths	1	0	3
Crude rate (per 100,000)	-	-	0.33
Cumulative risk (0-74) (%)	-	-	0.03
Lifetime risk (0-74) (1 in :)	-	-	3807
WASR (per 100,000)	-	-	0.22
EASR (per 100,000)	-	-	0.32
% of all cancer deaths	0.25	0	0.16
Median age	-	-	74
DATA QUALITY			
Mortality: Incidence ratio	0.3	0	0.1
% Death Certificate Only	0	0	0
% Microscopically Verified	100	100	100

The risk of testicular cancer in males with undescended testis is thought to be ten times higher than in the general population. Next to cryptorchidism the causes of cancer are sought in hormonal influences, infertility, viral infections and more recently, exercise.

Age distribution

Cancer of the testis primarily affects young adult males - half of the cases registered were under 34 years at the time of diagnosis. Almost two thirds of the cases (23 cases, 74%) were below the age of 40 at diagnosis. In males with age 20-39 years it was the most commonly diagnosed cancer after excluding non-melanoma skin cancer. This predominance for young males was also shown with the age-specific rates where the highest rates were found for the 30-39 year age group - see Fig. 14.1 and 14.2.

Figure 14.1: Age distribution of new cases registered in 1993-97, Cancer of the Testis

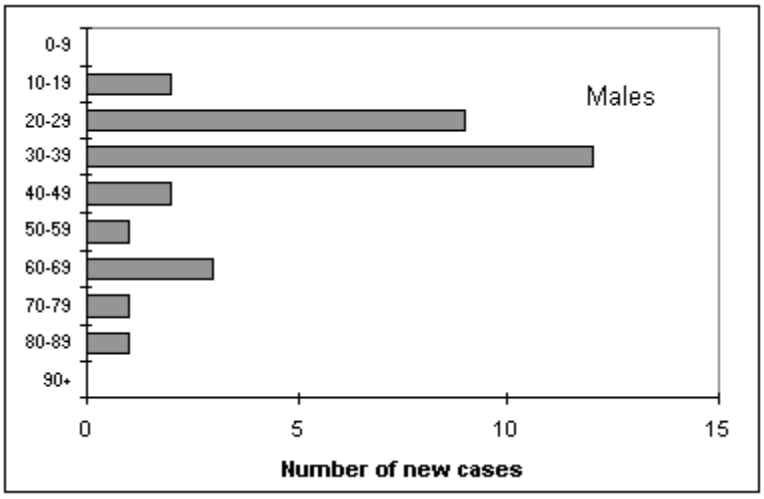
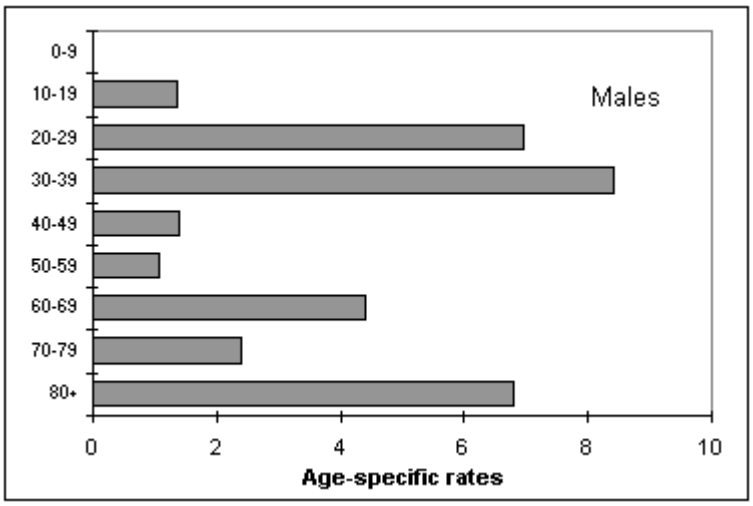


Figure 14.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Testis



Morphology

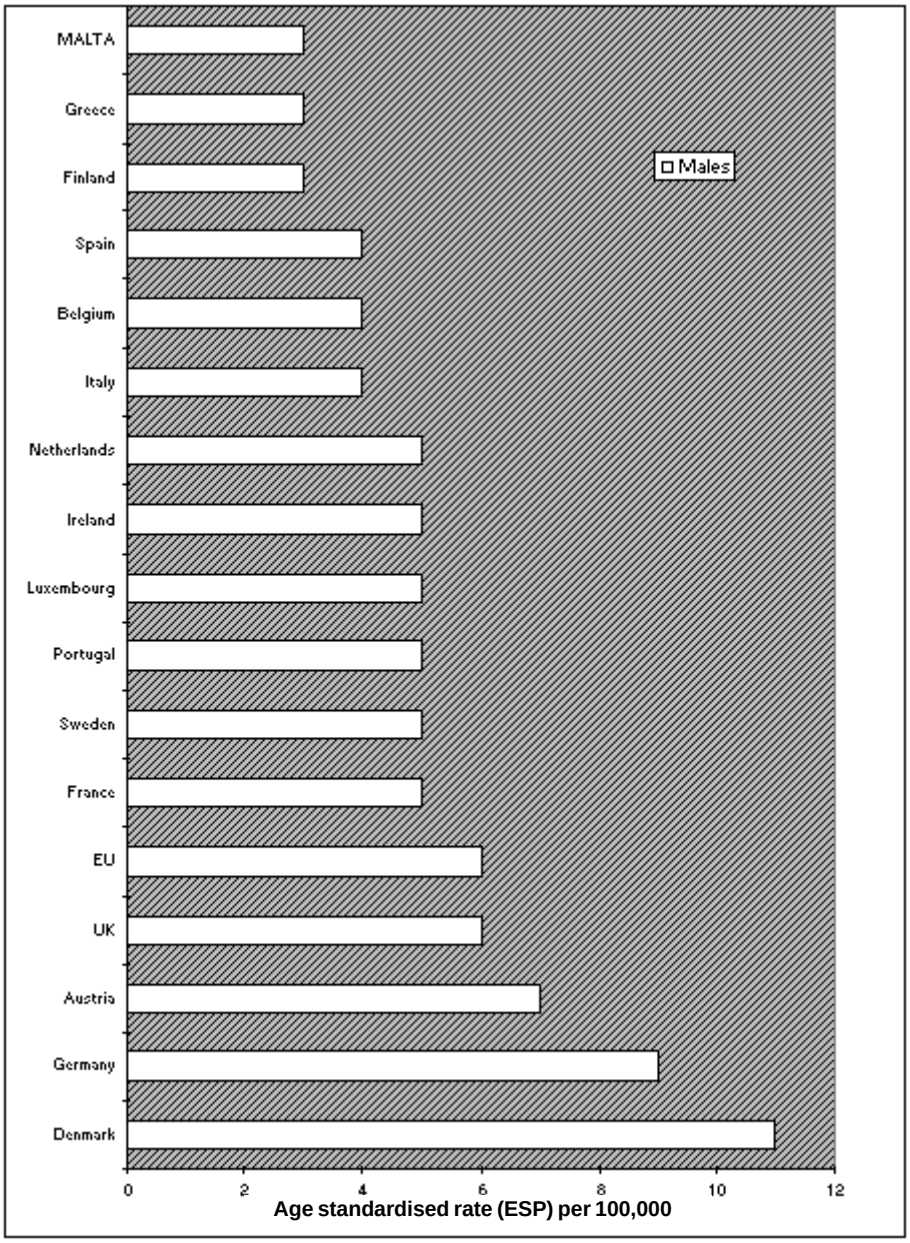
Seminomas accounted to 55% of the testicular cancers registered between 1993 and 1997. The second largest group were the malignant teratomas (16%) followed by the lymphomas (10%). There were also 2 cases each of embryonal carcinoma and choriocarcinoma. The cases of seminoma were mainly concentrated in the patients below 39 years at diagnosis (14 out of 17 seminomas).

