Cancer Incidence in Peninsular Malaysia 2003-2005

Edited by:

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National Cancer Registry

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Cancer Incidence in Peninsular Malaysia, 2003-2005

The Third Report of the National Cancer Registry, Malaysia

Edited by

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Ministry of Health Malaysia

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Abbreviations

ASR	Age-standardized Incidence Rate
CR	Crude Incidence Rate
CRC	Clinical Research Centre
CRU	Cancer Registry Unit
CumR	Cumulative Risk
HMIS	Hospital Management Information System
IACR	International Association of Cancer Registry
IARC	International Agency for Cancer Research
IC	Identification Card
ICD	International Classification of Disease, WHO
ICD -10	International Classification of Diseases 10th Edition
ICD-O	International Classification of Disease for Oncology, WHO
MOH	Ministry of Health, Malaysia
NCR	National Cancer Registry
QC	Quality Control
SDP	Source Data Provider or Producer
SOP	Standard Operating Procedure
USA	United States of America
WHO	World Health Organization
NSCLC	Non Small Cell Lung Carcinoma

FOREWORD BY THE MINISTER OF HEALTH, MALAYSIA

I am happy to give this forward for the third report of the NCR, which has galvanized the support of all sectors and disciplines involved with cancer patients. My highest commendations to the members of the Advisory Committee and Expert Panel who have ensured participation and ownership of the processing of data of the NCR. I understand the close rapport between the Source Data Providers, experts and staff of the NCR was instrumental in the success of the NCR which is already being continued by the new management of the NCR.

It is noteworthy that NCR started under the Clinical Research Centre and then moved on to be under the Department of Radiotherapy and Oncology of Hospital Kuala Lumpur. The resilience of the staff who have been steadfastly committed to delivering to the nation the much needed data on Cancer Incidence over the years is remarkable. This data has been useful in many situations such as in planning cancer programmes and in drafting the National Cancer Blueprint.

Many organizations will find the data from this third report useful, e.g. the high incidence of large bowel cancer which had already been alluded to in national conferences, has certainly provided impetus for the programmes for screening and early detection.

Data for year 2006 onwards will be handled and managed by the Public Health Division of the Ministry of Health in response to efforts by Ministry of Health to have a single cancer registry for Malaysia. I hope that this single registry will herald progress in cooperation in other areas as well, similar to that of Maternal and Child Health. I hope the Public Health Division will continue to receive the cooperation and support from all sectors including the universities and private sector.

Now that the population-based registry will be under the Division of Public Health, we can look towards the development of outcome databases by the clinicians which will provide the much needed data on outcomes of treatment.

DATUK SERI DR. CHUA SOI LEK
Minister of Health, Malaysia

FOREWORD BY THE DIRECTOR GENERAL OF HEALTH, MALAYSIA

I welcome the publication of this three-year report by the NCR encompassing years 2003 to 2005. With this publication, the NCR has again upheld their promise of providing reports to the stakeholders.

Over the years, NCR has managed to achieve a majority of their objectives, which includes the determination of cancer burden, identification of subgroups in the population at risk of cancers and to stimulate and facilitate epidemiological cancer research.

The information from this publication together with the publication by the existing regional registries will provide more comprehensive data on cancer burden. This will allow modification, enhancement and better implementation of prevention and management strategies for cancers in Malaysia.

I wish to congratulate all source data producers (SDPs) from the public, private, universities as well as non-Governmental organizations for their regular notification over the years to NCR. Special thanks to the expert panel members who have contributed their time and energy to help in the quality control of data received and members of the Advisory Committee who have provided direction and governance to the running of the NCR.

Last but not least, I wish to congratulate all the authors and all those who have contributed to the registry.

I hope the Public Health Division of the Ministry of Health will continue the good work started by the NCR and to coordinate with the existing regional registries to provide one national cancer registry for Malaysia.

TAN SRI DATUK DR HAJI ISMAIL MERICAN
Director General of Health, Malaysia

ACKNOWLEDGEMENTS

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- The Honourable Minister of Health Y.B. Dr. Dato' Chua Soi Lek for his generous support.
- Director General of Health Malaysia, Tan Sri Datuk Dr. Haji Mohd Ismail Merican, for the mandate given to National Cancer Registry to function, and in providing support in the form of a research grant (Grant number: MRG2003-13) to fund the registry.
- Deputy Director General of Health Malaysia (Medical) Datuk Dr. Noorimi bte Morad for her continuous support.
- Deputy Director General of Health (Public Health) Dato' Dr Haji Ramlee bin Haji Rahmat for his support to carry on the National Cancer Registry under the Department of Public Health, Ministry of Health Malaysia.
- Deputy Director of the Information Documentation Systems (IDS) Unit of the MOH and the medical record departments of all participating hospitals for their continuing support.
- Finance Division of Ministry of Health for their expeditious disbursements of funds.
- Director Network of Clinical Research Centres (CRCs), Dr Lim Teck Onn for his technical support.
- Oncologists, pathologists, palliative care professionals, other members of the medical profession from the various government, university, non-government and private centres, upon whose commitment, hard work, and timely data submission, this report ultimately depended on.
- Director of the National Registration Department (Jabatan Pendaftaran Negara) for his assistance and support.
- And not forgetting our supporters from the industry and non-governmental organizations:
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    - Roche (Malaysia) Sdn Bhd
- And all other well-wishers

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88. Neurosurgery Department, Hospital Umum Sarawak
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107. Palliative Care Unit, Hospital Kota Belud
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109. Palliative Care Unit, Hospital Kudat
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126. Pathology Department, Hospital Batu Pahat
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133. Pathology Department, Hospital Sultanah Nur Zahirah, Kuala Terengganu
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ADVISORY COMMITTEE

Member	Designation and Institution
Dr. Gerard Lim Chin Chye (Chairperson)	Head, Department of Radiotherapy & Oncology, Hospital Kuala Lumpur
Dato' Dr. Halimah Yahaya (Co-Chairperson)	Consultant Pathologist, Department of Pathology, Hospital Serdang
Dr. Lau Shin Hin	Consultant Oral Pathology & Oral Medicine, Cancer Research Centre, Institute for Medical Research
Dr. Hisham Shah Mohd Ibrahim	Consultant Paediatric Oncologist, Department of Paediatric, Hospital Kuala Lumpur
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Mr Vincent Chang W.K	Malaysia Association of Private Laboratories
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Dr. Ong Chee Leng	Director, State Health Department, Pulau Pinang
Dr. Sanjay Rampal	Department of Social & Preventive Medicine, Faculty of Medicine, University of Malaya

EXPERT PANEL

For each major cancer site, the NCR had established an expert panel comprising members of the medical profession and allied health with expert knowledge in the area concerned.

This year the tasks of the Expert Panel were:

1. To undertake Quality Control of the reported data.
2. To classify the reported tumour according to its behaviour (benign, uncertain, precursor and malignant), site, histology and diagnostic basis (clinical, morphology, histology).
3. To undertake literature review in the area relevant to the panel.

List Of Expert Panel Groups:

Buccal Cavity	**Male Genital Organs**
Pharynx	**Female Genital Organs**
Digestive Organs	**Urinary Organs**
Nose, Sinuses and Larynx	**Eye**
Lower Respiratory	**Brain & Nervous system**
Bones etc	**Endocrine Organs**
Connective Tissue etc	**Lymph Nodes**
Skin	**Paediatric Tumours**
Breast	**Haematopoietic & Reticuloendothelial Systems**

List of Expert Panel Members:

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30.	I.Kuppusamy	Institute of Respiratory Medicine
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32.	Jameela Sather	Department of Haematology, Hospital Ampang
33.	Jayaram Menon	Department of Medicine, Hospital Queen Elizabeth
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42.	Lim Teck Chin	Department of Urology, Makhota Medical Centre
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85.	Yip Cheng Har	Department of Surgery, University Malaya Medical Centre
86.	Yang Jin Rong	Department of Urology, Mahkota Medical Centre
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NATIONAL CANCER REGISTRY UNIT

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EXECUTIVE SUMMARY

Background to the NCR

The Third Report of the NCR describes the morbidity burden of cancer from 1st January 2003 to 31st December 2005. This report is mainly a descriptive report of the data collected for the above period together with a detailed analysis of topography and morphology, interpretation and comparison of the said data.

In 2003, 2004 and 2005, NCR received 42,963, 48,549 and 46,048 notifications respectively from various hospitals, laboratories and clinics, both public and private, making a total of 137,560 notifications. This report includes 75,735 incident cases from the whole of Malaysia with 67,792 incident cases reported from Peninsular Malaysia.

This report has the advantage of a large source population that produces precise incidence estimates. A summary of the data for the whole country (Peninsular and East Malaysia) is presented in Table 4.1.1. However, the detailed analysis is presented for Peninsular Malaysia. We limited the presentation of the detailed analyses, as the ascertainment rate for Peninsular is more confidently determined. The information derived from this report is representative of the cancer burden to Malaysians living in Peninsular Malaysia.

In this report, comparisons between groups within and outside the country were based on Age Specific Rates in order to overcome the possible extraneous effect of differences in age composition of the various groups.

Female breast cancer is presented on its own as in previous reports while noting that male breast cancer contributed a further 257 cases. The figures for bone cancer, liver cancer and brain cancer were comparable to international figures, thus reflecting the quality of the expert input, as metastases to these sites were consciously excluded from being reported as primary tumours from these sites.

The main contributors of the data, the Source Data Providers (SDP) has increased over the years. The total number of active SDPs increased from 141 in 2002 to 193 in 2005. However, some cancers may still be underreported even though the numbers of SDPs had been increased to include radiologists, chest physicians, surgeons, gastroenterologists.

Cancer Burden

A total of 67,792 new cancers cases were diagnosed among Malaysians in Peninsular Malaysia in the years 2003 - 2005, comprising 29,596 males (43.7%) and 38,196 females (56.3%). The annual crude rate for males was 100.2 per 100,000 population and 132.1 per 100,000 for females; whereas the age standardized incidence rate for all cancers was 136.9 per 100,000 males, and 156.4 per 100,000 females.

In comparison with the second NCR report for 2003, the figures for this report were similar. For instance, ethnic variations were similar to the NCR Second Report 2003. Overall, this report showed that the Chinese population had the highest CR of 174.1 per 100,000 males and 218.1 per 100,000 females. This was followed by the Indians who had CR of 89.6 per 100,000 males and 150.7 per 100,000 females. The Malays had relatively lower CR of 60.2 per 100,000 males and 82.6 per 100,000 females.

A similar ethnic variation was seen in the Penang Cancer Registry Report 1999 - 2003. In the Penang Report, the Chinese had a CR of 169.2 per 100,000 males and 217.7 per 100,000 females; followed by the Indians with a CR of 85.7 per 100,000 males and 147.2 per 100,000 females; with the Malays having a CR of 60.6 per 100,000 males and 79.0 per 100,000 females.

In this report, the cumulative lifetime risk for Malaysians in Peninsular Malaysia developing cancer was 14.8% for males and 15.9% for females. This translates to an estimated risk of 1 in 7 males, and 1 in 6 females developing cancer in their lifetime.

Most frequent cancers in Malaysia

In this third report, cancers from the colon and rectum are grouped together as coming from one cancer site. This is to standardize the report for comparison to other national and international reports.

The most frequent cancer in Malaysians was breast cancer (18.0%) followed by large bowel cancer (11.9%) and lung cancer (7.4%). The ten most frequent cancers in males and females are presented in Figures 4.2.1(a) and 4.2.1(b) and the accompanying tables.

Amongst males, large bowel cancer (14.5%; ASR 20.9) was the most frequent cancer followed by cancers of the lung (12.2%; ASR 18.1), nasopharynx (7.8%; ASR 9.2), prostate (7.3%; ASR 12.0), leukaemia (6.5%; ASR 7.0) and lymphoma (6.2%; ASR 7.7). In females, the most frequent cancer was breast cancer (31.3%; ASR 47.4), followed by cancers of the cervix uteri (10.6%; ASR 16.1), large bowel (9.9%; ASR 16.8), ovary (4.3%; ASR 6.4), leukaemia (3.7%; ASR 5.2) and lung (3.6%; ASR 6.2).

Variation of cancer incidence by sex and ethnicity

Generally, the incidence of cancers was reported more in males than females in most countries. However the male to female (M:F) sex ratio in this report was 1: 1.3. A similar trend was noted in earlier NCR reports. Consistent with other regional registries, there was predominance of females to males in cancers of the thyroid as seen by a M:F ratio of 1:3.

The variation of the ten most frequent cancer incidence by sex and major ethnic groups is shown in Figure 4.3.1(a) and 4.3.1(b) and the accompanying tables. Overall, this report showed that the Chinese had significantly higher ASR per 100,000 population of 182.9 (males) and 201.5 (females), compared with the Indians (ASR of 134.4 in males and 186.3 in females) and the Malays (ASR of 89.6 in males and 106.4 in females). The following estimates of cancers are presented as a proportion to the total sub group and as an ASR per 100,000 population for comparison puposes.

Amongst Malay males, large bowel cancer (12.6%; ASR 12.3) was the most common cancer followed by leukaemia (11.2%; ASR 7.2), lung cancer (11.1%; ASR 11.2), lymphoma (9.0%; ASR 7.4) and prostate cancer (6.6%; ASR 7.7).

Large bowel cancer was also the leading cause of cancer in Chinese males (16.9%; ASR 31.5) followed by cancers of the lung (14.2%; ASR 26.8), nasopharynx (10.7%; ASR 17.0), prostate (7.8%; ASR 15.8) and stomach (5.9%; ASR 11.3).

In Indian males, the most frequent cancers were large bowel (11.5%; ASR 15.7), prostate (8.7%; ASR 14.8), stomach (8.0%; ASR 11.9), lung (7.0%; ASR 9.9) and lymphoma (6.4%; ASR 6.9)

The most frequent cancers for Malay females are cancers of the breast (33.6%; ASR 34.9), large bowel (8.2%; ASR 9.7), cervix uteri (8.1%; ASR 8.7), Leukaemia (6.0%; ASR 5.3) and ovary (5.0%; ASR 5.2).

In the Chinese females, the most frequent cancers were cancers of the breast (30.3%; ASR 59.9), large bowel (12.8%; ASR 26.2), cervix uteri (11.8%; ASR 23.2), lung (5.1%; ASR 10.6) and stomach (3.8%; ASR 7.7).

Amongst the Indian females breast cancer (31.2%; ASR 54.2) was followed by cancers of the cervix uteri (8.8%; ASR 16.4), mouth (6.5%; ASR 14.5), large bowel (6.3%; ASR 12.9) and corpus uteri (4.0%; ASR 8.0).

For most tumour sites, Chinese had the highest ASR except for the following cancers: lymphoma (ASR highest in Malay males and females); lymphatic leukemia (ASR highest in Malay and Indian males, and Malay females); myeloid leukemia (ASR highest in Malay males, Indian females); larynx (highest in Indian males and females); mouth (highest in Indian males and females); tongue (highest in Indian males and females); oesophagus (highest in Indian males and females); bone (highest in Indian females); corpus uteri (highest in Indian females); brain and nervous system (highest in Indian females), thyroid (highest in Malay males).

In tumour sites not mentioned in the previous paragraph, Malays had the lowest ASR among the major ethnic groups. For stomach cancer, Malay males and females had an incidence much lower than the other major ethnic groups. In the mouth, Chinese had the lowest among females, although among males the Malays had the lowest ASR. In Nasopharyngeal cancer, Indian males and females had the lowest ASR.

The other surprising finding in this report was the high ranking of leukemia amongst Malay Males. However, this was consistent with the Kelantan Cancer Registry Report 1999-2003 whereby leukemia was the third most frequent cancer among all Males, and second highest among Malay Males. By contrast, in the Penang Cancer Registry 1999-2003, leukemia featured eighth among males and eighth among females.

An unexpected finding is that prostate cancer was the second-most common cancer in Indian males. Prostate cancer ranked fourth among male cancers in Malaysia. Interestingly, the age specific incidence rate in Chinese (ASR 15.8) and Indians (ASR 14.8) in Malaysia were higher than those in Taiwan (ASR 11.9), Hong Kong (ASR 8.6) and Mumbai (ASR 7.4). This finding for Malaysian Indian males could be due to chance variation in a smaller sample compared to the other major ethnic groups. However, in Singapore Indians, the numbers of cases reported for lung and prostate were very close (68 and 65 respectively), with the ASR for these two organs being 10.0 and 9.9 in this population in Singapore. The ASR for prostate cancer in Malaysian Indians (14.8 per 100,000) was higher than that reported for Indians in the Singapore Cancer Registry and various other Indian Cancer Registries *(refer Chapter 5.22)*.

Variation in cancer incidence by sex and age

The variation in cancer incidence by age and sex is presented in Figures 4.4.1(a) and 4.4.1(b) and in detail in the accompanying table. The following estimates of cancers are presented as a proportion to the total sub group and as CR per 100,000 population for comparison.

The most frequent cancers in male children children (0-14 years) were leukaemias (47.6%, CR 7.7), brain cancers (11.2%, CR 1.8), lymphomas (9.5%, CR 1.5), cancer of kidneys (3.9%,; CR 0.6) and the bones (3.7%; CR 0.6).

Similarly, in female children aged 0-14 years, the most frequent cancers are leukemia(45.4%; CR 5.8), brain(13.3%; CR 1.7), lymphoma (6.2%, CR 0.8), bones (4.3%; CR 0.5) and kidneys (3.6%; CR 0.5).

In the age group of young male adults (15-49 years old), the common cancers were nasopharynx (15.9%; CR 7.7), large bowel (10.7%, CR 5.2), lymphomas (9.6%; CR 4.7), leukaemias (9.2%; CR 4.4) and lung (6.6%; CR 3.2).

In women aged 15-49 years, the common cancers were breast (39.1%; CR 37.8), cervix uteri (13.5%; CR 13.1), large bowel (5.4%; CR 5.3), ovary (5.2%; CR 5.1) and thyroid (4.9%; CR 4.7).

In older subjects (50 - 69 years), cancers of the large bowel (16.6%; CR 63.4), lung (15.4%; CR 58.7), prostate (7.2%; CR 27.3), nasopharynx (7.1%; CR 27.2) and lymphoma (5.3%; CR 20.0) predominated in men. Whereas the most frequent cancer in women aged 50-69 were breast (31.9%, CR 149.3), large bowel (11.1%; CR 52.0), cervix uteri (10.1%; CR 47.1), lung (4.5%; CR 20.9) and corpus uteri (4.5%; CR 20.9).

In the oldest group (aged ≥70 years), the most common cancers in men were large bowel (17.4%: CR 177.2), prostate (16.5%: CR 167.7), lung (14.6%: CR 147.6), stomach (7.3%: CR 74.4) and bladder (5.3%: CR 54.3). While in women aged ≥ 70 years, the most frequent cancers were large bowel (20.0%; CR 133.7), breast (15.7%; CR 105.1), cervix uteri (6.9%; CR 46.2), lung (6.6%; CR 44.2), stomach (6.3%; CR 42.5).

Gerard Lim Chin Chye
Sanjay Rampal
Halimah Yahaya

1.0 NATIONAL CANCER REGISTRY

1.1 Background

The Malaysian National Cancer Registry (NCR) is a service supported by Ministry of Health, Malaysia (MOH) to collect information about cancer incidence in Malaysia. This information is vital in planning and evaluation of cancer services by the governemental agencies, Non Governemental Organizations (NGO), private providers and the industry.

In November 2001, the Honorable Minister of Health Malaysia directed the Clinical Research Centre (CRC) to establish a National Cancer Registry (NCR). Following this directive, the NCR's Sponsor Group was formed. The membership comprised of Oncologist, Pathologist, Haematologist, Paediatric Oncologist, Head of the Cancer Research Centre in the Institute of Medical Research, Director of the Disease Control Division and the Director of the Medical Development Division. In April 2002, the NCR obtained approval from the Director General of Health to setup its operations and was subsequently awarded a Medical Research Grant grant in June 2002 by the Deputy Director General of Health (Research & Tech Support).

Administratively, the NCR began as one of the seven clinical registries under the umbrella of the Clinical Research Centre, Ministry of Health. In 2005, as the registry 'matured' the administration of the registry was handed over to the Department of Radiotherapy and Oncology, Hospital Kuala Lumpur. In response to the call by the Director General of Health for a single Cancer Registry in Malaysia, the Division of Public Health (DPH) has taken over the management of the NCR from 2007 onwards. This is timely as the DPH is in the midst of expanding its cancer registration system at a national level. It is hoped that with a single management system, the regional registries alongwith the national registry would be able to produce national data more effectively and efficiently. This will provide the much needed impetus for further development of cancer programmes and initiatives.

1.2 Objectives

The objectives of National Cancer Registry are to:

1. Determine the disease burden attributable to cancer by quantifying the magnitude of cancer morbidity and mortality, and its geographic and temporal trends in Malaysia.
2. Identify subgroups in the population at high risk of cancer to whom cancer prevention effort should be targeted.
3. Stimulate and facilitate epidemiological research on cancer with respect to cancer etiology, diagnosis and prognosis.
4. Evaluate cancer treatment, control and prevention programme.

1.3 Operations of the National Cancer Registry

The NCR received data voluntarily on cancer incidence mainly from individual doctors who provided cancer diagnostic services or who cared for cancer patients. Information on cancer incidence was also extracted using the the Ministry of Health's Hospital Information System.

The day to day operations of the NCR can be categorized as two essential components:

a. *Clinical operations:* These are the day-to-day administration, site and data management operations of a Registry. It entails general administration of the registry, initiating and maintaining site participation in the registry, data acquisition, data storage, data processing (data transmittal, review, coding, cleaning, query, reconciling, transferring and archiving), data quality assurance, and periodic site monitoring and retraining.

b. *Database management operations:* An electronic database server was used to store the data and a database application was used to automate most of the work processes involved in data management. The database management system required routine administration, maintenance and continuing development and enhancement to meet the dynamic needs of this registry.

1.4 Sponsors Of The NCR

Oncology, Haematology and Pathology services, MOH

Division of Disease Control, Public Health Department, MOH

Medical Development Division, MOH

Cancer Research Centre, Institute for Medical Research, MOH

Clinical Research Centre, Hospital Kuala Lumpur, MOH

2.0 MALAYSIA AND ITS POPULATION

2.1 Geography

Malaysia is located in the South East Asian region and covers an area of 329, 961 km^2. It shares its borders with Singapore, Thailand, Indonesia and Brunei. The South China Sea separates West and East Malaysia; West Malaysia being a peninsular region of the Asian Continent whereas East Malaysia is located on the Island of Borneo. There are a total of 13 states and three Federal Territories as follows:

- Peninsular Malaysia
    - Northern Region: Perlis, Kedah, Penang, Perak
    - East Coast Region: Kelantan, Terengganu, Pahang
    - Central Region: Selangor, Federal Territory of Kuala Lumpur and Federal Territory of Putrajaya
    - Southern Region: Negeri Sembilan, Malacca, Johor

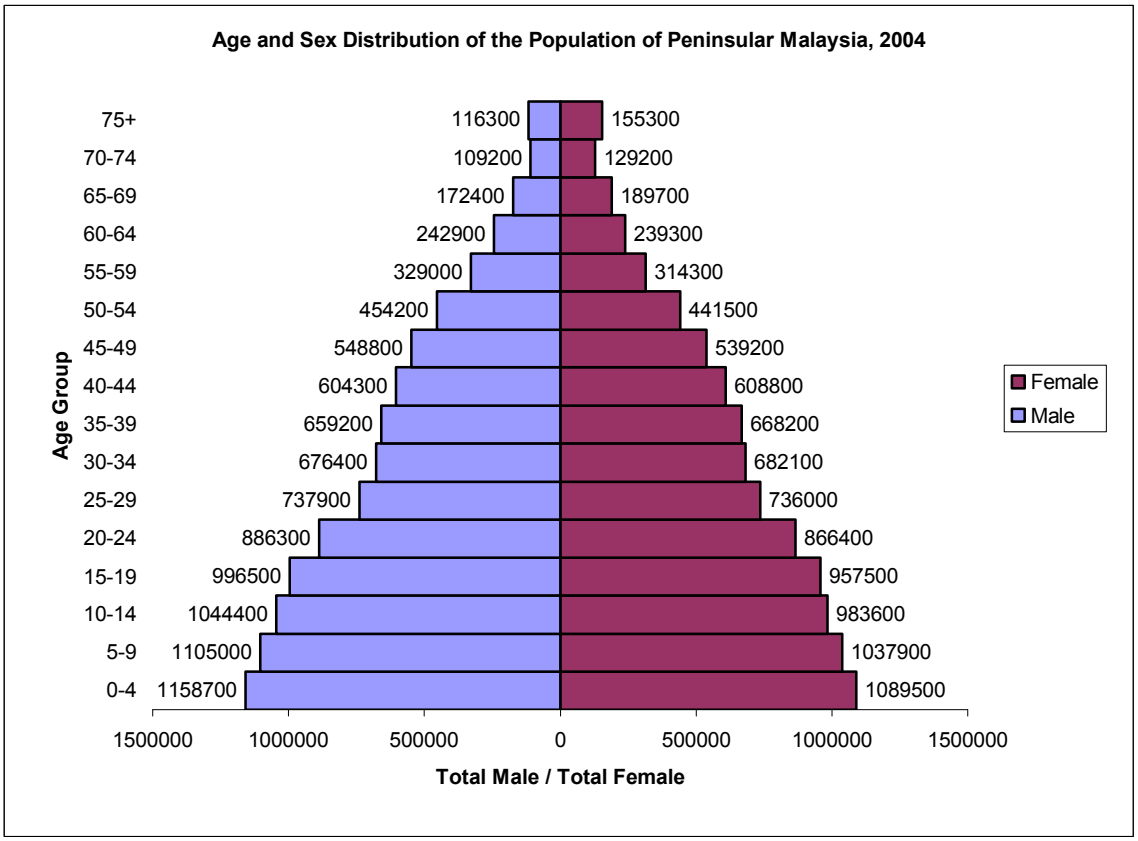
- East Malaysia
    - Sarawak
    - Sabah
    - Federal Territory of Labuan

Malaysia enjoys an equatorial climate. It is hot and humid throughout the year with an average temperature of 27^{o}C and an annual rainfall that exceeds 2000 mm. The rainy seasons are influenced by the monsoon trade winds.

2.2 Population Of Peninsular Malaysia

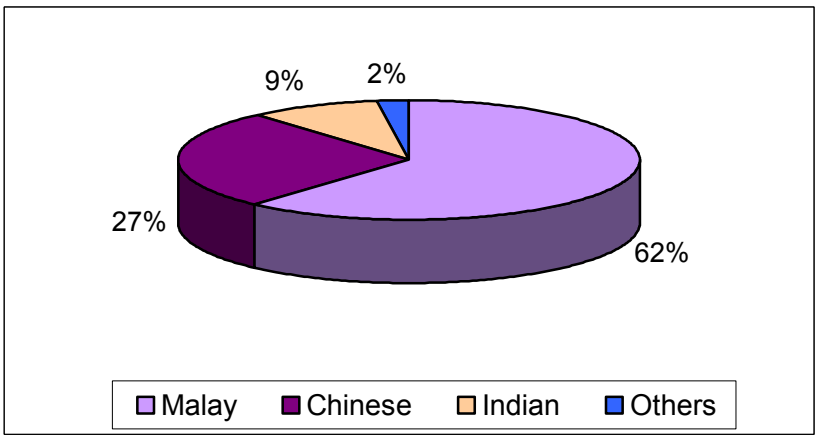
The age distribution of Malysia is dynamic over the years and the country currently experiences a high birth rate with a decline of the death rates. The age pyramid still has a large base but the elderly proportion is increasing. The age and sex distribution of the population of Peninsular Malaysia is shown in Figure 2.2.1.Malaysia is a multi-ethnic country, with the Malays being the majority followed by the Chinese, Indians, Indigenous groups and Orang Asli. A graphical representation of the ethnic distribution in Peninsular Malaysia is shown in Figure 2.2.2.

Figure 2.2.1: Age and sex distribution of the population of Peninsular Malaysia 2004



Source: Department of Statistics, Malaysia, 2006

Figure 2.2.2: Ethnicity in Peninsular Malaysia, 2004



Source: Department of Statistics, Malaysia, 2006

This report covers incident cancer cases from 2003 to 2005. Thus the age, sex and ethnic distribution in 2004 can be used to represent the average age, sex and ethnic distribution of the study base (average distribution of the denominator used for incident rate calculation).

The total population of Peninsular Malaysia in 2004 was 19.5 million which consisted of 9.84 million (50.5%) males and 9.64 million (49.5%) females. There were 12.0 million (61.5%) Malays, 5.2 million (26.7%) Chinese and 1.8 million (9.2%) Indians.

Table 2.2.1: Age, sex and ethnic distribution of the population of Peninsular Malaysia 2004

Age group, years	Malay		Chinese		Indian		All groups		World Standard Population
	Male	Female	Male	Female	Male	Female	Male	Female	
0-4	799,100	753,300	231,900	214,800	93, 000	89,600	1,158,700	1,089,500	12, 000
5-9	743,100	700,000	240,200	221,100	91, 800	88,500	1,105,000	1,037,900	10, 000
10-14	707,300	669,600	227,000	207,300	8,600	82,900	1,044,400	983,600	9, 000
15-19	658,600	637,600	228,900	213,700	87, 400	83,300	996,500	957,500	9, 000
20-24	566,500	559,000	216,700	206,300	81, 700	79,800	886,300	866,400	8, 000
25-29	433,800	442,000	205,400	197,100	73, 600	75,400	737,900	736,000	8, 000
30-34	384,100	396,200	200,600	194,600	69, 600	72,000	676,400	682,100	6, 000
35-39	376,900	387,400	200,400	196,700	67, 300	68,900	659,200	668,200	6, 000
40-44	339,400	346,100	192,500	187,500	62, 300	63,800	604,300	608,800	6, 000
45-49	300,600	299,700	182,100	173,400	56, 900	58,100	548,800	539,200	6, 000
50-54	243,700	240,800	158,700	148,600	45, 300	46,300	454,200	441,500	5, 000
55-59	171,400	167,600	124,500	113,300	28, 700	29,200	329,000	314,300	4, 000
60-64	124,000	125,500	96,400	89,900	19, 500	20,900	242,900	239,300	4, 000
65-69	88,000	99,800	68,800	70,800	13, 500	17,000	172,400	189,700	3, 000
70-74	55,500	67,100	44,200	49,800	8, 100	10,800	109,200	129,200	2, 000
75+	63,500	79,900	41,800	63,400	8, 900	10,200	116,300	155,300	2, 000
TOTAL	**6,055,600**	**5,971,500**	**2,660,100**	**2,548,300**	**894,300**	**896,700**	**9,841,500**	**9,638,500**	**100, 000**

2.3 Infrastructure

Infrastructure such as roads, public transportation and telecommunication in Malaysia are well developed. There is good coverage for electricity and water coverage.

2.4 Socioeconomic Status

The main occupations in Malaysia of 2004 are shown in **Table 2.4.1.**

Table 2.4.1: Malaysia: Percentage Distribution of Employed Persons by Occupation

Occupation	2004
Legislators, senior officials and managers	8.6%
Professionals	5.6%
Technicians and associate professionals	12.1%
Clerical workers	9.3%
Service workers and shop and market sales workers	14.8%
Skilled agricultural and fishery workers	13.2%
Craft and related trade workers	11.7%
Plant and machine operators and assemblers	14.1%
Elementary occupations	10.7%

Source: Department of Statistics, Malaysia, 2006

2.5 Health Status and Facilities

Since independence, the health status of Malaysia has been enhanced by improved socio economical status, health infrastructure and services. The following statistics are presented for 2004 unless stated otherwise as it represents an average of the 2003-2005 period.

Life expectancy at birth was 70.4 years and 76.2 years in Malaysian males and females respectively. Infant Mortality Rate was 5.9 per 1000 livebirths whereas Maternal Mortality Rate was 0.3 per 1000 livebirths (Table 2.5.1). The doctor to population ratio was 1:1402 and there were 119 government hospitals, 6 non-MOH government hospitals, 218 private hospitals, 859 MOH health clinics, 1924 MOH rural clinics, 93 MOH maternal and child health clinics, 165 mobile clinics and 1969 dental clinics. Government hospitals and private hospitals provided 28,966 and 10,542 beds respectively.

Table 2.5.1: Perinatal, neonatal, infant and maternal mortality rate for Malaysia, 2004

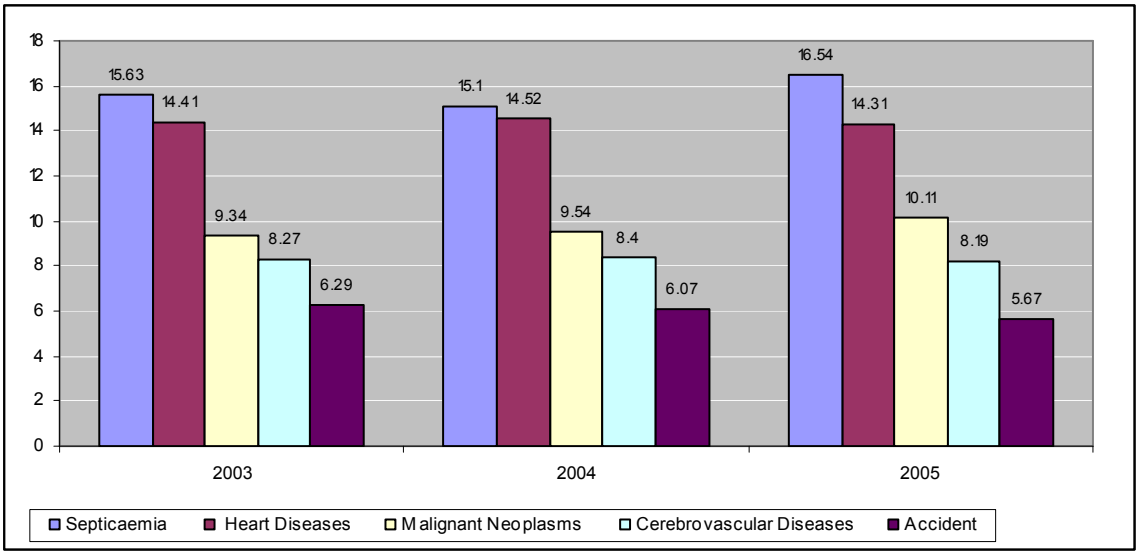
	2004
Perinatal mortality rate*	6.8
Maternal mortality rate*	0.3
Infant mortality rate*	5.9
Neonatal mortality rate*	3.8

* Per 1000 live births

(Source: Health Facts, Ministry of Health, 2004)

With Malaysians enjoying better health status currently compared with their predecessors, it was then no surprise that malignant neoplasm ranked among its top five causes of death in the years 2003-2005.

Figure 2.5.1: Most common causes of death in Malaysia government hospitals, 2003-2005



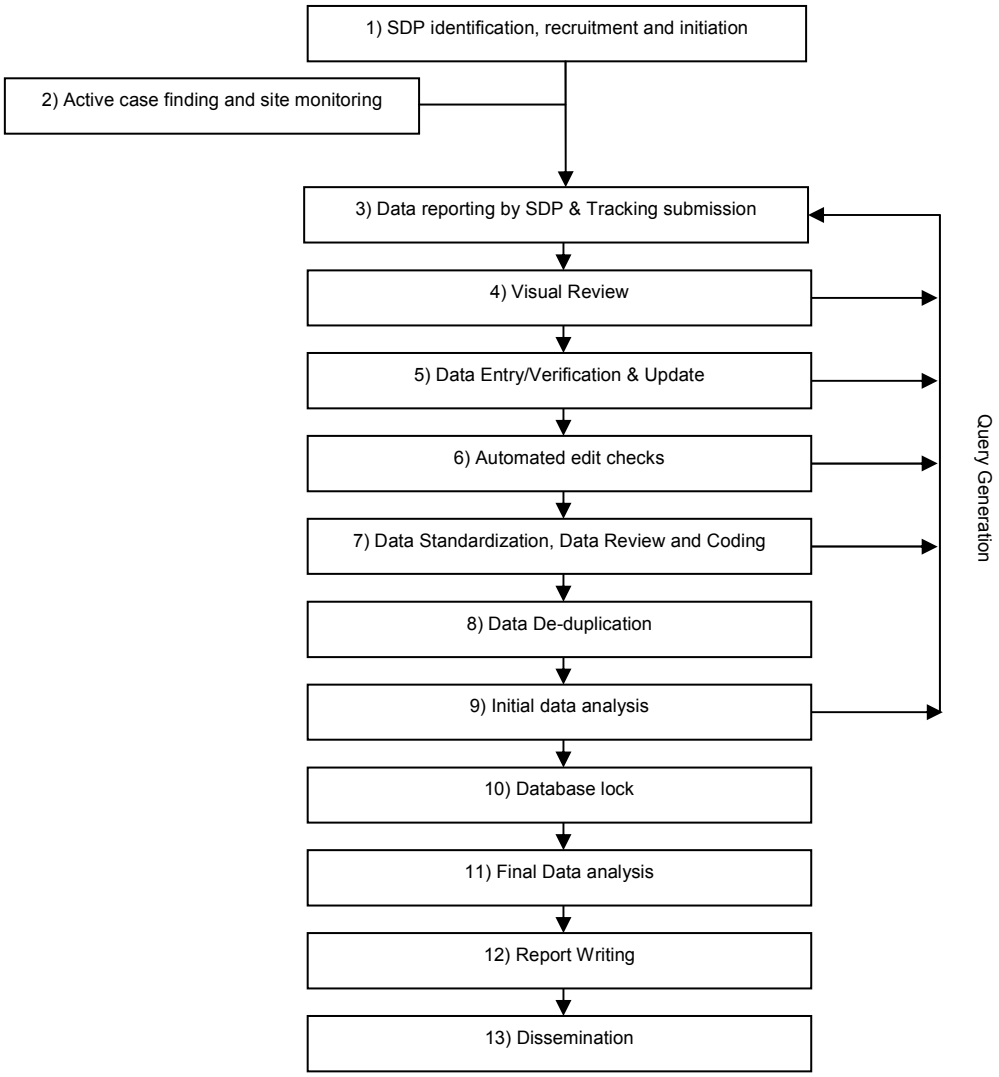
3.0 METHODS

The National Cancer Registry provided the support to run the operations of the registry by ensuring the following:-

1. Complete enumeration of all incident cases of cancer in the population.
2. Validity of the data collected on these cases of cancer.
3. Correct and reproducible classification and coding.

These were accomplished by a series of tasks as shown in the figure below.

Figure 3.1 Flow Chart for Overall Operations of the NCR



Selection, identification, recruitment and motivation of Source Data Provider

Ideally, any individual or institution that has access to cancer related information should become a Source Data Provider (SDP). However, including every medical practitioner in the country as SDP was an ideal that was not achievable. In practice, SDPs were selected judiciously. This was based on consideration of data validity, the burden associated with identifying cases and the requirement for a wide case finding network that deliberately included multiple source reporting so that a case will be reported by at least one of the sources. Based on these considerations, the type of SDPs targeted for recruitment by NCR was from the following disciplines: pathology, oncology, haematology, palliative care, and selected practices that manage specialized cancers such as breast, endocrine and liver cancers. Chest physicians, gastroenterologists, hepatobiliary surgeons, neurosurgeons and radiologists were recruited in the middle of 2003 to increase the ascertainment rates of cancers with problems of under-ascertainment. This information was supplemented by data downloaded from the routine hospital information system.

Once the SDPs were identified, they were persuaded to voluntarily participate in the NCR and were continuously motivated to continue reporting data. The influence of key opinion leaders and professional societies, together with extensive marketing were employed using various media such as websites, brochures, trade exhibitions, face-to-face talks, meetings and organized events. Furthermore, NCR ensured wide representation in its activities through appointments to the Advisory Committee and through participation in the Expert Panel and NCR supported research activities.