Data Quality

The MV% for cancer of the testis was 100% for the cases registered between 1993-97. There were no cases registered on the basis of a death certificate only. This is well comparable with most centres in Europe where the MV% reported in the Volume VII of the Cancer Incidence in Five Continents approached to 99% and the DCO% was 0%.

International comparisons

Figure 14.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Testis

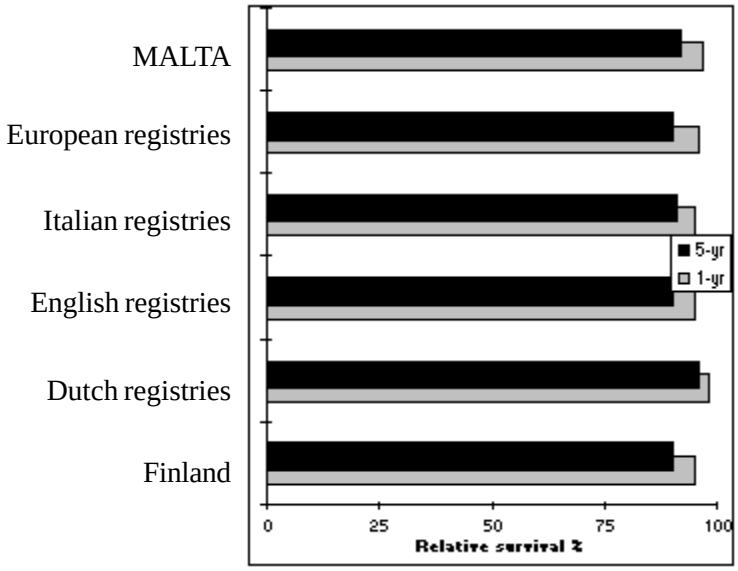


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

The European Union average incidence for testicular cancer was about 6 cases per 100,000 population. Denmark and Germany have a relatively high rate compared to the rest of the EU countries. The incidence rate for the Maltese Islands compares to the lowest rates reported for Europe in the EUCAN database.

Survival

Figure 14.4: Relative 1- and 5-year survival of Cancer of the Testis in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The majority of centres that participated in the EUROCARE-2 study reported a 5 year survival for testicular cancer near or above 90%. The survival experience of the males diagnosed with cancer of the testis between 1993 and 1997 in Malta compares well with the rates published in the above-mentioned study.

CANCER OF THE KIDNEY

ICD-O-2 C64

In the 1993-97 period an average of 24 new cases of cancer of the kidney were registered each year. Incidence of cancer of the kidney ranked as the tenth most commonly diagnosed cancer in males and thirteenth in females. It accounted for a little more than 2% of all cancers in males and almost 1.5% in females with a sex ratio of 1.6:1 The sex ratio for deaths is higher at 2.7 males to 1 female.

Detection of renal cancer has improved in the last decades , largely due to new and improved diagnostic technology such as ultrasonography and CT-scanning. The median age at diagnosis in females diagnosed between 1993-97 was 5.5. years younger than for the men.

Table 15.1: Summary Statistics: Kidney

	Males			Females		
	1996	1997	1993-97	1996	1997	1993-97
INCIDENCE						
Number of new cases	12	15	75	17	10	46
Crude rate (per 100,000)	6.49	8.06	8.18	9.03	5.28	4.92
Cumulative risk (0-74) (%)	0.62	0.55	0.82	0.42	0.46	0.42
Lifetime risk (0-74) (1 in :)	162	183	121	129	216	237
WASR (per 100,000)	5.55	6.03	6.79	6.72	4.82	3.92
EASR (per 100,000)	7.27	8.91	9.48	8.87	5.29	4.86
% of all registered cancers	1.66	1.97	2.14	2.89	1.36	1.46
Median age	66.5	58	65	61	50.5	59.5
MORTALITY						
Number of deaths	8	12	49	2	6	18
Crude rate (per 100,000)	6.49	4.3	5.34	1.06	3.17	1.92
Cumulative risk (0-74) (%)	0.71	0.41	0.58	0.13	0.28	0.13
Lifetime risk (0-74) (1 in :)	140	246	171	793	350	755
WASR (per 100,000)	5.76	3.41	4.29	0.72	2.75	1.26
EASR (per 100,000)	7.63	4.91	6.06	1.08	3.22	1.81
% of all cancer deaths	2.95	2.06	2.55	0.65	2.03	1.25
Median age	64.5	73	67	64	62.5	70
DATA QUALITY						
Mortality: Incidence ratio	0.7	0.8	0.6	0.1	0.6	0.4
% Death Certificate Only	0	0	1.3	0	0	0
% Microscopically Verified	58.3	73.3	81.3	88.2	80	89.1

A major risk factor associated with cancer of the kidney is tobacco use. High protein intake has also been associated with an increased risk of renal cancer. Incidence and mortality of cancer of the kidney have been generally increasing in developed nations. Survival has also been improving. However this is probably more due to the detection of a bigger proportion of tumours in the earlier stages of the disease rather than to better therapeutic techniques, since survival according to stage at diagnosis was not shown to have also improved.

Age distribution

Renal cancer occurred mainly after mid-adulthood, more than half of all cases were found in patients aged more than 60 years. Peak age-specific rates were found in the 60-69 years followed by 70-79 years age groups in males and in the over 80 years group in females - see Figures 15.1 and 15.2.

Figure 15.1: Age distribution of new cases registered in 1993-97, Cancer of the Kidney

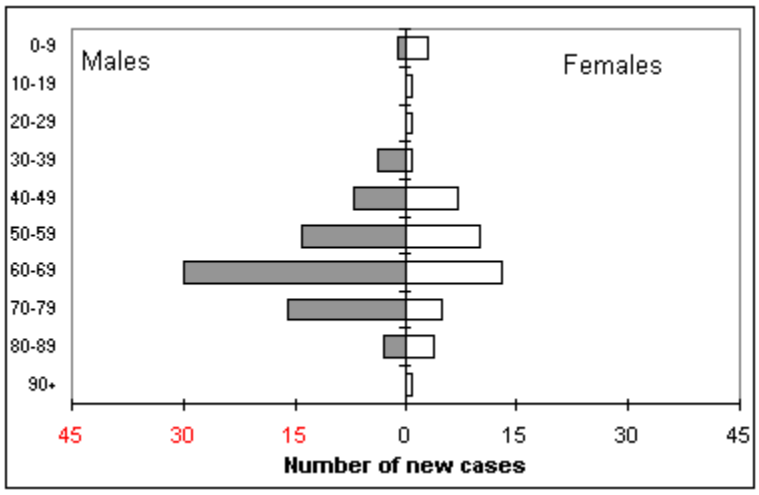
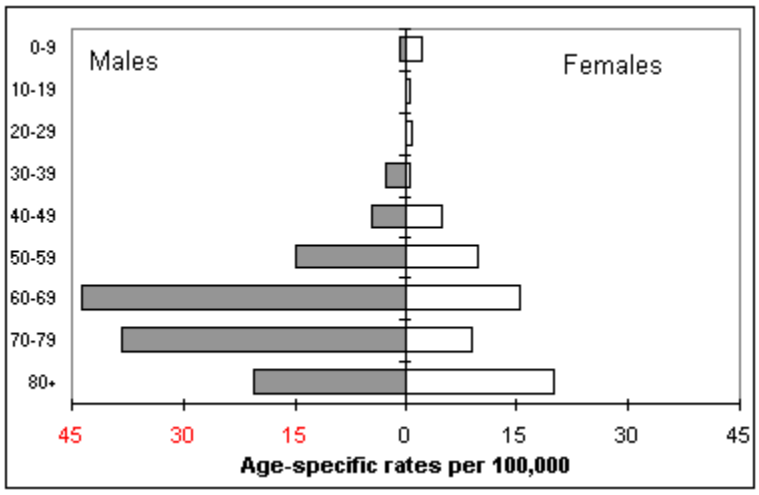


Figure 15.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Kidney



Morphology

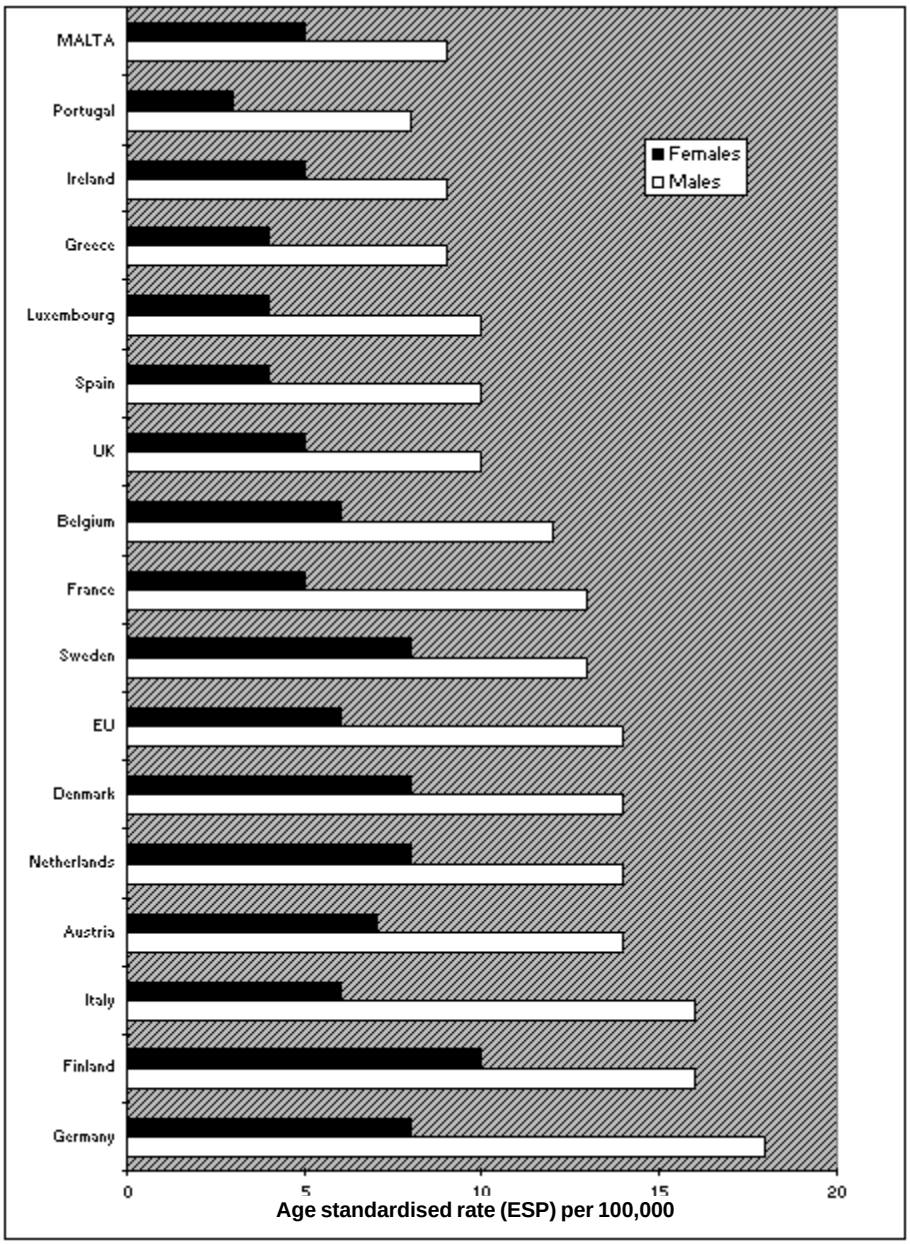
The most commonly recorded morphology was renal cell carcinoma (31%) followed by clear cell carcinoma (29%). There were 5 cases of Nephroblastoma (Wilm's tumour), 1 male and 4 females. Three of these cases occurred in the 0-4 years age group.

Data Quality

The percentage of cases that were microscopically verified was above 80% for both genders. This compared well with the figures quoted in Vol. VII of the Cancer Incidence in Five Continents for southern European countries like Italy and Spain. Out of the 121 cases of renal cancer registered between 1993-97, only one case was registered on the basis of a death certificate only (DCO).

International comparisons

Figure 15.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Kidney

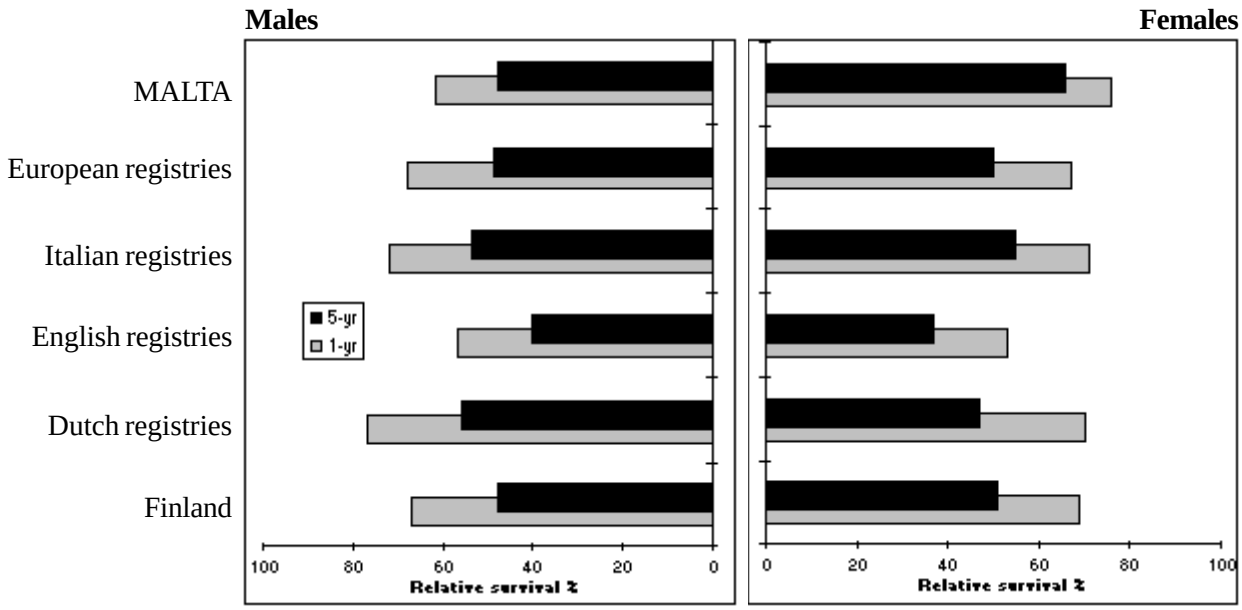


Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Figure 15.3 shows that incidence is highest in Germany for males and in Finland for females. The incidence for Malta is lower than the European average. The incidence of cancer of the kidneys is relatively homogeneous in all the countries of the EU.