NCR managed to maintain a very high participation rate of SDPs. The total number of active SDPs increased from 141 in 2002 to 190 in 2005.

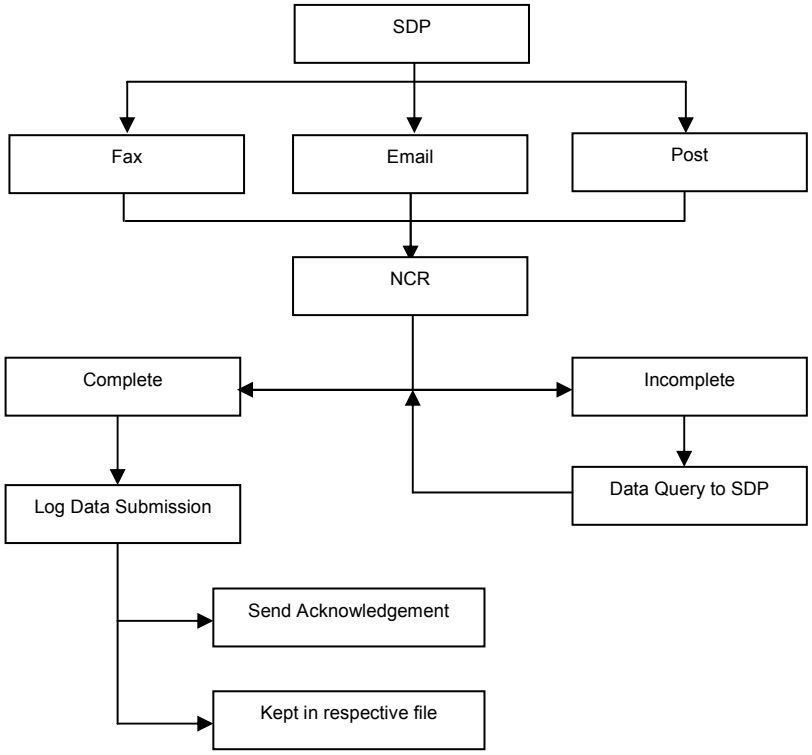
Data reporting by SDP

To minimize the burden associated with data reporting, only 7 data items were required for each reported case. These were patient's name, identification number (old/new), age, sex, race, topography (specimen/ site/organ involved), and morphology (cytology or histology). It was decided by the Advisory Committee that more data items would be requested from the SDPs once notification rates were consistently high. We acknowledge that these minimal data requirements would not fulfill international requirements but the NCR founding committee member's plan was to ensure high notification rates in the initial few years, following which the data load would be gradually increased so as to meet international requirements. It was felt that the NCR strategy would be able to ascertain incidence cases due to the varied data sources and the de-duplication process. The date of incidence could be estimated by the earliest date of notification.

Participating SDPs reported data on new cancer cases to the NCR on a monthly basis. The case definition was deliberately liberal. SDPs were instructed to report a case even when they had doubt about case eligibility. All cases notified by SDPs were then subsequently verified by the Expert Panels. Ineligible notifications were subsequently removed from the final dataset.

Data submissions by SDPs were tracked by a computer system. Late submissions were flagged and reminders sent to the relevant SDPs. This system was designed to ensure complete data submission by the SDPs. All reasonable effort was made to ensure participating SDPs submitted their data for the years 2003, 2004 and 2005. NCR also made site visits to SDPs to extract data to increase completeness of notification, and site monitoring.

Figure 3.2 Flow Chart for Receiving data



Active case finding

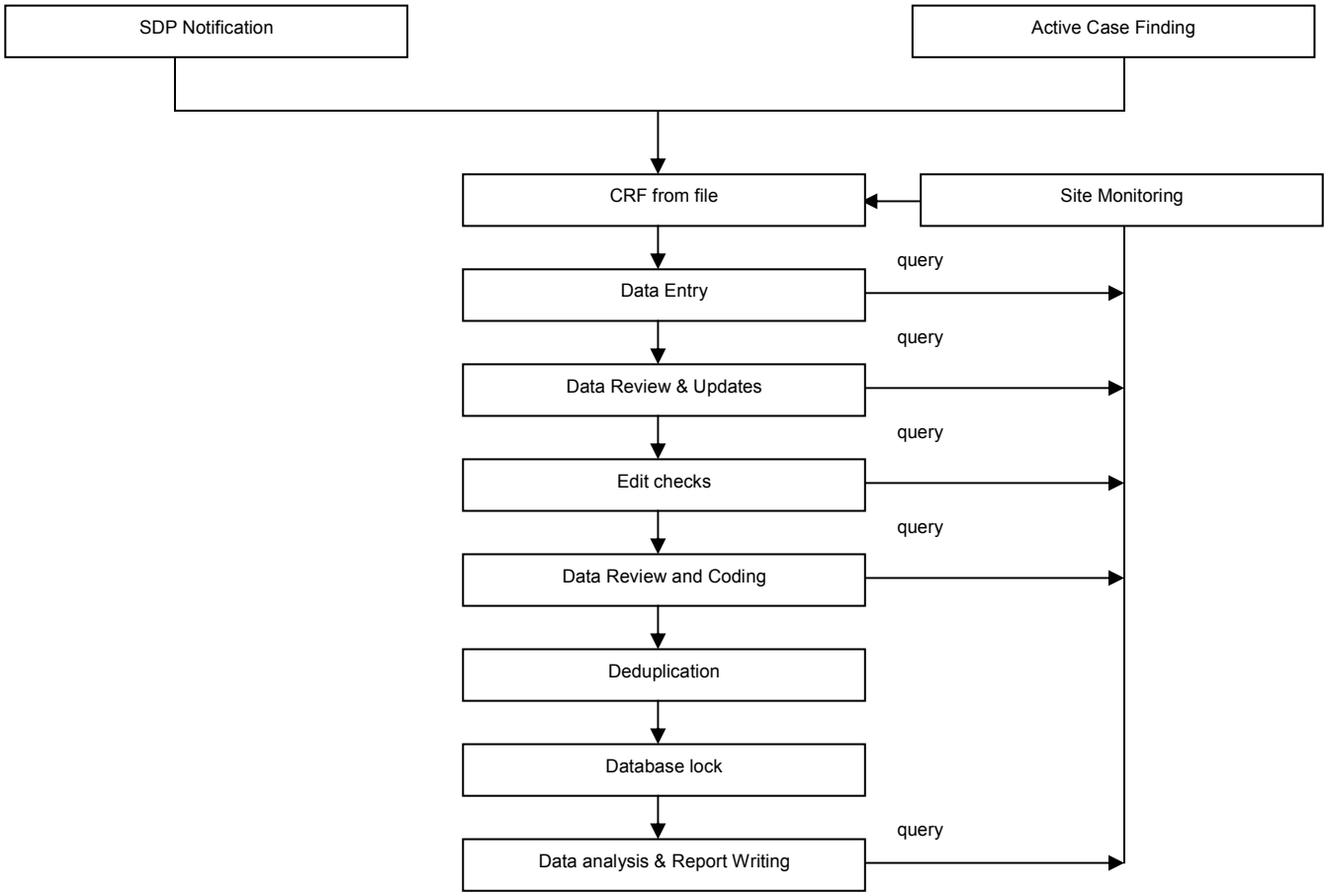
Active case finding and site monitoring were indicated for under-performing SDPs.

Data entry/update and edit checks

Data received by the NCR was entered into an electronic database. Visual review of notified data was carried out and SDPs were contacted to resolve any queries.

Data without any apparent problems were entered into the registry database. Automated edit checks were performed periodically to identify potential data errors, such as missing data, non-plausible values, out of range numerical values, inconsistent data. Data clarification forms were then generated from these data queries and sent to the SDPs.

Figure 3.3 Flow Chart for Data Management Process



Data Standardisation and Preliminary De-duplication

For the preparation of the 2003-2005 report, NCR used the QualityStage software from Ascential™ to perform data standardization and data de-duplication. Data standardisation incorporated the following processes:

- Handling of missing data. For example, deriving age from IC, deriving gender from IC and name and inferring race from name.
- Checking inconsistency of the data. For example, IC and name shows female but gender was male.
- Correction of typographical errors.
- Standardize commonly occurring words.
- Name parsing and concatenation - Parse name into a set of fixed subcomponents that were in fixed locations to enable cross component checking during de-duplication.

Subsequently, preliminary data de-duplication was performed to identify duplicates and all the data were formatted for expert panel review. The expert panel reviewer had information on whether the data was unique or whether there was a high probability of it being a duplicate.

Data review and coding

Cancer data was initially coded automatically by the NCR's QualityStage software. This process used a keyword dictionary to topograhphically code free text to ICD-O3 topography codes. The keyword dictionary was updated annually and specific rules were applied with input from subject matter experts to make the dictionary comprehensive yet specific. This was an iterative process. This automated hierrachial coding system was not used for morphological coding due to the high variability (non specific) of the terms associated with individual codes.

To maintain rigorous quality control (QC) of NCR data, an expert panel group comprising specialists from pathology, oncology, surgery, gynaecology, radiology, otorinolaryngology, orthopaedics, haematology and other disciplines with expertise and knowledge in the relevant areas was established for each cancer site. NCR frequently communicated with the members of the expert panel and requested additional inputs when required. At each session of expert panel review, a briefing and debriefing session was held to standardize coding of the cancers. At each expert panel session, the members reviewed the data and verified its eligibility. They reviewed the notified cancers and classified the reported tumours according to ICD-O3 topographical. Furthermore, the experts also categorized the behaviour (benign, uncertain, precursor and malignant), site, histology and diagnostic basis (clinical, morphology, histology) of the reported notifications. Any data found to be ineligible were excluded from the topographical analysis dataset. In addition, experts in morphology coding were selected to provide appropriate codes for the notified cases. If data on morpholy was insufficient, the notified cases were then excluded from the morphological analysis dataset.

For comparibility of the report's results, NCR followed IARC/IACR recommendation and used the ICD-O3 classification system for coding its cancer data.

Data de-duplication

The NCR, like other cancer registries, adopted a multiple source reporting strategy to minimize under-registration and maximize data validity. The inevitable problem arising of such a strategy was multiple or duplicate recording of the same incident cancer case.

Duplicate records require the NCR to resolve 3 problems:

1. De-duplication: The identification of duplicates in order to exclude them from analysis. Manual and sophisticated record linkage techniques were employed to accomplish this.
2. Assigning one value for the variables when reported values conflict with each other. This was undertaken by expert review of the data; if necessary, queries were directed at the sources to resolve inconsistencies. Otherwise, pre-determined rules were used for selecting a value.
3. Duplicates with multiple primaries. Here the ICD O3 convention on multiple primaries was followed.

De-duplication was performed using QualityStage software. NCR achieved de-duplication by applying methods such as string comparison, phonemic name comparison, fuzzy matching, specialised numeric comparisons and other user defined rules. NCR developed rules for identifying duplicates of records within the system.

For quality assurance purposes, a final clerical review by NCR was done to ensure that the records identified as duplicates were truly duplicates and that the records identified as unique were indeed truly unique.

Preliminary Database lock

The data set for analysis was preliminarily locked prior to analysis. Any queries generated by the statistician were sent to the NCR. The queried data was verified against the source records and when indicated, data clarification forms (DCF) were sent to the site. The DCFs were followed up to ensure a expeditious resolution.Following query resolution, the database was updated as indicated.

Final Database lock

To ensure a clear audit trail, the final data set for analysis was locked prior to final analysis.

Rules for excluding records from database (deleted) or from analysis were as follows:

- Prevalent cases.
  SDPs were instructed not to report prevalent cases. However, prevalent cases were determined by performing record matching using QualityStage software against antecedent HMIS and NCR data.
- Non-cancers, benign tumours or tumours of uncertain behaviour
- Recurrent or residual tumours. Here we assume that tumour was diagnosed before year of reporting, and hence represented a prevalent case. This was conservative as tumour may well have recurred in the same year that it was diagnosed.
- Tumours of uncertain diagnostic basis.
- Expert Panel's decision to exclude a case, usually on grounds of poor data quality or insufficient information to determine case status.

Data Analysis

The statistical methods described below for the analysis of NCR cancer data followed standard practices. Missing data on age and sex were imputed by "hot-decking". The hot deck imputation method implemented was the "Approximate Bayesian Bootstrap Hotdeck". In this method, a sample was first obtained by bootstrap sampling from observations with complete data for the strata defined by cancer diagnosis and race, and donor lines are then selected again from this bootstrap sample again by bootstrap sampling.

Cancer incidence is defined as the number of cases first notified for a given population during a specified period.

The crude incidence rate (CR) was estimated as follows:

$$\text{Incidence} = \frac{\text{Number of new cancer cases in a period of time}}{\text{Population at risk}}$$

$$\text{CR} = \frac{\sum_{i=1}^{A} r_i}{\sum_{i=1}^{A} n_i} \times 100000$$

where r_i is the number of cases which have occurred in the *i*th age class and n_i the person-years of observation in the *i*th age class during the same period of times as cases were counted.

The population at risk referred to the Malaysian population as provided by Department of Statistics based on its projection from the 2000 census. As the period of interest was the calendar years 2003-2005, the midpoint population of 2004 was used as an annual reference.

A common problem encountered in comparison of cancer rates between different populations is the differing age distributions encountered between the populations. Incidence of cancer is positively associated with age; the risk of cancer increases with advancing age. Thus, whenever the crude rates of 2 populations are compared, any differences seen may be a result of differing age distributions. The standard method employed is to standardize the age distribution to a standard population. Thus the Age-Standardized Incidence Rate (ASR) is used in this report for meaningful comparison with other populations. For example, comparison of male and female, or one ethnic group to a another, or one country and another.

On a similar note, we have decided to use the crude number of cases to estimate the male to female (M:F) ratio. It is hoped that this would be more useful at a national level and reflects the national burden of cancer. Thus the 'crude' M:F ratio should not be compared to other populations as differing age structure could cause extraneous conclusions.

The age-standardized incidence was calculated by the direct method, the reference population being the World Standard Population [2]

$$\text{ASR} = \frac{\sum_{i=1}^{A} a_i w_i}{\sum_{i=1}^{A} w_i} \quad X \quad 100,000$$

where a_i is the age-specific rate in the ith age class and w_i is the weight from the Standard Population in the ith age class.

The ASR is used when comparing the cancer incidence between the different ethnicities in Malaysia. It is also used when we compare Malaysian rates with international registries/countries.

The Cumulative Risk (CumR) is the risk that an individual would have of developing the cancer in question during a certain age span if no other causes of death were in operation. This statistic is more readily understandable than age standardized rate as no arbitrary standard population is used. It can be considered as a directly age standardized rate with the same size of population in each age group. The CumR is estimated as follows:
The cumulative rate is estimated by the sum of over each year of age of the age-specific incidence, taken from birth to age 70+ for the 0-70+ rate.

$$\text{Cumulative rate} = \sum_{i=1}^{A} a_i t_i$$

where a_i is the age-specific incidence rate in the ith age class which is t_i years long.

The cumulative risk is estimated as follows:

Cum. risk = 100 x [1-exp (-cum. rate/100)]

3.1 Evaluation of the Quality of NCR Data

A credible cancer registry needs to evaluate and ensure the quality of its data.

Data quality has 2 aspects:

High case ascertainment rate (completeness of enumeration or registration). This is the extent to which every incident cases of cancer is identified by the registry.

High data validity. This is the extent to which the information recorded on the different variables is true or accurate.

A systematic quality evaluation of the data is obviously necessary to alert readers to exercise caution in interpreting results where data quality is a problem. Hence we undertook an independent evaluation of the quality of the data that provide the basis for this report.

Evaluation of the quality of NCR data serves 2 purposes:
It identifies shortfall in the registry design and practices, and thereby provides an opportunity for improvement.

It is important for NCR to be transparent on its limitations, and at the same time highlights the strengths of this registry report.

METHODS

In evaluating data quality, we followed standard practices but not all recommended methods were applicable due to the nature of data collection and data management.

This data quality evaluation was confined to Peninsular Malaysia data. Case ascertainment rates for Sabah and Sarawak were low and therefore specific results were excluded from the report and from this evaluation.

1. Completeness of ascertainment

The completeness of registration was assured by the design of the registry. Design features incorporated into NCR registration practice to ensure high completeness rate were:

- Marketing techniques to ensure complete identification and enlistment of SDPs.
- Simple reporting procedure with minimal data collection (only 7 data items per case).
- Active case finding at SDP sites where data submission was late or judged to be insufficient from reporting trend.
- Use of multiple source reporting.

Methods used for evaluating completeness of registration were:

- Number of sources or notifications per case. High number of notifications or sources per case suggests high completeness of case ascertainment.
- Age Specific Incidence Curves for specific cancers. These curves were presented in this report under the specific cancer chapters. These curves can be compared with other comparable populations/reports to identify cancers likely to be under ascertained.

The following methods are not used and the reasons are given below:

- Death certificate methods. This was not useful as medical certification of deaths is performed on roughly half of all reported deaths in Malaysia.
- Mortality: Incidence ratio. This ratio compared the number of deaths attributed to a specific cancer and the number of incident cases in the same time period. This method was not useful to NCR because only about 50% of deaths were medically certified and had never been independently verified.
- Restricted data sets. This method, compares notified cases with patients enrolled into trial, specialized registry, or other comprehensive case registers. NCR had no access to other independent data sources that may be used for this purpose.
- Re-screening of cases or case-finding study. This was clearly a resource intensive method.

2. Validity of data

The validity of data is determined by the design of the registry. Design features incorporated into NCR registration practice to ensure high data validity are:

- Targeting SDPs likely to provide highly valid data. These are Pathology, Oncology, Palliative care and Hematology.
- Use of multiple source reporting
- Trained and dedicated personnel working to clear written standard operating procedures.
- Use of external Expert Panel members to review and code data at centralized sessions. At each session, a briefing and debriefing session was held to standardize operating procedures of the experts. This is a very expensive procedure rarely used by any registries. The sponsors of the NCR stressed on the importance to assure data quality through independent data review by experts. Members of the various Expert Panels are listed in this report.
- Pre-programmed edit checks to identify out of range, non-plausible and inconsistent values.
- Visual review and verification of all automated computing checks and processes.

Methods used for evaluating data validity were as follows:

- Histological verification. Higher rates suggested higher validity except for certain cancers which are relatively inaccessible for biopsy or for which non-invasive diagnostic methods were available, such as liver, gallbladder, pancreas, kidney, lung and brain.
- Morphologically coded data. A higher rate suggests higher internal validity
- Missing demographic data on age and sex and Unknown primary site
- Automated computing process with visual review.

The following methods are not used and the reasons are given below:

- Death certificate only (DCO). The validity of DCO would be highly suspect because of the low rate of medical certification of causes of death, lack of independent verification of such data, and the required assumption that death occurred in the same year the case was diagnosed.
- Reabstraction or Source data verification. This method compares registry record with source data by an independent observer (monitor). This is clearly a resource intensive procedure and not common in cancer registry practice.
- Internal consistency method. This is a method for assuring data validity rather than for evaluating data quality. Edit checks were extensively employed in NCR data management practices.

RESULTS

Number of sources or notifications per case.

From 2003 to 2005, the NCR received 137,560 cancer notifications from all over Malaysia. These notifications represented 75,735 unique cancer cases. Thus on an average, there were 1.8 notifications per case nationally. For Peninsular Malaysia, there were 67,792 unique cases ascertained, giving a similar average of 1.9 notifications per case. These represent a high notification rate by any standard.

The number of notifications per case varied by cancer site and iss shown in Table Q1. The highest number of notifications (>3 per case) came from the oesophagous, breast and adrenal cancer sites. The least number of notifications came from the cancer sites of prostate, melanoma of skin, salivary glands, and other endocrine and skin sites. It is interesting to note that the average number of notifications from other endocrine and skin site were lower than 1. This indicates that for these two sites, the SDPs were not the only source of cancer incidence and those extra cases were ascertained through the HMIS database. These results are in favor of good ascertainment for most cancer types. However one may postulate that for the sites with notifications of 1 or less, the ascertainment may be incomplete.

Table Q1: Number of notification per case by cancer sites

Cancer sites	Number of notifications per case
OESOPHAGUS	3.4
BREAST	3.3
ADRENAL	3.1
LARGE BOWEL	2.8
OTHER OROPHARYNX	2.8
HYPOPHARYNX	2.7
NASOPHARYNX	2.7
TRACHEA, BRONCHUS, LUNG	2.6
LARYNX	2.6
PENIS	2.6
LUNG	2.5
STOMACH	2.5
UNKNOWN SITE	2.3
CERVIX UTERI	2.2
URETER	2.2
OTHER MALE GENITAL	2.2
CORPUS UTERI	2.1
OTHER FEMALE GENITAL	2
PHARYNX UNSPEC	2
TONSIL	2
OTHER URINARY ORGANS	2
OTHER THORACIC ORGANS	2
TONGUE	1.9
VAGINA	1.9
PANCREAS	1.8

Cancer sites	Number of notifications per case
GALLBLADDER	1.8
BLADDER	1.8
UTERUS UNSPECIFIED	1.7
OVARY	1.7
NOSE, SINUSES	1.7
RENAL PELVIS	1.6
THYROID	1.6
BRAIN, NERVOUS SYSTEM	1.5
KIDNEY	1.5
TESTIS	1.5
CONNECTIVE,SOFT TISSUE	1.4
MOUTH	1.4
PLACENTA	1.4
SMALL INTESTINE	1.4
VULVA	1.4
LYMPHOMA	1.4
BONE	1.3
LIVER	1.2
EYE	1.2
PROSTATE	1
MELANOMA OF SKIN	1
SALIVARY GLAND	1
OTHER ENDOCRINE	0.8
OTHER SKIN	0.7

Proportion of cases histologically verified (HV%).

Two methods were used to estimate this component of evaluation. The first method used was assessment of all cancer notifications by an expert with experience in morphological coding to verify the presence of explicit morphological information of the notified cancer. The second method used the expert panel to review the information provided by SDPs to assess histological verification. A regional comparison of both these methods is shown in Table Q2. On reviewing the rates from this table it can be seen that the HV% as notified by the SDP is very much higher than the proportion where morphological information is explicitly available. This may be attributed to certain SDPs who had sent their notification with incomplete morphology information but had stated that the diagnosis was based on a morphological report. On the other hand some of these notifications by the SDP might have been over reported. A conservative method to assess the HV% is to take an average of this two figures. These conservative estimates are comparable with the different regions.

Missing demographic data and Primary site uncertain (PSU)

The result is shown in the table below

Variable	No. Missing, (%)
Race	61 (0.03)
Sex	4 (0.01)
Age	767 (0.42)
Primary site uncertain (PSU)	8092 (5.34)

Missing data for the demographic variables clearly were low. The percentage of Primary Site Unknown of all reported cancers of 5.34% was slightly higher than the range reported by established cancer registries in the world.

CONCLUSION

Overall, the incident case ascertainment rate achieved by the NCR was acceptable for diagnosed cancers, and the validity of the data was comparable to those of established registries.

Table Q2: Percentage of cases registered with histological verification of diagnosis. Comparison of N.America, Western Europe, Australia/NZ, Japan, Other Asia and Malaysian NCR data

		North America	Western Europe	Australia / NZ	Japan	Other Asia	NCR, Malaysia*	NCR, Malaysia **
Lip	M	96.4	97.5	95.7	90.9	96.2	73.7	100.0
	F	95.0	97.5	95.5	90.0	90.0	73.8	100.0
Tongue	M	92.8	97.2	91.5	90.6	84.5	59.9	99.2
	F	93.4	95.5	92.0	90.0	80.5	63.9	100.0
Salivary gland	M	95.0	97.9	92.0	89.4	85.6	63.4	98.5
	F	92.7	95.9	91.3	89.5	86.4	71.7	100.0
Mouth	M	92.9	98.9	95.3	92.5	85.4	54.5	100.0
	F	94.5	97.8	94.2	89.8	80.8	60.8	100.0
Oropharynx	M	92.9	98.1	92.9	97.3	88.5	62.4	100.0
	F	94.8	98.3	91.4	90.6	86.3	63.9	100.0
Nasopharynx	M	91.8	95.9	92.2	90.9	83.8	50.0	99.3
	F	91.4	95.0	89.8	84.5	82.2	54.2	99.2
Hypopharynx	M	94.8	98.2	96.6	92.8	84.5	52.1	100.0
	F	95.0	97.4	96.2	89.9	85.0	50.0	100.0
Other Pharynx	M	84.8	95.6	86.9	67.9	62.5	61.2	91.3
	F	85.5	83.3	77.1	85.7	44.0	46.7	100.0
Oesophagus	M	89.9	92.5	88.2	76.5	57.7	32.3	96.2
	F	88.6	88.2	86.1	66.6	53.0	94.9	93.1
Stomach	M	90.1	94.3	86.9	80.3	61.5	50.0	96.3
	F	85.5	91.8	80.8	75.9	58.6	50.0	96.0
Small intestine	M	94.2	98.1	92.8	81.3	79.4	50.5	98.1
	F	93.7	95.2	90.5	76.4	78.0	48.6	91.1
Large Bowel	M	91.9	93.7	89.6	76.0	78.2	52.6	97.1
	F	90.2	92.5	87.0	73.1	77.5	54.5	96.8
Liver	M	71.0	74.1	67.4	36.0	28.9	62.3	82.3
	F	66.6	75.3	68.6	29.7	26.8	57.5	78.4
Gallbladder	M	81.1	81.3	80.5	51.6	57.0	54.6	90.8
	F	82.6	82.0	78.4	49.4	63.4	49.5	90.5
Pancreas	M	64.5	67.0	55.8	46.8	35.4	39.7	79.6
	F	61.5	64.9	52.9	39.9	35.5	39.1	77.5
Sinonasal	M	92.9	96.9	93.5	82.2	82.6	57.5	97.3
	F	92.6	96.1	93.3	83.3	81.9	60.3	95.2
Larynx	M	94.3	97.0	93.2	90.4	82.4	39.3	97.4
	F	93.5	94.9	93.6	79.4	75.2	50.0	95.0
Lung	M	82.8	89.2	78.9	67	53.8	39.9	92.4
	F	83.5	87.3	77.9	60.4	46.1	38.9	91.8
Pleura	M	90.3	96	89.8	81.3	72.1	40.4	99.0
	F	86.1	92.4	95.2	81.1	69.8	38.5	100

*** HV% based on explicit morphology information availability in notification report**
**** HV% based on SDP notification stating diagnosis based on morphology**

		North America	Western Europe	Australia/ NZ	Japan	Other Asia	NCR, Malaysia*	NCR, Malaysia **
Bone	M	88	97.5	93.6	82.4	59	52.7	83.6
	F	87.1	92.8	92.7	81.3	55.1	47.3	87.5
Connective tissue	M	92.8	96.8	94	95.1	89.5	62.4	93.3
	F	91.7	97.5	93.9	94.1	87.9	58	90.5
Melanoma	M	96.2	99.4	97.7	87.1	95	62.2	100
	F	95.8	99.7	97.5	91.3	95.3	69	100
Other skin	M	89.8	99.6	95.6	94.7	93.8	80.5	100
	F	99.6	99.1	94.2	91	92.6	82.2	100
Female breast	F	94.7	96.3	93.2	91.3	86.6	44.8	96.5
Cervix uteri	F	94.1	98.3	95.3	94.5	84.2	43	97.9
Corpus uteri	F	97.1	98.1	95.2	92.1	93.1	56.3	98.8
Ovary	F	91.1	93.7	91.1	74	80.3	62.5	97.1
Male breast	M	94.3	95.7	94.5	93.8	84.6	38.5	97.3
Prostate	M	93	94.2	88.3	74.3	81.1	72.5	99.1
Testis	M	97.3	98.8	95.8	91.6	90.5	63.3	98.2
Penis, etc	M	94.2	99.6	96.8	86	86.3	49.3	100
Bladder	M	95.1	97.3	94.6	84.2	84.5	62.6	96.7
	F	93.6	96.1	92.1	76.4	80.6	61.6	96.9
Kidney etc	M	84.9	89	84.6	77.7	77.1	67.3	91.5
	F	82.5	88	84.4	71.7	77	65.7	91.3
Eye	M	74.8	92.8	91.6	90.2	79.4	72.6	94.3
	F	69.9	87.1	91.2	91.8	78.2	85.5	99.2
Brain, etc	M	79.7	79.5	76.5	67.1	61.5	46.9	74.0
	F	74.3	78.2	72	61.2	59.3	47.4	72.5
Thyroid	M	95.1	96.7	91.8	88.7	87.1	56.2	97.0
	F	96.2	96.7	95.1	91.3	88.7	58.5	97.7
Endocrine etc	M	75.2	89.6	79.9	77.9	67.1	36.1	77.8
	F	76.5	91.9	79.5	78.4	71.5	37.8	73.0
Non-Hodgkin	M	92.2	98.2	94	93.6	86.6	70.5	100
	F	92	97.7	93.2	93.6	87.6	71.3	100
Hodgkin's disease	M	94.4	98.3	94.7	97.6	93.5	70.8	100
	F	94.7	96.7	94.5	98.8	94.7	73.8	
Lymphoid leukaemia	M	78.8	93.6	91.1	88.7	85.2	76.3	100
	F	76.9	92.8	89.9	88.5	85	78.7	100
Myeloid leukaemia	M	86.3	93.8	91.3	86.1	82.9	71.7	100
	F	85.2	93	88.5	85	81.9	73.7	100

*** HV% based on explicit morphology information availability in notification report**
**** HV% based on SDP notification stating diagnosis based on morphology**

4.0 CANCER INCIDENCE IN MALAYSIA 2003-2005

4.1 Overall cancer incidence

Table 4.1.1: Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex, Malaysia 2003-2005

Sex	No.	%	CR	ASR	ASR 95% CI	CumR
			Peninsular			
Male	29596	43.7	100.2	136.9	(135.3, 138.5)	14.8
Female	38196	56.3	132.1	156.4	(154.8, 158.0)	15.9
Both sexes	67792	100	116.0	145.6	(144.5, 146.7)	15.3
			Sabah			
Male	1523	44.5	46.4	77.6	(73.5, 81.7)	8.7
Female	1897	55.5	59.5	93.9	(89.4, 98.4)	9.9
Both sexes	3420	100	52.8	85.3	(82.3, 88.3)	9.2
			Sarawak			
Male	2164	47.7	65.1	84.1	(80.4, 87.8)	9.4
Female	2368	52.3	73.3	87.0	(83.4, 90.6)	9.1
Both sexes	4532	100	69.2	85.2	(82.6, 87.8)	9.2

Table 4.1.2: Cancer Incidence per 100,000 population (CR) by age and sex, Peninsular Malaysia 2003-2005

	Male			Female		
Age, year	***No.***	***%***	***CR***	***No.***	***%***	***CR***
0-9	1219	4.1	17.9	856	2.2	13.4
10-19	861	2.9	14.1	741	1.9	12.7
20-29	1106	3.7	22.7	1297	3.4	27.0
30-39	1960	6.6	48.9	4048	10.6	99.9
40-49	3854	13.0	111.4	8908	23.3	258.7
50-59	5996	20.3	255.1	9384	24.6	413.8
60-69	7715	26.1	618.3	7230	18.9	561.0
70+	6883	23.3	1015.8	5725	15.0	669.8

Table 4.1.3: Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity and sex, Peninsular Malaysia 2003-2005

Ethnic group	Male						Female					
	No.	*%*	*CR*	*ASR*	*ASR 95% CI*		*No.*	*%*	*CR*	*ASR*	*ASR 95% CI*	
Malay	11027	40.4	60.2	89.6	(87.8,	91.4)	14792	41.6	82.6	106.4	(104.6,	108.2)
Chinese	13897	50.9	174.1	182.9	(179.9,	185.9)	16676	46.9	218.1	201.5	(198.4,	204.6)
Indian	2404	8.8	89.6	134.4	(128.8,	140)	4054	11.4	150.7	186.3	(180.4,	192.2)

Table 4.1.4: Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								CumR
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Male	Malay	18.8	12.9	20.4	35.3	74.9	173.6	383.3	589.5	9.9
	Chinese	12.5	13.8	21.6	64.3	151.4	329.4	830.6	1495.4	19
	Indian	15.7	16.7	19.7	31.2	85.3	230.5	634.3	1103.5	15.1
Female	Malay	13.5	11.5	23	78	195.1	293.6	349.9	335.7	10.9
	Chinese	10.9	11.9	28.5	118.9	332.1	526.1	733.7	991.5	20
	Indian	14.6	14.6	24	83.5	227.3	468.2	785.1	1033.3	19.5

4.2 Cancer Incidence by site

Figure 4.2: Ten most frequent cancers, Peninsular Malaysia 2003-2005

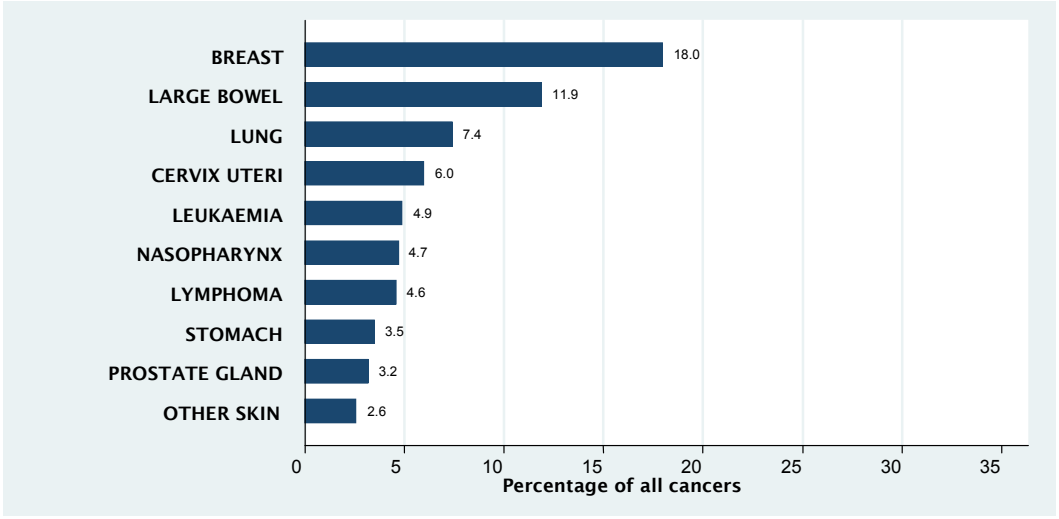


Figure 4.2.1(a): Ten most frequent cancers in males, Peninsular Malaysia 2003-2005

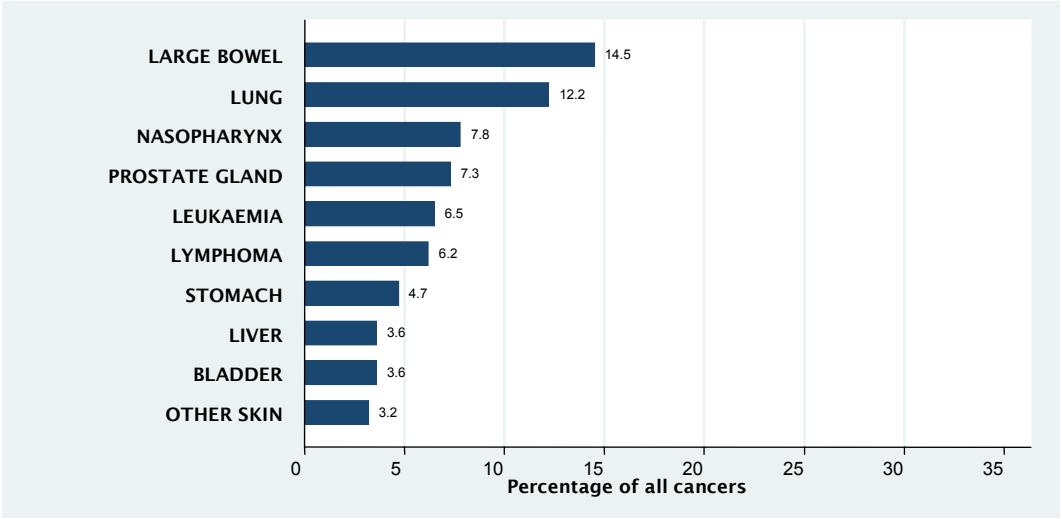
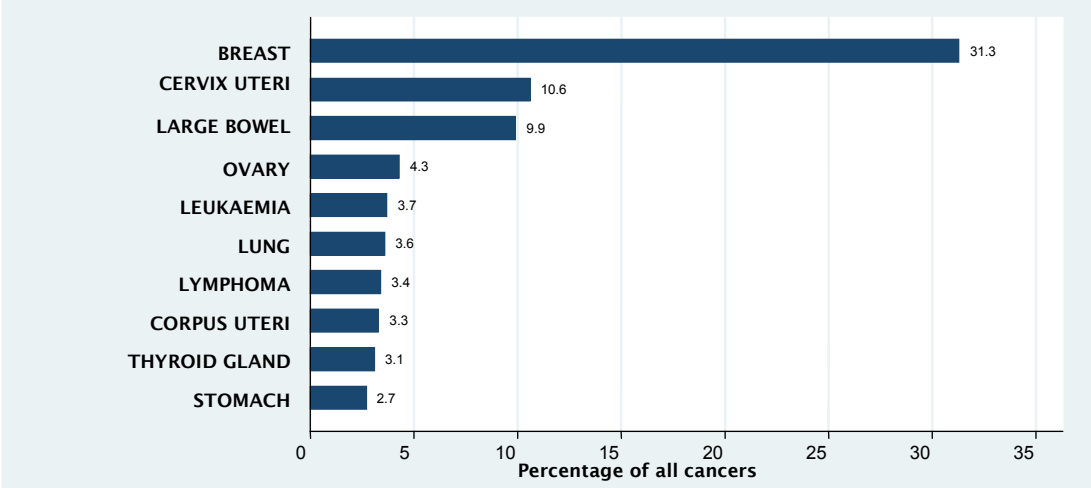


Figure 4.2.1(b): Ten most frequent cancers in females, Peninsular Malaysia 2003-2005



A. Sex differences in cancer incidence by site

Table 4.2.1: Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by site and sex, Peninsular Malaysia 2003-2005