Survival

Figure 15.4: Relative 1- and 5-year survival of Cancer of the Kidney in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival of patients diagnosed with cancer of the kidney is modestly good. In developed countries a steady increase in the relative survival rates are being observed. This is most probably due an increased detection of patients at the earliest stages of the disease, since an improvement in survival according to stage has not been so apparent. Maltese males diagnosed between 1993-97 showed a poorer survival than the average for European registries published in the EUROCARE-2 study. The survival for females on the other hand was exceptionally good (76% at 1 year and 66% at 5 years). These rates were close to the best rates published in the above-mentioned study. These rates were for Austria at 76% survival at 1 year and 71% survival at 5 years from diagnosis.

CANCER OF THE URINARY BLADDER

ICD-O-2 C67

About 62 male cases and 14 female cases of invasive bladder cancer were registered per annum between 1993 and 1997. There were 4 male cases diagnosed for every female case of bladder cancer (gender ratio was 4.3:1). It accounted to almost 9% of all cancers in males and just over 2% in females. Excluding non-melanoma skin cancer bladder cancer was the third most commonly diagnosed cancer in men and twelfth in women. The number of cases diagnosed was 2.5 times the number of deaths attributed to bladder cancer.

Table 16.1: Summary Statistics: Bladder

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	57	59	309	12	16	72
Crude rate (per 100,000)	30.84	31.7	33.71	6.38	8.45	7.7
Cumulative risk (0-74) (%)	3.26	2.4	3.11	0.47	0.36	0.58
Lifetime risk (0-74) (1 in :)	31	42	32	212	279	172
WASR (per 100,000)	23.51	21.96	25.87	3.37	4.27	4.56
EASR (per 100,000)	34.92	35.39	39.52	5.33	7.04	6.92
% of all registered cancers	7.91	7.75	8.82	2.04	2.18	2.29
Median age	70	74	70	74	77.5	72
MORTALITY						
Number of deaths	13	28	112	4	8	41
Crude rate (per 100,000)	7.03	15.05	12.22	2.12	4.23	4.39
Cumulative risk (0-74) (%)	0.59	0.51	0.74	0.07	0.26	0.24
Lifetime risk (0-74) (1 in :)	170	195	135	1377	386	415
WASR (per 100,000)	5.06	9.01	8.51	0.86	2.18	2.27
EASR (per 100,000)	8.2	16.58	14.5	1.57	3.5	3.78
% of all cancer deaths	3.2	7.22	5.82	1.3	2.71	2.85
Median age	74	79	76.5	79.5	73	76
DATA QUALITY						
Mortality: Incidence ratio	0.2	0.5	0.4	0.3	0.5	0.6
% Death Certificate Only	0	0	0.6	8.3	6.3	2.8
% Microscopically Verified	96.5	94.9	95.5	83.3	93.8	90.3

Aetiological evidence based on several epidemiological studies show that smoking is a risk factor for cancer of the bladder. Occupational exposure to aromatic amines as in the manufacture of dyes, pigments and rubber and infection with Schistosomiasis in tropical countries also increase the risk for bladder cancer.

Age distribution

The median age at diagnosis of cancer of the bladder was relatively high at 70 years for males and 72 years for females. The biggest number of cases was in the 60-79 years age group for both genders, but the number of male cases overshadow the females. Age-specific rates for both genders show a consistent rise with age, peaking in the oldest age groups - see Figures 16.1 and 16.2.

Figure 16.1: Age distribution of new cases registered in 1993-97, Cancer of the Bladder

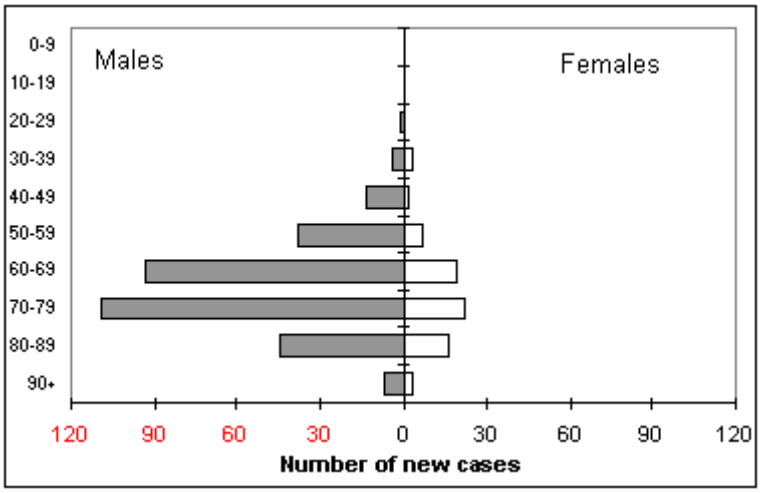
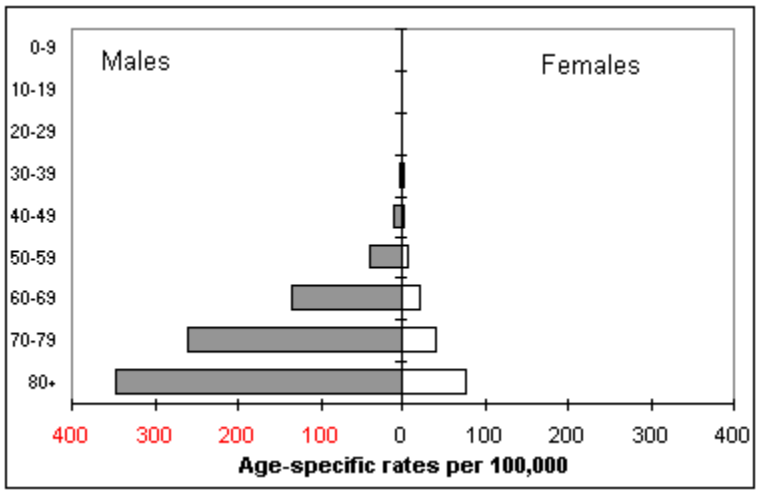


Figure 16.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Bladder



Morphology

According to the recommendations issued in 1995 by the Working group on Bladder tumours of the European Network of Cancer Registries (ENCR), all bladder tumours should be registered, whatever the histological type and level of invasion. The MNCR follows these recommendations. Invasive tumours from pT1 (invasion of the lamina propria) to pT4 are given a behaviour code /3, i.e. malignant. The above summary figures include only the tumours that are classified under this category. Tumours classified as pTis are given behaviour code /2 (in-situ). Those classified as pTa or when the histological examination indicates the existence of a tumour, but it is not possible to determine the degree of malignancy on the specimen examined are coded as /1 (tumour benign or of uncertain malignancy).

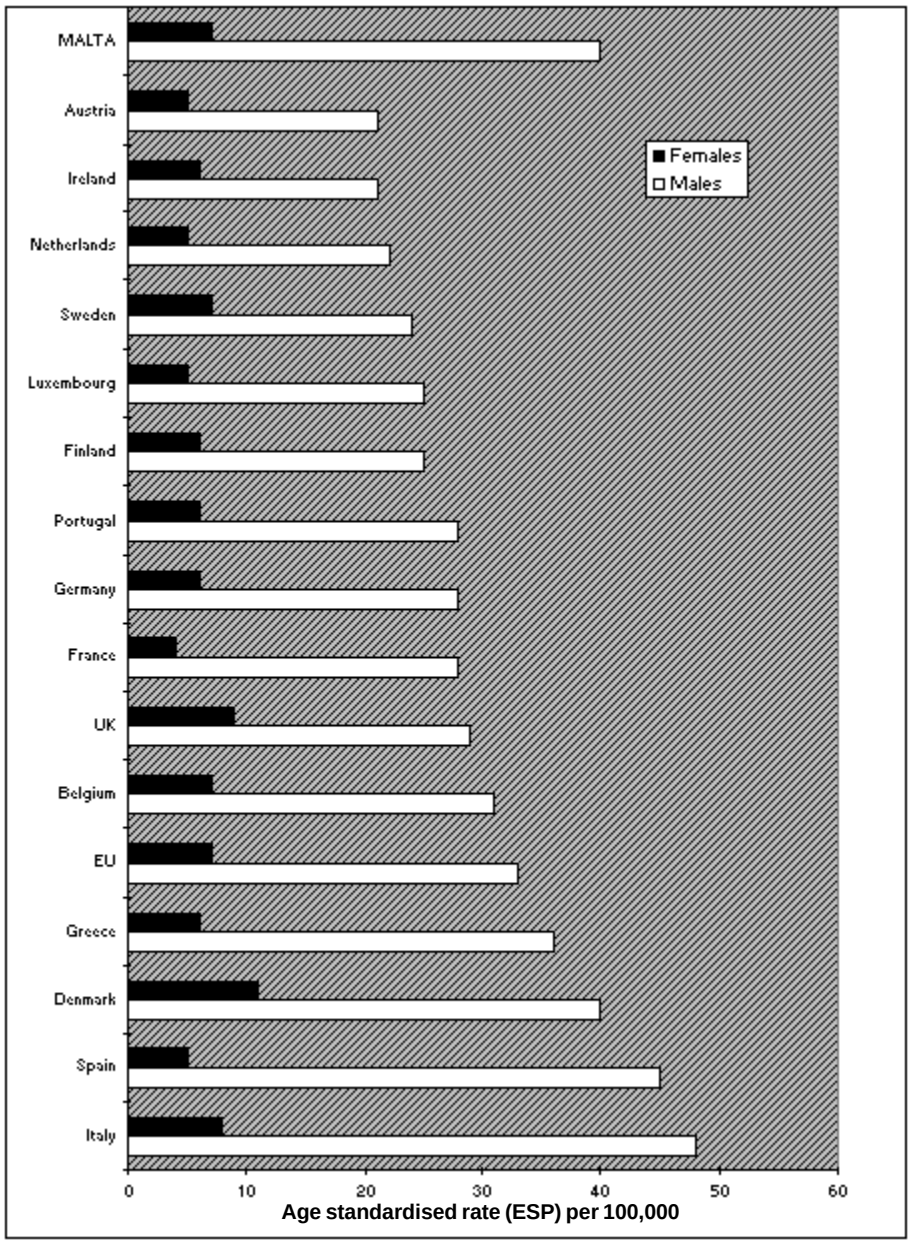
Data Quality

The MV% for cancer of the bladder is well comparable to the MV% quoted for most countries of Europe in the Volume VII of the Cancer Incidence in Five Continents. Two cases for each gender were registered on the basis of a death certificate only.

International comparisons

Apart from Denmark the 3 southern European countries Italy, Spain and Greece have the highest age standardised rates. The incidence for Malta is also high especially for males and compares to those of its geographical neighbours. The comparison of the incidence and survival of bladder cancers is complicated because of the different and often difficult classification criteria used by different registries. It was excluded from analysis in the EUROCARE-1 study (1995) for this reason. Comparison of information after 1995 should be more feasible after the issue of the recommendations issued by the ENCR mentioned above.

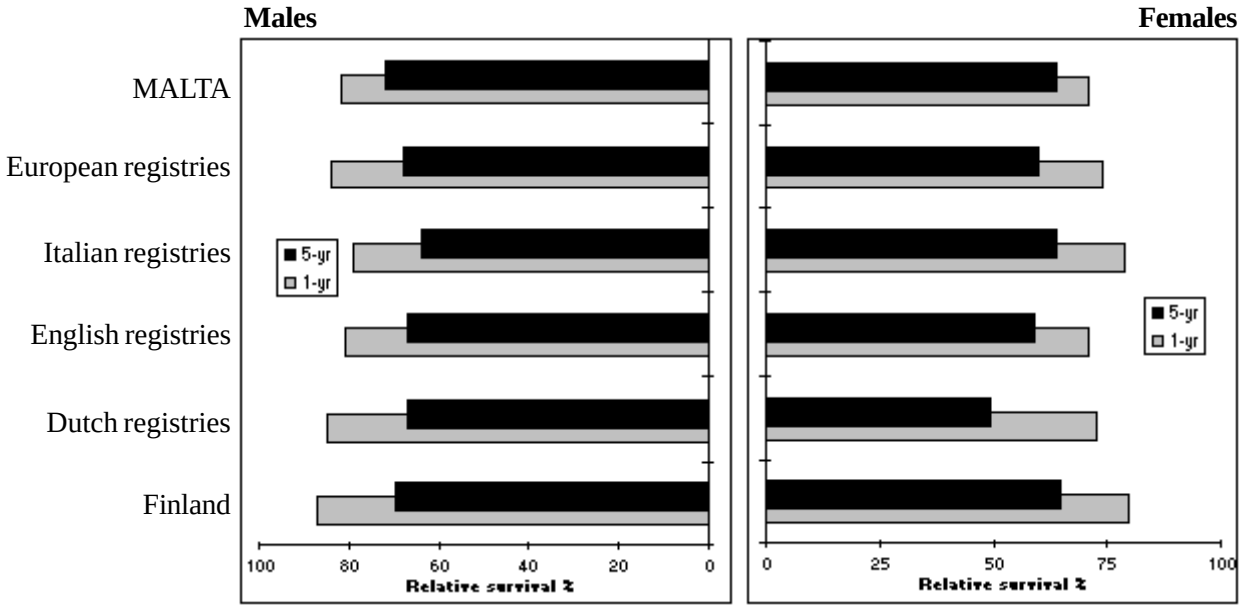
Figure 16.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Bladder.



Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Survival

Figure 16.4: Relative 1- and 5-year survival of Cancer of the Bladder in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

The survival from bladder cancer is favourable, with most countries registering a 5 year survival between 60-70%. In the EUROCARE-2 study survival was reported to be generally worse for females than males. The survival of Maltese patients compared well with those of the other countries in the EU. The highest 5-year survival was reported in Germany followed by Finland for males at 76% and 75% respectively.

CANCER OF THE THYROID GLAND

ICD-O-2 C73

On average 14 females and 4 males are diagnosed with cancer of the thyroid per annum. During 1993 to 1997 it was the twelfth most commonly diagnosed cancer in females and accounted for just over 2% of all cancers in women. . The Male:Female ratio was 0.3 or about 4 females were diagnosed to one male. This tumour has an excellent survival as reflected by the Mortality: Incidence ratio which is near to zero in both genders.