Male								
	Site	No.	%	CR	ASR	ASR 95% CI		Cum R
C00	LIP	38	0.1	0.1	0.2	0.2	0.2	0
C01-C02	TONGUE	394	1.3	1.3	1.8	1.8	1.8	0.2
C03-C06	MOUTH	303	1.0	1	1.4	1.4	1.4	0.2
C07-C08	SALIVARY GLANDS	198	0.7	0.7	0.8	0.8	0.8	0.1
C09	TONSIL	157	0.5	0.5	0.7	0.7	0.7	0.1
C10	OROPHARYNX	36	0.1	0.1	0.2	0.2	0.2	0
C11	NASOPHARYNX	2315	7.8	7.8	9.2	9.2	9.2	1
C12	PYRIFORM SINUS	49	0.2	0.2	0.2	0.2	0.2	0
C13	HYPOPHARYNX	65	0.2	0.2	0.3	0.3	0.3	0
C14	OTHER AND ILL-DEFINED SITES IN LIP, ORAL CAVITY AND PHARYNX	46	0.2	0.2	0.2	0.2	0.2	0
C15	ESOPHAGUS	521	1.8	1.8	2.6	2.6	2.6	0.3
C16	STOMACH	1389	4.7	4.7	7	7	7	0.8
C17	SMALL INTESTINE	155	0.5	0.5	0.7	0.7	0.7	0.1
C18-C21	LARGE BOWEL	4286	14.5	14.5	20.9	20.3	21.5	2.6
C22	LIVER AND INTRAHEPATIC BILE DUCTS	1060	3.6	3.6	4.8	4.8	4.8	0.6
C23-C24	GALLBLADDER	251	0.8	0.8	1.2	1.2	1.2	0.1
C25	PANCREAS	358	1.2	1.2	1.7	1.7	1.7	0.2
C26	OTHER AND ILL-DEFINED DIGESTIVE ORGANS	84	0.3	0.3	0.4	0.4	0.4	0
C30-C31	NOSE, SINUSES	219	0.7	0.7	1	1	1	0.1
C32	LARYNX	606	2.0	2.1	3	3	3	0.4
C33-C34	LUNG	3614	12.2	12.2	18.1	17.5	18.7	2.3
C37	THYMUS	30	0.1	0.1	0.1	0.1	0.1	0
C38	HEART, MEDIASTINUM, AND PLEURA	312	1.1	1.1	1.3	1.3	1.3	0.1
C39	OTHER AND ILL-DEFINED SITES WITHIN RESPIRATORY SYSTEM AND INTRATHORACIC ORGA	3	0.0	0	0	0	0	0
C40-C41	BONES	330	1.1	1.1	1.2	1.2	1.2	0.1
C42	HEMATOPOIETIC AND RETICULOENDOTHELIAL SYSTEMS	2255	7.6	7.6	8.4	8.4	8.4	0.8
C44	SKIN	1207	4.1	4.1	6	6	6	0.7
C47	PERIPHERAL NERVES AND AUTONOMIC NERVOUS SYSTEM	37	0.1	0.1	0.1	0.1	0.1	0
C48	RETROPERITONEUM AND PERITONEUM	83	0.3	0.3	0.4	0.4	0.4	0

Female								
	Site	No.	%	CR	ASR	ASR 95% CI		Cum R
C00	LIP	61	0.2	0.2	0.3	0.3	0.3	0
C01-C02	TONGUE	269	0.7	0.9	1.2	1.2	1.2	0.1
C03-C06	MOUTH	434	1.1	1.5	2	2	2	0.3
C07-C08	SALIVARY GLAND	158	0.4	0.5	0.6	0.6	0.6	0.1
C09	TONSIL	83	0.2	0.3	0.4	0.4	0.4	0
C10	OROPHARYNX	24	0.1	0.1	0.1	0.1	0.1	0
C11	NASOPHARYNX	900	2.4	3.1	3.5	3.5	3.5	0.4
C12	PYRIFORM SINUS	15	0.0	0.1	0.1	0.1	0.1	0
C13	HYPOPHARYNX	39	0.1	0.1	0.2	0.2	0.2	0
C14	OTHER AND ILL-DEFINED SITES IN LIP, ORAL CAVITY AND PHARYNX	20	0.1	0.1	0.1	0.1	0.1	0
C15	ESOPHAGUS	290	0.8	1	1.3	1.3	1.3	0.2
C16	STOMACH	1014	2.7	3.5	4.5	4.5	4.5	0.5
C17	SMALL INTESTINE	90	0.2	0.3	0.4	0.4	0.4	0
C18-C21	LARGE BOWEL	3791	9.9	13.1	16.8	16.2	17.4	2
C22	LIVER AND INTRAHEPATIC BILE DUCTS	449	1.2	1.5	1.9	1.9	1.9	0.2
C23-C24	GALLBLADDER	275	0.7	1	1.2	1.2	1.2	0.1
C25	PANCREAS	284	0.7	1	1.3	1.3	1.3	0.1
C26	OTHER AND ILL-DEFINED DIGESTIVE ORGANS	79	0.2	0.3	0.3	0.3	0.3	0
C30-C31	NOSE, SINUSES	126	0.3	0.4	0.5	0.5	0.5	0.1
C32	LARYNX	80	0.2	0.3	0.4	0.4	0.4	0
C33-C34	LUNG	1387	3.6	4.8	6.2	6.2	6.2	0.7
C37	THYMUS	19	0.0	0.1	0.1	0.1	0.1	0
C38	HEART, MEDIASTINUM, AND PLEURA	205	0.5	0.7	0.9	0.9	0.9	0.1
C39	OTHER AND ILL-DEFINED SITES WITHIN RESPIRATORY SYSTEM AND INTRATHORACIC ORGA	5	0.0	0	0	0	0	0
C40-C41	BONES	200	0.5	0.7	0.7	0.7	0.7	0.1
C42	HEMATOPOIETIC AND RETICULOENDOTHELIAL SYSTEMS	1678	4.4	5.8	6.3	6.3	6.3	0.6
C44	SKIN	1049	2.7	3.6	4.6	4.6	4.6	0.5
C47	PERIPHERAL NERVES AND AUTONOMIC NERVOUS SYSTEM	54	0.1	0.2	0.2	0.2	0.2	0
C48	RETROPERITONEUM AND PERITONEUM	114	0.3	0.4	0.5	0.5	0.5	0.1

Male								
	Site	No.	%	CR	ASR	ASR 95% CI		Cum R
C49	CONNECTIVE, SUBCUTANEOUS AND OTHER SOFT TISSUES	534	1.8	1.7	2.1	2.1	2.1	0.2
C50	MALE BREAST	257	0.9	0.9	1.2	1.2	1.2	0.1
C60	PENIS	69	0.2	0.2	0.3	0.3	0.3	0
C61	PROSTATE GLAND	2150	7.3	7.3	12	11.4	12.6	1.5
C62	TESTIS	330	1.1	1.1	1.1	1.1	1.1	0.1
C63	OTHER AND UNSPECIFIED MALE GENITAL ORGANS	24	0.1	0.1	0.1	0.1	0.1	0
C64,C65, C66,C68	KIDNEY,OTHER URINARY ORGANS	680	2.3	2.3	3.1	3.1	3.1	0.4
C67	BLADDER	1079	3.6	3.7	5.4	5.4	5.4	0.7
C69	EYE AND ADNEXA	157	0.5	0.5	0.7	0.7	0.7	0.1
C70-C72	BRAIN,OTHER NERVOUS SYSTEM	789	2.7	2.7	2.9	2.9	2.9	0.3
C73	THYROID GLAND	402	1.4	1.4	1.6	1.6	1.6	0.2
C74	ADRENAL GLAND	55	0.2	0.2	0.2	0.2	0.2	0
C75	OTHER ENDOCRINE GLANDS AND RELATED STRUCTURES	72	0.2	0.2	0.2	0.2	0.2	0
C76	OTHER AND ILL-DEFINED SITES	295	1.0	1	1.3	1.3	1.3	0.1
C77	LYMPH NODES	1199	4.1	4.1	5.2	5.2	5.2	0.6
C80	UNKNOWN PRIMARY SITE	1350	4.6	4.7	6.4	6.4	6.4	0.8
	LEUKAEMIA	1914	6.5	6.5	7	7	7	0.6
	OTHER SKIN	935	3.2	3.2	4.8	4.8	4.8	0.5
	MELANOMA	113	0.4	0.5	0.5	0.5	0.1	113
	LYMPHOMA	1828	6.2	6.2	7.7	7.7	7.7	0.8

Female								
	Site	No.	%	CR	ASR	ASR 95% CI		Cum R
C49	CONNECTIVE, SUBCUTANEOUS AND OTHER SOFT TISSUES	379	1.0	1.2	1.4	1.4	1.4	0.1
C50	BREAST	11952	31.3	41.3	47.3	46.4	48.2	5
C51	VULVA	87	0.2	0.3	0.4	0.4	0.4	0
C52	VAGINA	148	0.4	0.5	0.6	0.6	0.6	0.1
C53	CERVIX UTERI	4057	10.6	14	16.1	15.5	16.7	1.7
C54	CORPUS UTERI	1253	3.3	4.3	5.3	5.3	5.3	0.6
C55	UTERUS, NOS	438	1.1	1.5	1.8	1.8	1.8	0.2
C56-C57	OVARY	1627	4.3	5.6	6.4	6.4	6.4	0.6
C58	PLACENTA	25	0.1	0.1	0.1	0.1	0.1	0
C64,C65, C66,C68	KIDNEY,OTHER URINARY ORGANS	345	0.9	1.2	1.5	1.5	1.5	0.2
C67	BLADDER	320	0.8	1.1	1.5	1.5	1.5	0.2
C69	EYE AND ADNEXA	124	0.3	0.4	0.5	0.5	0.5	0
C70-C72	BRAIN	650	1.7	2.2	2.4	2.4	2.4	0.2
C73	THYROID GLAND	1194	3.1	4.1	4.5	4.5	4.5	0.5
C74	ADRENAL GLAND	35	0.1	0.1	0.1	0.1	0.1	0
C75	OTHER ENDOCRINE GLANDS AND RELATED STRUCTURES	37	0.1	0.1	0.1	0.1	0.1	0
C76	OTHER AND ILL-DEFINED SITES	279	0.7	1	1.2	1.2	1.2	0.1
C77	LYMPH NODES	831	2.2	2.9	3.4	3.4	3.4	0.4
C80	UNKNOWN PRIMARY SITE	1216	3.2	4.4	5.3	5.3	5.3	0.6
	LEUKAEMIA	1414	3.7	4.9	5.2	5.2	5.2	0.4
	OTHER SKIN	814	2.1	2.9	3.7	3.7	3.7	0.4
	MELANOMA	103	0.3	0.4	0.4	0.4	0.1	103
	LYMPHOMA	1306	3.4	4.5	5.3	5.3	5.3	0.6

4.3 Cancer Incidence by Site, Ethnicity and Sex

Figure 4.3.1(a): Ten most frequent cancers in males by ethnic groups, Peninsular Malaysia 2003-2005

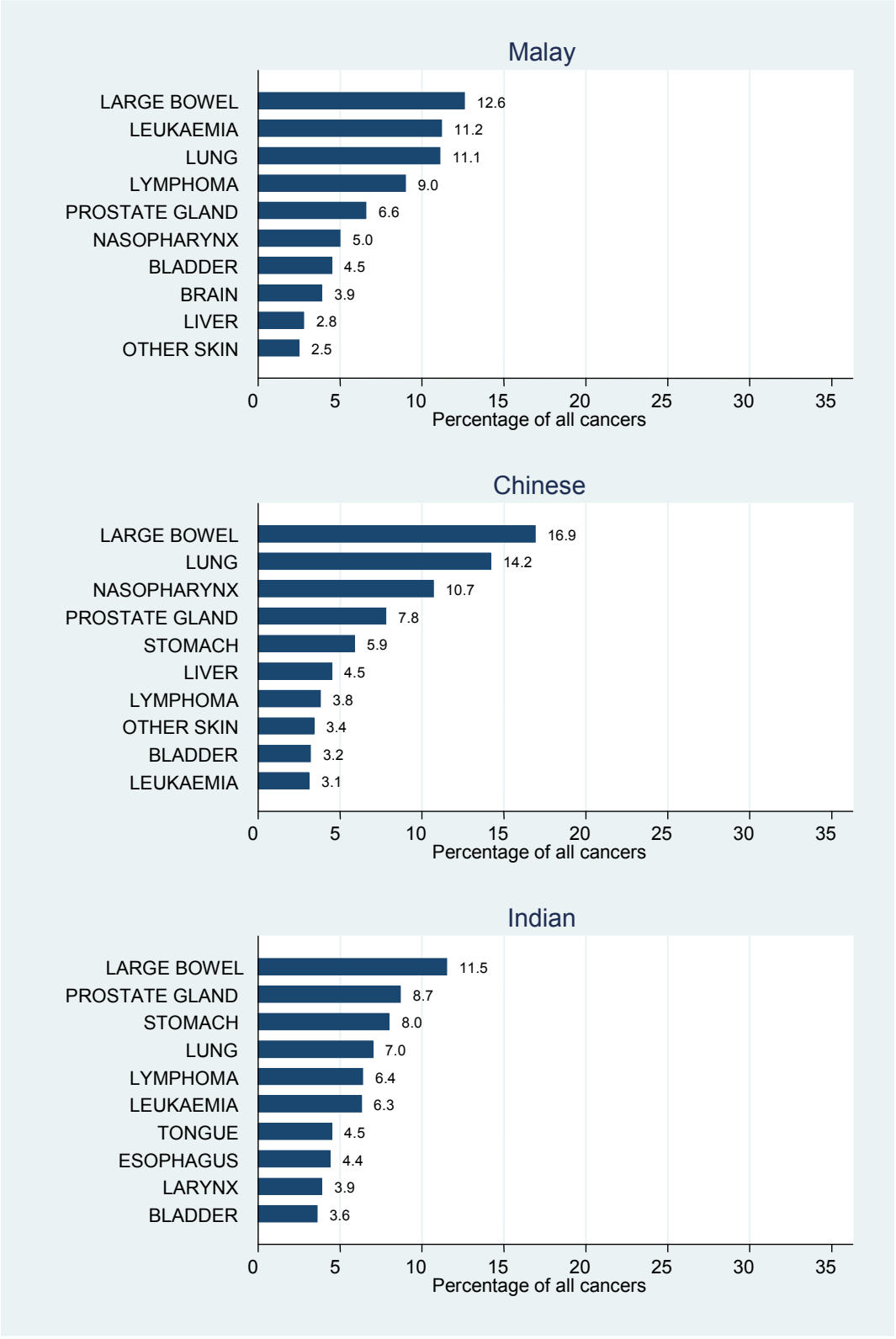
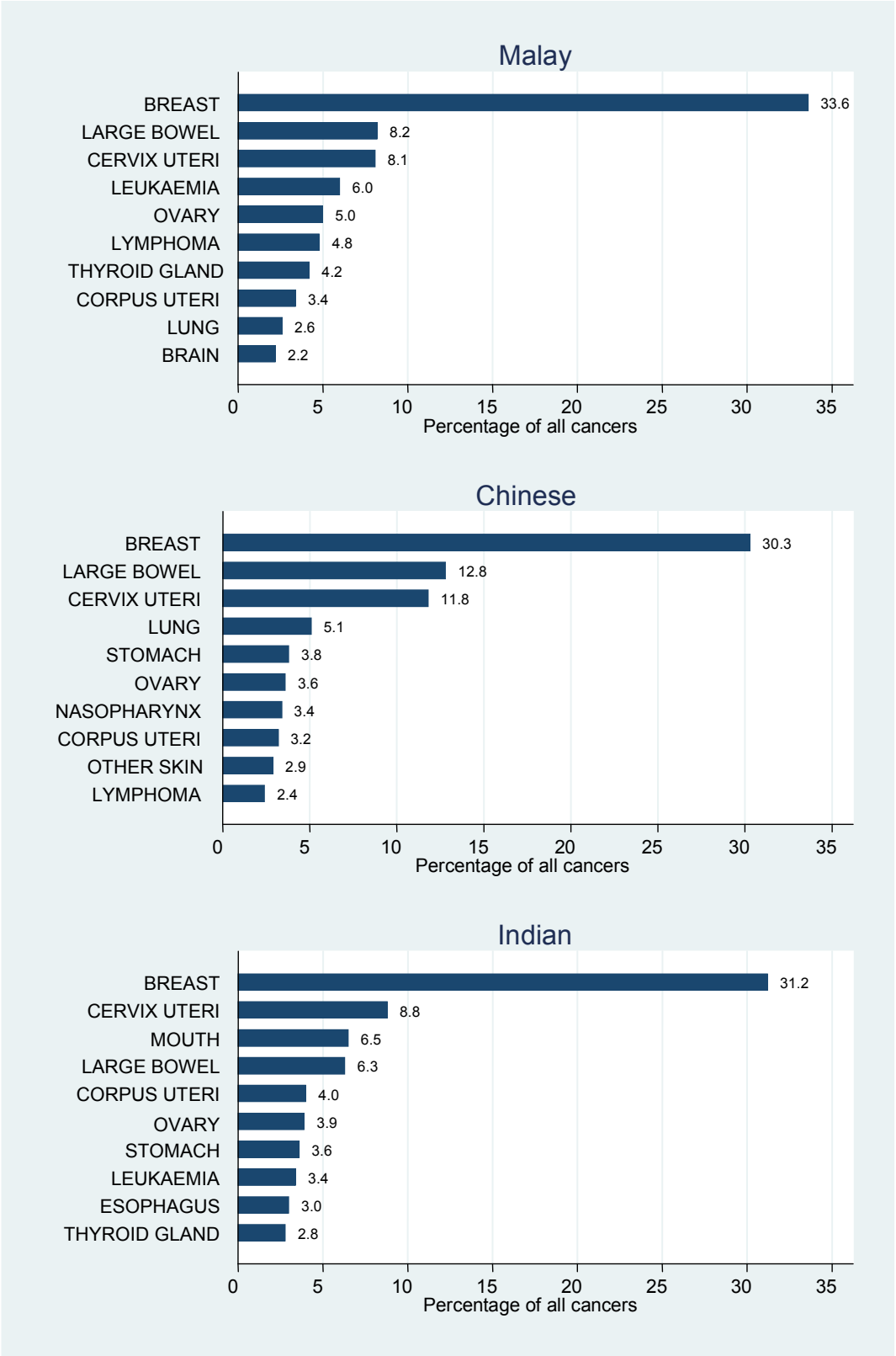


Figure 4.3.1(b): Ten most frequent cancers in females by ethnic groups, Peninsular Malaysia 2003-2005



4.4 Cancer Incidence by Site, Age and Sex

Figure 4.4.1(a): Ten most frequent cancers in males by age groups, Peninsular Malaysia 2003-2005

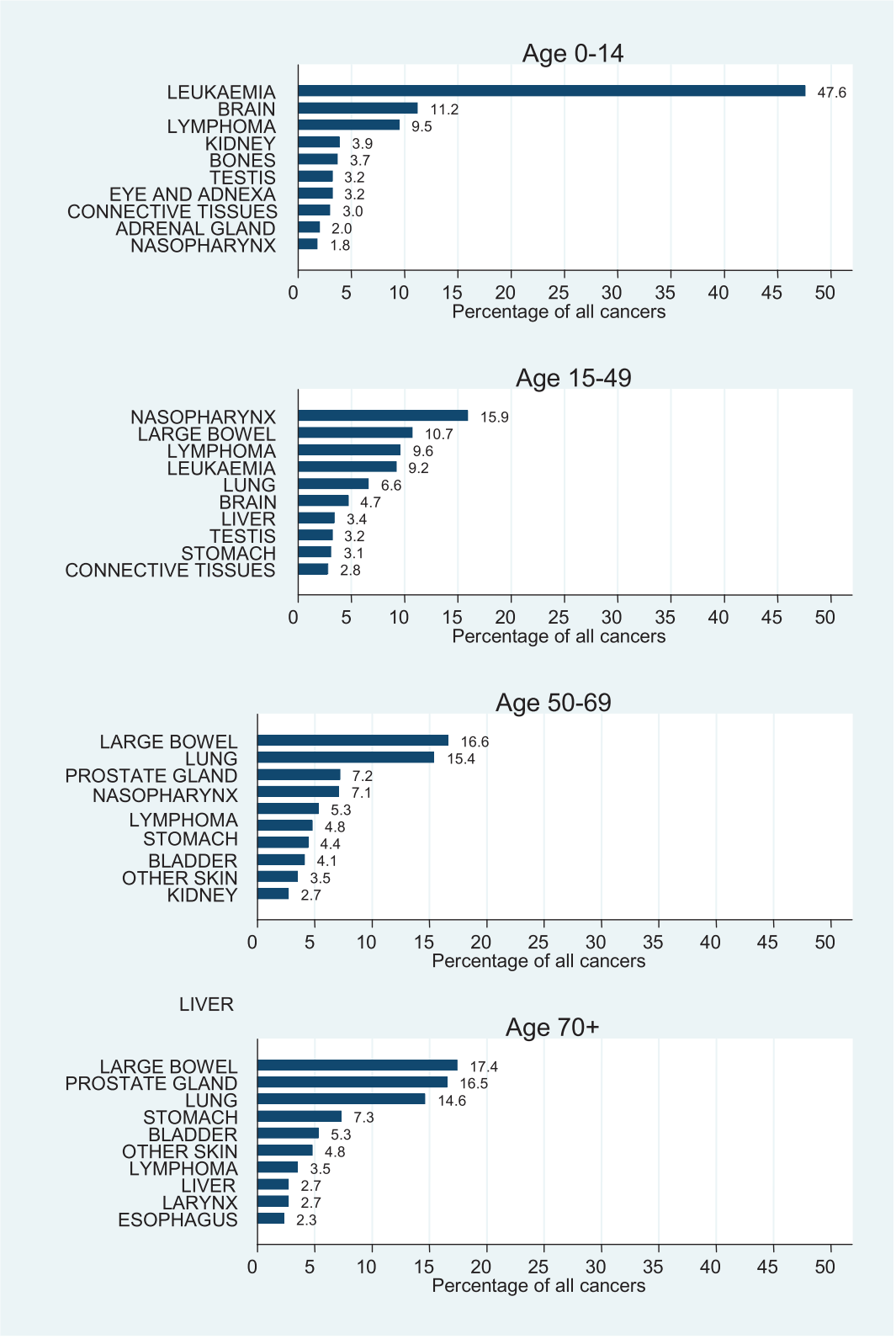
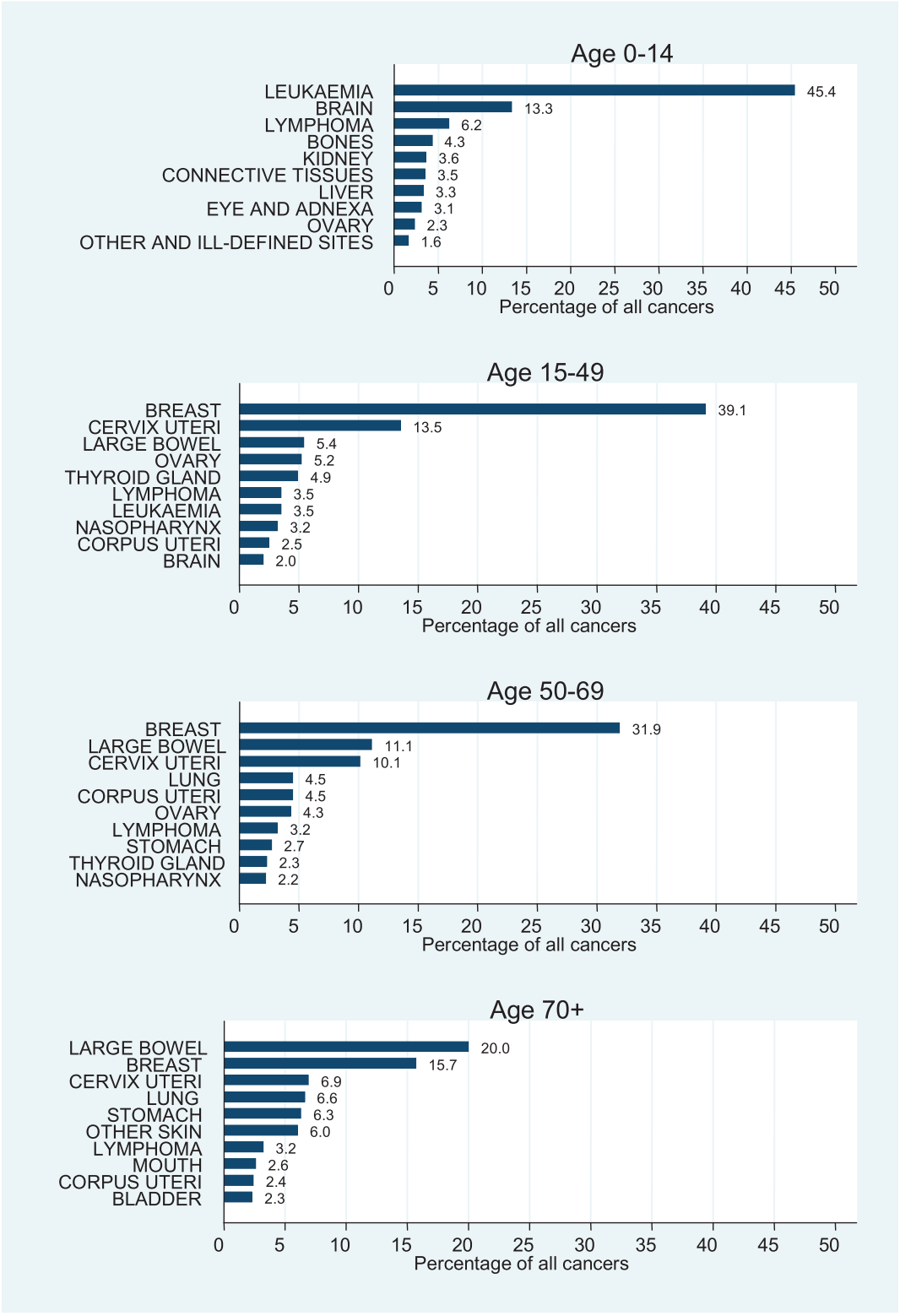


Figure 4.4.1(b): Ten most frequent cancers in females by age groups, Peninsular Malaysia 2003-2005



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Chapter 5

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

BUCCAL CAVITY

5.1 Tongue

5.2 Salivary Gland

5.3 Mouth

NASOPHARYNX

5.4 Nasopharynx

5. SELECTED CANCER SITES 2003-2005

5.1 TONGUE (ICDO: C01-C02)

(Authors: Dr Lau Shin Hin, Dr Ajura Abd Jalil, Prof Dr Rosnah Mohd Zain)

Tongue cancer ranked seventeenth among cancers in males and twenty-first in females. The incidence of tongue cancer was highest among the Indians. The incidence for Indian females (4.9) was notably higher compared with females in the Indian subcontinent such as Trivandrum (2.7) and Madras (1.7).

Of the morphologically reported cases, squamous cell carcinoma, NOS (92.6%) was most commonly reported in the tongue.

Table 5.1.1: Tongue Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	394	100	1.3	1.8	269	100	0.9	1.2
Malay	115	29.2	0.6	0.9	80	29.7	0.4	0.6
Chinese	127	32.2	1.6	1.6	68	25.3	0.9	0.8
Indian	108	27.4	4.0	6.0	92	34.2	3.4	4.9

Table 5.1.2: Tongue Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.3	0.9	2.2	4.1	7.6	10.9	0.2
	Malay	0	0	0.2	0.7	0.9	2.1	3.8	6.1	0.1
	Chinese	0	0	0.4	0.9	2.8	2.5	7.5	8.5	0.2
	Indian	0	0	0	1.0	5.3	17.1	19.2	54.7	0.8
Female	All races	0	0	0.2	0.6	1.2	3.1	5	6.8	0.1
	Malay	0	0	0.1	0.4	1.0	1.5	2.2	3.2	0.1
	Chinese	0	0	0.4	0.7	1.3	1.8	3.3	3.2	0.1
	Indian	0	0	0.4	0.2	1.4	13.7	21.9	44.4	0.6

Figure 5.1.1: Tongue Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

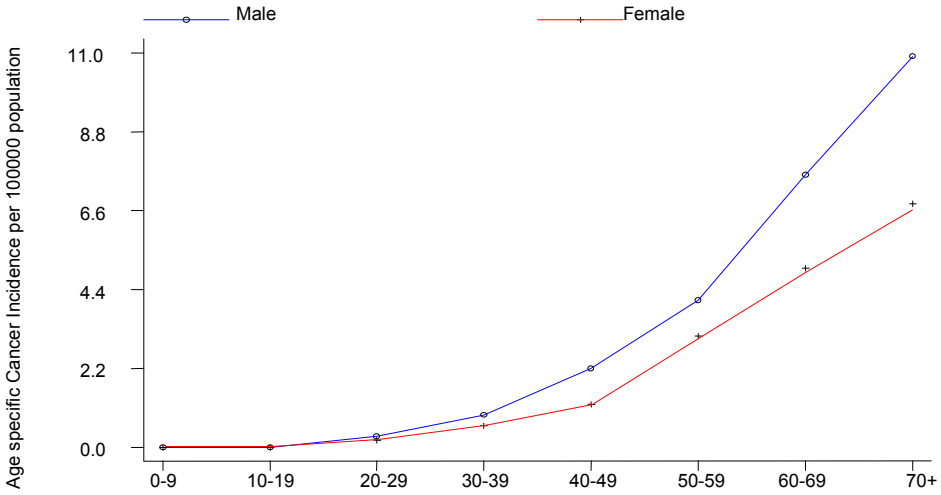


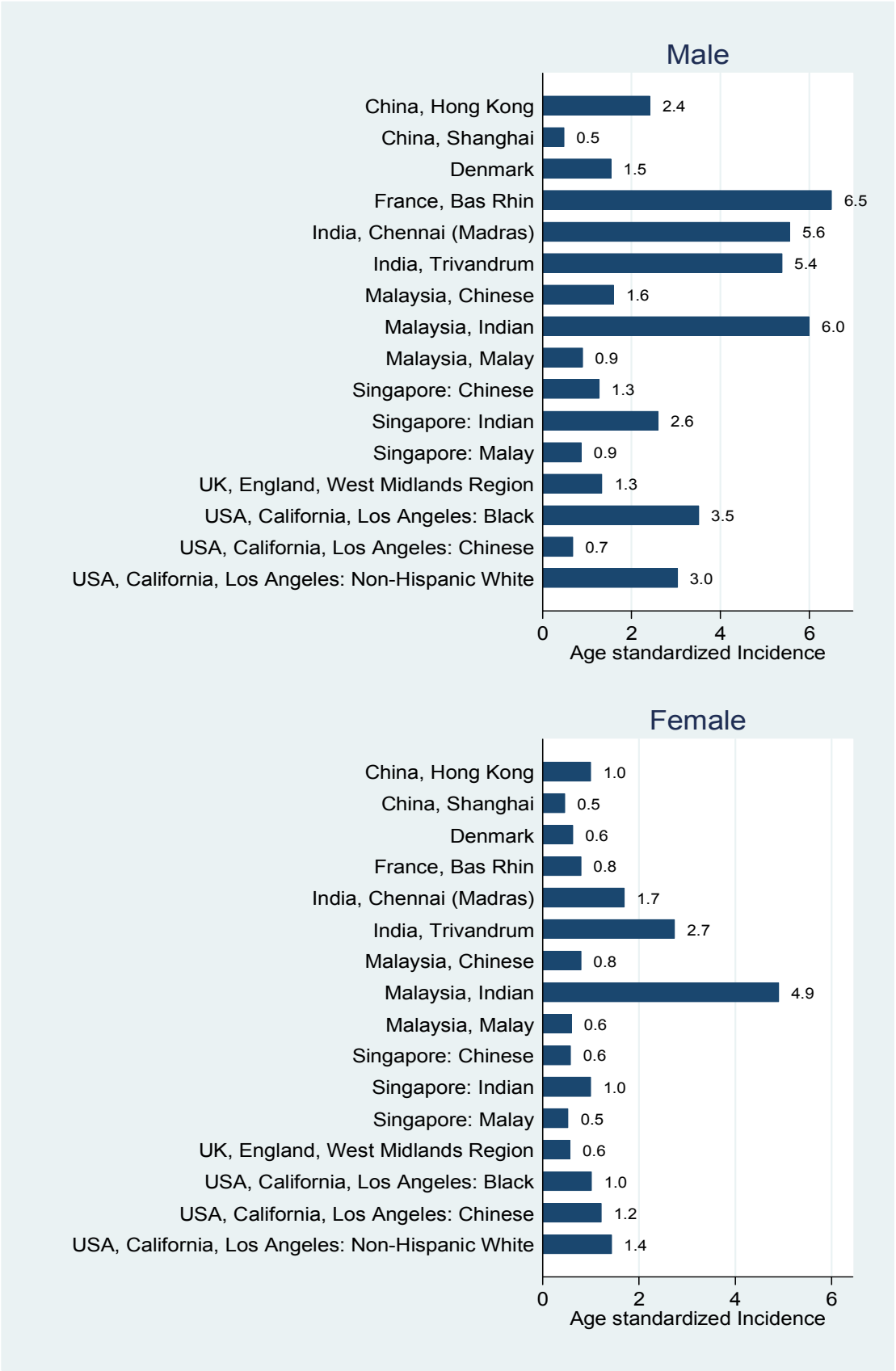
Table 5.1.3: Number of Tongue cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C01.9	Base of tongue, NOS	16	4.1	16	5.9
C02.0	Dorsal surface of tongue, NOS	1	0.3	3	1.1
C02.1	Border of tongue	10	2.5	11	4.1
C02.2	Ventral surface of tongue, NOS	1	0.3	2	0.7
C02.4	Lingual tonsil	1	0.3	0	0
C02.9	Tongue, NOS	365	92.5	237	88.2
	TOTAL	394	100	269	100

Table 5.1.4: Number (%) of Tongue cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8010/3	Carcinoma, NOS	1	0.2
8041/3	Small cell carcinoma, NOS	2	0.5
8051/3	Verrucous carcinoma, NOS	4	1.0
8070/3	Squamous cell carcinoma, NOS	378	92.6
8071/3	Sq. cell carcinoma, keratinizing, NOS	4	1.0
8072/3	Sq. cell carcinoma, lg. cell, non-ker., NOS	1	0.2
8074/3	Sq. cell carcinoma, spindle cell	1	0.2
8140/3	Adenocarcinoma, NOS	4	1.0
8200/3	Adenoid cystic carcinoma	2	0.5
8430/3	Mucoepidermoid carcinoma	2	0.5
8560/3	Adenosquamous carcinoma	1	0.2
8830/3	Fibrous histiocytoma, malignant	1	0.2
9590/3	Malignant lymphoma, NOS	1	0.2
9591/3	Malignant lymphoma, non-Hodgkin, NOS	1	0.2
9680/3	ML, large B-cell, diffuse, NOS	5	1.2
	TOTAL	408	100

Figure 5.1.2: Tongue International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.2 SALIVARY GLAND (ICDO: C07-C08)

(Authors: Dr Lau Shin Hin, Dr Ajura Abd Jalil, Prof Dr Rosnah Mohd Zain)

Salivary gland cancer was not common. Compared with the Malays, Chinese had significantly higher incidence. The incidence of salivary gland malignancies in Malaysians appeared comparable with data from other countries as in Fig.5.2.2. The most common malignant tumour was mucoepidermoid carcinoma (27.9%), followed by adenoid cystic carcinoma (18.6%) and acinar cell carcinoma (11.3%). The commonest site for both sexes was the parotid gland.

Comparing the Age Specific Incidence Curves between the sexes, the cancer incidence in males increased exponentially after the age of 30 years whereas for females, the incidence rate plateaued after the age of 50 years.

Table 5.2.1: Salivary Gland Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	198	100	0.7	0.8	158	100	0.5	0.6
Malay	85	42.9	0.5	0.6	67	42.4	0.4	0.5
Chinese	84	42.4	1.1	1.0	60	38.0	0.8	0.7
Indian	12	6.1	0.4	0.6	15	9.5	0.6	0.6

Table 5.2.2: Salivary Gland Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.3	0.9	2.2	4.1	7.6	10.9	0.2
	Malay	0.1	0.1	0.3	0.5	0.8	1.1	2.2	3.1	0.1
	Chinese	0.1	0.2	0.6	0.7	1.2	2.5	2.8	6.2	0.1
	Indian	0.1	0.2	0.5	0.6	1.0	1.6	2.5	4.6	0.1
Female	All races	0	0.1	0.2	0.5	1.1	1.9	1.9	2.0	0.1
	Malay	0	0.1	0.2	0.4	0.7	1.5	1.3	1.8	0.1
	Chinese	0	0.2	0.1	0.6	1.3	2.3	2.3	2.1	0.1
	Indian	0	0	0.4	0	1.4	1.8	2.6	1.6	0.1

Figure 5.2.1: Salivary Gland Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

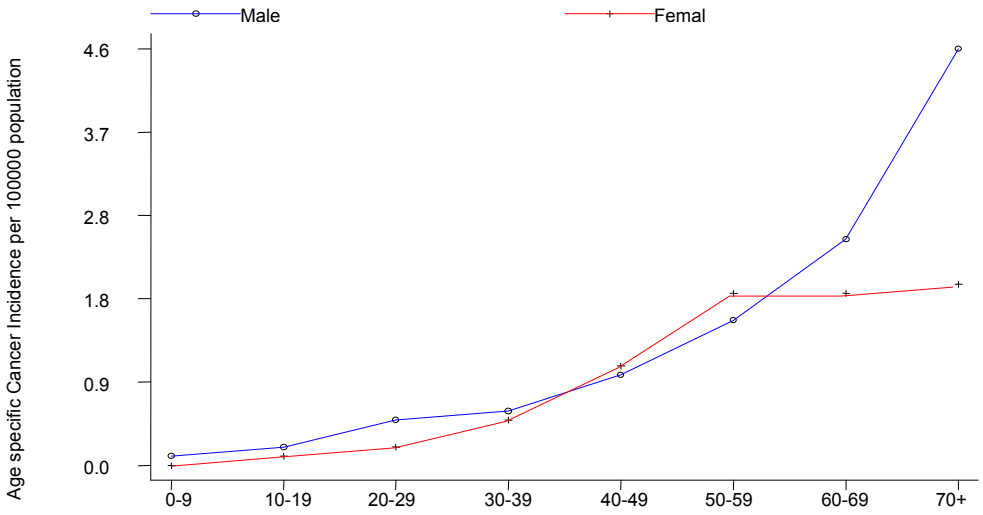


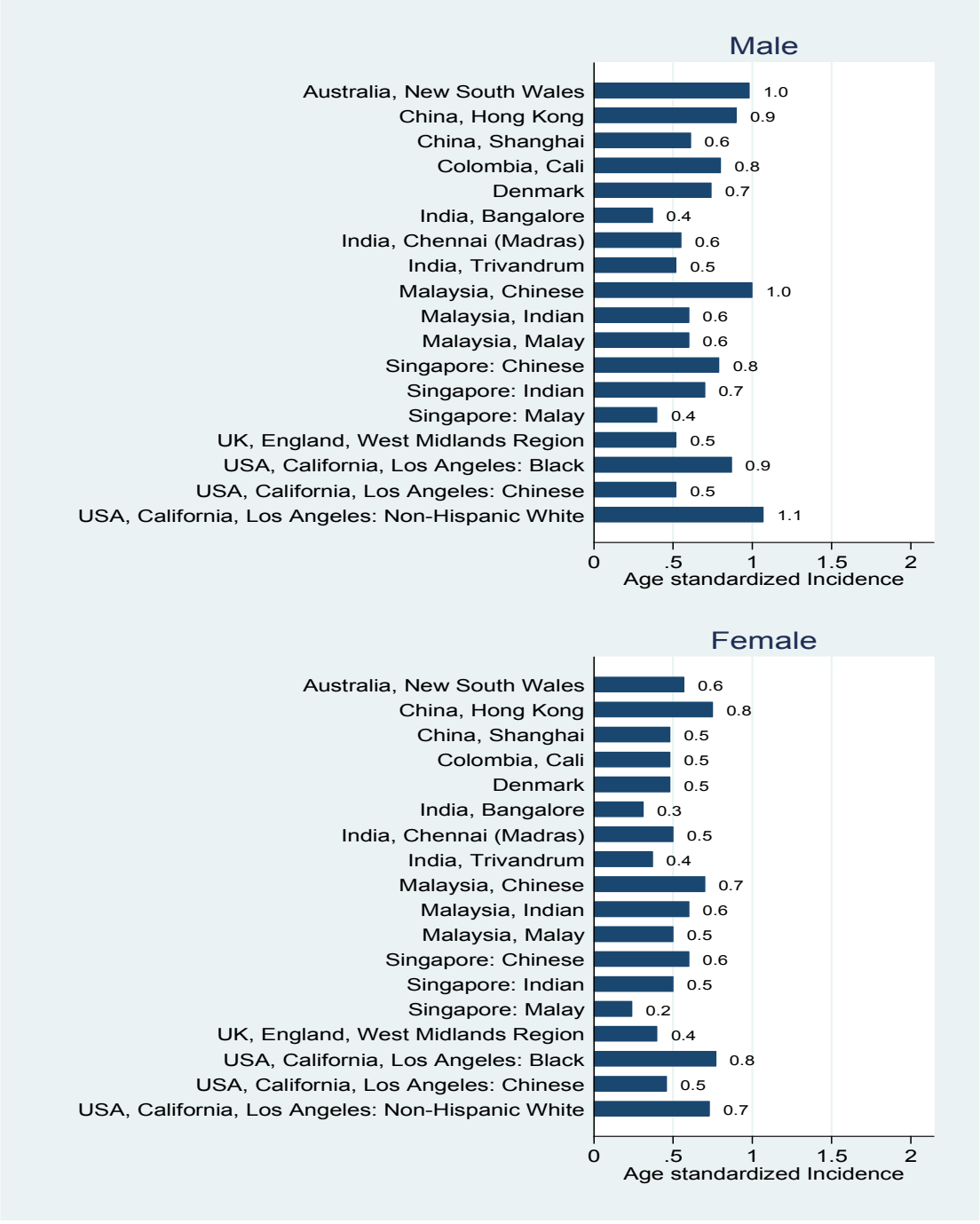
Table 5.2.3: Number (%) of Salivary Gland cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	2	1
8010/3	Carcinoma, NOS	6	2.9
8020/3	Carcinoma, undifferentiated type, NOS	4	2.0
8041/3	Small cell carcinoma, NOS	1	0.5
8050/3	Papillary carcinoma, NOS	1	0.5
8070/3	Squamous cell carcinoma, NOS	18	8.8
8082/3	Lymphoepithelial carcinoma	3	1.5
8090/3	Basal cell carcinoma, NOS	1	0.5
8140/3	Adenocarcinoma, NOS	16	7.8
8200/3	Adenoid cystic carcinoma	38	18.6
8310/3	Clear cell adenocarcinoma, NOS	1	0.5
8430/3	Mucoepidermoid carcinoma	57	27.9
8480/3	Mucinous adenocarcinoma	1	0.5
8500/3	Infiltrating duct carcinoma, NOS	1	0.5
8550/3	Acinar cell carcinoma	23	11.3
8562/3	Epithelial-myoepithelial carcinoma	2	1.0
8910/3	Embryonal rhabdomyosarcoma, NOS	1	0.5
8941/3	Carcinoma in pleomorphic adenoma	1	0.5
9140/3	Kaposi sarcoma	1	0.5
9571/3	Perineurioma, malignant	1	0.5
9590/3	Malignant lymphoma, NOS	8	3.9
9591/3	Malignant lymphoma, non-Hodgkin, NOS	9	4.4
9650/3	Hodgkin lymphoma, NOS	1	0.5
9680/3	ML, large B-cell, diffuse, NOS	1	0.5
9690/3	Follicular lymphoma, NOS	4	2.0
9930/3	Myeloid sarcoma	2	1.0
	TOTAL	204	100

Table 5.2.4: Number of Salivary Gland cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C07.9	Parotid gland	145	73.2	112	70.8
C08.0	Submandibular gland	31	15.7	26	16.5
C08.1	Sublingual gland	1	0.5	3	1.9
C08.9	Major salivary gland, NOS	21	10.6	17	10.8
	TOTAL	198	100	158	100

Figure 5.2.2: Salivary Gland International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.3 MOUTH (ICDO: C03-C06)

(Authors: Dr Lau Shin Hin, Dr Ajura Abd Jalil, Prof Dr Rosnah Mohd Zain)

Mouth cancer ranked twenty-second among cancers in males and fifteenth in females. In Malaysia, the incidence was highest among the Indians, especially among the females. In males, the crude incidence amongst the Indians was approximately 6 times higher than the Malays, whereas in females, the crude incidence amongst the Indians was approximately 20 times higher than the Malays.