Table 17.1: Summary Statistics: Thyroid

	Males			Females		
	1996	**1997**	**1993-97**	**1996**	**1997**	**1993-97**
INCIDENCE						
Number of new cases	7	5	19	17	21	72
Crude rate (per 100,000)	3.79	2.69	2.07	9.03	11.1	7.7
Cumulative risk (0-74) (%)	0.26	0.25	0.15	0.7	0.76	0.57
Lifetime risk (0-74) (1 in :)	379	402	658	143	131	175
WASR (per 100,000)	2.94	2.39	1.7	8.47	8.71	6.59
EASR (per 100,000)	3.86	2.88	2.14	9.31	10.69	7.64
% of all registered cancers	0.97	0.66	0.54	2.89	2.86	2.29
Median age	38	54	49	36	45	43.5
MORTALITY						
Number of deaths	0	0	2	0	0	1
Crude rate (per 100,000)	-	-	-	-	-	-
Cumulative risk (0-74) (%)	-	-	-	-	-	-
Lifetime risk (0-74) (1 in :)	-	-	-	-	-	-
WASR (per 100,000)	-	-	-	-	-	-
EASR (per 100,000)	-	-	-	-	-	-
% of all cancer deaths	0	0	0.06	0	0	0.03
Median age	-	-	-	-	-	-
DATA QUALITY						
Mortality: Incidence ratio	0	0	0.1	0	0	0
% Death Certificate Only	14.3	0	5.3	0	0	0
% Microscopically Verified	71.4	100	81.3	100	95.2	98.6

Risk factors associated with cancer of the thyroid include radiation in infancy and childhood, various associations with hormonal factors and shortage of iodine intake. About one fourth of patients with medullary carcinoma have a genetic risk related to familial MEN-2 syndrome.

Age distribution

The median age at diagnosis of cancer of the thyroid was relatively low when compared with other cancers. In this group it was 49 years in males and 43.5 years in females. In fact more than 69% of female and about 58% of male thyroid cancer cases were below 50 years of age at diagnosis. Both Figures 17.1 and 17.2 show the preponderance of female over male cases for this cancer.

Figure 17.1: Age distribution of new cases registered in 1993-97, Cancer of the Thyroid

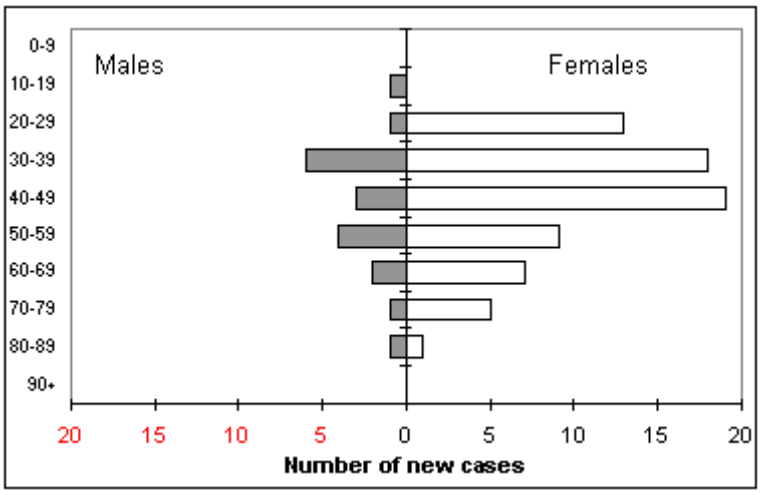
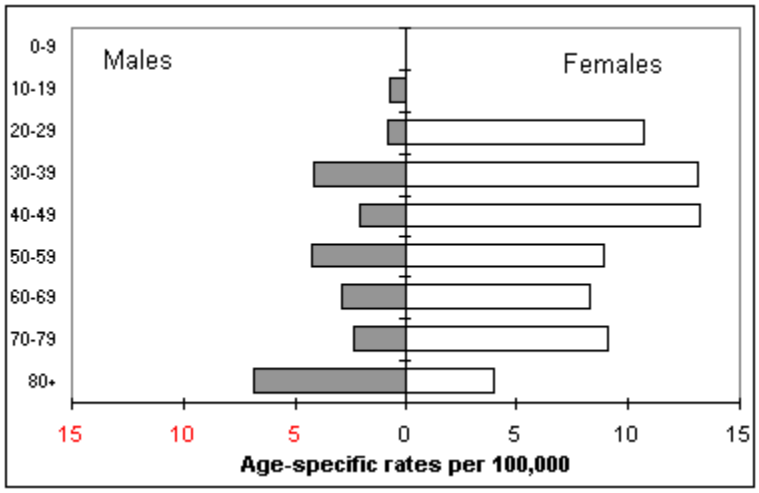


Figure 17.2: Age specific rates (per 100,000 population) of new cases in 1993-97, Cancer of the Thyroid



Morphology

Sixty percent of the thyroid cancers registered between 1993 to 1997 were papillary adenocarcinomas. These were followed by 15 cases (16%) of the follicular variant of papillary carcinoma and 5 cases of follicular adenocarcinoma. All the follicular adenocarcinomas were in female cases and 87% of the cases of the follicular variant of papillary carcinoma were females. There were 5 cases of medullary carcinoma accounting for just above 5% of all thyroid cancers. There were also 2 cases of the anaplastic carcinoma type which are known to have a poor prognosis. These cases were older than the median age at diagnosis (see above) and they both survived less than one year after diagnosis.