The Age Specific Incidence Curve for both sexes demonstrated an exponential increase after the age of 40 years.

The incidence of Indian males in Malaysia (4.4) was lower than the ASR of Indian males in Trivandrum (9.3) and males in parts of France (Bas-Rhin ASR 9.1). However the ASR for Indian females (14.5) was higher than the highest ASR for females in the Indian subcontinent (Bangalore 7.5).

Squamous cell carcinoma, NOS was the most common malignancy (83.7%) reported in the mouth, followed by malignant lymphoma (3.6%) and mucoepidermoid carcinoma (2.8%). The most commonly reported site was the cheek mucosa in both sexes (32.9% in males, 44.9% in females).

Table 5.3.1: Mouth Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	303	100	1.0	1.4	434	100	1.5	2.0
Malay	92	30.4	0.5	0.7	98	22.6	0.5	0.8
Chinese	104	34.3	1.3	1.3	50	11.5	0.7	0.6
Indian	76	25.1	2.8	4.4	265	61.1	9.8	14.5

Table 5.3.2: Mouth Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0.1	0.2	0.3	1.6	3.1	6.2	9.6	0.2
	Malay	0	0.1	0.1	0.2	1.1	1.8	2.3	5.3	0.1
	Chinese	0	0.1	0.2	0.4	1.3	3.3	7.1	7.0	0.2
	Indian	0	0	0.2	0.5	3.9	8.1	19.2	43.0	0.5
Female	All races	0	0.1	0.1	0.3	1.6	3.7	9.9	17.2	0.3
	Malay	0	0.1	0	0.3	1.0	1.5	2.7	7.5	0.1
	Chinese	0	0	0.1	0.5	0.3	0.9	2.3	6.5	0.1
	Indian	0	0	0	0.5	8.2	21.6	84.2	139.5	2.0

Figure 5.3.1: Mouth Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

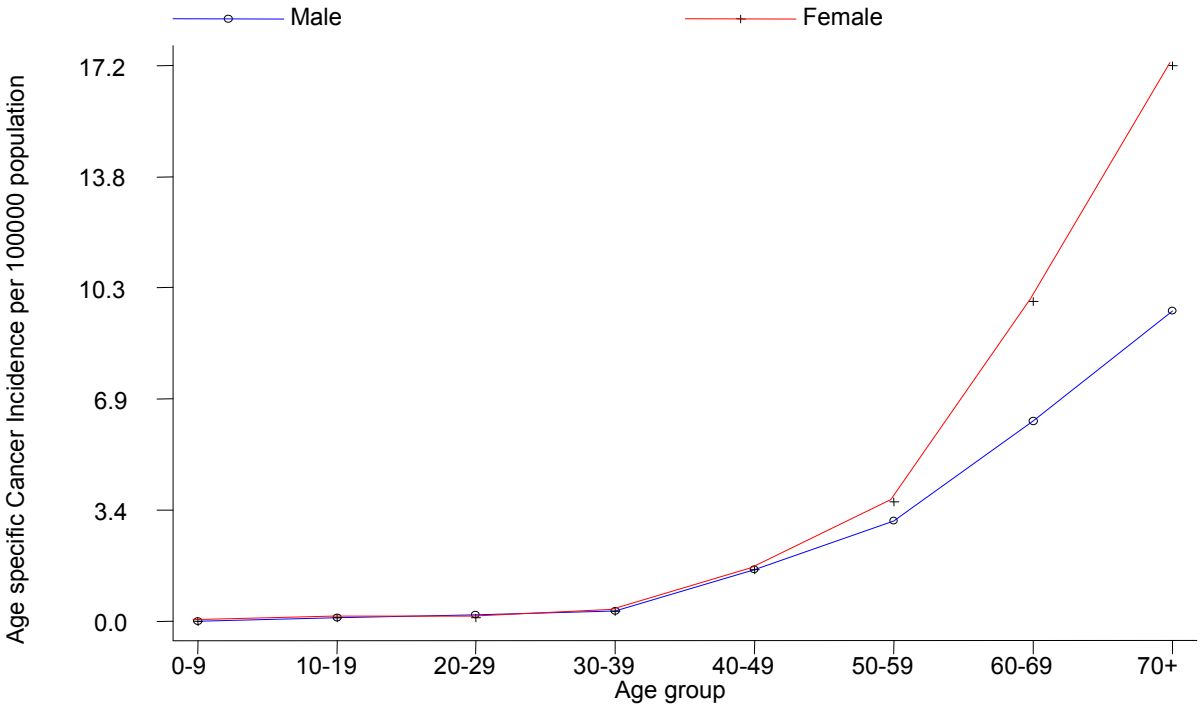


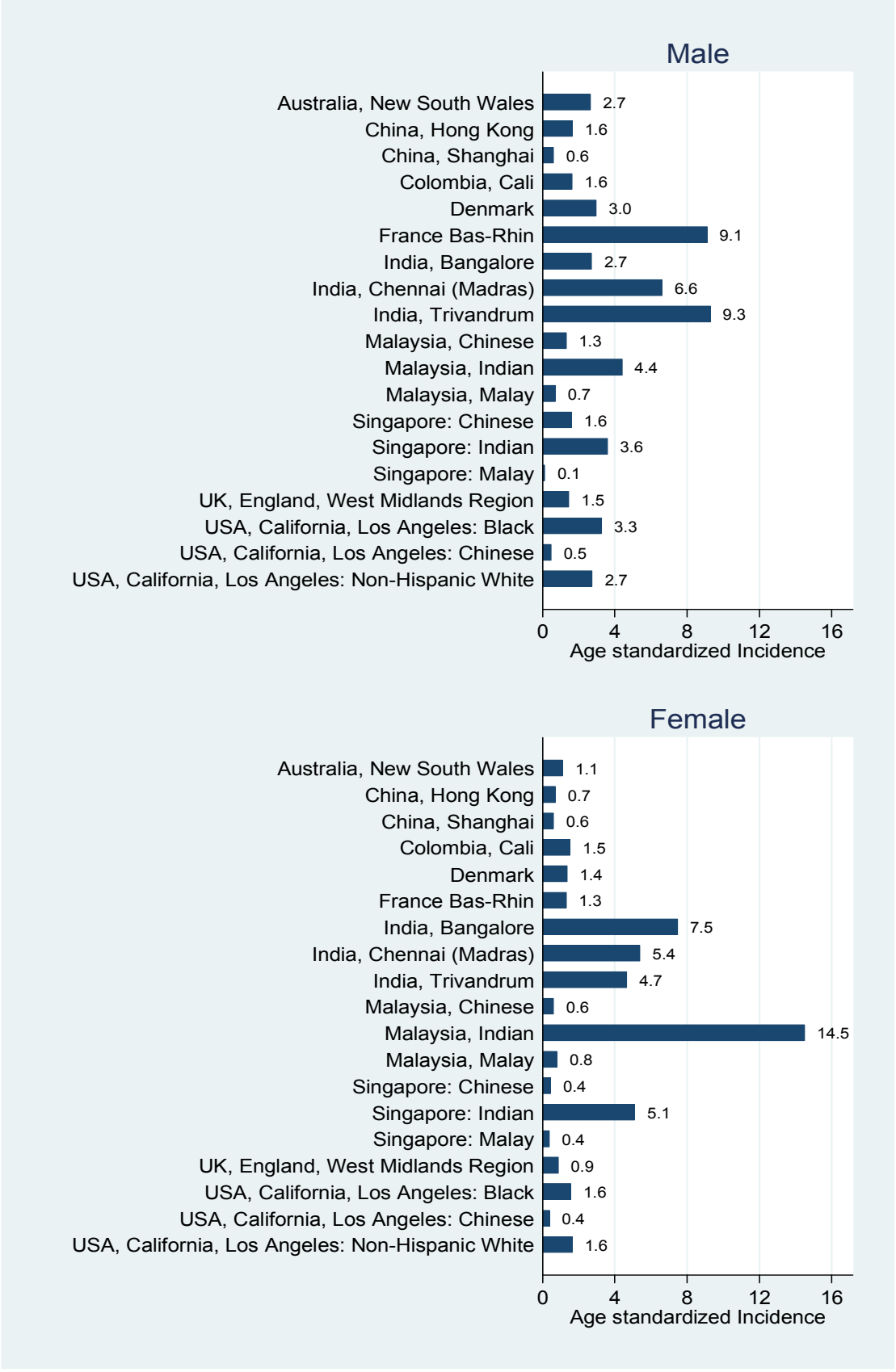
Table 5.3.3: Number of Mouth cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C03.0	Upper gum	7	2.3	4	0.9
C03.1	Lower gum	4	1.3	11	2.5
C03.9	Gum, NOS	15	5.0	21	4.8
C04.0	Anterior floor of mouth	0	0	1	0.2
C04.9	Floor of mouth, NOS	33	10.9	7	1.6
C05.0	Hard palate	11	3.6	11	2.5
C05.1	Soft palate, NOS (excludes nasopharyngeal surface of soft palate C11.3)	25	8.3	16	3.7
C05.2	Uvula	3	1.0	0	0
C05.9	Palate, NOS	20	6.6	30	6.9
C06.0	Cheek mucosa	100	32.9	195	44.9
C06.1	Vestibule of mouth	2	0.7	7	1.6
C06.2	Retromolar area	5	1.7	8	1.8
C06.8	Overlapping lesion of other and unspecified parts of mouth	1	0.3	0	0
C06.9	Mouth, NOS	77	25.4	123	28.3
	TOTAL	303	100	434	100

Table 5.3.4: Number (%) of Mouth cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	1	0.2
8004/3	Malignant tumor, spindle cell type	1	0.2
8005/3	Malignant tumor, clear cell type	1	0.2
8010/3	Carcinoma, NOS	5	1.0
8020/3	Carcinoma, undifferentiated type, NOS	3	0.6
8041/3	Small cell carcinoma, NOS	1	0.2
8051/3	Verrucous carcinoma, NOS	3	0.6
8052/3	Papillary squamous cell carcinoma	1	0.2
8070/3	Squamous cell carcinoma, NOS	421	83.7
8071/3	Sq. cell carcinoma, keratinizing, NOS	5	1.0
8074/3	Sq. cell carcinoma, spindle cell	1	0.2
8076/3	Sq. cell carcinoma, micro-invasive	1	0.2
8090/3	Basal cell carcinoma, NOS	4	0.8
8140/3	Adenocarcinoma, NOS	2	0.4
8200/3	Adenoid cystic carcinoma	8	1.6
8247/3	Merkel cell carcinoma	1	0.2
8430/3	Mucoepidermoid carcinoma	14	2.8
8480/3	Mucinous adenocarcinoma	1	0.2
8550/3	Acinar cell carcinoma	1	0.2
8560/3	Adenosquamous carcinoma	1	0.2
8720/3	Malignant melanoma, NOS	3	0.6
8800/3	Sarcoma, NOS	1	0.2
8801/3	Spindle cell sarcoma	1	0.2
8830/3	Fibrous histiocytoma, malignant	1	0.2
8941/3	Carcinoma in pleomorphic adenoma	2	0.4
9180/3	Osteosarcoma, NOS	1	0.2
9590/3	Malignant lymphoma, NOS	6	1.2
9591/3	Malignant lymphoma, non-Hodgkin, NOS	7	1.4
9670/3	ML, small B lymphocytic, NOS	1	0.2
9680/3	ML, large B-cell, diffuse, NOS	1	0.2
9690/3	Follicular lymphoma, NOS	1	0.2
9695/3	Follicular lymphoma, grade 1	1	0.2
9702/3	Mature T-cell lymphoma, NOS	1	0.2
	TOTAL	503	100

Figure 5.3.2: Mouth International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.4 NASOPHARYNX (ICDO: C11)

(Author: Dr Saraiza Abu Bakar)

Nasopharyngeal carcinoma was reported in 2315 males with ASR of 9.2 and in 900 females with ASR of 3.5. Male to female ratio was 2.6 :1. Nasopharyngeal carcinoma occured in all age groups with increasing incidence after the age of 30 years. The incidence peaked at 60-69 years for males and 50-69 years for females.

The Chinese had the highest incidence with ASR of 17.0 in males and ASR of 6.6 in females. This was followed by Malays and Indians. The ASR of Malaysian Chinese males and females ranked second after Hong Kong where the ASR was 21.4 and 8.3 respectively. By comparison, Singapore Chinese males and females had an ASR of 16.3 and 5.4 respectively.

Life time risk for Chinese males and females was 1 in 50 and 1 in 142 respectively. By comparison, the life time risk for Malay males and females was 1 in 200 and 1 in 500 respectively and in Indian males and females was 1in 500 and 1in 1000 respectively.

Table 5.4.1: Nasopharynx Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	2315	100	7.8	9.2	900	100	3.1	3.5
Malay	556	24	3.0	4.2	227	25.2	1.3	1.6
Chinese	1485	64.1	18.6	17.0	563	62.6	7.4	6.6
Indian	44	1.9	1.6	2.0	24	2.7	0.9	1.0

Table 5.4.2: Nasopharynx Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.1	0.9	1.9	8.5	20.4	25.2	31.1	19.0	1.0
	Malay	0.1	0.8	1.2	2.5	7.1	11.0	15.8	13.1	0.5
	Chinese	0.1	0.9	2.4	20.1	42.7	46	51.2	28.3	1.8
	Indian	0	0.2	1.3	1.2	2.5	5.0	9.1	5.9	0.2
Female	All races	0	0.4	0.9	4.0	7.2	10.3	10.1	6.9	0.4
	Malay	0	0.4	0.5	1.5	3.5	4.2	4.0	3.6	0.2
	Chinese	0.1	0.2	1.6	9.1	14.3	18.6	19.3	11.8	0.7
	Indian	0	0.2	0.6	0.9	0.8	4.0	2.6	1.6	0.1

Figure 5.4.1: Nasopharynx Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

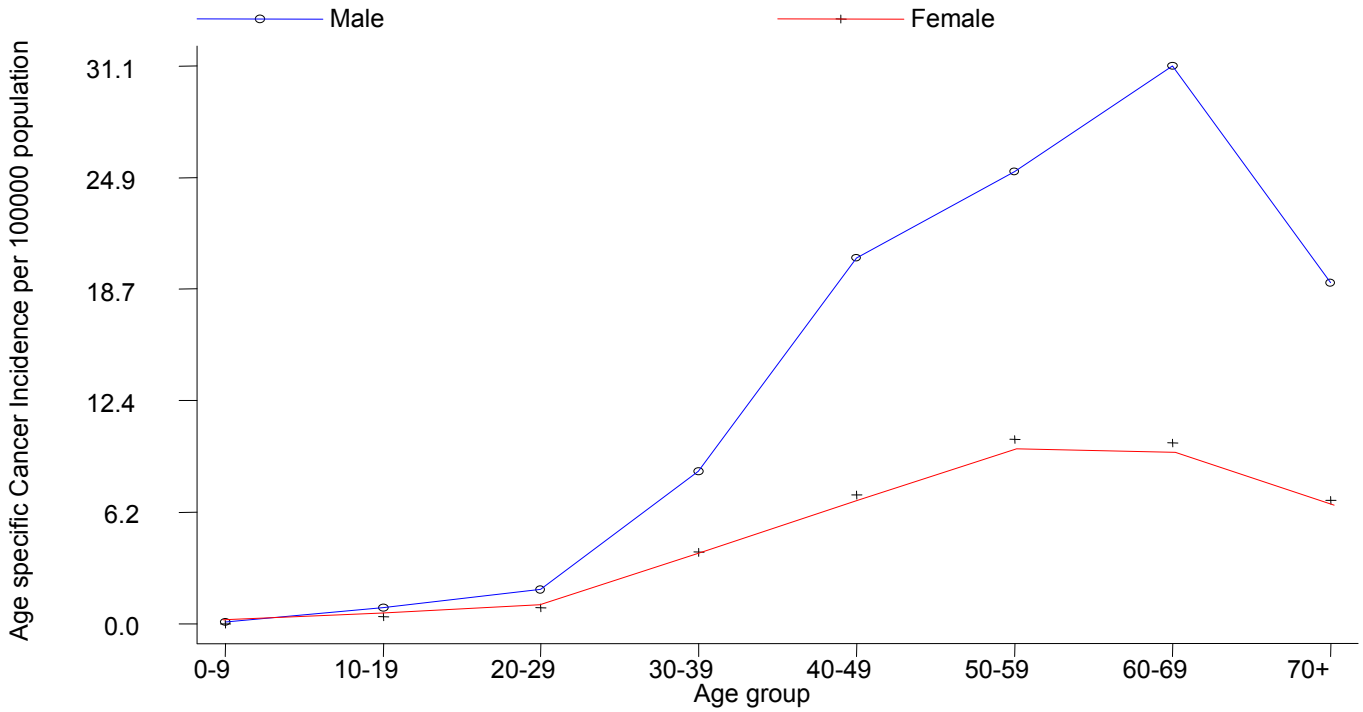
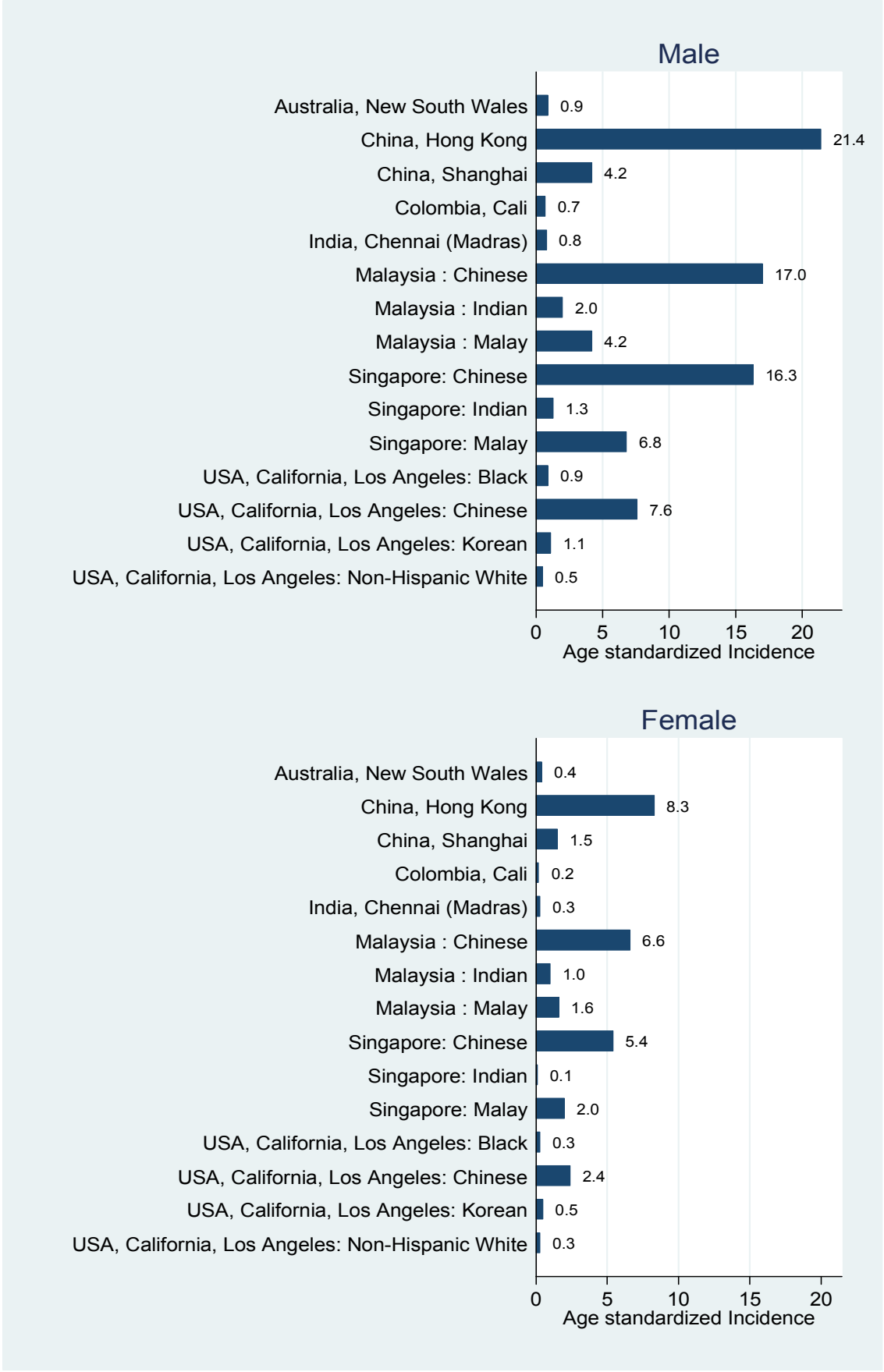


Figure 5.4.2: Nasopharynx International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

DIGESTIVE SYSTEM

5.5 Oesophagous

5.6 Stomach

5.7 Large Bowel

5.8 Liver

5.9 Gall Bladder

5.10 Pancreas

5.5 DIGESTIVE ORGANS

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

As a group, digestive cancers formed the largest group of cancers accounting for 27.4% of all cancers in males and 16.4% in females. Most were carcinomas which increased in incidence exponentially from above the age of 40 years. The incidence was highest among Chinese except for oesophageal cancers.

5.5 OESOPHAGUS (ICDO: C15)

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

In Peninsular Malaysia, oesophageal cancer accounted for 1.8% of cancers among males and 0.8% of cancers among females. The age specific incidence curve rose sharply after the age of 60 years. Squamous cell carcinomas, NOS (55.9%) formed the majority of oesophageal cancers, while adenocarcinomas, NOS accounted for 33.7%.

Indians had the highest incidence of oesophageal cancer in both males and females. The incidence for Indians was 4.3 times that of Malay males and 9.9 times that of Malay females.
The male to female rate ratio for Indians was nearly 1:1 while that for Chinese and Malays was approximately 3:1 and 2:1 respectively.

The incidence was exceptionally high among Indian women in Malaysia (6.4) which was higher than the incidence reported in UK, England (3.5), Shanghai (4.2), Madras (6.1) and Indian women in Singapore (1.9). In Singapore, Chinese males had the highest incidence (7.0) as compared to the Indian and Malay males. The incidence among Indian males in Malaysia (6.3) was comparable to ASR recorded in Madras (males 8.7), Shanghai (8.2) and UK, England (8.4).

Table 5.5.1: Oesophagus Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	521	100	1.8	2.6	290	100	1.0	1.3
Malay	167	32.1	0.9	1.6	82	28.3	0.5	0.7
Chinese	222	42.6	2.8	3.0	73	25.2	1.0	0.9
Indian	106	20.3	4.0	6.3	122	42.1	4.5	6.4

Table 5.5.2: Oesophagus Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.1	0.5	1.4	4.6	14.3	23.3	0.3
	Malay	0	0	0.1	0.2	0.8	3.3	8.4	13.1	0.2
	Chinese	0.1	0	0.2	0.2	1.5	4.8	16.1	29.8	0.4
	Indian	0	0	0	1.5	3.9	9.0	37.4	56.6	0.8
Female	All races	0	0	0	0.2	0.9	2.1	7.3	12.5	0.2
	Malay	0	0	0	0.1	0.5	1.4	4.1	5.9	0.1
	Chinese	0	0	0	0.1	0.4	0.4	3.3	14.4	0.1
	Indian	0	0	0.4	1.4	4.6	9.7	41.2	44.4	0.8

Figure 5.5.1: Oesophagus Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

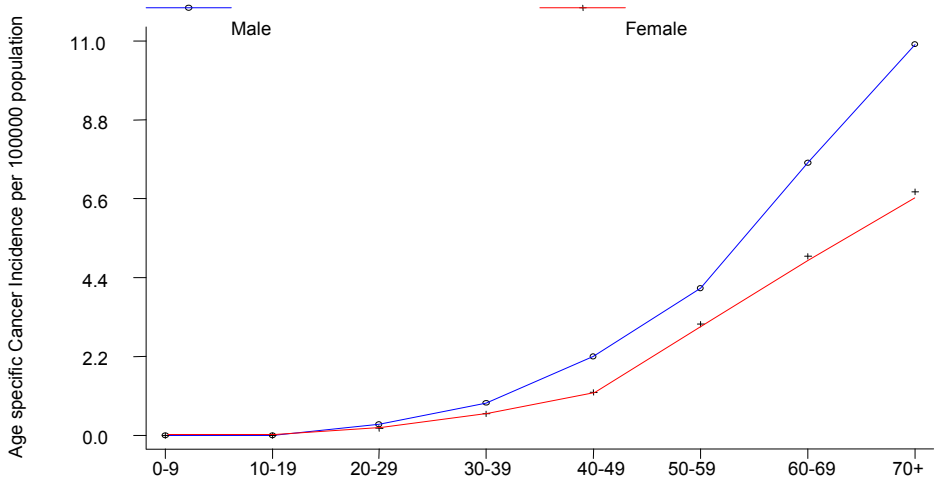


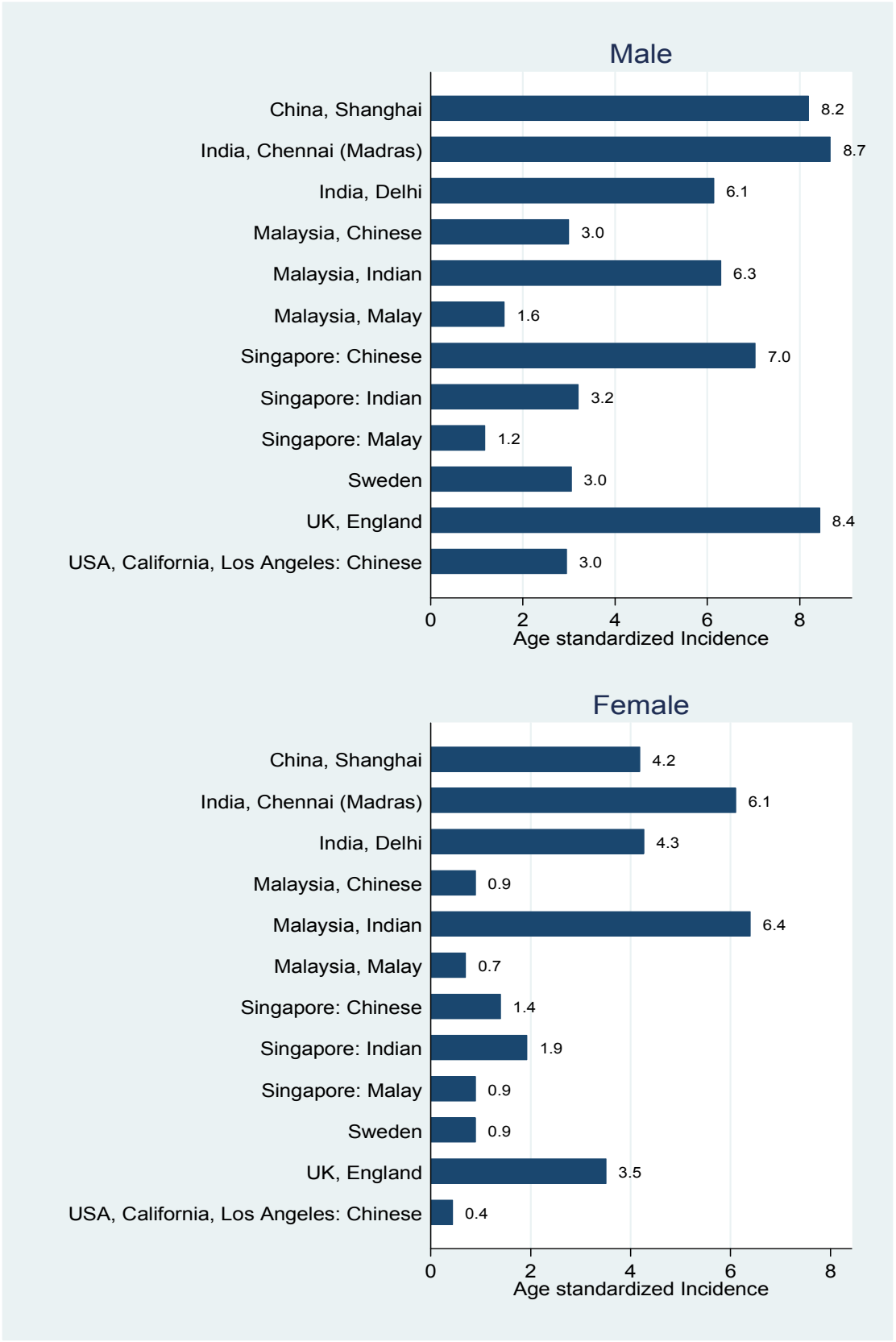
Table 5.5.3: Number of Oesophagus cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C15.0	Cervical esophagus	1	0.2	1	0.3
C15.3	Upper third of esophagus	8	1.5	2	0.7
C15.4	Middle third of esophagus	4	0.8	0	0
C15.5	Lower third of esophagus	11	2.1	11	3.8
C15.8	Overlapping lesion of esophagus	7	1.3	3	1.0
C15.9	Esophagus, NOS	490	94.1	273	94.2
	TOTAL	521	100	290	100

Table 5.5.4: Number (%) of Oesophagus cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	2	0.5
8001/3	Tumor cells, malignant	1	0.2
8010/3	Carcinoma, NOS	24	5.9
8020/3	Carcinoma, undifferentiated type, NOS	1	0.2
8070/3	Squamous cell carcinoma, NOS	226	55.9
8071/3	Sq. cell carcinoma, keratinizing, NOS	4	1.0
8072/3	Sq. cell carcinoma, lg. cell, non-ker., NOS	2	0.5
8140/3	Adenocarcinoma, NOS	136	33.7
8480/3	Mucinous adenocarcinoma	2	0.5
8481/3	Mucin-producing adenocarcinoma	1	0.2
8490/3	Signet ring cell carcinoma	1	0.2
8560/3	Adenosquamous carcinoma	2	0.5
8890/3	Leiomyosarcoma, NOS	1	0.2
9680/3	ML, large B-cell, diffuse, NOS	1	0.2
	TOTAL	404	100

Figure 5.5.2: Oesophagus International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.6 STOMACH (ICDO: C16)

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

Stomach cancer ranked as the seventh most common cancer in males in Peninsular Malaysia and tenth among females. Adenocarcinomas, NOS formed the majority (72.3%) of stomach cancers. The female to male ratio was 1 : 1.4.

The age specific incidence curve increased exponentially with age. The sharp rise occurred after 60 years of age. The difference between the age specific incidence curve in males and females widened with increasing age.

In Peninsular Malaysia, Chinese and Indians had similar high rates for males (11.3 and 11.9 respectively) and females (7.7 and 7.2 respectively), as compared to Malays (male ASR 2.2, female ASR 1.3).

The ASR for Chinese males and females (11.3 and 7.7 respectively) in Peninsular Malaysia was much lower than in their counterparts in Singapore (25.6 and 12.4 respectively). The ASR in both Malay men and women in Peninsular Malaysia (2.2 and 1.3) were about 3 times lower than their counterparts in Singapore (6.6 and 4.0 respectively). Indian males and females (ASR 11.9 and 7.2 respectively) in Peninsular Malaysia were observed to have higher rates than Indian males and females in Singapore (9.0 and 6.0 respectively).

Table 5.6.1: Stomach Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	1389	100	4.7	7.0	1014	100	3.5	4.5
Malay	255	20.2	1.4	2.2	162	17.2	0.9	1.3
Chinese	817	64.6	10.2	11.3	635	67.3	8.3	7.7
Indian	193	15.3	7.2	11.9	146	15.5	5.4	7.2

Table 5.6.2: Stomach Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.3	1.6	4.4	11.1	31.6	74.4	0.8
	Malay	0	0	0.1	0.7	2.6	5.4	10.3	14.2	0.3
	Chinese	0	0	0.6	1.9	5.4	14.8	48.6	138.5	1.3
	Indian	0	0.2	0.2	1.7	6.4	18.0	52.5	134.8	1.6
Female	All races	0	0	0.2	1.4	3.8	8.4	20.3	42.5	0.5
	Malay	0	0	0.2	0.6	1.3	3.3	5.5	9.1	0.2
	Chinese	0	0.1	0.2	2.4	6.2	12.9	32.7	81.7	0.9
	Indian	0	0	0.2	2.6	8.2	13.3	33.3	57.1	0.9

Figure 5.6.1: Stomach Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

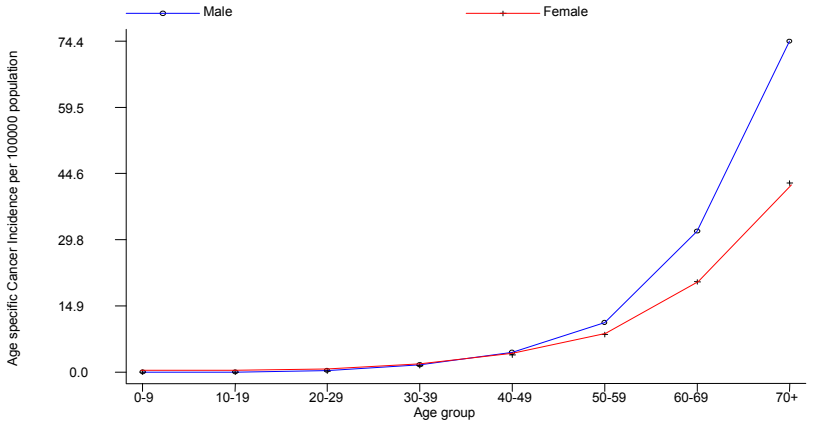


Table 5.6.3: Number of Stomach cases by subsite, Peninsular Malaysia 2003-2005

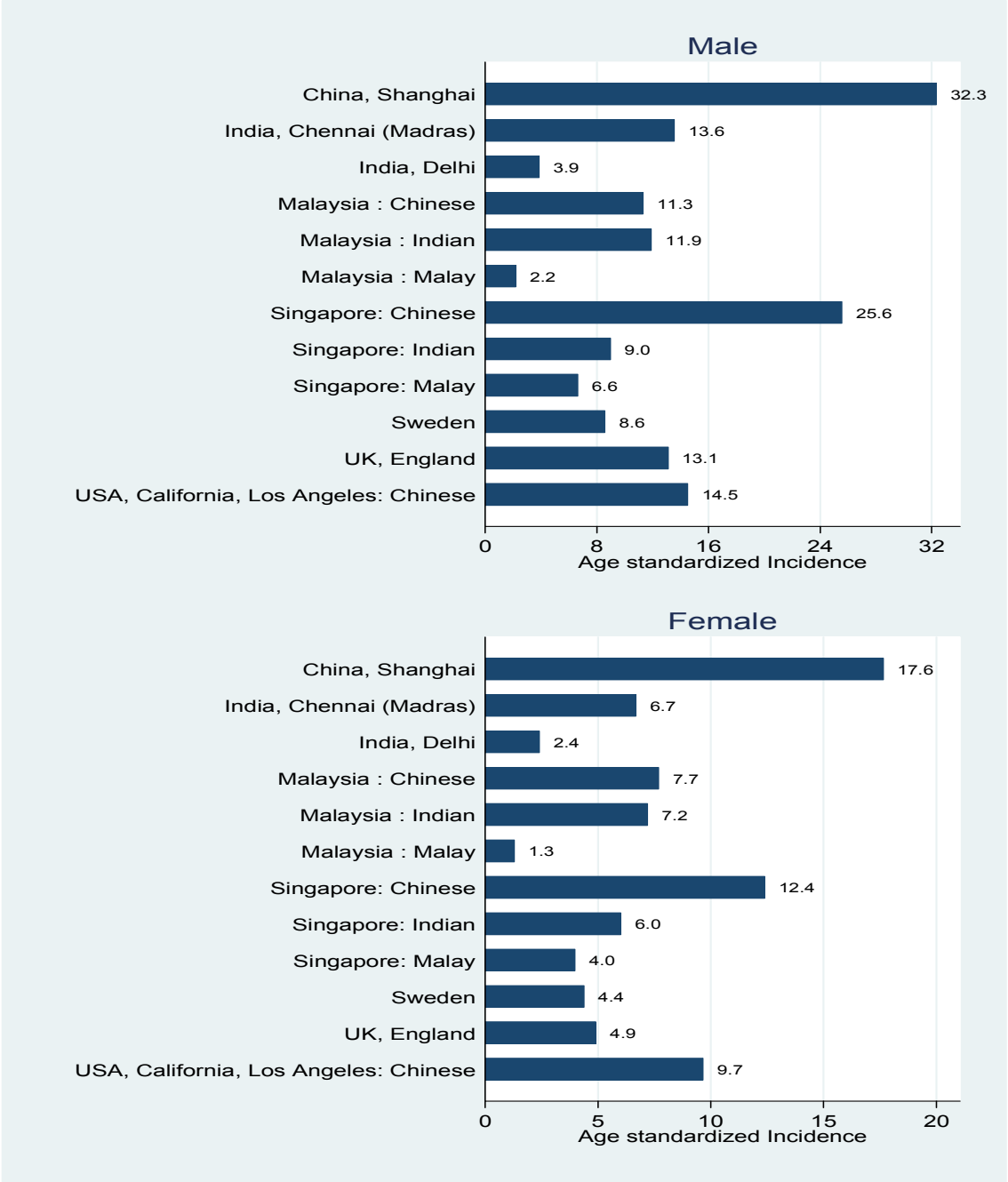
	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C16.0	Cardia, NOS	66	4.8	26	2.6
C16.1	Fundus of stomach	4	0.3	0	0
C16.2	Body of stomach	1	0.1	1	0.1
C16.3	Gastric antrum	31	2.2	21	2.1
C16.4	Pylorus	14	1.0	10	1.0
C16.5	Lesser curvature of stomach, NOS	2	0.1	1	0.1
C16.6	Greater curvature of stomach, NOS	0	0	1	0.1
C16.8	Overlapping lesion of stomach	4	0.3	1	0.1
C16.9	Stomach, NOS	1267	91.2	953	93.9
	TOTAL	1389	100	1014	100

Table 5.6.4: Number (%) of Stomach cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	5	0.4
8010/3	Carcinoma, NOS	64	5.1
8020/3	Carcinoma, undifferentiated type, NOS	2	0.2
8021/3	Carcinoma, anaplastic type, NOS	6	0.5
8070/3	Squamous cell carcinoma, NOS	22	1.8
8072/3	Sq. cell carcinoma, lg. cell, non-ker., NOS	1	0.1
8140/3	Adenocarcinoma, NOS	906	72.3
8144/3	Adenocarcinoma, intestinal type	26	2.1
8145/3	Carcinoma, diffuse type	22	1.8
8240/3	Carcinoid tumor, NOS	8	0.6
8246/3	Neuroendocrine carcinoma, NOS	2	0.2
8260/3	Papillary adenocarcinoma, NOS	2	0.2
8263/3	Adenocarcinoma in tubulovillous adenoma	1	0.1
8480/3	Mucinous adenocarcinoma	17	1.4
8481/3	Mucin-producing adenocarcinoma	3	0.2
8490/3	Signet ring cell carcinoma	70	5.6
8800/3	Sarcoma, NOS	4	0.3
8890/3	Leiomyosarcoma, NOS	16	1.3

	Morphology	No.	%
8935/3	Stromal sarcoma, NOS	1	0.1
8936/3	Gastrointestinal stromal sarcoma	18	1.4
9590/3	Malignant lymphoma, NOS	5	0.4
9591/3	Malignant lymphoma, non-Hodgkin, NOS	37	3
9680/3	ML, large B-cell, diffuse, NOS	7	0.6
9699/3	Marginal zone B-cell lymphoma, NOS	6	0.5
9702/3	Mature T-cell lymphoma, NOS	1	0.1
9930/3	Myeloid sarcoma	1	0.1
	TOTAL	1253	100

Figure 5.6.2: Stomach International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.7 LARGE BOWEL (ICDO: C18-C21)

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

Cancer of the large bowel, which includes cancer of the colon, rectum and anus, was the commonest cancer among men in Peninsular Malaysia accounting for 14.5% of all cancers. Among women, large bowel cancers ranked third, accounting for 9.9% of cancers. Among elderly women above 70 years of age, large bowel cancer was the most common cancer. Morphologically, adenocarcinomas, NOS (86.4%) were most commonly reported.

The age specific incidence curve of large bowel cancer rose exponentially above the age of 40 years. The difference in the incidence for large bowel cancer between men and women became wider after the age of 60 years. The male to female rate ratio was 1.1 : 1, with more males than females in all the major ethnic groups. The cumulative lifetime risk of developing large bowel cancer in males was 1 : 38 and 1 : 50 for females.

Chinese in Peninsular Malaysia had a higher incidence of large bowel cancer compared with Malays and Indians. The cumulative lifetime risk of large bowel cancer for Chinese was 1 : 27 for men and 1 : 33 for women. For Indians it was 1 : 50 for men and 1 : 67 for women and Malays had a cumulative lifetime risk of 1 : 67 and 1 : 83 for men and women respectively.

The ASR for large bowel cancer in Peninsular Malaysia for Chinese males and females were lower in Malaysia (20.9 and 16.8 respectively) compared to Singapore (44.1 and 31.7 respectively). Malaysian Indian males (15.7) had a higher incidence of large bowel cancer compared to their counterparts in Singapore (8.7) whereas Malay males in Malaysia (12.3) had a lower incidence compared to the Malay males in Singapore (20.2).

Chinese in Malaysia had an Age specific rate that was comparable to Hong Kong (males 38.5, females 28.3) and Taiwan (males 28.8, females 23.5). Age specific rates for Indians in Malaysia were higher than in Mumbai (males, 6.7, females 5.5) and Delhi (males 5.6, females 4.0).

Table 5.7.1: Large Bowel Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	4286	100	14.5	20.9	3791	100	13.1	16.8
Malay	1386	32.3	7.6	12.3	1208	31.9	6.7	9.7
Chinese	2353	54.9	29.5	31.5	2141	56.5	28.0	26.2
Indian	276	6.4	10.3	15.7	256	6.8	9.5	12.9

Table 5.7.2: Large Bowel Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.1	0.3	1.4	5	14.8	41.4	104.8	177.2	2.6
	Malay	0.1	0.2	1.3	3.9	10.1	26.4	59.7	93.6	1.5
	Chinese	0	0.4	0.7	6.4	20.9	59.1	156.1	290.6	3.7
	Indian	0	0.6	1.9	4.1	10.6	27.9	82.8	127.0	2.0
Female	All races	0	0.2	1.6	5.3	14.4	37.8	76.9	133.6	2.0
	Malay	0	0.2	1.4	3.2	10.9	27.2	46.5	49.6	1.2
	Chinese	0	0.2	1.4	7.6	19.8	55.5	119.8	236.4	3.0
	Indian	0	0	1.5	5.4	8.5	24.7	52.6	125.2	1.5

Figure 5.7.1: Large Bowel Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

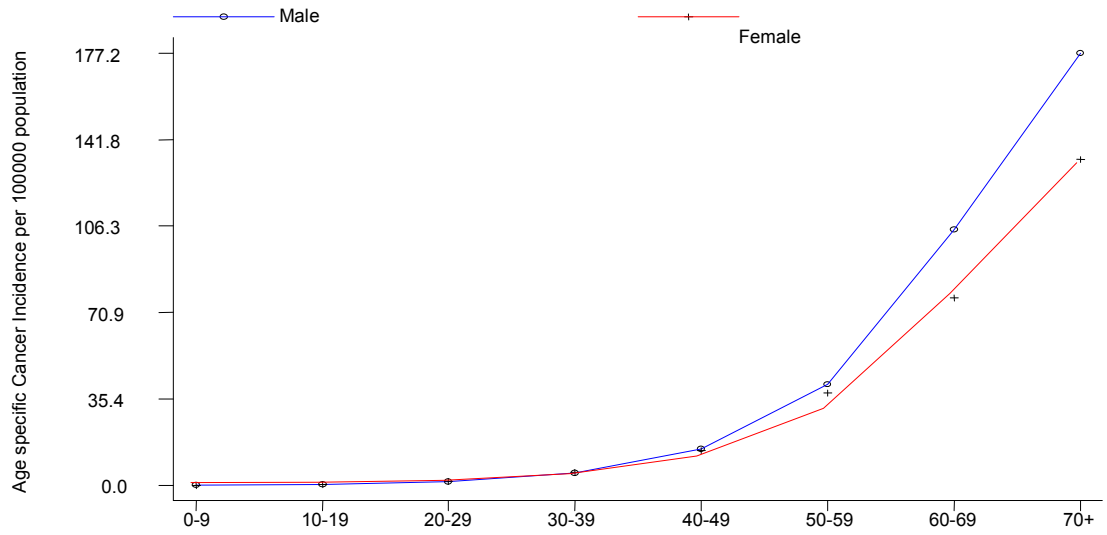


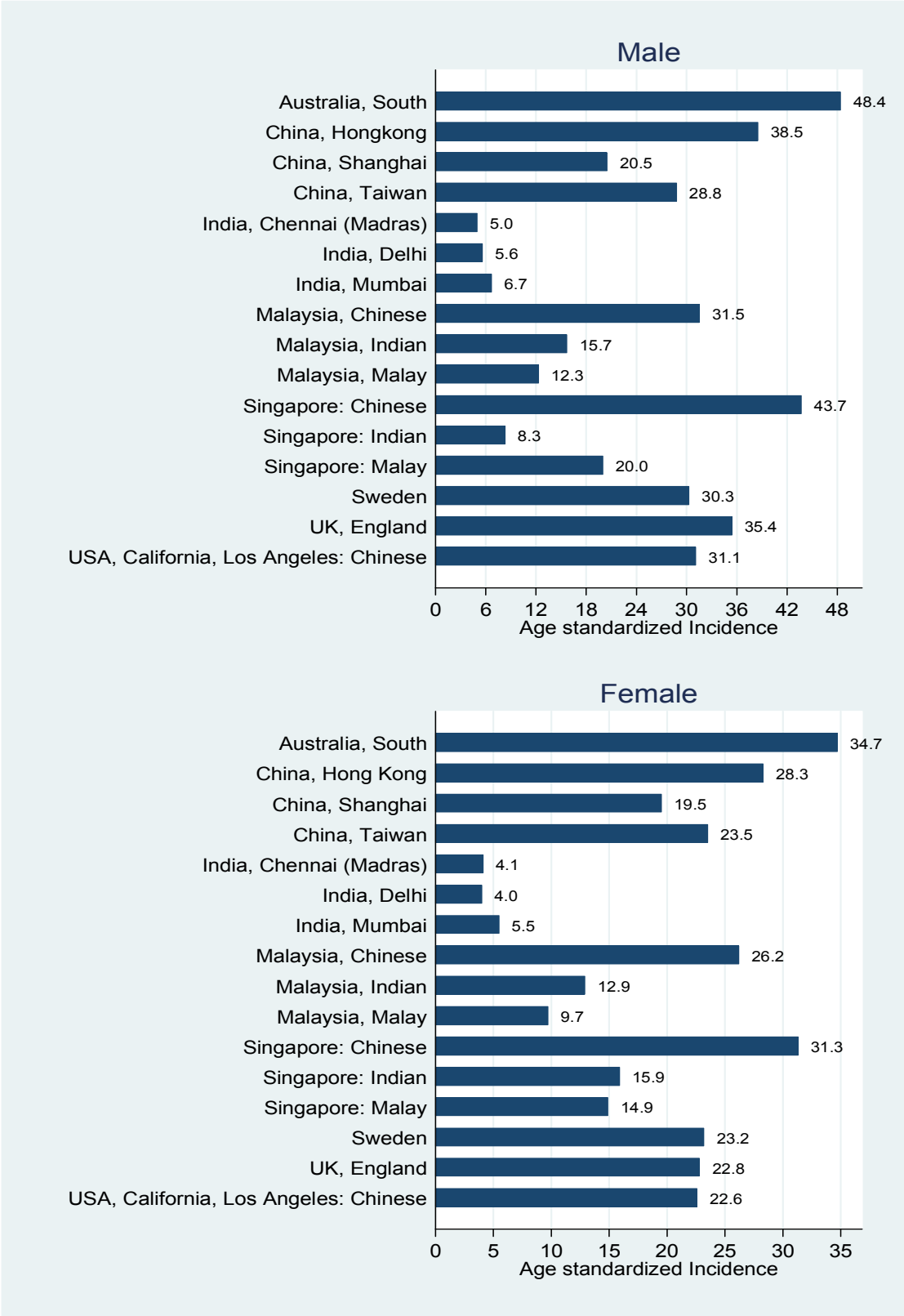
Table 5.7.3: Number of Large Bowel cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C18.0	Cecum	115	2.7	161	4.2
C18.1	Appendix	23	0.5	37	1.0
C18.2	Ascending colon	97	2.3	89	2.3
C18.3	Hepatic flexure of colon	24	0.6	27	0.7
C18.4	Transverse colon	53	1.2	42	1.1
C18.5	Splenic flexure of colon	14	0.3	12	0.3
C18.6	Descending colon	67	1.6	50	1.3
C18.7	Sigmoid colon	394	9.2	407	10.7
C18.8	Overlapping lesion of colon	12	0.3	18	0.5
C18.9	Colon, NOS	1417	33.1	1362	35.9
C19.9	Rectosigmoid junction	329	7.7	270	7.1
C20.9	Rectum, NOS	1629	38.0	1235	32.6
C21.0	Anus, NOS (excludes skin of anus and perianal skin C44.5)	65	1.5	51	1.3
C21.1	Anal canal	20	0.5	8	0.2
C21.2	Cloacogenic zone	0	0	2	0.1
C21.8	Overlapping lesion of rectum, anus and anal canal	27	0.6	20	0.5
	TOTAL	4286	100	3791	100

Table 5.7.4: Number (%) of Large Bowel cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	27	0.7
8010/3	Carcinoma, NOS	120	2.9
8020/3	Carcinoma, undifferentiated type, NOS	4	0.1
8041/3	Small cell carcinoma, NOS	3	0.1
8046/3	Non-small cell carcinoma	1	0
8050/3	Papillary carcinoma, NOS	1	0
8070/3	Squamous cell carcinoma, NOS	35	0.8
8072/3	Sq. cell carcinoma, lg. cell, non-ker., NOS	2	0
8083/3	Basaloid squamous cell carcinoma	1	0
8123/3	Basaloid carcinoma	2	0
8140/3	Adenocarcinoma, NOS	3567	86.4
8143/3	Superficial spreading adenocarcinoma	1	0
8144/3	Adenocarcinoma, intestinal type	2	0
8147/3	Basal cell adenocarcinoma	1	0
8160/3	Cholangiocarcinoma	1	0
8210/3	Adenocarcinoma in adenomatous polyp	5	0.1
8211/3	Tubular adenocarcinoma	3	0.1
8240/3	Carcinoid tumor, NOS	54	1.3
8246/3	Neuroendocrine carcinoma, NOS	2	0
8260/3	Papillary adenocarcinoma, NOS	39	0.9
8262/3	Villous adenocarcinoma	9	0.2
8263/3	Adenocarcinoma in tubulovillous adenoma	56	1.4
8310/3	Clear cell adenocarcinoma, NOS	2	0
8430/3	Mucoepidermoid carcinoma	1	0
8440/3	Cystadenocarcinoma, NOS	1	0
8470/3	Mucinous cystadenocarcinoma, NOS	1	0
8480/3	Mucinous adenocarcinoma	81	2
8481/3	Mucin-producing adenocarcinoma	9	0.2
8490/3	Signet ring cell carcinoma	17	0.4
8560/3	Adenosquamous carcinoma	4	0.1
8720/3	Malignant melanoma, NOS	5	0.1
8800/3	Sarcoma, NOS	2	0
8806/3	Desmoplastic small round cell tumor	1	0
8810/3	Fibrosarcoma, NOS	1	0
8890/3	Leiomyosarcoma, NOS	3	0.1
8910/3	Embryonal rhabdomyosarcoma, NOS	1	0
8936/3	Gastrointestinal stromal sarcoma	4	0.1
9590/3	Malignant lymphoma, NOS	5	0.1
9591/3	Malignant lymphoma, non-Hodgkin, NOS	32	0.8
9651/3	Hodgkin lymphoma, lymphocyte-rich	1	0
9670/3	ML, small B lymphocytic, NOS	2	0
9680/3	ML, large B-cell, diffuse, NOS	14	0.3
9687/3	Burkitt lymphoma, NOS	1	0
9699/3	Marginal zone B-cell lymphoma, NOS	2	0
9717/3	Intestinal T-cell lymphoma	1	0
	TOTAL	4127	100

Figure 5.7.2: Large Bowel International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5. 8 LIVER (ICDO: C22)

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

Liver cancer accounted for 3.6% of cancers among males in Peninsular Malaysia and 1.2% among females. The male to female ratio was 2.4 : 1. Chinese had the highest incidence as compared to Malays and Indians for both sexes.

The incidence rates of liver cancer reported in all races in males and females were lower than their counterparts in Singapore. Chinese in Malaysia had a lower incidence compared to Chinese in Hong Kong, Shanghai and Los Angeles.

Approximately 82% of cases reported morphologically were hepatocellular carcinoma, NOS.

Table 5.8.1: Liver Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	1060	100	3.6	4.9	449	100	1.6	2.0
Malay	307	29	1.7	2.5	163	36.3	0.9	1.2
Chinese	628	59.2	7.9	8.0	233	51.9	3.0	2.9
Indian	55	5.2	2.0	3.2	30	6.7	1.1	1.3

Table 5.8.2: Liver Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.2	0.2	0.4	1.2	5.1	12.8	23.9	27.9	0.6
	Malay	0.3	0.1	0.3	1.0	2.7	7.4	9.7	13.9	0.3
	Chinese	0	0.4	0.9	1.5	8.6	21.3	39.5	46.4	0.9
	Indian	0.4	0	0	0.2	2.0	6.8	18.2	23.4	0.4
Female	All races	0.5	0.1	0.1	0.5	2.1	4.5	9.0	11.0	0.2
	Malay	0.6	0.1	0.1	0.3	1.5	2.9	5.5	4.8	0.2
	Chinese	0.5	0.1	0.1	0.9	2.4	6.9	14.7	18.8	0.4
	Indian	0.2	0.4	0.2	0	1.9	4.4	3.5	7.9	0.1

Figure 5.8.1: Liver Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

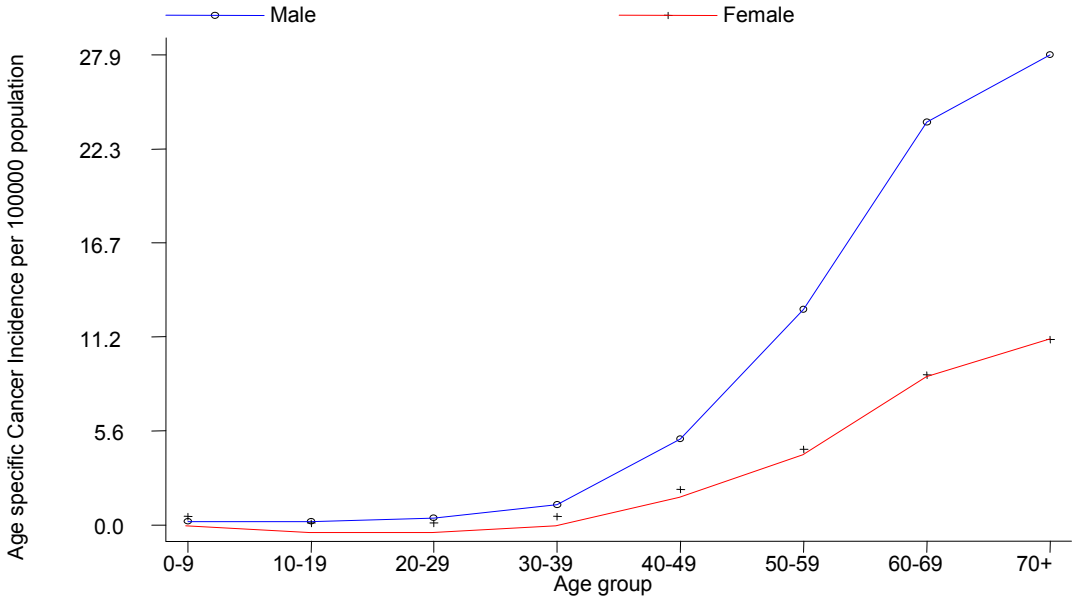
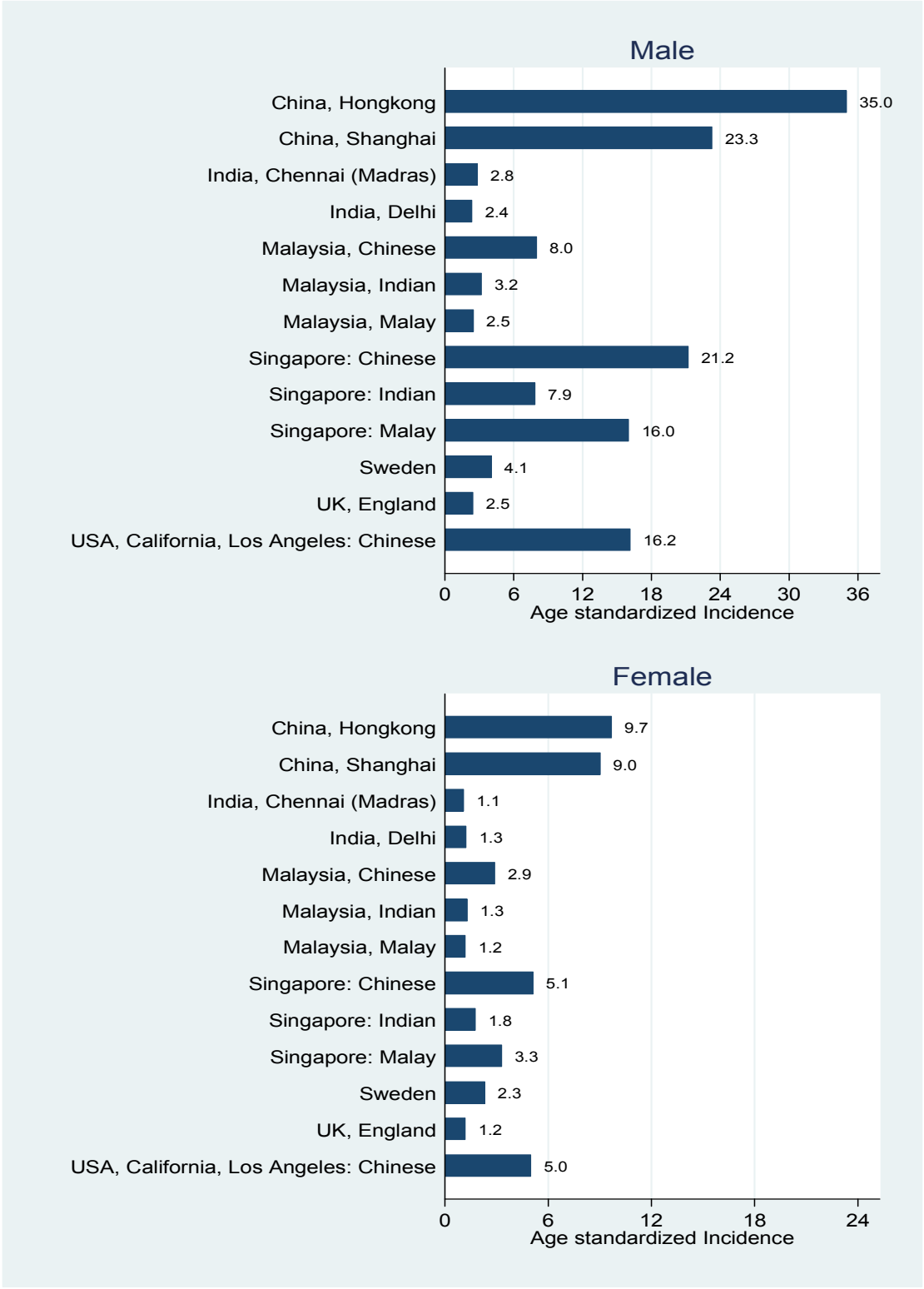


Table 5.8.3: Number (%) of Liver cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	3	0.3
8010/3	Carcinoma, NOS	19	2.1
8032/3	Spindle cell carcinoma, NOS	1	0.1
8070/3	Squamous cell carcinoma, NOS	3	0.3
8140/3	Adenocarcinoma, NOS	49	5.3
8160/3	Cholangiocarcinoma	20	2.2
8170/3	Hepatocellular carcinoma, NOS	760	82.7
8171/3	Hepatocellular carcinoma, fibrolamellar	1	0.1
8172/3	Hepatocellular carcinoma, scirrhous	1	0.1
8240/3	Carcinoid tumor, NOS	1	0.1
8246/3	Neuroendocrine carcinoma, NOS	2	0.2
8440/3	Cystadenocarcinoma, NOS	1	0.1
8550/3	Acinar cell carcinoma	1	0.1
8560/3	Adenosquamous carcinoma	1	0.1
8800/3	Sarcoma, NOS	6	0.7
8890/3	Leiomyosarcoma, NOS	3	0.3
8970/3	Hepatoblastoma	36	3.9
8991/3	Embryonal sarcoma	2	0.2
9071/3	Yolk sac tumor	2	0.2
9120/3	Hemangiosarcoma	1	0.1
9150/3	Hemangiopericytoma, malignant	1	0.1
9590/3	Malignant lymphoma, NOS	3	0.3
9591/3	Malignant lymphoma, non-Hodgkin, NOS	1	0.1
9670/3	ML, small B lymphocytic, NOS	1	0.1
	TOTAL	919	100

Figure 5.8.2: Liver International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5. 9 GALLBLADDER (ICDO: C23-C24)

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

Gall bladder cancer accounted for 0.8% of cancers among males and 0.7% among females in Peninsular Malaysia.

The ASR of cancers of the gallbladder and extrahepatic bile ducts appeared to be similar in males and females in Peninsular Malaysia. The disease was almost non-existent below 20 years of age but rose exponentially after the age of 40 years.

Chinese males and females had a higher ASR than Malays and Indians. The incidence rates recorded were in general lower than those observed in Singapore.

Adenocarcinoma, NOS accounted for 48.5% of all cases reported morphologically.

Table 5.9.1: Gallbladder Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	251	100	0.8	1.2	275	100	1.0	1.2
Malay	104	41.4	0.6	0.9	115	41.8	0.6	0.9
Chinese	110	43.8	1.4	1.5	122	44.4	1.6	1.5
Indian	20	8	0.7	1.1	26	9.5	1.0	1.3

Table 5.9.2: Gallbladder Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.1	0.2	1.1	2.8	6.2	8.3	0.1
	Malay	0	0	0.1	0.2	0.9	2.6	4.7	4.7	0.1
	Chinese	0	0.1	0.2	0.2	1.4	2.6	7.1	12.4	0.2
	Indian	0	0	0	0.2	1.1	2.7	4.0	9.8	0.1
Female	All races	0	0	0.1	0.3	1.3	2.8	5.9	8.7	0.1
	Malay	0	0	0.1	0.3	1.1	3.2	3.8	4.8	0.1
	Chinese	0	0	0.1	0.5	1.5	2.0	8.9	11.8	0.2
	Indian	0	0	0.2	0	1.1	2.7	5.3	14.3	0.1

Figure 5.9.1: Gallbladder Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

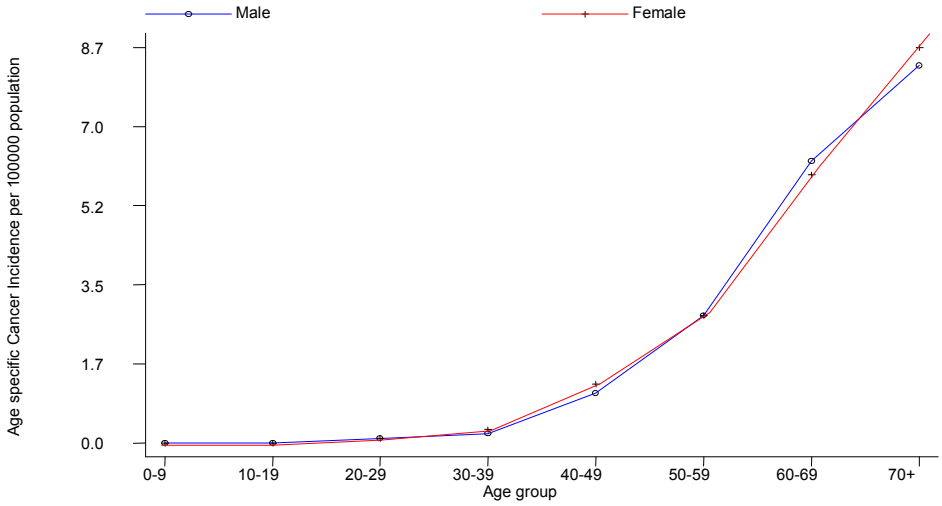


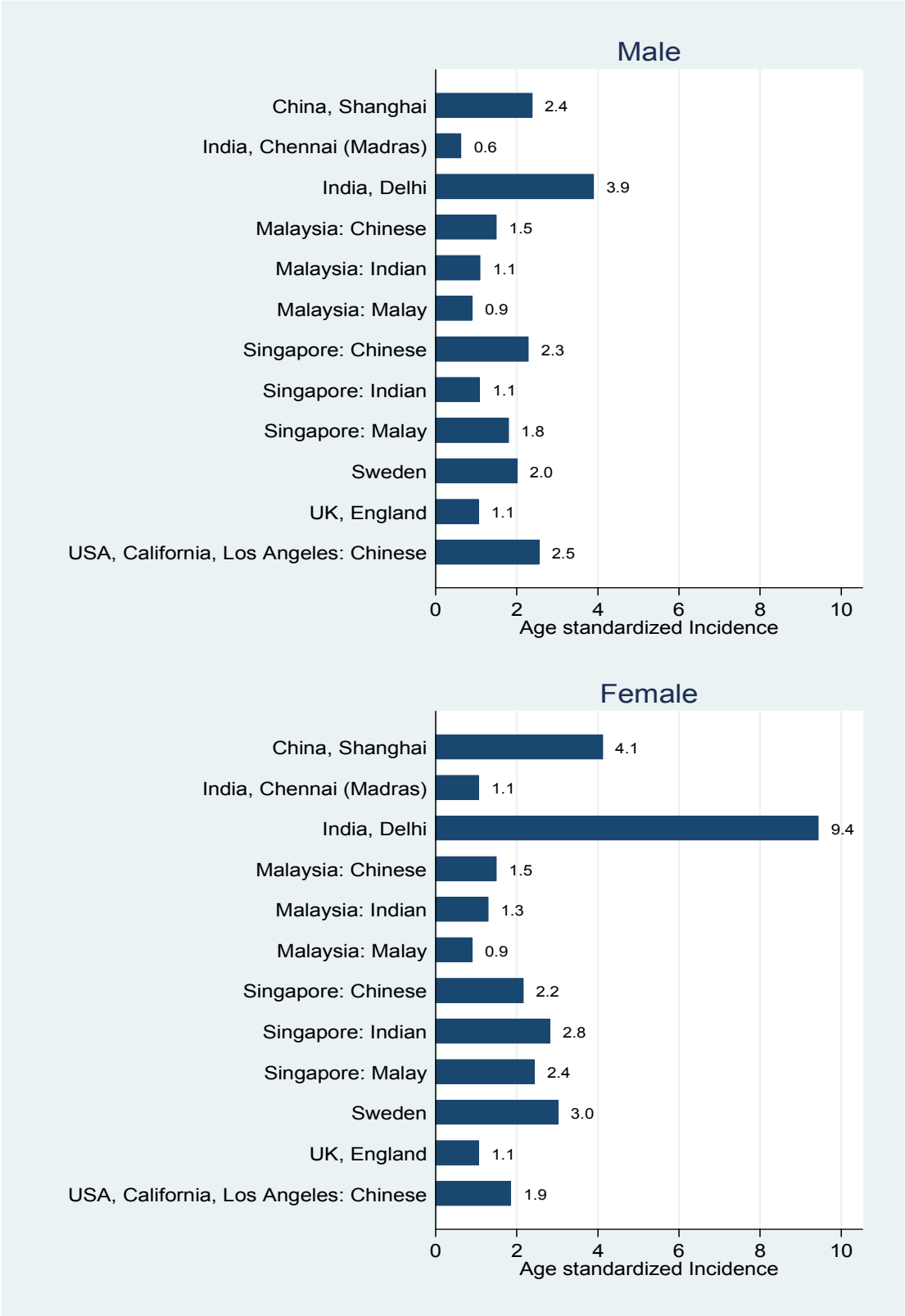
Table 5.9.3: Number of Gallbladder cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C23.9	Gallbladder	73	29.1	108	39.3
C24.0	Extrahepatic bile duct	54	21.5	44	15.9
C24.1	Ampulla of Vater	89	35.5	97	35.3
C24.8	Overlapping lesion of biliary tract	2	0.8	1	0.4
C24.9	Biliary tract, NOS	33	13.1	25	9.1
	TOTAL	251	100	275	100

Table 5.9.4: Number (%) of Gallbladder cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	3	1.1
8010/3	Carcinoma, NOS	22	8.0
8021/3	Carcinoma, anaplastic type, NOS	2	0.7
8050/3	Papillary carcinoma, NOS	1	0.4
8140/3	Adenocarcinoma, NOS	133	48.5
8160/3	Cholangiocarcinoma	91	33.2
8162/3	Klatskin tumor	2	0.7
8240/3	Carcinoid tumor, NOS	1	0.4
8260/3	Papillary adenocarcinoma, NOS	9	3.3
8263/3	Adenocarcinoma in tubulovillous adenoma	1	0.4
8330/3	Follicular adenocarcinoma, NOS	1	0.4
8480/3	Mucinous adenocarcinoma	2	0.7
8490/3	Signet ring cell carcinoma	2	0.7
8560/3	Adenosquamous carcinoma	1	0.4
8980/3	Carcinosarcoma, NOS	1	0.4
9591/3	Malignant lymphoma, non-Hodgkin, NOS	1	0.4
	TOTAL	274	100

Figure 5.9.2: Gallbladder International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.10 PANCREAS (ICDO: C25)

(Authors: Dr Lim Kean Ghee, Dr S. Ganesananthan, Prof Dato Dr Kandasami Palaiyan)

The incidence of pancreatic cancer among males was higher compared to females with a Male to Female ratio of 1.3 : 1. The incidence increased exponentially after the age of 40 years. Malays had the lowest risk among the three major races in Peninsular Malaysia. The most commonly reported morphology was adenocarcinoma, NOS which was 56.1%.

The incidence among all the major ethnic groups in Malaysia is generally lower compared to their counterparts in Singapore.

Table 5.10.1: Pancreas Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	358	100	1.2	1.7	284	100	1.0	1.3
Malay	100	27.9	0.5	0.9	105	37	0.6	0.8
Chinese	201	56.1	2.5	2.6	131	46.1	1.7	1.6
Indian	31	8.7	1.2	1.7	25	8.8	0.9	1.3

Table 5.10.2: Pancreas Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.1	0.3	1.5	4.3	8.2	12.5	0.2
	Malay	0	0	0.1	0.1	0.8	3.1	3.8	4.7	0.1
	Chinese	0	0	0.1	0.2	2.4	6.4	11.7	22.4	0.3
	Indian	0	0	0.2	0.5	2.0	2.3	13.1	5.9	0.2
Female	All races	0	0.1	0.2	0.3	0.9	3.3	6.3	8.3	0.1
	Malay	0	0.1	0.2	0.1	0.8	2.8	4.0	3.9	0.1
	Chinese	0	0	0.2	0.3	0.9	3.9	8.5	12.6	0.2
	Indian	0	0	0.2	0.9	0	1.8	7	12.7	0.2

Figure 5.10.1: Pancreas Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

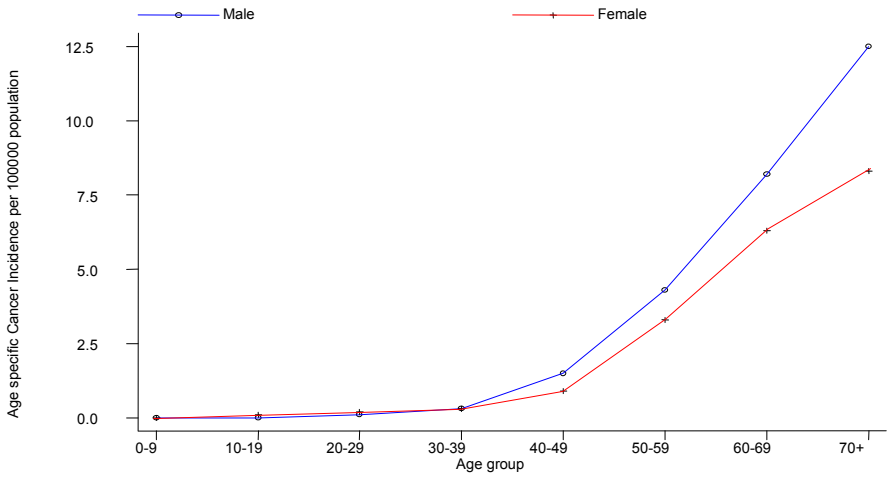


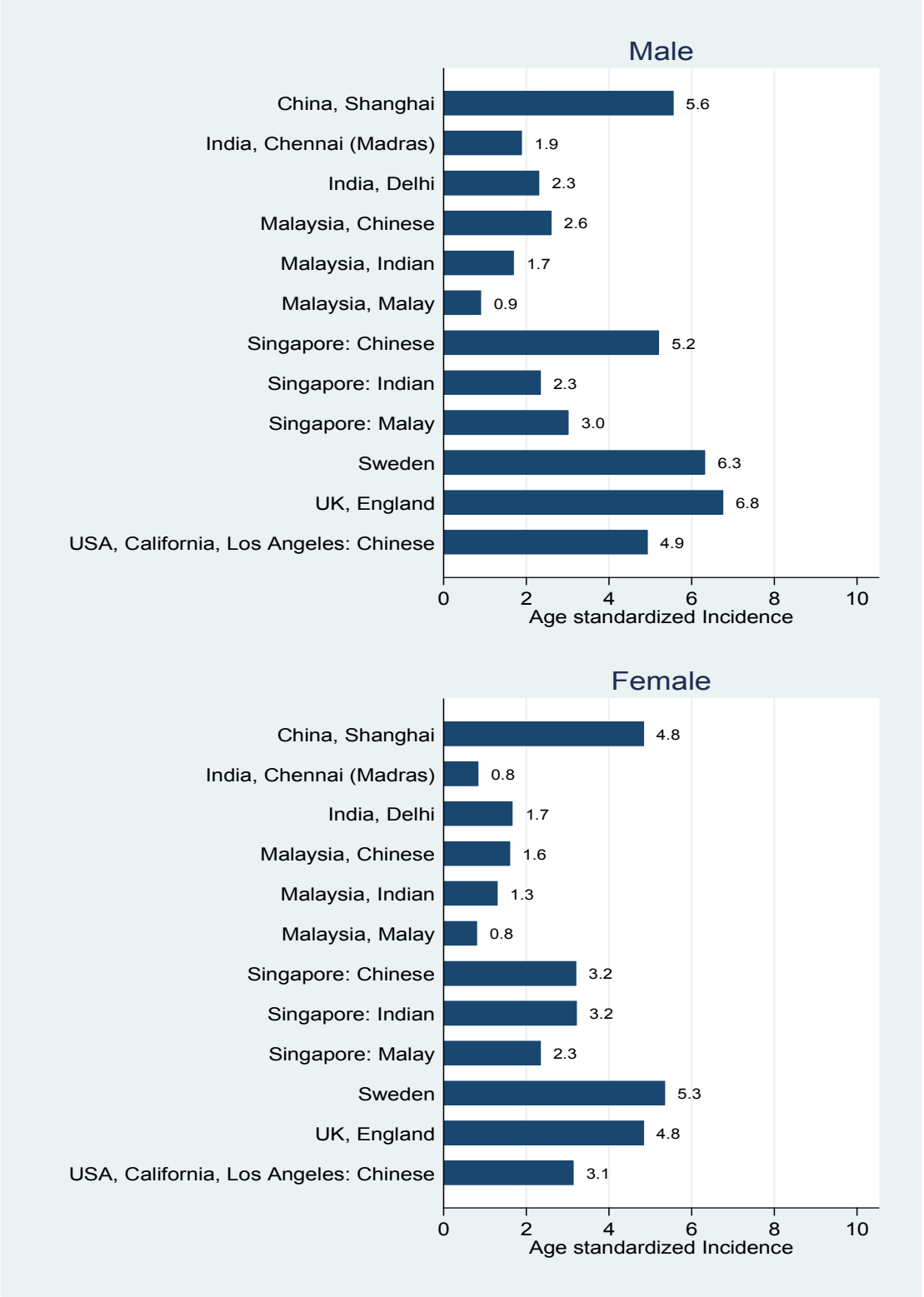
Table 5.10.3: Number of Pancreas cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	%	No.	%
C25.0	Head of pancreas	51	14.2	33	11.6
C25.1	Body of pancreas	9	2.5	10	3.5
C25.2	Tail of pancreas	6	1.7	2	0.7
C25.3	Pancreatic duct	1	0.3	1	0.4
C25.4	Islets of Langerhans	1	0.3	0	0
C25.7	Other specified parts of pancreas	1	0.3	0	0
C25.8	Overlapping lesion of pancreas	0	0	1	0.4
C25.9	Pancreas, NOS	289	80.7	237	83.4
	TOTAL	358	100	284	100

Table 5.10.4: Number (%) of Pancreas cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	5	2.0
8010/3	Carcinoma, NOS	68	26.9
8021/3	Carcinoma, anaplastic type, NOS	1	0.4
8041/3	Small cell carcinoma, NOS	2	0.8
8070/3	Squamous cell carcinoma, NOS	2	0.8
8140/3	Adenocarcinoma, NOS	142	56.1
8240/3	Carcinoid tumor, NOS	2	0.8
8246/3	Neuroendocrine carcinoma, NOS	8	3.2
8260/3	Papillary adenocarcinoma, NOS	4	1.6
8440/3	Cystadenocarcinoma, NOS	2	0.8
8470/3	Mucinous cystadenocarcinoma, NOS	3	1.2
8480/3	Mucinous adenocarcinoma	5	2.0
8500/3	Infiltrating duct carcinoma, NOS	6	2.4
8800/3	Sarcoma, NOS	1	0.4
8890/3	Leiomyosarcoma, NOS	1	0.4
8971/3	Pancreatoblastoma	1	0.4
	TOTAL	253	100

Figure 5.10.2: Pancreas International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

NOSE, SINUSES, LARYNX AND LUNGS

5.11 NOSE and SINUSES (ICDO: C30-C31)

(Author: Dr Nur Hashima Abdul Rashid)

Cancer of the nose and paranasal sinuses represented 0.7% of the total reported cancers in males and 0.3% of females in Peninsular Malaysia in the period of 2003 to 2005. There were more male cancers as seen by the Female:Male ratio of 1 : 1.7 in favour of males. Cancer incidence increased exponentially with age in both sexes after the age of 40 years. Chinese males had the highest incidence followed by Malay males.