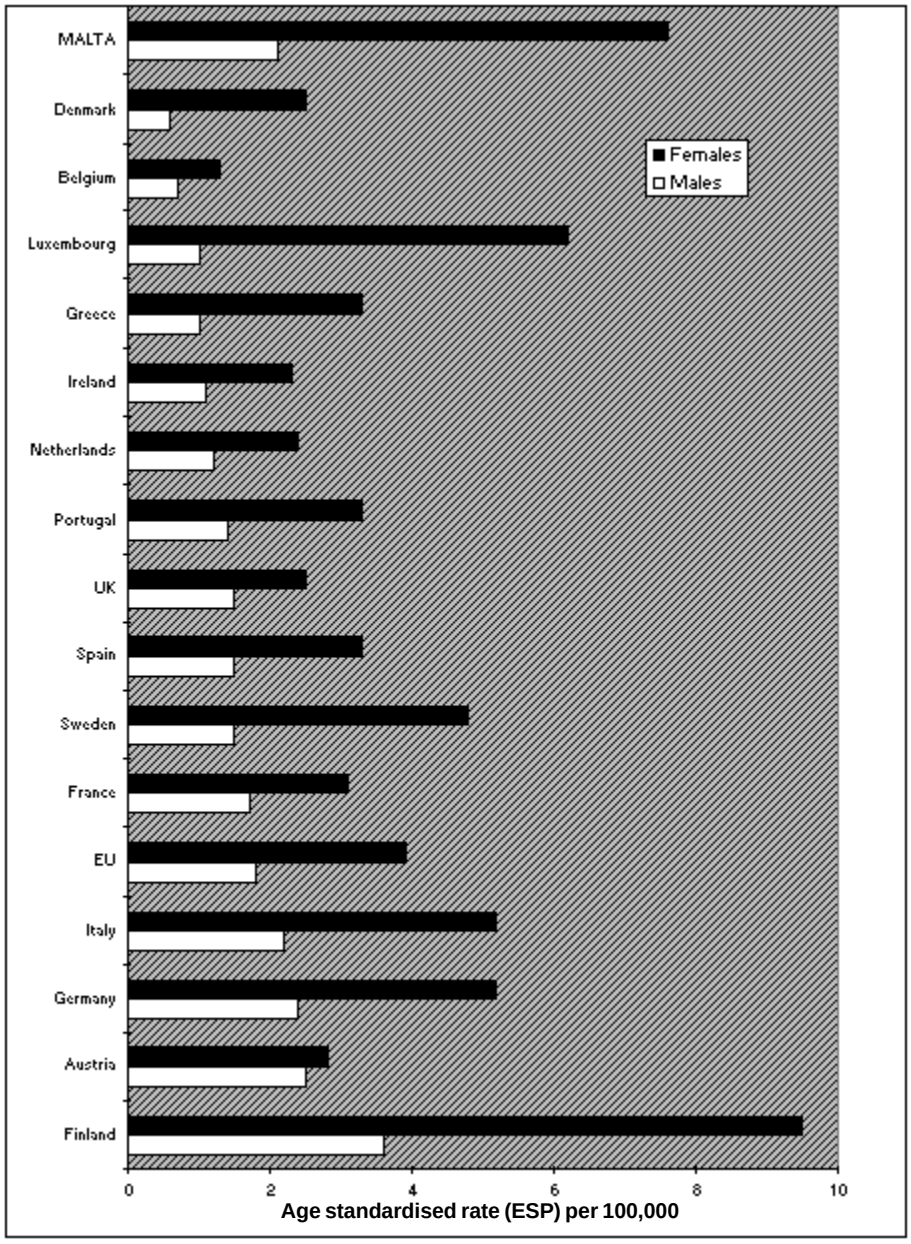
Data Quality

The MV% for cancer of the thyroid is near to 100% in most countries of Europe as reported in the Volume VII of the Cancer Incidence in Five Continents. The proportion of cases microscopically verified in Malta is also at or near to 100% for both genders. In this group of cases only one case was registered on the basis of a death certificate only.

International comparisons

The incidence of thyroid cancer in Malta is high compared to the countries of the European Union (see Figure 17.3), especially in females. Thyroid cancer is highest in the Scandinavian region and all countries show that the incidence rates are higher in women than in men.

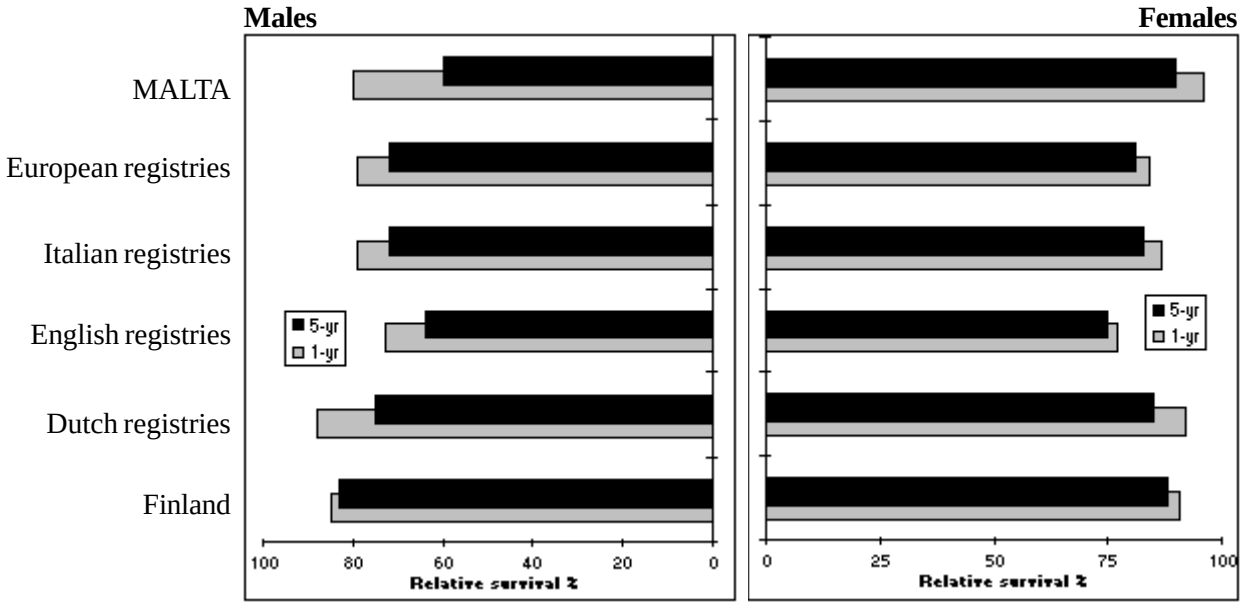
Figure 17.3: International age-standardised (European Standard Population) incidence rates of Cancer of the Thyroid.



Source: EUCAN - Cancer Incidence, Mortality and Prevalence in the EU, ENCR, Lyon, 1999

Survival

Figure 17.4: Relative 1- and 5-year survival of Cancer of the Thyroid in Malta and in Europe



Source: EUROCARE-2 study: Survival of Cancer Patients in Europe, IARC, Lyon, 1999

Thyroid cancer has a very high survival. Both one year and five year survival are generally better in females than in males. Maltese female patients enjoy good survival rates compared to the European countries included in the EUROCARE-2 study. Male patients however have a five year survival which is less than the average published for all European registries.

CHILDHOOD CANCERS

A total of 64 new cases of cancer in cases aged 0-14 years of age at diagnosis were registered between 1993 and 1997. On average, 8 males and 5 females (Male/ Female ratio: 1.6) were diagnosed with cancer in childhood during this time period. This accounted to about 1% of all cancers registered. During 1995, there was an exceptionally high incidence (20 new cases of childhood cancers; 31% of total diagnosed between 1993-97). This is reflected in rather high age-standardised rates for the time period 1993 to 1997.

During the same period 19 deaths in children below or at 14 years of age were attributed to cancer. These consisted to 13 males and 6 females. Mortality, more so than incidence, was very variable from year to year reflecting changes in the small numbers concerned.

Table 18.1: Summary Statistics: Childhood cancers

	Males	Females
	1993-97	1993-97
INCIDENCE		
Total Number of new cases	39	25
Crude rate (per 1,000,000)	187.19	126.51
No. of cases less than 1 year	5	2
1-4 years	13	11
5-9 years	11	7
10-14 years	10	5
WASR (per 1,000,000)	196.38	135.78
Male: Female ratio	1.6:1	-
% of all registered cancers	1.11	0.8
MORTALITY		
Number of deaths	13	6
Crude rate (per 1,000,000)	62.4	30.36
Cumulative risk (0-74) (%)	0.06	0.09
% of all cancer deaths	0.68	0.42
DATA QUALITY		
Mortality: Incidence ratio	0.3	0.2
% Death Certificate Only	0	0
% Microscopically Verified	87.2	96

Childhood cancers are usually associated with a high profile coverage due to the related great emotional and psychological consequences on the patients and their families. However their occurrence in reality is extremely rare. In most cases there are no known causes although around 5% may have a genetic component linked to the family history. The influence of exogenous factors may be rather small or remain restricted to genetically susceptible children. Random mutations in fast growing tissues in various organs appear to be more important for the development of childhood cancer. Modern treatment regimes which are usually multi-modal and very aggressive have resulted in a high survival rate and the prognosis for childhood cancers is generally very good.

Almost 45% of all children with cancer diagnosed during 1993-97 had leukaemias (mostly acute) and lymphomas; while the remaining 55% were solid tumours, i.e. sarcomas, blastomas, and carcinomas of many organ sites and sympathetic and central nervous systems. Table 18.2 shows the details on the sites and types of cancers diagnosed according to the International Classification of Childhood Cancer (ICCC) published by the IARC in 1996.