The ASR for males and females in Peninsular Malaysia was 1.0 and 0.5 respectively. This was comparable to Hanoi (males 1.0 and females 0.5), Slovenia (males 1.0, females 0.4) and Singapore Chinese (males 1.0, females 0.3). The most common sites of tumour occurrence reported in both sexes were the nasal cavity and maxillary sinus. The most common tumour type was squamous cell carcinoma, NOS (35.1%). The lifetime risk for cancer of the nose and sinuses was 1:1000 for both sexes.

Table 5.11.1: Nose and Sinuses Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	219	100	0.7	1.0	126	100	0.4	0.5
Malay	89	40.6	0.5	0.7	55	43.7	0.3	0.4
Chinese	96	43.8	1.2	1.2	47	37.3	0.6	0.6
Indian	9	4.1	0.3	0.4	11	8.7	0.4	0.5

Table 5.11.2: Nose and Sinuses Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.2	0.5	1.0	2.2	3.9	7.1	0.1
	Malay	0	0	0.1	0.5	0.8	1.5	2.8	5.9	0.1
	Chinese	0.1	0.1	0.2	0.3	1.2	2.7	5.8	8.5	0.1
	Indian	0	0	0.4	0.2	0.6	0.9	0	3.9	0
Female	All races	0	0.1	0.2	0.1	0.7	1.2	1.9	3.3	0.1
	Malay	0	0	0.2	0.1	0.5	1.3	2.4	1.1	0
	Chinese	0.1	0.2	0.2	0.1	1.0	0.9	1.0	5.0	0.1
	Indian	0.2	0	0	0.2	1.1	0	0.9	6.3	0.1

Figure 5.11.1: Nose and Sinuses Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

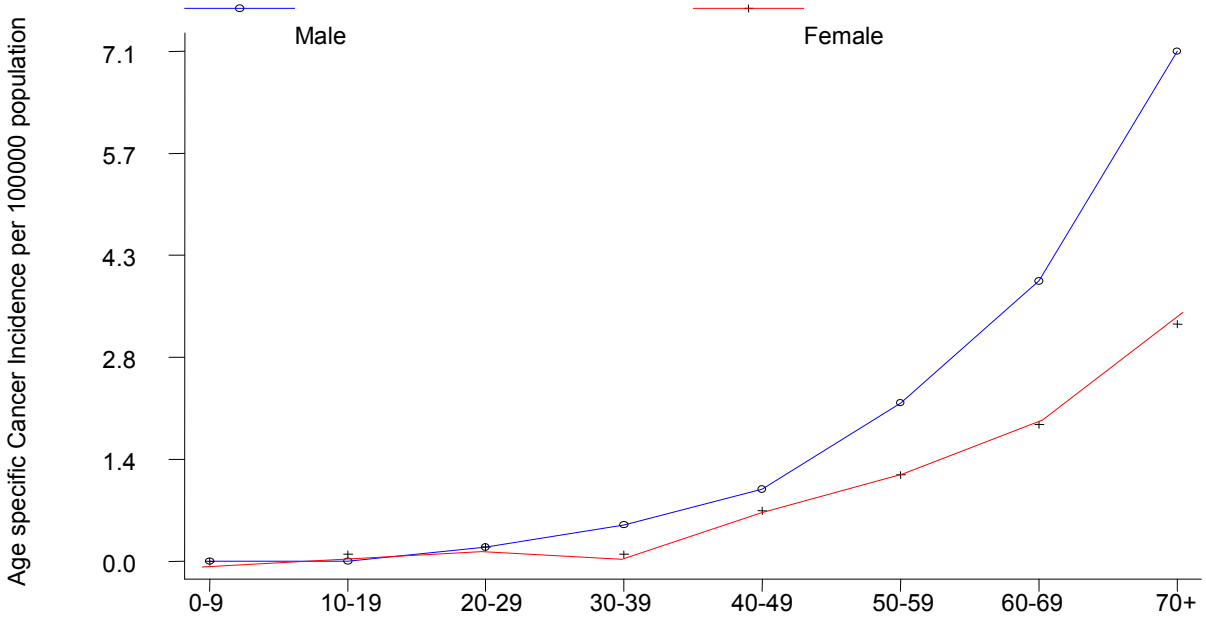


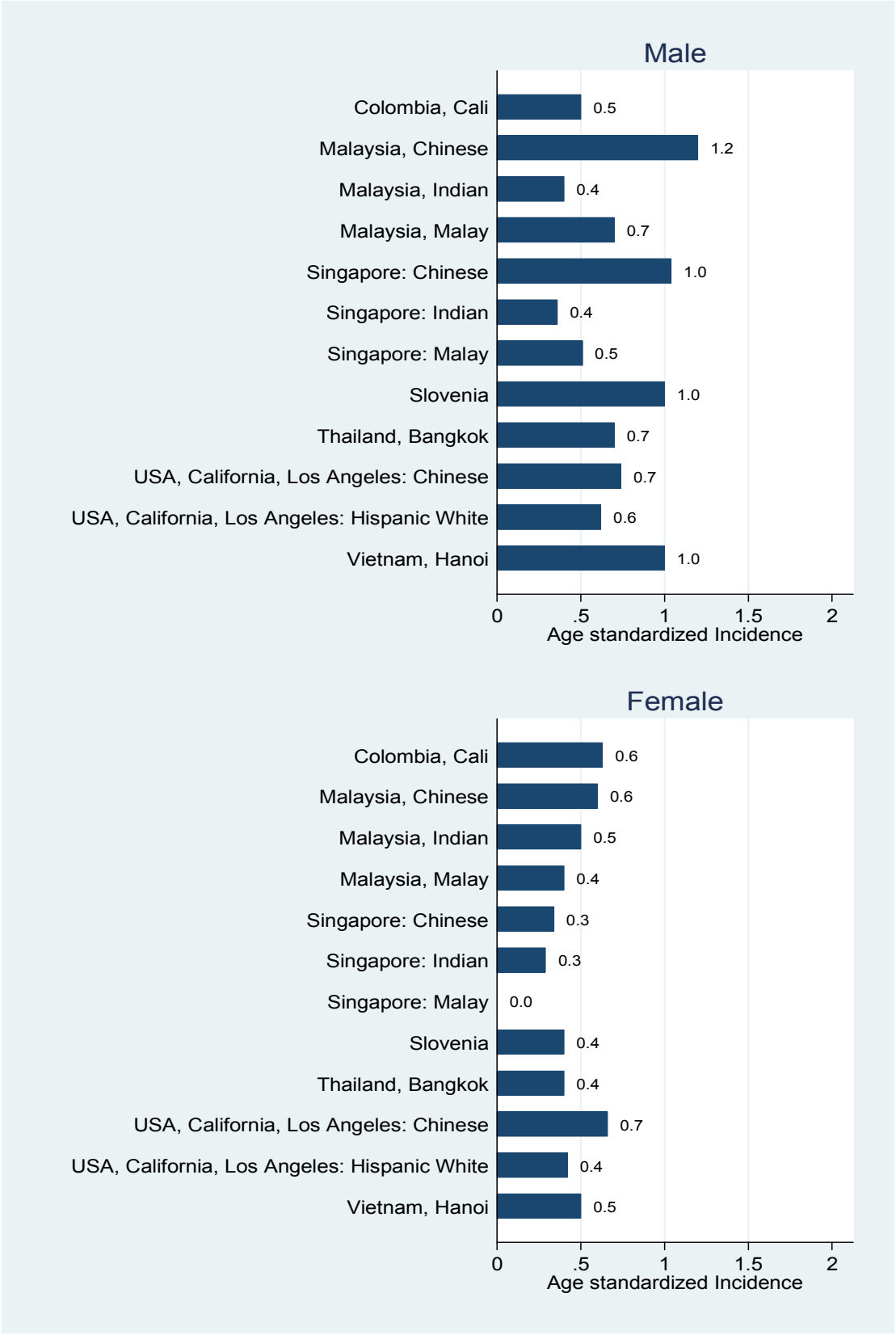
Table 5.11.3: Number of Nose and Sinuses cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C30.0	Nasal cavity (excludes nose, NOS C76.0)	131	59.8	77	61.1
C30.1	Middle ear	9	4.1	6	4.8
C31.0	Maxillary sinus	52	23.7	31	24.6
C31.1	Ethmoid sinus	14	6.4	3	2.4
C31.2	Frontal sinus	0	0	2	1.6
C31.3	Sphenoid sinus	7	3.2	1	0.8
C31.8	Overlapping lesion of accessory sinuses	1	0.5	0	0
C31.9	Accessory sinus, NOS	5	2.3	6	4.8
	TOTAL	219	100	126	100

Table 5.11.4: Number (%) of Nose and Sinuses cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	2	1.0
8001/3	Tumor cells, malignant	3	1.5
8010/3	Carcinoma, NOS	17	8.4
8020/3	Carcinoma, undifferentiated type, NOS	11	5.4
8021/3	Carcinoma, anaplastic type, NOS	1	0.5
8041/3	Small cell carcinoma, NOS	2	1.0
8070/3	Squamous cell carcinoma, NOS	71	35.1
8072/3	Sq. cell carcinoma, lg. cell, non-ker., NOS	7	3.5
8083/3	Basaloid squamous cell carcinoma	1	0.5
8090/3	Basal cell carcinoma, NOS	4	2.0
8120/3	Transitional cell carcinoma, NOS	3	1.5
8121/3	Schneiderian carcinoma	1	0.5
8130/3	Papillary trans. cell carcinoma	1	0.5
8140/3	Adenocarcinoma, NOS	5	2.5
8200/3	Adenoid cystic carcinoma	14	6.9
8430/3	Mucoepidermoid carcinoma	4	2.0
8720/3	Malignant melanoma, NOS	1	0.5
8806/3	Desmoplastic small round cell tumor	1	0.5
8830/3	Fibrous histiocytoma, malignant	1	0.5
8900/3	Rhabdomyosarcoma, NOS	2	1.0
8910/3	Embryonal rhabdomyosarcoma, NOS	1	0.5
9150/3	Hemangiopericytoma, malignant	1	0.5
9330/3	Ameloblastic fibrosarcoma	1	0.5
9371/3	Chondroid chordoma	1	0.5
9500/3	Neuroblastoma, NOS	3	1.5
9521/3	Olfactory neurocytoma	1	0.5
9522/3	Olfactory neuroblastoma	7	3.5
9590/3	Malignant lymphoma, NOS	6	3.0
9591/3	Malignant lymphoma, non-Hodgkin, NOS	12	5.9
9670/3	ML, small B lymphocytic, NOS	2	1.0
9680/3	ML, large B-cell, diffuse, NOS	2	1.0
9702/3	Mature T-cell lymphoma, NOS	7	3.5
9719/3	NK/T-cell lymphoma, nasal and nasal-type	6	3.0
	TOTAL	202	100

Figure 5.11.2: Nose and Sinuses International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.12 LARYNX (ICDO: C32)

(Author: Dr Rosalind Simon)

Cancer of the larynx exhibited a marked male predominance which was consistent with global patterns. The incidence increased after 50 years of age for both sexes with a gap that progressively widened with an approximate overall female to male ratio of 1:8.

The age adjusted incidence amongst Indians was highest among males (5.3) and females (0.9) in Malaysia. This was in contrast to Singapore where Chinese males had the highest rates (ASR 5.8) among the major ethnic groups. Indian males in Malaysia had a comparable incidence to Chennai (ASR 4.7) but lower than in Delhi (ASR 9.4). The incidence in Indian females was similarly comparable to their counterparts in Chennai and Delhi.

The commonest morphology reported was squamous cell carcinoma, NOS (82.7%).

Table 5.12.1: Larynx Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	606	100	2.1	3.0	80	100	0.3	0.4
Malay	146	24.1	0.8	1.4	31	38.8	0.2	0.3
Chinese	303	50.0	3.8	4.1	28	35.0	0.4	0.3
Indian	93	15.3	3.5	5.3	17	21.3	0.6	0.9

Table 5.12.2: Larynx Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0	0.3	1.7	6.2	16.2	27	0.4
	Malay	0	0	0	0.2	0.7	2.4	7.0	14.8	0.2
	Chinese	0	0.1	0	0.6	2.0	7.5	23.8	34.8	0.5
	Indian	0.2	0	0.2	0.2	2.8	15.3	21.2	48.8	0.7
Female	All races	0	0	0.1	0.1	0.1	0.8	1.9	2.9	0
	Malay	0	0	0.1	0.1	0.1	0.3	1.8	1.4	0
	Chinese	0	0	0	0	0.2	0.8	1.5	3.8	0
	Indian	0.2	0	0	0	0	2.7	4.4	7.9	0.1

Figure 5.12.1: Larynx Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

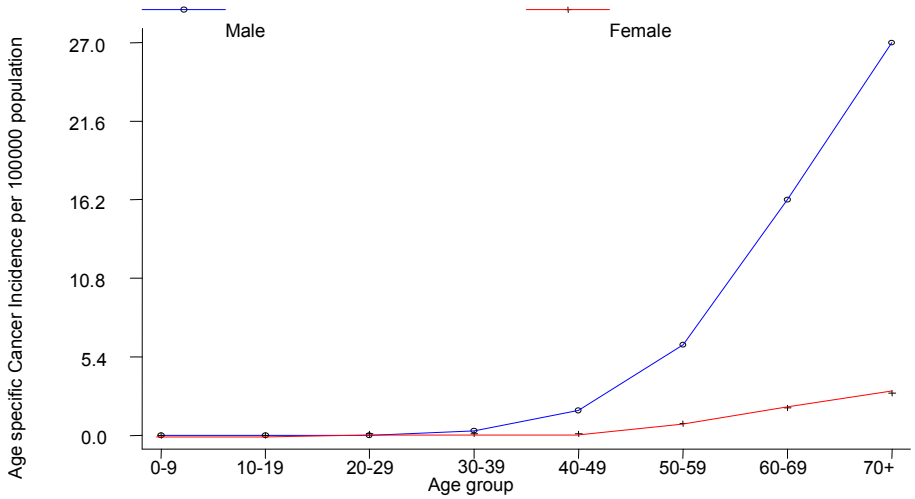


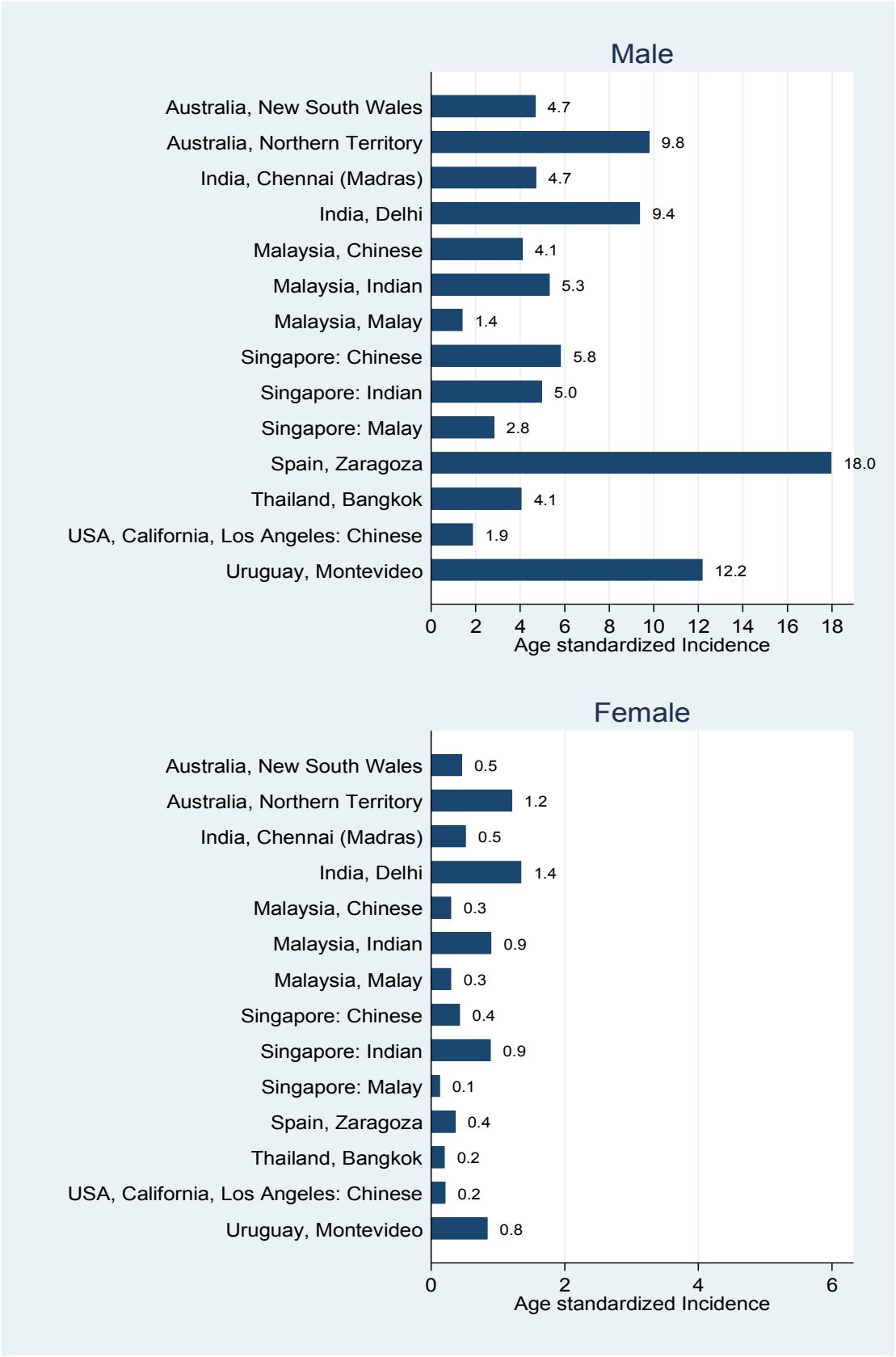
Table 5.12.3: Number of Larynx cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C32.0	Glottis	193	31.8	26	32.5
C32.1	Supraglottis	78	12.9	12	15.0
C32.2	Subglottis	6	1.0	1	1.3
C32.3	Laryngeal cartilage	7	1.2	0	0
C32.8	Overlapping lesion of larynx	6	1.0	0	0
C32.9	Larynx, NOS	316	52.1	41	51.2
	TOTAL	606	100	80	100

Table 5.12.4: Number (%) of Larynx cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8001/3	Tumor cells, malignant	7	2.5
8010/3	Carcinoma, NOS	9	3.2
8033/3	Pseudosarcomatous carcinoma	1	0.4
8041/3	Small cell carcinoma, NOS	1	0.4
8051/3	Verrucous carcinoma, NOS	2	0.7
8052/3	Papillary squamous cell carcinoma	1	0.4
8070/3	Squamous cell carcinoma, NOS	230	82.7
8071/3	Sq. cell carcinoma, keratinizing, NOS	4	1.4
8072/3	Sq. cell carcinoma, lg. Cell, non-ker., NOS	6	2.2
8074/3	Sq. cell carcinoma, spindle cell	2	0.7
8140/3	Adenocarcinoma, NOS	6	2.2
8200/3	Adenoid cystic carcinoma	2	0.7
8260/3	Papillary adenocarcinoma, NOS	2	0.7
8430/3	Mucoepidermoid carcinoma	1	0.4
9581/3	Alveolar soft part sarcoma	1	0.4
9590/3	Malignant lymphoma, NOS	1	0.4
9591/3	Malignant lymphoma, non-Hodgkin, NOS	1	0.4
9714/3	Anaplastic large cell lymphoma, T-cell and Null cell type	1	0.4
	TOTAL	278	100

Figure 5.12.2: Larynx International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.13 LUNG (ICDO: C33-C34)

(Authors: Dr Jurina Mohd Hassan, Dr Anita Zarina Bustam)

A total of 5001 cases of lung cancers were reported, comprising 12.2% of male cancers and 3.6% of female cancers. Lung cancer ranked second and sixth of all cancers in males and females respectively. The male to female ratio was approximately 3:1. The incidence of lung cancer rose progressively with age for both genders after the age of 40 years for both sexes, with a progressively widening gap with age.

Chinese had the highest incidence among the major ethnic groups. In males, the life time risks of developing lung cancers for Chinese, Malays and Indians were 1 in 29, 1 in 71 and 1 in 77 respectively. In females, the life time risks for Chinese was 1 in 77, whereas Malays and Indians had the same risk of 1 in 250.

The incidence in Malaysia and Singapore in terms of ethnic and age distributions showed a similar pattern. However, the ASR for Singapore was higher than in Malaysia in both genders.

Complete histologic information was available for approximately 39.6% of cases. Out of the morphologically reported cases, 63.1% were non-small cell lung cancer (NSCLC). Of all the NSCLC cases, adenocarcinoma was the commonest, followed by squamous cell carcinoma.

Table 5.13.1: Lung Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	3614	100	12.2	18.1	1387	100	4.8	6.2
Malay	1220	33.8	6.7	11.2	378	27.3	2.1	3.1
Chinese	1973	54.6	24.7	26.8	857	61.8	11.2	10.6
Indian	168	4.6	6.3	9.9	77	5.6	2.9	3.6

Table 5.13.2: Lung Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.1	0.1	0.5	2.6	10.3	34.2	105.1	147.9	2.3
	Malay	0	0.1	0.5	2.0	8.9	24.3	60.9	80.3	1.4
	Chinese	0.1	0.1	0.3	3.3	11.9	44.0	158.3	244.6	3.4
	Indian	0.2	0	0.2	1.9	5.3	19.4	61.6	68.4	1.3
Female	All races	0.1	0	0.4	1.2	5.5	14.6	32.1	44.2	0.7
	Malay	0.1	0.1	0.3	1.0	3.5	6.8	16.5	17.0	0.4
	Chinese	0.1	0	0.5	1.4	8.3	26.0	54.3	81.7	1.3
	Indian	0.2	0	0.2	0.7	4.9	10.6	15.8	19.0	0.4

Figure 5.13.1: Lung Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

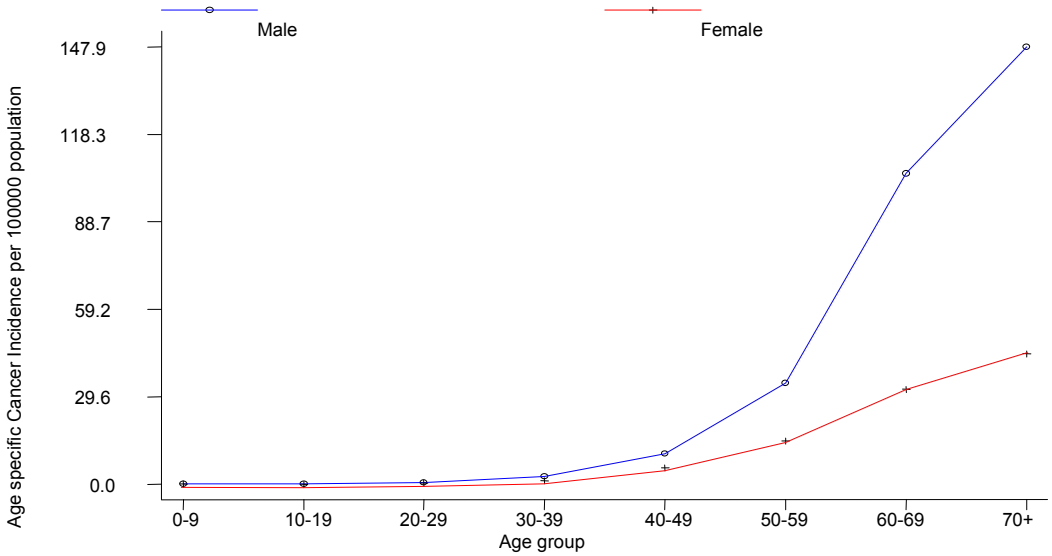


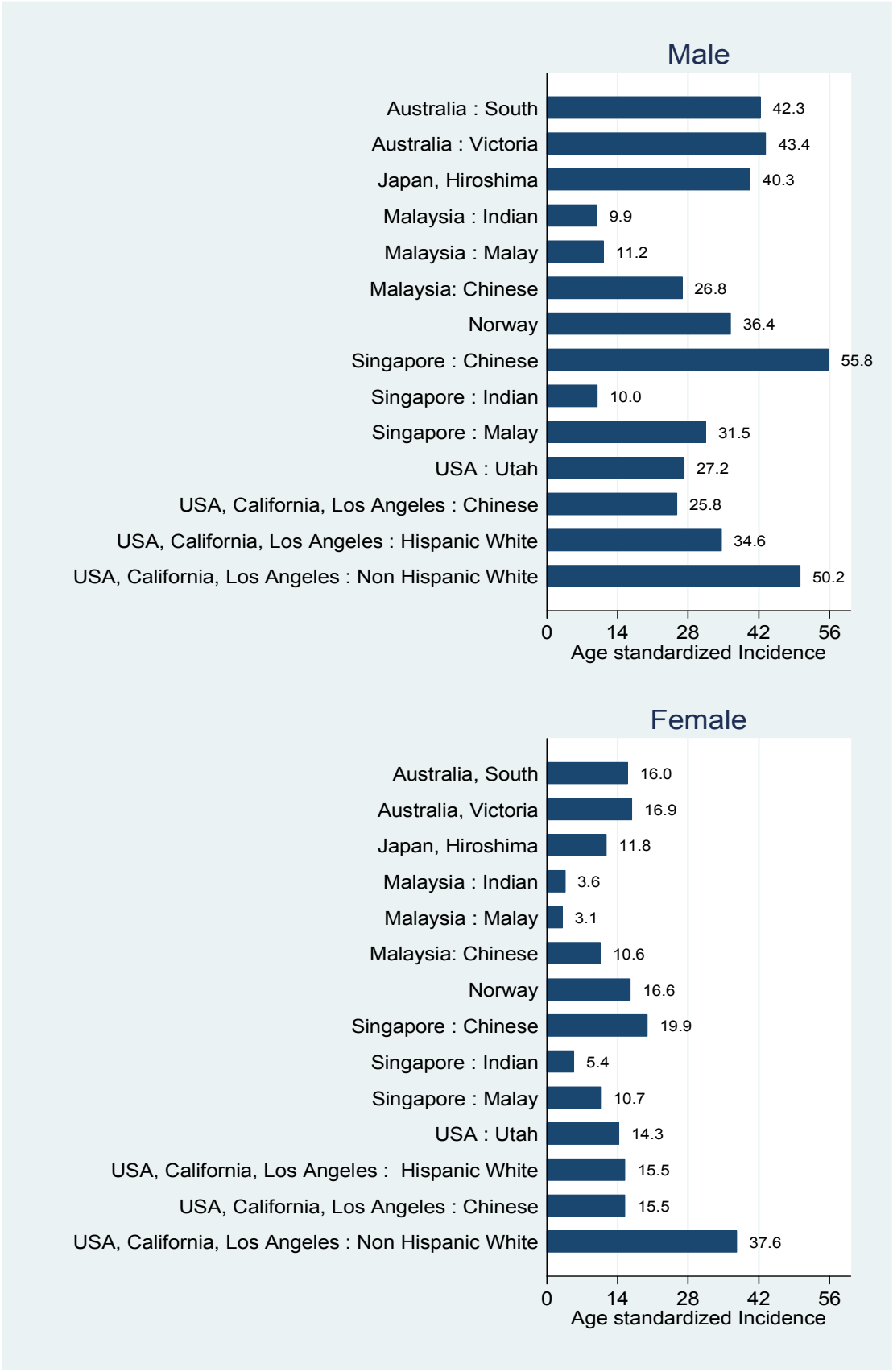
Table 5.13.3: Number of Lung cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C33.9	Trachea	8	0.2	6	0.4
C34.0	Main bronchus	26	0.7	7	0.5
C34.1	Upper lobe, lung	63	1.7	21	1.5
C34.2	Middle lobe, lung	4	0.1	5	0.4
C34.3	Lower lobe, lung	34	0.9	11	0.8
C34.8	Overlapping lesion of lung	2	0.1	1	0.1
C34.9	Lung, NOS	3477	96.2	1336	96.3
	TOTAL	3614	100	1387	100

Table 5.13.4: Number (%) of Lung cases by morphology, Peninsular Malaysia 2003-2005

Type	Histology	Class	No	%
8041/3	Small cell carcinoma, NOS	SCLC	376	19.0
8070/3	Squamous cell carcinoma, NOS	NSCLC	478	24.1
8090/3	Basaloid cell carcinoma, NOS	NSCLC	1	0.1
8260/3	Papillary adenocarcinoma, NOS	NSCLC	24	1.2
8550/3	Acinar cell carcinoma	NSCLC	2	0.1
8480/3	Mucinous adenocarcinoma	NSCLC	2	0.1
8250/3	Bronchiolo-alveolar adenocarcinoma, NOS	NSCLC	43	2.2
8012/3	Large cell carcinoma, NOS	NSCLC	39	2.0
8560/3	Adenosquamous carcinoma	NSCLC	5	0.3
8980/3	Carcinosarcoma, NOS	NSCLC	1	0.1
8140/3	Adenocarcinoma, NOS	NSCLC	646	32.6
8031/3	Giant cell carcinoma	NSCLC	3	0.2
8240/3	Carcinoid tumor, NOS	NSCLC	3	0.2
8249/3	Atypical carcinoid tumor	NSCLC	1	0.1
8200/3	Adenoid cystic carcinoma	NSCLC	2	0.1
8000/3	Neoplasm, malignant		344	17.4
9050/3	Mesothelioma, malignant	pleura	1	0.1
9590/3	Malignant lymphoma, NOS		9	0.5
	TOTAL		1980	100

Figure 5.13.2: Lung International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

BONE AND CONNECTIVE TISSUE

5.14 Bone

5.14 BONE (ICDO: C40-C41)

(Authors: Dr Chye Ping Ching, Dr Shalini Kumar, Dr Deepak Peter Rebentish)

Bone cancer ranked twentieth among males and twenty sixth among females in Peninsular Malaysia. The cumulative life time risk of developing bone cancer was 1 in 1000. These cancers occurred more frequently in males with male to female ratio of 1.7 : 1.

A bimodal age distribution was noted in the age specific incidence curves. The peak incidence for both sexes occurred in the adolescent age group (10 to 19 years) and at 70+ years.

In Malaysia, the ASR for Malay, Chinese and Indian males was higher than their counterparts in Singapore (0.5, 0.5 and 0.35 respectively). A similar pattern was seen among females in Malaysia compared to their counterparts in Singapore (0.43, 0.42 and 0 respectively). The incidence in Malaysia was comparable to estimates from New South Wales (Australia), Korea and Shanghai.

The most common histological types reported were osteosarcoma, NOS (47.2%) followed by chondrosarcoma, NOS (12.3%) and Ewing's sarcoma (9.7%).

Table 5.14.1: Bone Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	330	100	1.1	1.2	200	100	0.7	0.7
Malay	184	55.8	1.0	1.2	98	49	0.5	0.6
Chinese	86	26.1	1.1	1.0	51	25.5	0.7	0.7
Indian	27	8.2	1.0	1.1	28	14.0	1.0	1.3

Table 5.14.2: Bone Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.4	1.3	0.9	0.9	1.1	1.9	2.8	3.4	0.1
	Malay	0.4	1.2	0.9	0.6	1.0	1.9	3.0	3.3	0.1
	Chinese	0.4	0.7	0.9	1.2	1.0	2.1	1.8	2.3	0.1
	Indian	0.2	2.3	0.6	0.5	0.6	1.4	1.0	5.9	0.1
Female	All races	0.4	0.8	0.6	0.4	0.6	1.1	1.2	2.5	0.1
	Malay	0.3	0.6	0.7	0.3	0.5	1.2	0.9	0.9	0
	Chinese	0.5	1.1	0.4	0.4	0.3	0.6	1.0	2.6	0.1
	Indian	0.6	0.8	0.6	0	1.1	1.3	2.6	12.7	0.1

Figure 5.14.1: Bone Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

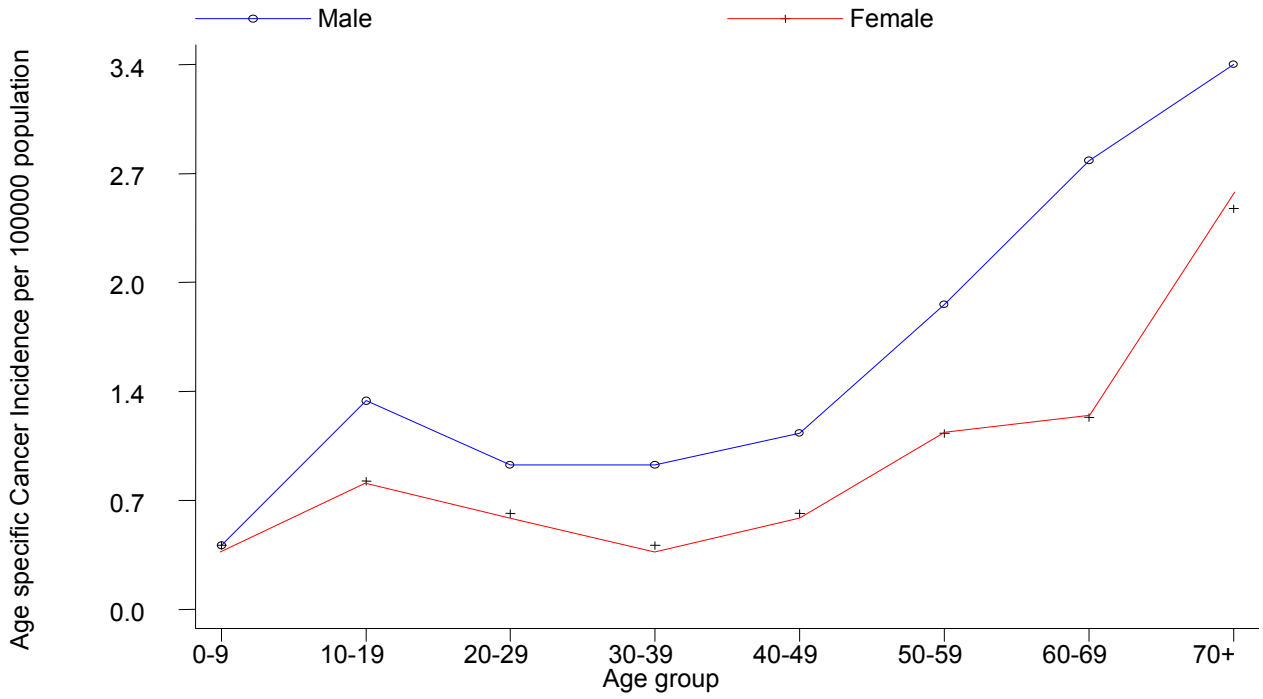


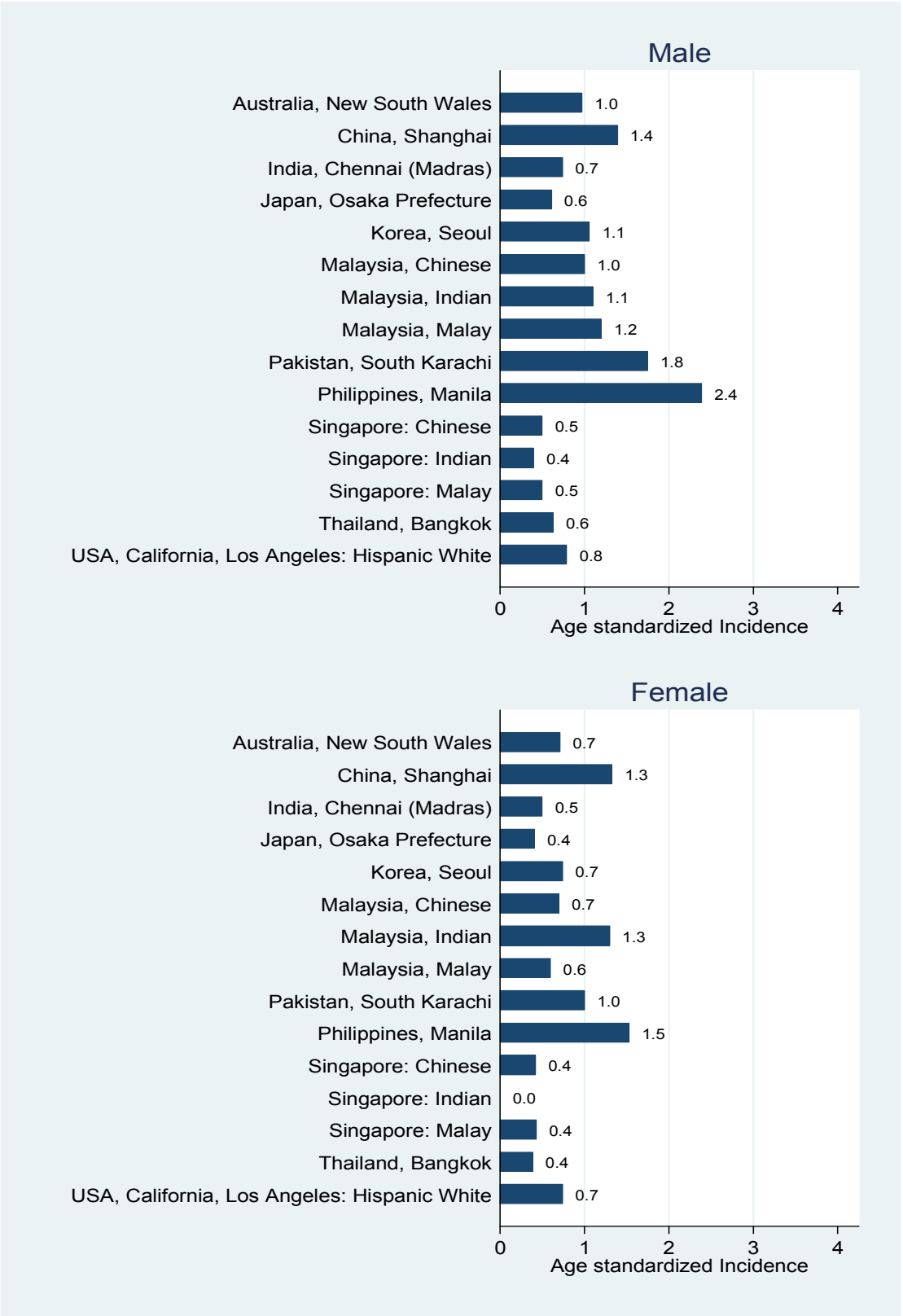
Table 5.14.3: Number of Bone cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C40.0	Long bones of upper limb, scapula and associated joints	22	6.7	22	11
C40.1	Short bones of upper limb and associated joints	1	0.3	2	1.0
C40.2	Long bones of lower limb and associated joints	84	25.5	41	20.5
C40.3	Short bones of lower limb and associated joints	8	2.4	4	2.0
C40.9	Bone of limb, NOS	4	1.2	2	1.0
C41.0	Bones of skull and face and associated joints (excludes mandible C41.1)	36	10.9	19	9.5
C41.1	Mandible	19	5.8	23	11.5
C41.2	Vertebral column (excludes sacrum and coccyx C41.4)	39	11.8	16	8.0
C41.3	Rib, sternum, clavicle and associated joints	10	3.0	6	3.0
C41.4	Pelvic bones, sacrum, coccyx and associated joints	22	6.7	18	9.0
C41.9	Bone, NOS	85	25.8	47	23.5
	TOTAL	330	100	200	100

Table 5.14.4: Number (%) of Bone cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8800/3	Sarcoma, NOS	5	1.9
8810/3	Fibrosarcoma, NOS	1	0.4
8811/3	Fibromyxosarcoma	1	0.4
8830/3	Fibrous histiocytoma, malignant	1	0.4
8850/3	Liposarcoma, NOS	1	0.4
9040/3	Synovial sarcoma, NOS	2	0.7
9041/3	Synovial sarcoma, spindle cell	1	0.4
9120/3	Hemangiosarcoma	1	0.4
9180/3	Osteosarcoma, NOS	127	47.2
9181/3	Chondroblastic osteosarcoma	4	1.5
9182/3	Fibroblastic osteosarcoma	1	0.4
9183/3	Telangiectatic osteosarcoma	1	0.4
9185/3	Small cell osteosarcoma	1	0.4
9220/3	Chondrosarcoma, NOS	33	12.3
9230/3	Chondroblastoma, malignant	1	0.4
9231/3	Myxoid chondrosarcoma	1	0.4
9250/3	Giant cell tumor of bone, malignant	9	3.3
9252/3	Malignant tenosynovial giant cell tumor	1	0.4
9260/3	Ewing sarcoma	26	9.7
9370/3	Chordoma, NOS	1	0.4
9371/3	Chondroid chordoma	2	0.7
9473/3	Primitive neuroectodermal tumor, NOS	3	1.1
9540/3	Malignant peripheral nerve sheath tumor	1	0.4
9590/3	Malignant lymphoma, NOS	4	1.5
9591/3	Malignant lymphoma, non-Hodgkin, NOS	9	3.3
9650/3	Hodgkin lymphoma, NOS	1	0.4
9651/3	Hodgkin lymphoma, lymphocyte-rich	1	0.4
9670/3	ML, small B lymphocytic, NOS	1	0.4
9680/3	ML, large B-cell, diffuse, NOS	2	0.7
9687/3	Burkitt lymphoma, NOS	4	1.5
9729/3	Precursor T-cell lymphoblastic lymphoma	1	0.4
9731/3	Plasmacytoma, NOS	7	2.6
9732/3	Multiple myeloma	13	4.8
9734/3	Plasmacytoma, extramedullary	1	0.4
	TOTAL	269	100

Figure 5.14.2: Bone International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

SKIN AND MELANOMA

5.15 OTHER SKIN

(Authors: Dr Asmah Johar, Dr Hakimah Mahsin)

There were 1749 cases of skin cancers other than melanoma reported for the years 2003-2005. The ASR was 4.7 for males and 3.6 for females. Skin cancer other than melanoma ranked tenth among all males and twelfth among females. The highest incidence was among the Chinese (males ASR 6.4, females ASR 5.8). The incidence increased exponentially with age for both sexes.

The incidence among Chinese males and females in Malaysia (ASR 6.4, 5.8 respectively) were lower compared to their counterparts in Singapore (ASR 10.7 and 8.3 respectively) but higher than Chinese in Shanghai (ASR 1.1, 1.0 respectively), Hong Kong (ASR 4.4, 4.0 respectively) and Taiwan (ASR 5.1, 4.7 respectively).

The commonest morphologically reported skin cancers were basal cell carcinoma, NOS and squamous cell carcinoma, NOS.

Table 5.15.1: Other Skin Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	935	100	3.2	4.7	814	100	2.8	3.6
Malay	274	29.3	1.5	2.6	232	28.5	1.3	1.9
Chinese	466	49.8	5.8	6.4	475	58.4	6.2	5.8
Indian	51	5.5	1.9	3.1	44	5.4	1.6	2.1

Table 5.15.2: Other Skin Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.1	0.8	2.6	8.2	22.4	48.7	0.5
	Malay	0	0	0.1	0.3	1.2	5.4	14.8	22	0.3
	Chinese	0	0	0.2	1.3	2.9	9.1	27.2	78.2	0.7
	Indian	0	0	0	0.5	2.2	4.1	15.2	33.2	0.3
Female	All races	0	0	0.3	0.7	2.8	5.6	15.4	40.0	0.4
	Malay	0	0	0.2	0.6	1.8	3.3	7.8	17.9	0.2
	Chinese	0.1	0	0.2	0.5	3.8	8.3	24	71.4	0.6
	Indian	0	0.2	0	0.5	3.0	4.4	10.5	12.7	0.2

Figure 5.15.1: Other Skin Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

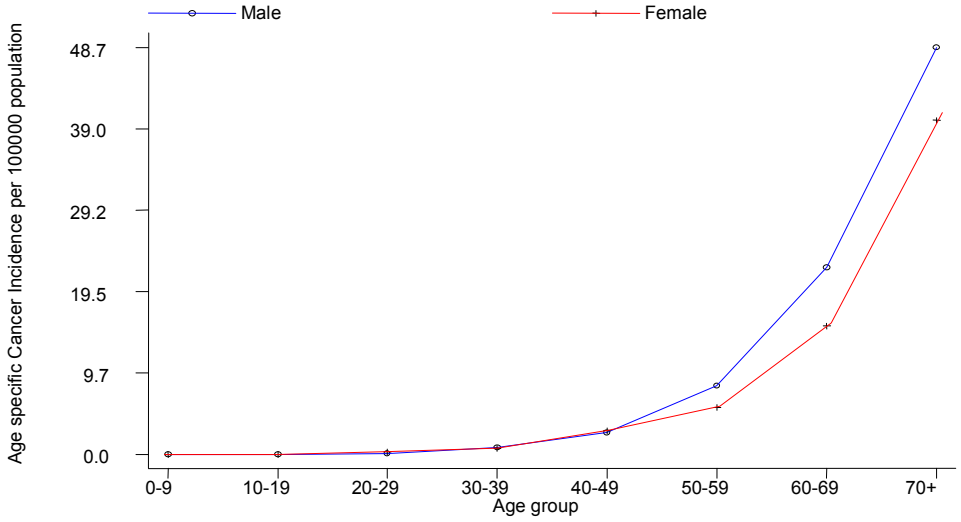


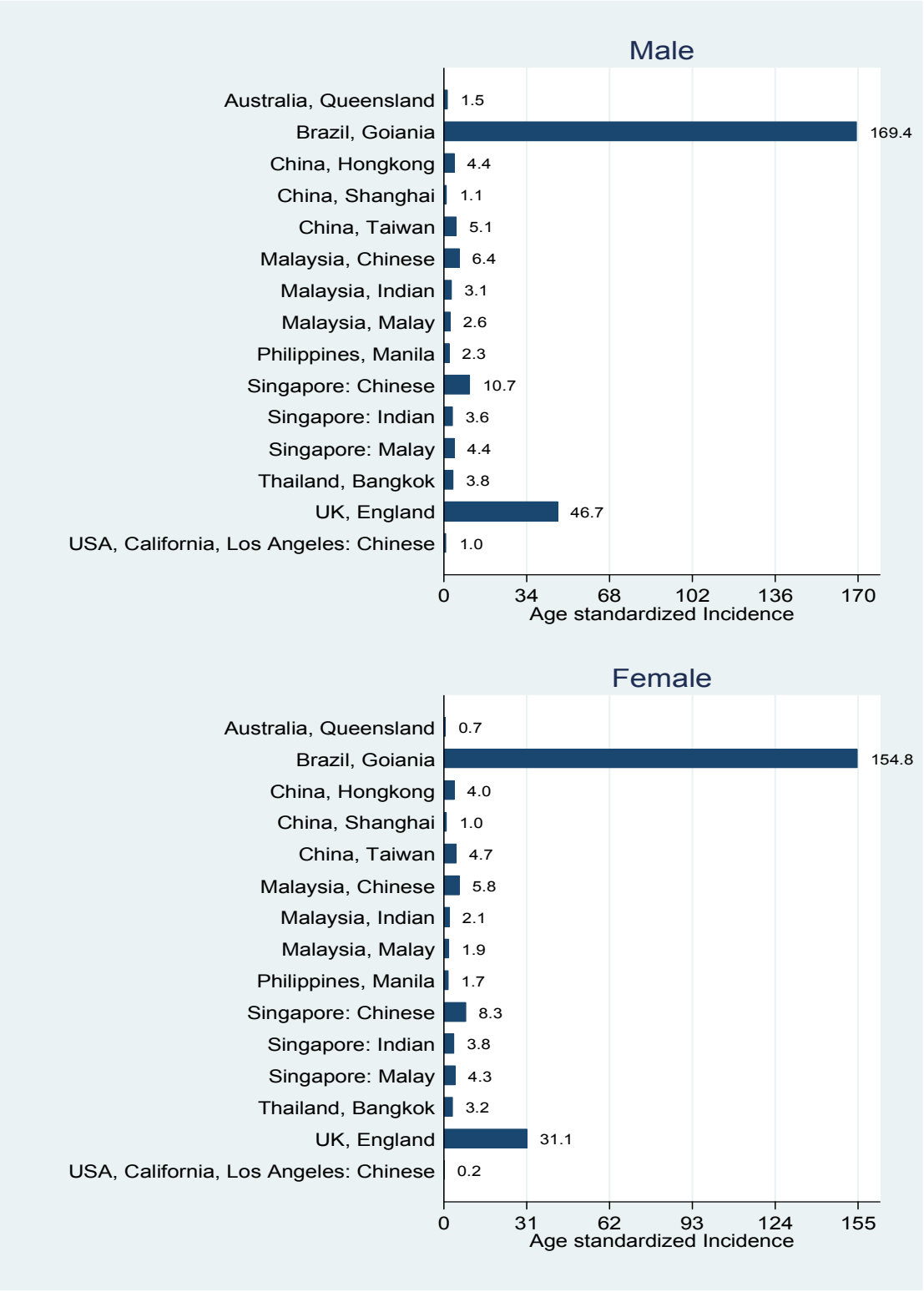
Table 5.15.3: Number of Other Skin cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C21.8	Overlapping lesion of rectum, anus and anal canal	0	0	1	0.1
C44.0	Skin of lip, NOS	8	0.9	9	1.1
C44.1	Eyelid	20	2.1	23	2.8
C44.2	External ear	54	5.8	43	5.3
C44.3	Skin of other and unspecified parts of face	176	18.8	214	26.3
C44.4	Skin of scalp and neck	67	7.2	59	7.2
C44.5	Skin of trunk	40	4.3	25	3.1
C44.6	Skin of upper limb and shoulder	54	5.8	25	3.1
C44.7	Skin of lower limb and hip	87	9.3	34	4.2
C44.8	Overlapping lesion of skin	0	0	1	0.1
C44.9	Skin, NOS (excludes skin of labia majora C51.0, skin of vulva C51.9, skin of penis C60.9 and skin of scrotum C63.2)	420	44.9	366	45.0
C50.9	Breast, NOS	0	0	3	0.4
C80.9	Unknown primary site	9	1.0	11	1.4
	TOTAL	935	100	814	100

Table 5.15.4: Ten most common of Other Skin cases by morphology, Peninsular Malaysia 2003-2005

Morphology	No.	%
Basal cell carcinoma	857	59.2
Squamous cell carcinoma	486	33.5
Verrucous carcinoma	22	1.5
Carcinoma, NOS	17	1.2
Basosquamous	14	1.0
Adenocarcinoma (inc. mucinous)	14	1.0
Skin appendageal carcinoma	8	0.6
Sebaceous adenocarcinoma	8	0.6
Extramammary Paget's	5	0.3
Others	16	1.1
TOTAL	1447	100

Figure 5.15.2: **Other Skin** International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.16 MELANOMA

(Authors: Dr Asmah Johar, Dr Hakimah Mahsin)

There were 216 cases reported to the registry from 2003 to 2005. The ASR for melanoma was 0.5 for males and 0.4 for females. The incidence increased with age and rose steeply above 50 years in males and above 60 years in females. The incidence was highest among Chinese males and females. The incidence in Malaysia was similar to their counterparts in Singapore (ASR 0.5 in males and 0.4 in females), Taiwan (ASR 0.5 in males and 0.5 in females) and Hong Kong (ASR 0.6 in males and 0.5 in females). The age specific rates was lower than that in Europe, Australia and North America.

The most common site was skin of lower limb and hip for both males and females.

The most common histology reported was malignant melanoma, NOS.

Table 5.16.1: Melanoma Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	113	100	0.4	0.5	103	100	0.4	0.4
Malay	47	41.6	0.3	0.4	43	41.7	0.2	0.3
Chinese	50	44.2	0.6	0.6	41	39.8	0.5	0.5
Indian	7	6.2	0.3	0.4	9	8.7	0.3	0.4

Table 5.16.2: Melanoma Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0	0.1	0.1	0.3	1.5	2.2	4.0	0.1
	Malay	0	0	0	0.1	0.2	1.1	2.0	3.6	0.1
	Chinese	0	0	0.2	0.2	0.4	2.1	2.2	4.3	0.1
	Indian	0	0	0.2	0.2	0	0.9	1	3.9	0
Female	All races	0	0	0.1	0.3	0.6	0.8	1.8	2.6	0.1
	Malay	0	0	0.1	0.3	0.6	0.7	1.2	0.7	0
	Chinese	0	0.1	0	0.2	0.6	0.6	2.5	4.4	0.1
	Indian	0	0	0.4	0.7	0.3	0	1.8	1.6	0

Figure 5.16.1: Melanoma Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

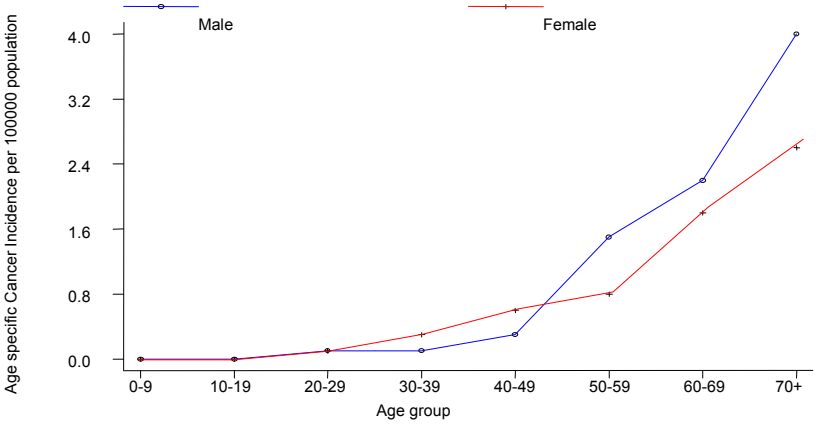
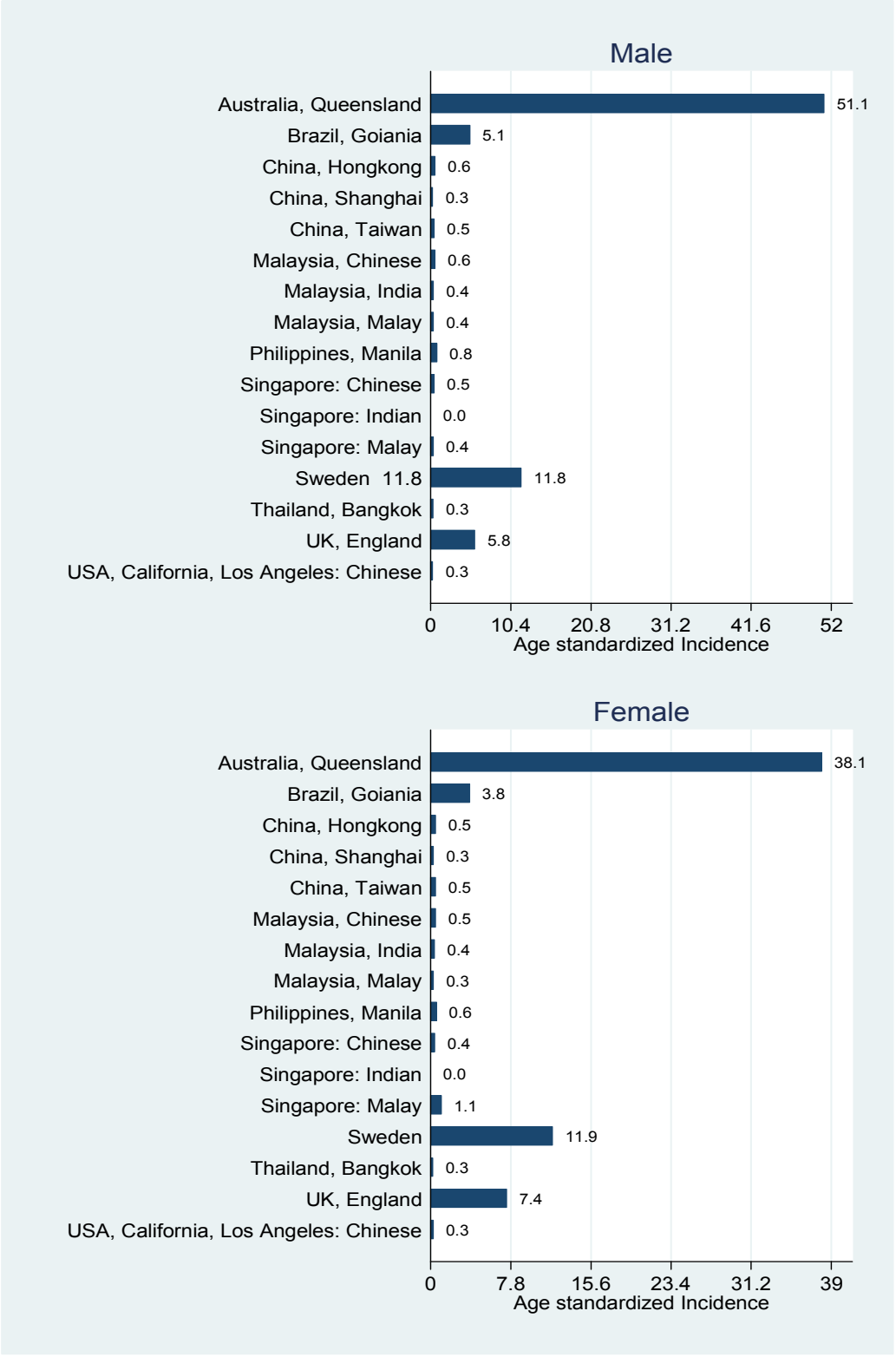


Table 5.16.3: Number of Melanoma cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	%	No.	%
C03.0	Upper gum	0	0	1	1.0
C03.9	Gum, NOS	0	0	1	1.0
C06.9	Mouth, NOS	1	0.9	0	0
C16.9	Stomach, NOS	2	1.8	0	0
C17.0	Duodenum	1	0.9	0	0
C17.9	Small intestine, NOS	1	0.9	0	0
C20.9	Rectum, NOS	3	2.7	2	1.9
C21.0	Anus, NOS (excludes skin of anus and perianal skin C44.5)	1	0.9	2	1.9
C22.0	Liver	0	0	1	1.0
C30.0	Nasal cavity (excludes nose, NOS C76.0)	1	0.9	0	0
C44.1	Eyelid	1	0.9	0	0
C44.3	Skin of other and unspecified parts of face	2	1.8	2	1.9
C44.4	Skin of scalp and neck	2	1.8	2	1.9
C44.5	Skin of trunk	7	6.2	4	3.9
C44.6	Skin of upper limb and shoulder	7	6.2	6	5.8
C44.7	Skin of lower limb and hip	39	34.5	28	27.3
C44.9	Skin, NOS (excludes skin of labia majora C51.0, skin of vulva C51.9, skin of penis C60.9 and skin of scrotum C63.2)	37	32.7	27	26.2
C49.2	Connective, subcutaneous and other soft tissue of lower limb and hip	2	1.8	2	1.9
C49.5	Connective, subcutaneous and other soft tissues of pelvis	1	0.9	0	0
C50.9	Breast, NOS	0	0	1	1.0
C51.9	Vulva, NOS	0	0	2	1.9
C52.9	Vagina, NOS	0	0	3	2.9
C53.9	Cervix uteri	0	0	1	1.0
C56.9	Ovary	0	0	2	1.9
C69.0	Conjunctiva	1	0.9	1	1.0
C69.4	Ciliary body	0	0	1	1.0
C69.9	Eye, NOS	1	0.9	5	4.9
C80.9	Unknown primary site	3	2.7	9	8.7
	TOTAL	113	100	103	100

Figure 5.16.2: Melanoma International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

5.17 Female Breast

5.17 FEMALE BREAST (ICDO: C50)

(*Authors: Dr. Noorhisham Abdullah, Dr. Rohana Ahmad, Prof Dr Nor Hayati Othman, Prof Yip Cheng Har, Assoc. Prof Dr Fuad Ismail)*

Breast cancer was the commonest cancer among Malaysian women. In a 3 year period from 2003 – 2005, 11952 new cases were reported to the National Cancer Registry. Breast cancer accounted for 31.3% of the total number of new cases in women, with a similar percentage in each of the major ethnic groups: Malays (33.6%), Chinese (30.6%) and Indians (31.2%). The age-standardized rate for females was 47.4 per 100,000 women. By comparison, there were 257 men with breast cancer, with an ASR of 1.2 per 100,000 men.

The peak incidence of breast cancer occured in the 50-60 years age group except in Indians where the incidence peaked after the age of 60 years.

The incidence of breast cancer in Chinese women (ASR of 59.9 per 100 000) was higher compared to Malays (ASR of 34.9) and Indians (ASR of 54.2). Chinese women had a 1 in 16 chance of developing breast cancer in their lifetime, as compared to Indians (1 in 17) and Malays (1 in 28).

The incidence of breast cancer in Malaysia and Singapore showed a similar ASR. The peak incidence in both registries occured in the 50 – 59 age groups. The incidence of Chinese in Malaysia (59.9) was comparable to Chinese in Singapore (57.0). The incidence of Indians in Malaysia (54.2) was higher than Indians in Singapore (45.8). However, the incidence among Malays in Malaysia (34.9) was lower than their counterparts in Singapore (44.8).

The incidence of breast cancer amongst Malaysian women was lower than in Western countries (USA SEER; White 92.1, Canada 78.5, England 74.4, South Australia 80.8, Netherlands 85.6, Denmark 81.3) but higher compared to some Asian countries (Beijing 24.6, Hiroshima 36.6, Chennai 23.9, Seoul 20.8).

The commonest histological type was infiltrating ductal carcinoma, NOS which comprised 84.5% of all the female breast cancers.

Table 5.17.1: Female Breast Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	*No.*	*%*	*CR*	*ASR*
All races	11952	100	41.3	47.4
Malay	4969	41.6	27.7	34.9
Chinese	5051	42.3	66.1	59.9
Indian	1265	10.6	47	54.2

Table 5.17.2: Female Breast Age specific Cancer Incidence per 100,000 population, by ethnicity, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Female	All races	0.1	0.2	3.7	37.3	117.4	154.0	141.5	105.1	5.0
	Malay	0.1	0.2	2.8	33.0	94.9	113.0	89.6	59.8	3.6
	Chinese	0.1	0.1	3.7	40.4	149.7	194.0	188.8	140.5	6.3
	Indian	0	0.4	4.7	29.6	100.1	174.0	200.0	202.9	6.0

* Editorial Note: Singapore estimates in the above write-up are based on Singapore Cancer Registry Report No. 6, Trends In Cancer Incidence in Singapore 1968-2002 (Reference 10); whereas Singapore estimates for Figure 5.17.2 are based on Cancer Incidence in Five Continents (Reference 4).

Table 5.17.3: Number (%) of Female Breast cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8004/3	Malignant tumor, spindle cell type	1	0
8005/3	Malignant tumor, clear cell type	1	0
8050/3	Papillary carcinoma, NOS	2	0
8070/3	Squamous cell carcinoma, NOS	20	0.4
8140/3	Adenocarcinoma, NOS	290	5.4
8200/3	Adenoid cystic carcinoma	1	0
8211/3	Tubular adenocarcinoma	9	0.2
8240/3	Carcinoid tumor, NOS	1	0
8260/3	Papillary adenocarcinoma, NOS	8	0.1
8320/3	Granular cell carcinoma	1	0
8401/3	Apocrine adenocarcinoma	2	0
8420/3	Ceruminous adenocarcinoma	1	0
8480/3	Mucinous adenocarcinoma	100	1.9
8490/3	Signet ring cell carcinoma	1	0
8500/3	Infiltrating duct carcinoma, NOS	4522	84.5
8501/3	Comedocarcinoma, NOS	14	0.3
8503/3	Intraductal papillary adenocarcinoma with invasion	30	0.6
8504/3	Intracystic carcinoma, NOS	1	0
8510/3	Medullary carcinoma, NOS	58	1.1
8520/3	Lobular carcinoma, NOS	166	3.1
8523/3	Infiltr. duct mixed with other types of carcinoma	14	0.3
8524/3	Infiltrating lobular mixed with other types of carc.	5	0.1
8530/3	Inflammatory carcinoma	1	0
8540/3	Paget disease, mammary	16	0.3
8550/3	Acinar cell carcinoma	3	0.1
8575/3	Metaplastic carcinoma, NOS	6	0.1
8800/3	Sarcoma, NOS	56	1.0
9500/3	Neuroblastoma, NOS	1	0
9590/3	Malignant lymphoma, NOS	20	0.4
	TOTAL	5351	100

Figure 5.17.1: Female Breast Age specific Cancer Incidence per 100,000 population, Peninsular Malaysia 2003-2005

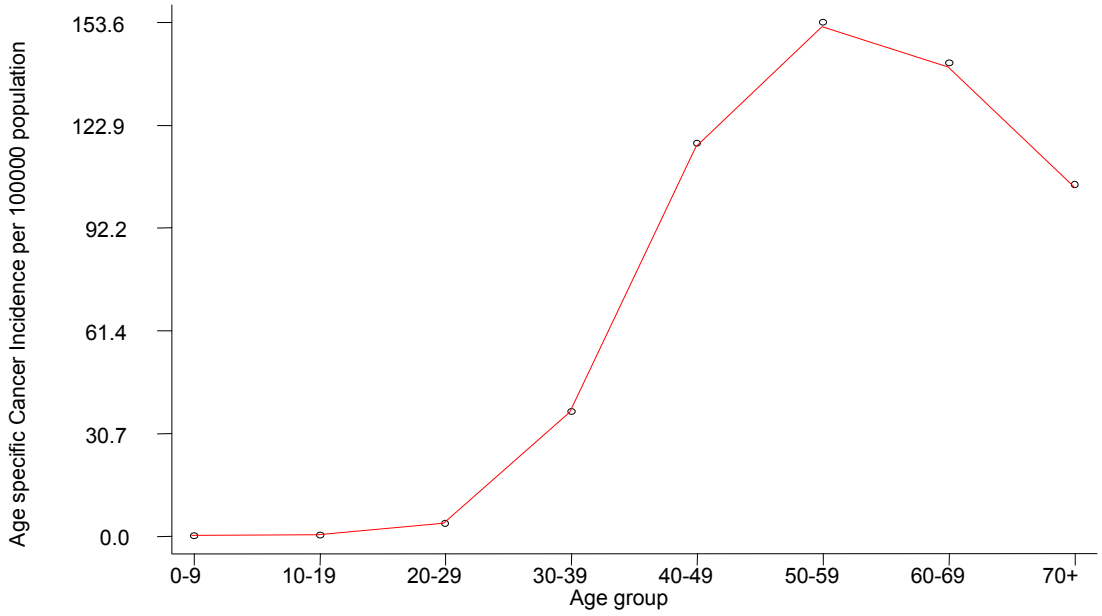
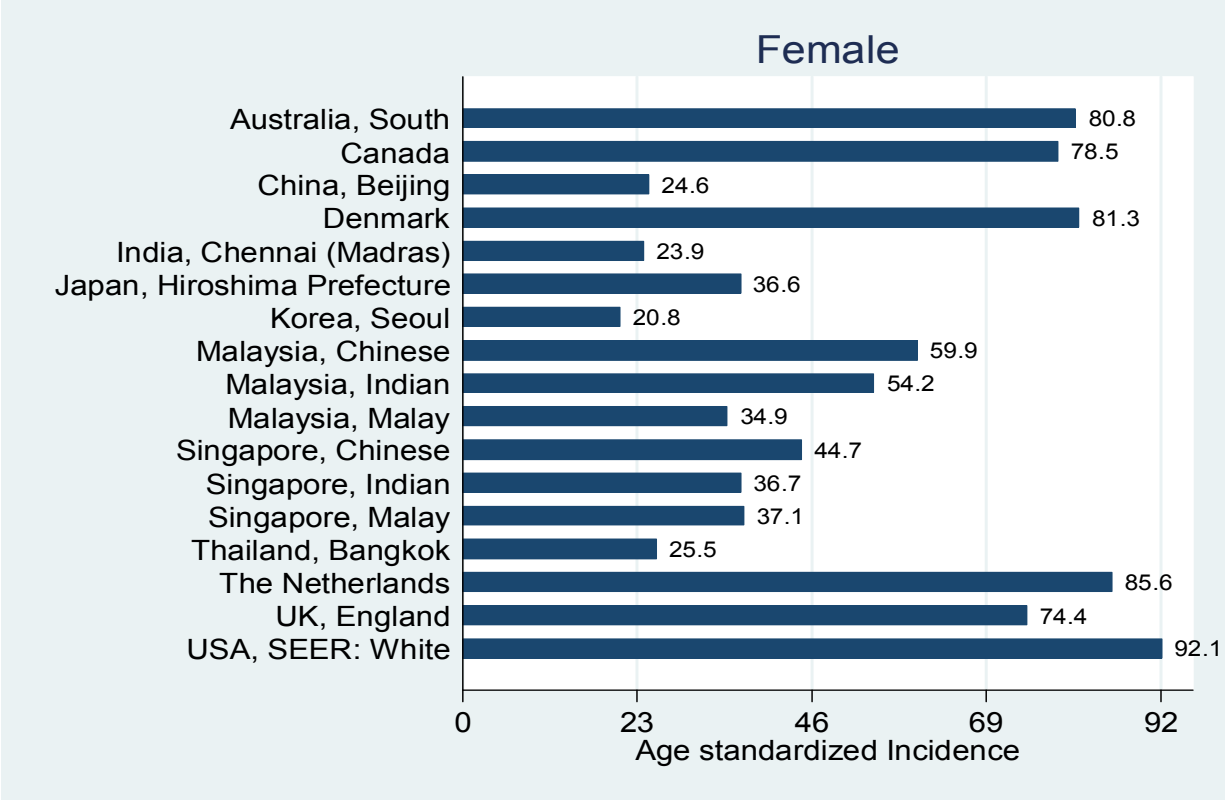


Figure 5.17.2: Female Breast International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

FEMALE GENITAL ORGANS

5.18 CERVIX UTERI (ICDO: C53)

(Authors: Dr Ng Kok Ying, Dr Muralitharan Ganesalingam, Dr Subathra Sabaratnam)

Cancer of cervix uteri was the second most common cancer among women in Peninsular Malaysia in the years 2003 to 2005. It constituted 10.6 % of all female cancers. There were a total of 4057 confirmed cases of cancer cervix, with an ASR of 16.1 per 100,000 women.

Cancer of cervix was rare before 30 years of age. Incidence increased with age, with a peak at ages 60 – 69 years. Chinese women had the highest ASR (23.2) followed by Indians (16.4) and Malays (8.7). The lifetime risk for getting cancer of cervix was 1:40 for Chinese, 1:50 for Indians and 1: 111 for Malays.

The ASR of cancer of cervix for Chinese (23.2) and Indians (16.4) in Malaysia was higher compared to Chinese (15.0) and Indians (8.2) in Singapore. The incidence among Malays in Singapore (9.9) was comparable to that in Malaysia (8.7). The overall incidence in Malaysia was higher than in more developed countries such as Australia, New South Wales (8.3) and USA SEER, White (6.8).

Of the morphologically reported cases, Squamous cell carcinoma (71.7%) was the commonest followed by Adenocarcinoma (18.9%).

Table 5.18.1: Cervix Uteri Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Female			
	No.	*%*	*CR*	*ASR*
All races	4057	100	14	16.1
Malay	1205	29.7	6.7	8.7
Chinese	1968	48.5	25.7	23.2
Indian	355	8.8	13.2	16.4

Table 5.18.2: Cervix Uteri Age specific Cancer Incidence per 100,000 population, by ethnicity, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Female	All races	0	0.1	1.9	15.2	37.0	44.6	51.5	46.2	1.7
	Malay	0	0.2	0.7	6.8	21.2	26.6	26.1	23.6	0.9
	Chinese	0	0	3.9	24.9	55.3	59.9	71.1	63.5	2.5
	Indian	0	0	1.7	8.8	18.9	43.3	73.7	93.5	2.0

Figure 5.18.1: Cervix Uteri Age specific Cancer Incidence per 100,000 population, Peninsular Malaysia 2003-2005

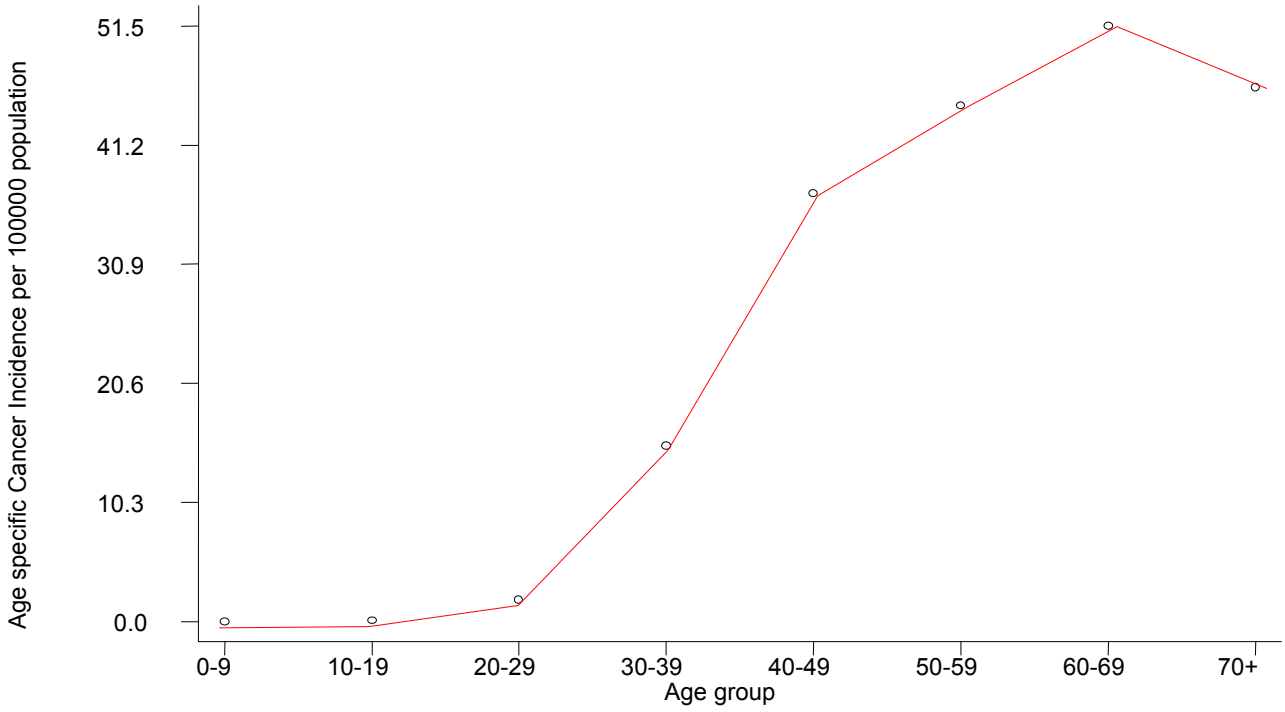
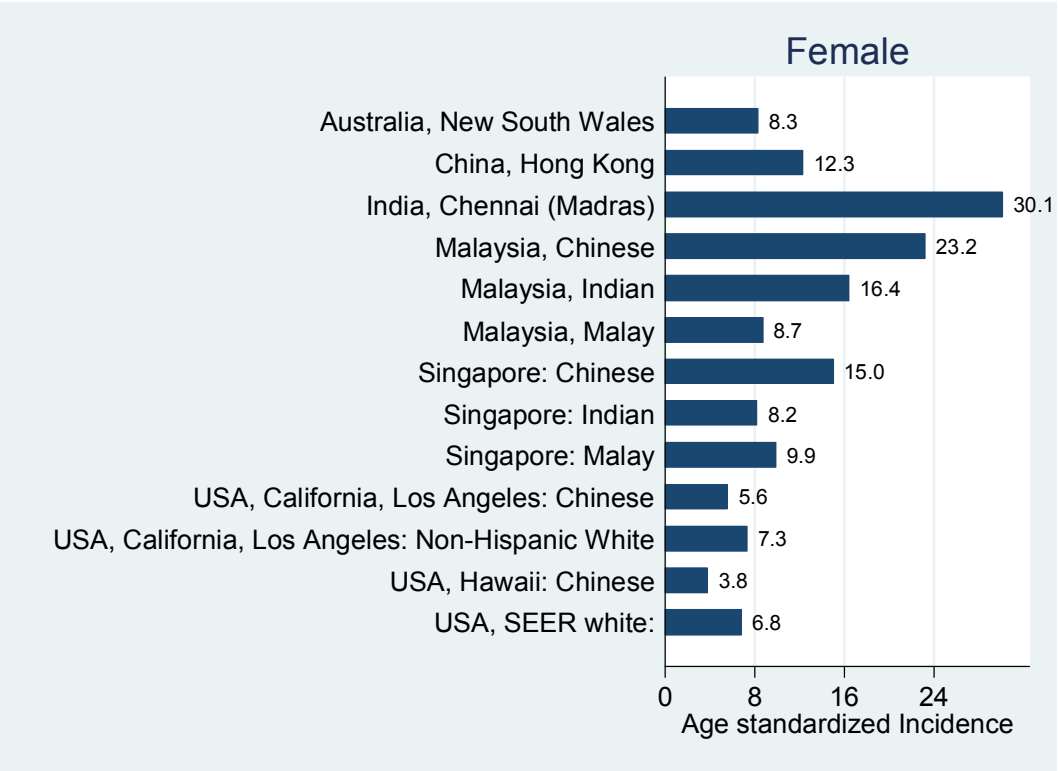


Table 5.18.3: Number (%) of Cervix Uteri cases by morphology (WHO), Peninsular Malaysia 2003-2005

Morphology	No	%
Squamous cell carcinoma	1251	71.7
Adenocarcinoma	330	18.9
Adenosquamous	25	1.4
Carcinoma NOS	77	4.4
Neuroendocrine	2	0.1
Mucinous adenocarcinoma	7	0.4
Clear cell carcinoma	4	0.2
Small cell carcinoma	5	0.3
Papillary adenocarcinoma	7	0.4
Endometrioid Carcinoma	4	0.2
Sarcoma	9	0.5
Malignant mixed Mullerian Tumour	4	0.2
Malignant Lymphoma	12	0.7
Other Unspecified	7	0.4
TOTAL	1744	100

Figure 5.18.2: Cervix Uteri International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.19 CORPUS UTERI (ICDO: C54)

(Authors: Dr Ng Kok Ying, Dr Muralitharan Ganesalingam, Dr Subathra Sabaratnam)

Cancer of corpus uteri was the eighth most common cancer among women in Peninsular Malaysia in the year 2003 – 2005. It constituted 3.3% of all female cancers. There were a total of 1253 confirmed cases of cancer of corpus uteri, with an ASR of 5.3 per 100, 000 women. The incidence increased after the age of 30 years with a peak incidence at 60-69 years. Morphologically, Adenocarcinoma NOS was the predominant subtype (55.3%) followed by endometrioid carcinoma (21.1%).