Table 18.2

International Classification of Childhood Cancer (ICCC)		
Diagnostic group	**Number of cases (1993-1997)**	
	Males	**Females**
I Leukaemia	**13**	**6**
(a) Lymphoid leukaemia	10	6
(b) Acute non-lymphocytic leukaemia	1	-
(c) Chronic myeloid leukaemia	2	-
(d) Other specified leukaemias	-	-
(e) Unspecified leukaemias	-	-
II Lymphomas and reticuloendothelial neoplasms	**8**	**2**
(a) Hodgkin's disease	4	-
(b) Non-Hodgkin's lymphoma	-	1
(c) Burkitts's lymphoma	1	-
(d) Miscellaneous lymphoreticular neoplasms	3	1
(e) Unspecified lymphomas	-	-
III CNS and miscellaneous intracranial and intraspinal neoplasms	**4**	**7**
(a) Ependymoma	1	1
(b) Astrocytoma	1	2
(c) Primitive neuroectodermal tumours	1	1
(d) Other gliomas	1	3
(e) Other specified intracranial and intraspinal neoplasms	-	-
(f) Unspecifeied intracranial and intraspinal neoplasms	-	-
IV Sympathetic nervous system tumours	**6**	**2**
(a) Neuroblastoma and ganglioneuroblastoma	6	2
(b) Other sympathetic nervous system tumours	-	-
V Retinoblastoma	**2**	**0**
VI Renal tumours	**1**	**4**
(a) Wilm's tumour, rhabdoid and clear cell sarcomas	1	4
(b) Renal carcinoma	-	-
(c) Unspecified malignant renal tumours	-	-
VII Hepatic tumours	**0**	**0**
(a) Hepatoblastoma	-	-
(b) Hepatic carcinoma	-	-
(c) Unspecified malignant hepatic tumours	-	-
VIII Malignant bone tumours	**0**	**1**
(a) Osteosarcoma	-	1
(b) Chondrosarcoma	-	-
(c) Ewing's sarcoma	-	-
(d) Other specified malignant bone tumours	-	-
(e) Unspecified malignant bone tumours	-	-
IX Soft tissue sarcomas	**4**	**1**
(a) Rhabdomyosarcoma and embryonal sarcoma	1	1
(b) Fibrosarcoma, neurofibrosarcoma and other fibromatous neoplasms	1	-
(c) Kaposis's sarcoma	-	-
(d) Other specified soft tissue sarcomas	2	-
(e) Unspecified soft tissue sarcomas	-	-
X Germ cell, trophoblastic and other gonadal neoplasms	**0**	**1**
(a) Intracranial and intraspinal germ cell tumours	-	-
(b) Other and unspecified non-gonadal germ cell tumours	-	-
(c) Gonadal germ cell tumours	-	1
(d) Gonadal carcinomas	-	-
(e) Other and unspecified gonadal tumours	-	-

International Classification of Childhood Cancer (ICCC) - continued		
Diagnostic group	**Number of cases**	
	Males	**Females**
XI Carcinomas and other malignant epithelial neoplasms	**1**	**1**
(a) Adrenocortical carcinoma	-	-
(b) Thyroid carcinoma	-	-
(c) Nasopharyngeal carcinoma	-	-
(d) Malignant melanoma	-	-
(e) Skin carcinoma	1	-
(f) Other and unspecified carcinomas	-	1
XII Other and unspecified malignant neoplasms	**0**	**0**
(a) Other specified malignant tumours	-	-
(b) Other unspecified malignant tumours	-	-
Total	**39**	**25**

APPENDIX A

Explanation of Statistics used in this report

Terms that appear in bold italics are standard terms used in epidemiology. Full explanations and derivations of these terms may be found in epidemiological and cancer statistics textbooks. Some of the books used for this report are listed in the references below.

Incident cases: newly diagnosed cases of cancer

Crude rates: the number of persons per 100,000 population per year who have been newly registered with the cancer of interest. The crude rate is a simple, easily calculated rate which gives a broad picture of the extent of a disease in a particular time period, however it does not reflect the variation in the risk of disease due to factors, such as age, which have an important effect on risk. The onset of cancer in particular is known to be highly related to age: the older you get, the higher the chance of developing cancer. This means that a population with a higher proportion of older people will have a higher crude rate even if the risk of disease in the population is the same as another population with a lower proportion of older people.

Age specific rates: one way to allow for the variation in the incidence of cancer due to age is to work out the crude rate for each particular age group. In morbidity statistics age is usually split into 5 year age groups. The age-specific rates give a better comparison between populations and within a population as one can see how the rates increase with age. However, it is rather cumbersome to try and compare a whole set of age-specific rates, hence in addition to these it is convenient to also use summary statistics which take age into consideration. Two examples of these overall summary statistics used in this report are the direct age-standardised rate and the cumulative rate.

Direct age-standardised rates: This rate is computed by taking the age-specific rates of the study population and applying them to the age distribution of a pre-agreed 'standard population'. Two commonly used standard population are the World and the European Standard Populations (see Figure 2.2). These rates permit international comparisons by adjusting for differences in national population age structures.

Cumulative risk: this is another way of standardising for age and is usually expressed as a percentage. It is calculated by summing the age-specific rates over a range of age groups. It produces an approximation to the cumulative (lifetime) risk of developing the cancer during the age span used, ignoring the risk of mortality from all other causes. Traditionally, the rates over a 'lifetime' of ages 0-74 years are summed up, giving an approximation to the underlying lifetime risk of developing the disease. For childhood cancers the age span 0-14 years is used, while because of the improved longevity in most developed countries, rates calculated for the 0-84 age span are also being presented.

Mortality: Incidence ratio: the ratio of the number of deaths to the number of new cases in a given time period. Ratios of near to 1(or 100%) or greater may be interpreted as cancers with a poor survival, while the lower the value, the better the survival.

Male: Female ratio: the ratio of the number of male to female cases. This ratio is expressed in terms of its masculinity, e.g.: a ratio of 1.2:1 means that the cancer is 20% more commoner in men than in women.

Median: this is the age at which half the cases are younger and the other half are older.

Death Certificate Only percent (DCO%): the percentage of new cases that are only registered on the basis of a death certificate. Usually the diagnostic information on death certificates is considered inferior to other sources, hence the lower the DCO% the greater the confidence in the diagnoses registered.

Microscopically Verified percent (MV%): Ideally all cancers are confirmed by histological or cytological examination of tumour tissues. In most cases the greater the proportion of microscopically verified registrations to all cancers, the better is the diagnostic confidence.

Survival Statistics

The measure for survival from cancer used in this report was the ***relative survival***. This calculation expressed as a percentage, compares the observed survival of cancer patients with the survival expected under normal mortality rates (due to deaths from all causes) in the general population. The expected survival is obtained from a life table that reflects the general mortality of the area and time period from which the cancer patients are drawn. The estimate of survival dispenses with the need to verify the causes of death of the cancer patients and to assess whether the death was attributed or related to the cancer or not.

REFERENCES

Esteve J., Benhamou E., Raymond L. (1994) *Statistical Methods in Cancer Research, Volume IV: Descriptive Epidemiology* International Agency for Research on Cancer, Lyon

Jensen OM., Parkin DM., Maclennan R., Muir CS., Skeet RG. (1991) *Cancer Registration: Principles and Methods* International Agency for Research on Cancer, Lyon

Kirkwood B. (1988) *Essentials of Medical Statistics* Blackwell Science, Oxford

Parkin DM., Whelan SL., Ferlay J., Raymond L., Young J. (1997) *Cancer Incidence in Five Continents, Volume VII* International Agency for Research on Cancer, Scientific Publications No. 143, Lyon

TABLES

N.B. The figures and the totals for each column in the Tables A - D may not agree, because a registration may have needed to be entered more than once. For example, a case of malignant melanoma of skin will be found with All Skin (C44) and again with Melanoma (M872-879).

In Tables A - D, NMS stands for non-melanoma skin cancers.