Indian women had the highest ASR (8.0) followed by Chinese (6.4) and Malays (3.9). The lifetime risk for getting cancer of corpus uteri was 1: 100 for Indians, 1: 143 for Chinese and 1: 200 for Malays.

The adjusted incidence among Indians (8.0) in Malaysia was higher than the Indians in Singapore (6.9). However, the incidence among the Chinese (6.4) and Malays (3.9) in Malaysia were lower than their counterparts in Singapore (7.9 and 7.5 respectively). The ASR of cancer of the corpus uteri among Indians (8.0) in Malaysia was higher than the incidence in Madras (2.5), Delhi (3.1) and Mumbai (2.9). The incidence among Chinese in Malaysia (6.4) was comparable to that of Hong Kong (7.4).

Table 5.19.1: Corpus Uteri Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Female			
	No.	*%*	*CR*	*ASR*
All races	1253	100	4.3	5.3
Malay	500	39.9	2.8	3.9
Chinese	528	42.1	6.9	6.4
Indian	161	12.8	6.0	8.0

Table 5.19.2: Corpus Uteri Age specific Cancer Incidence per 100,000 population, by ethnicity, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Female	All races	0	0	0.3	2.7	7.3	19.8	23.0	16.0	0.6
	Malay	0	0	0.2	2.6	5.2	14.8	17.7	7.5	0.5
	Chinese	0	0	0.6	2.5	10.5	25.6	22.2	20.6	0.7
	Indian	0	0	0	3.1	4.6	23.9	45.6	39.6	1.0

Figure 5.19.1: Corpus Uteri Age specific Cancer Incidence per 100,000 population, Peninsular Malaysia 2003-2005

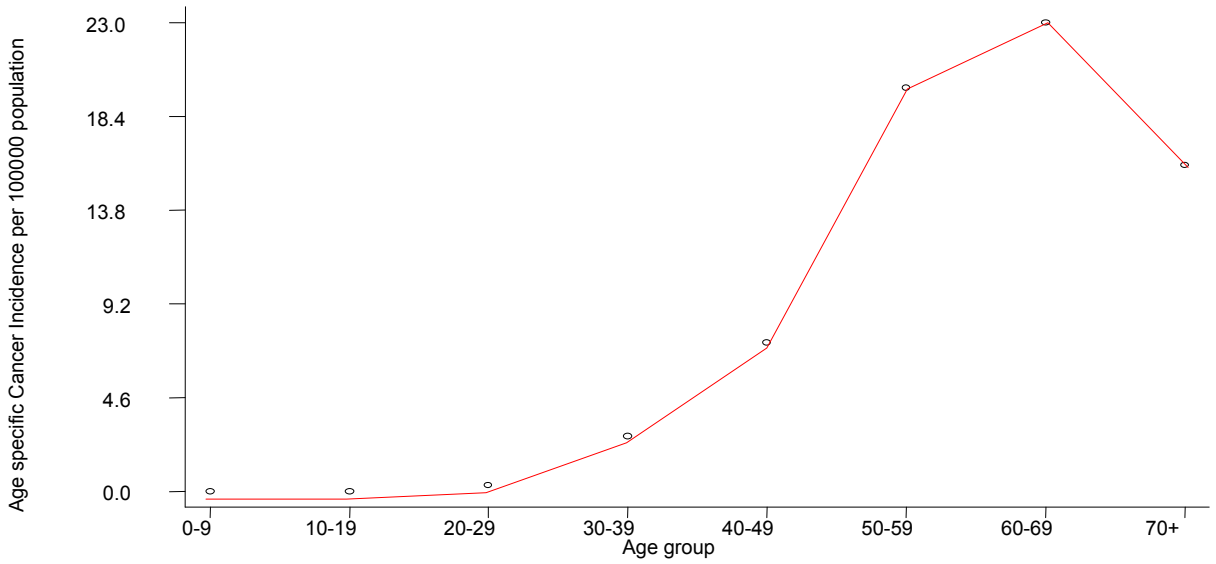
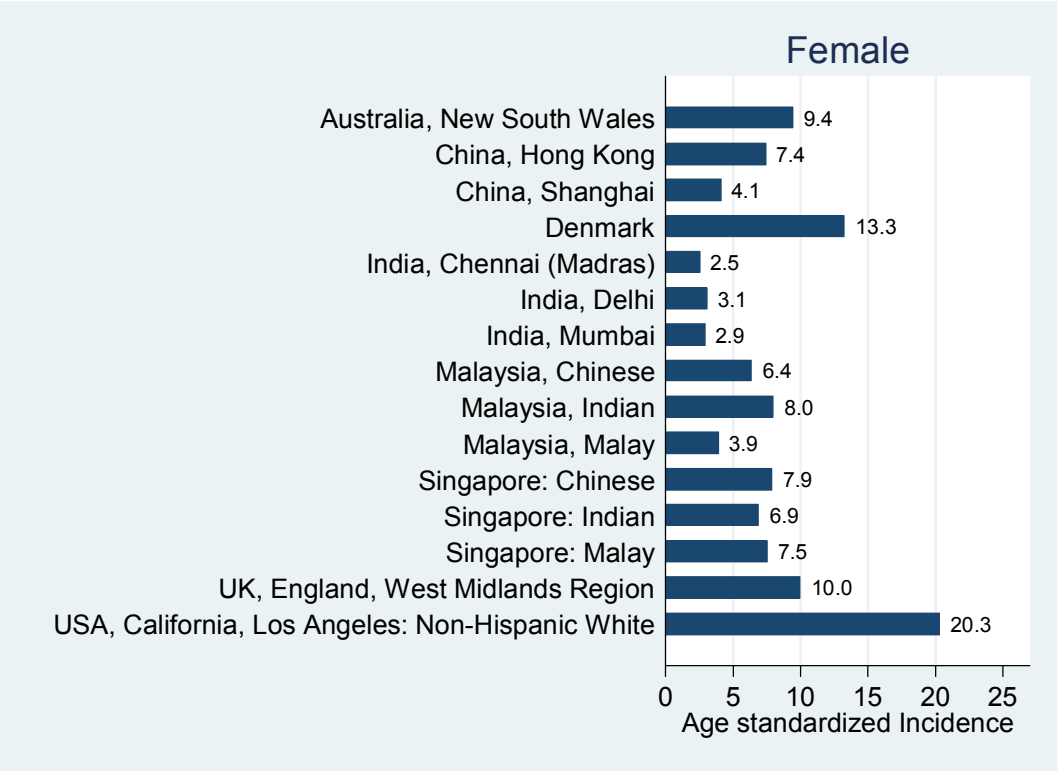


Table 5.19.3: Number (%) of Corpus Uteri cases by morphology (WHO), Peninsular Malaysia 2003-2005

Morphology	No.	%
Adenocarcinoma NOS	390	55.3
Endometrioid adenocarcinoma	149	21.1
Carcinoma NOS	43	6.1
Papillary Serous adenocarcinoma	30	4.3
Squamous cell carcinoma	30	4.3
Sarcoma NOS	13	1.8
Clear cell carcinoma	11	1.6
Malignant Mixed Mullerian Tumour	10	1.4
Endometrial Stromal Sarcoma	9	1.3
Leiomyosarcoma	8	1.1
Adenosquamous carcinoma	4	0.6
Carcinosarcoma	4	0.6
Adenosarcoma	2	0.3
Lymphoma/leukemia	1	0.1
Rhabdomyosarcoma	1	0.1
TOTAL	705	100

Figure 5.19.2: Corpus Uteri International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.20 OVARY (ICDO: C56-C57)

(Authors: Dr Ng Kok Ying, Dr Muralitharan Ganesalingam, Dr Subathra Sabaratnam)

Cancer of ovary was the fourth commonest cancer among women in Peninsular Malaysia between 2003 – 2005. It constituted 4.3 % of total cancers in women. There were a total of 1627 confirmed cases of ovarian cancer with an ASR of 6.4 per 100,000 women.

Cancer of ovary was seen in all age groups. The incidence increased sharply after the age of 40 years. Chinese women had the highest ASR (7.2) followed by Indians (6.7) and Malays (5.2). In comparison, Malay women in Singapore had the highest ASR (11.2). The lifetime risk for getting cancer of ovary was 1: 125 for Chinese, 1: 143 for Indians and 1: 167 for Malays. It was the fifth commonest cancer diagnosed in Malay women.

The incidence of cancer of ovary of all major ethnic groups in Malaysia was lower than their counterparts in Singapore, Denmark (13.3), UK, England (12.4), US, LA Non Hispanic Whites (14.5) and Chinese in Los Angeles (9.0).

Morphologically, Adenocarcinoma was the predominant subtype with Serous adenocarcinoma accounting for 22.1%.

Table 5.20.1: Ovary Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Female			
	No.	*%*	*CR*	*ASR*
All races	1627	100	5.6	6.4
Malay	745	45.8	4.2	5.2
Chinese	595	36.6	7.8	7.2
Indian	159	9.8	5.9	6.7

Table 5.20.2: Ovary Age specific Cancer Incidence per 100,000 population, by ethnicity, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Female	All races	0.2	1.1	2.7	4.4	11.7	19.7	20.5	14.2	0.7
	Malay	0.3	1.2	2.4	4.1	9.0	15.7	16.5	9.1	0.6
	Chinese	0.2	0.6	2.7	4.2	13.2	22.6	23.8	19.7	0.8
	Indian	0	1.0	2.1	2.1	13.4	22.1	21.1	19.0	0.7

Figure 5.20.1: Ovary Age specific Cancer Incidence per 100,000 population, Peninsular Malaysia 2003-2005

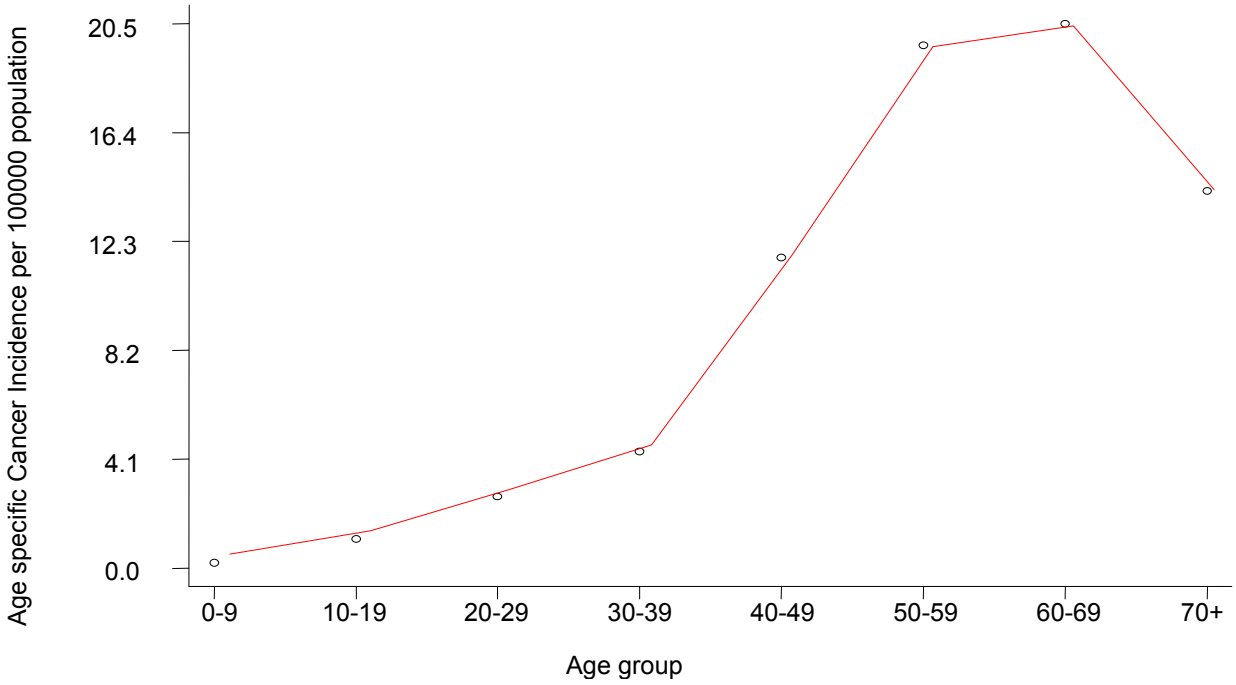


Figure 5.20.2: Ovary International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

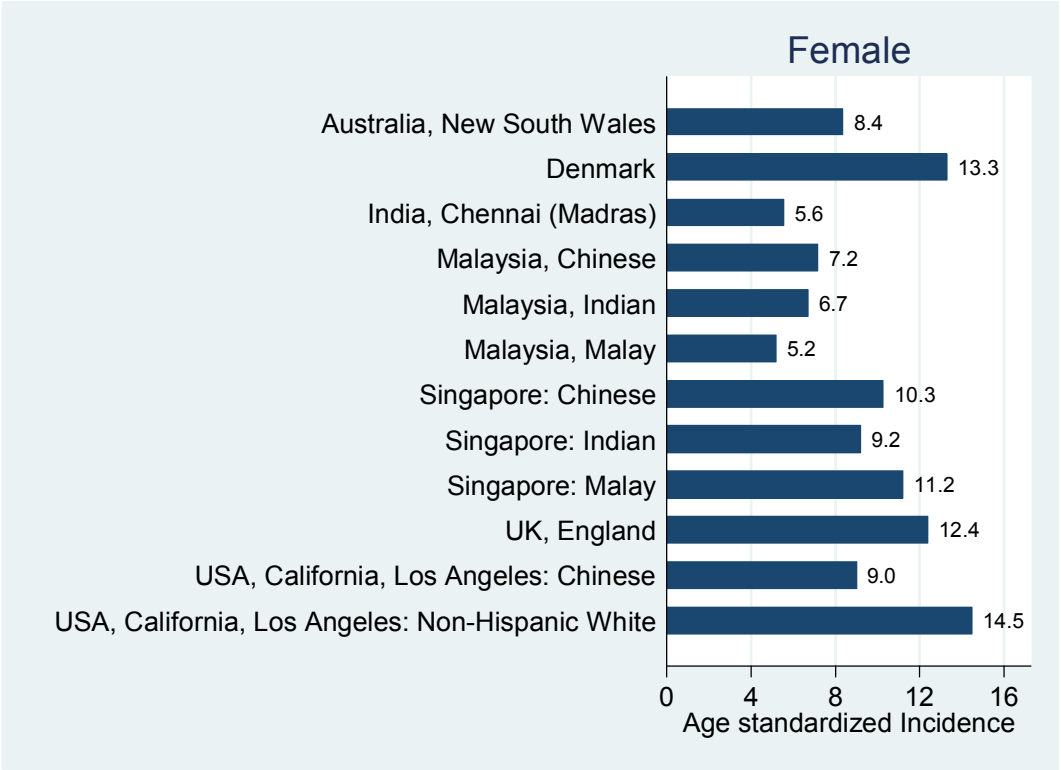


Table 5.20.3: Number (%) of Ovary cases by morphology (WHO), Peninsular Malaysia 2003-2005

Morphology	No.	%
Serous adenocarcinoma	225	22.1
Mucinous cystadenocarcinoma	185	18.2
Adenocarcinoma	183	18.0
Endometrioid adenocarcinoma	127	12.3
Clear cell adenocarcinoma	106	10.4
Teratoma, malignant	44	4.3
Carcinoma NOS	25	2.5
Squamous cell carcinoma	20	2.0
Yolk sac tumour	20	2.0
Dysgerminoma	16	1.6
Mixed Germ Cell Tumour	14	1.4
Others, unspecified	6	0.6
Germinoma	6	0.6
Granulosa cell tumour	5	0.5
Leiomyosarcoma	5	0.5
Sarcoma	5	0.5
Embryonal carcinoma	4	0.4
Malignant Mixed Mullerian Tumour	3	0.3
Carcinoid tumour	3	0.3
Malignant Lymphoma	3	0.3
Choriocarcinoma	3	0.3
Sex cord stromal tumours	2	0.2
Germ cell tumour,NOS	2	0.2
Granular cell tumour	1	0.1
Serous surface papillary carcinoma	1	0.1
Fibrosarcoma	1	0.1
Neuroendocrine	1	0.1
Adenocarcinofibroma	1	0.1
TOTAL	1017	100

Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

5.21 PROSTATE (ICDO: C61)

(Authors: Dr Lim Teck Chin, Dr Norraha Abdul Rahman)

Prostate cancer was the fourth most frequent cancer in males and accounted for 7.3% of the total cancers in males. The age specific incidence curve rose exponentially after the age of 50 years.

Among the ethnic groups in Peninsular Malaysia, the Chinese (15.8) recorded the highest age adjusted incidence, closely followed by Indians (14.8), whereas Malays had half the incidence (7.7) of the other two races. The life time risk of getting prostate cancer in Chinese and Indians was 1 in 53 compared to Malays which was 1 in 100. In terms of frequencies among the three ethnic groups, prostate cancer ranked the fifth most frequent cancer among the Malays, fourth among the Chinese and second among the Indians.

The incidence in Malaysian Chinese (15.8) was higher than in Shanghai (3.0), Hong Kong (8.6), and Taiwan (11.9). Indians in Malaysia (14.8) had an incidence higher than their counterparts in Chennai (4.9) and Singapore (9.9). Chinese in Singapore had an incidence (ASR 14.4) comparable to Malaysia, whereas Malays (13.3) in Singapore had a higher incidence compared to their Malaysian counterparts.

Out of a total of 2150 cases of prostate cancer, morphological diagnoses were available in 1559 cases. The majority of morphologically reported cases were adenocarcinomas, NOS (96.0%).

Table 5.21.1: Prostate Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male			
	No.	*%*	*CR*	*ASR*
All races	2150	100	7.3	12
Malay	728	33.9	4.0	7.7
Chinese	1083	50.4	13.6	15.8
Indian	209	9.7	7.8	14.8

Table 5.21.2: Prostate Age specific Cancer Incidence per 100,000 population, by ethnicity, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.1	0	0.1	0.1	0.5	9.7	60.4	167.7	1.5
	Malay	0.1	0	0	0.1	0.2	6.2	40.6	105.6	1.0
	Chinese	0.1	0.1	0.1	0	1.0	12.1	75.2	229.1	1.9
	Indian	0	0	0.2	0.2	0.8	10.8	73.7	209	1.9

Figure 5.21.1: Prostate Age specific Cancer Incidence per 100,000 population, Peninsular Malaysia 2003-2005

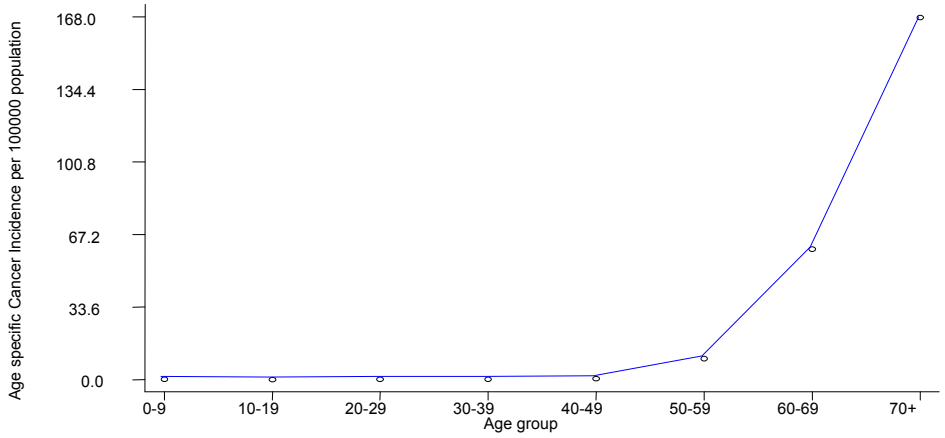
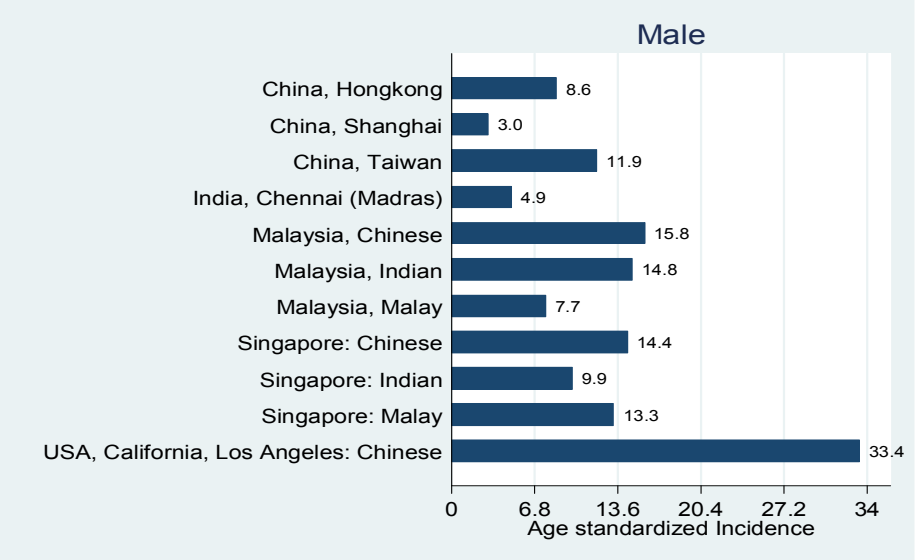


Table 5.21.3: Number (%) of Prostate cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8001/3	Tumor cells, malignant	1	0.1
8010/3	Carcinoma, NOS	36	2.3
8014/3	Large cell carcinoma with rhabdoid phenotype	1	0.1
8021/3	Carcinoma, anaplastic type, NOS	2	0.1
8050/3	Papillary carcinoma, NOS	1	0.1
8070/3	Squamous cell carcinoma, NOS	2	0.1
8120/3	Transitional cell carcinoma, NOS	15	1.0
8130/3	Papillary trans. cell carcinoma	1	0.1
8140/3	Adenocarcinoma, NOS	1496	96.0
8480/3	Mucinous adenocarcinoma	1	0.1
8550/3	Acinar cell carcinoma	2	0.1
8935/3	Stromal sarcoma, NOS	1	0.1
	TOTAL	1559	100

Figure 5.21.2: Prostate International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.22 BLADDER (ICDO: C67)

(Authors: Dr Lim Teck Chin, Dr Norraha Abdul Rahman)

In Malaysia, bladder cancer ranked ninth among males. It accounted for 3.6% among males and 0.8% among females of all new cases of cancer. The sex ratio was approximately 3:1 in favour of males. The age specific incidence curve for bladder cancer increased exponentially with a steep rise from the age of 50 years. Out of 872 cases with morphological diagnosis, 71.4% of these were transitional cell carcinoma, NOS.

The ASR of bladder cancer in Malaysian males was the highest among the Chinese (6.1) followed by Indians (5.4) and Malays (4.6). In comparison, Singapore Malays (8.1) and Chinese (8.0) had higher rates than the Indians (4.4). The incidence in Malaysia was lower than in Western countries. However, the incidence among Chinese in Malaysia was comparable to Shanghai for both sexes. The incidence among Indians in Malaysia was also comparable to their counterparts in Mumbai and Delhi for both sexes.

Table 5.22.1: Bladder Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	1079	100	3.7	5.4	320	100	1.1	1.4
Malay	494	45.8	2.7	4.6	110	34.4	0.6	0.9
Chinese	444	41.1	5.6	6.1	169	52.8	2.2	2.1
Indian	87	8.1	3.2	5.4	18	5.6	0.7	0.9

Table 5.22.2: Bladder Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.1	0	0.2	0.8	2.8	9.9	26.4	54.3	0.7
	Malay	0.1	0	0.2	0.9	2.5	8.9	22.7	43.5	0.6
	Chinese	0	0.1	0.3	0.7	3.1	10.0	26.8	68.5	0.7
	Indian	0	0.2	0	0.2	1.7	9.9	32.3	48.8	0.7
Female	All races	0	0	0	0.3	1.0	2.5	6	15.6	0.2
	Malay	0.1	0	0	0.1	0.8	1.7	3.7	9.3	0.1
	Chinese	0	0	0.1	0.3	1.2	3.2	8.7	24.7	0.2
	Indian	0	0	0	0	0.8	3.1	5.3	3.2	0.1

Figure 5.22.1: Bladder Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

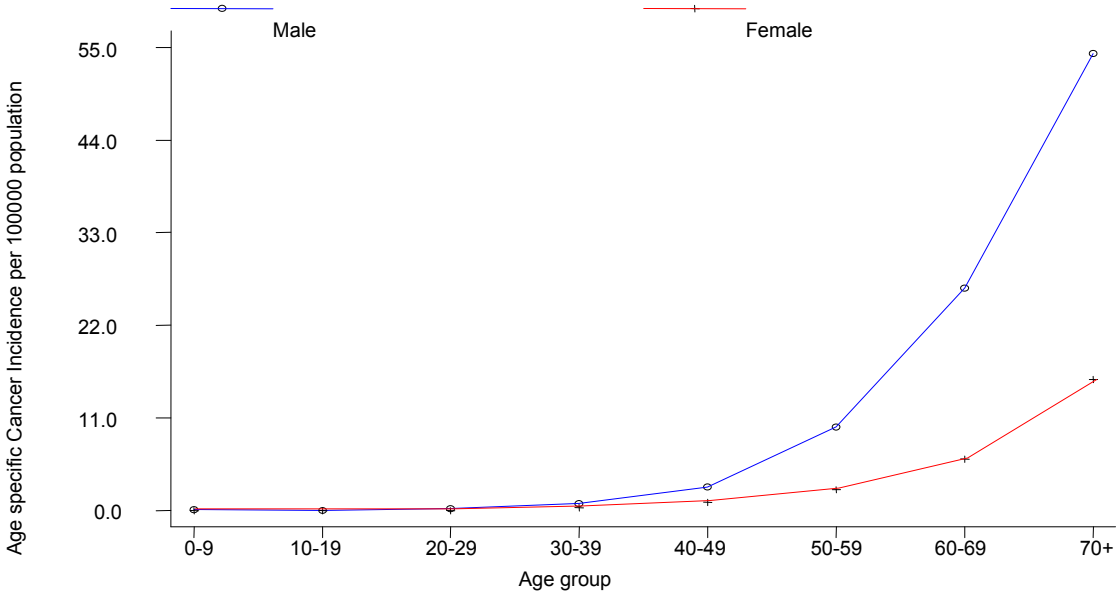
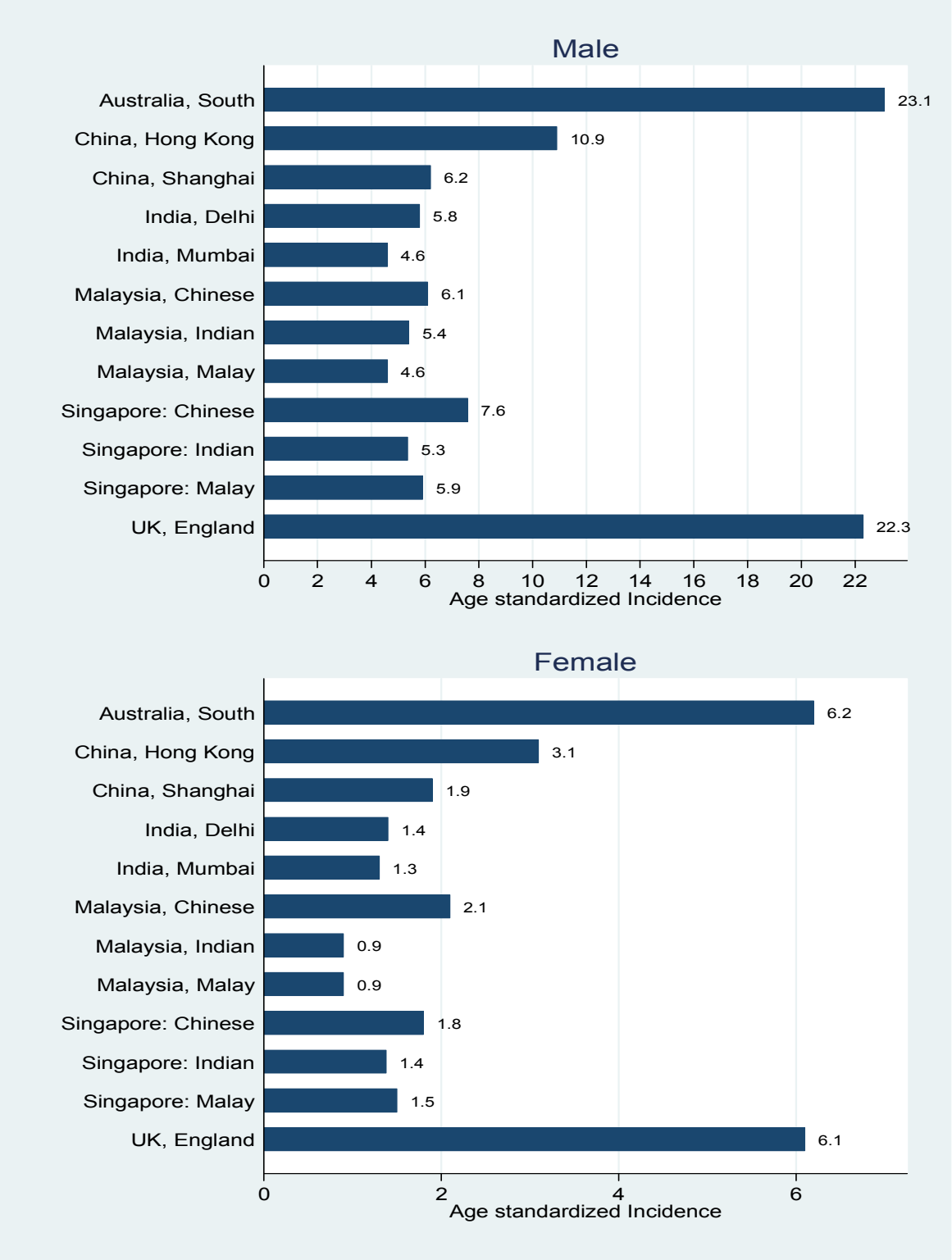


Table 5.22.3: Number (%) of Bladder cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	1	0.1
8010/3	Carcinoma, NOS	19	2.2
8012/3	Large cell carcinoma, NOS	1	0.1
8020/3	Carcinoma, undifferentiated type, NOS	6	0.7
8033/3	Pseudosarcomatous carcinoma	3	0.3
8050/3	Papillary carcinoma, NOS	9	1.0
8070/3	Squamous cell carcinoma, NOS	31	3.6
8071/3	Sq. cell carcinoma, keratinizing, NOS	2	0.2
8120/3	Transitional cell carcinoma, NOS	623	71.4
8130/3	Papillary trans. cell carcinoma	103	11.8
8140/3	Adenocarcinoma, NOS	48	5.5
8260/3	Papillary adenocarcinoma, NOS	3	0.3
8312/3	Renal cell carcinoma, NOS	3	0.3
8480/3	Mucinous adenocarcinoma	2	0.2
8481/3	Mucin-producing adenocarcinoma	1	0.1
8490/3	Signet ring cell carcinoma	1	0.1
8801/3	Spindle cell sarcoma	1	0.1
8900/3	Rhabdomyosarcoma, NOS	4	0.5
8910/3	Embryonal rhabdomyosarcoma, NOS	6	0.7
9590/3	Malignant lymphoma, NOS	1	0.1
9591/3	Malignant lymphoma, non-Hodgkin, NOS	1	0.1
9680/3	ML, large B-cell, diffuse, NOS	1	0.1
9687/3	Burkitt lymphoma, NOS	1	0.1
9800/3	Leukemia, NOS	1	0.1
	TOTAL	872	100

Figure 5.22.2: Bladder International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.23 KIDNEY and OTHER URINARY ORGANS (ICDO: C64, C65, C66, C68)

(Authors: Dr Lim Teck Chin, Dr Norraha Abdul Rahman)

The number of cases reported was 680 males, comprising 2.3% of all cancers in males; and 345 females comprising 0.9% of all cancers in females. The age-standardized incidence was 3.1 and 1.5 per 100, 000 males and females respectively. The sex ratio was 2:1 in favour of males. The age specific incidence curve rose rapidly after the age of 40 years.

Among the ethnic groups in Malaysia, Chinese had a higher incidence rate and risk than the Malays and Indians for both sexes.

The incidence among Chinese males in Malaysia was comparable to Chinese in Singapore but higher than their counterparts in Shanghai and Taiwan. The incidence among Chinese females in Malaysia was comparable to that of Singapore, Taiwan and Shanghai. The incidence among Indian males and females in Malaysia were comparable to their counterparts in Delhi, Mumbai and Singapore. The incidence among the Malays in Malaysia was lower than their counterparts in Singapore for both sexes.

Out of 1025 cases registered under this site, 89.6% occurred in the kidney, 3.6% in the renal pelvis and 4.7% in the ureter. Renal cell carcinoma, NOS comprised 52.1 % of all morphologically reported cases.

Table 5.23.1: Kidney and Other Urinary Organs Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	680	100	2.3	3.1	345	100	1.2	1.5
Malay	220	32.4	1.2	1.7	105	30.4	0.6	0.7
Chinese	375	55.1	4.7	4.8	187	54.2	2.4	2.4
Indian	52	7.6	1.9	2.8	34	9.9	1.3	1.5

Table 5.23.2: Kidney and Other Urinary Organs Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0.8	0.1	0.2	1	2.7	7.6	14.8	15.8	0.4
	Malay	0.8	0.1	0.2	0.5	1.8	3.8	7.7	7.5	0.2
	Chinese	0.6	0.2	0.2	1.9	4.1	12.6	23.8	25.9	0.6
	Indian	0.7	0	0	0.7	2.2	7.2	10.1	21.5	0.4
Female	All races	0.6	0.1	0.3	0.6	1.1	3	6.4	7.8	0.2
	Malay	0.5	0.1	0.2	0.7	0.4	1.6	2.5	2.7	0.1
	Chinese	0.8	0.3	0.3	0.8	2.0	4.2	10.8	15.3	0.3
	Indian	0.7	0	0.9	0	1.6	4.4	6.1	4.8	0.2

Table 5.23.3: Number of Kidney and Other Urinary Organs cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C64.9	Kidney, NOS	615	90.5	303	87.8
C65.9	Renal pelvis	26	3.8	11	3.2
C66.9	Ureter	28	4.1	20	5.8
C68.0	Urethra	5	0.7	7	2.0
C68.9	Urinary system, NOS	6	0.9	4	1.2
	TOTAL	680	100	345	100

Table 5.23.4: Number (%) of Kidney and Other Urinary Organs cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	2	0.3
8001/3	Tumor cells, malignant	1	0.1
8005/3	Malignant tumor, clear cell type	1	0.1
8010/3	Carcinoma, NOS	12	1.8
8020/3	Carcinoma, undifferentiated type, NOS	3	0.4
8033/3	Pseudosarcomatous carcinoma	1	0.1
8041/3	Small cell carcinoma, NOS	2	0.3
8070/3	Squamous cell carcinoma, NOS	11	1.6
8120/3	Transitional cell carcinoma, NOS	75	10.9
8122/3	Trans. cell carcinoma, spindle cell	1	0.1
8130/3	Papillary trans. cell carcinoma	15	2.2
8140/3	Adenocarcinoma, NOS	47	6.9
8260/3	Papillary adenocarcinoma, NOS	9	1.3
8310/3	Clear cell adenocarcinoma, NOS	45	6.6
8312/3	Renal cell carcinoma, NOS	358	52.1
8313/3	Clear cell adenocarcinofibroma	1	0.1
8316/3	Cyst-associated renal cell carcinoma	1	0.1
8317/3	Renal cell carcinoma, chromophobe type	1	0.1
8318/3	Renal cell carcinoma, sarcomatoid	13	1.9
8319/3	Collecting duct carcinoma	1	0.1
8480/3	Mucinous adenocarcinoma	1	0.1
8481/3	Mucin-producing adenocarcinoma	1	0.1
8806/3	Desmoplastic small round cell tumor	1	0.1
8900/3	Rhabdomyosarcoma, NOS	1	0.1
8960/3	Nephroblastoma, NOS	70	10.2
8963/3	Malignant rhabdoid tumor	1	0.1
8964/3	Clear cell sarcoma of kidney	5	0.7
9500/3	Neuroblastoma, NOS	2	0.3
9591/3	Malignant lymphoma, non-Hodgkin, NOS	3	0.4
9680/3	ML, large B-cell, diffuse, NOS	1	0.1
	TOTAL	686	100

Figure 5.23.1: Kidney and Other Urinary Organs Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

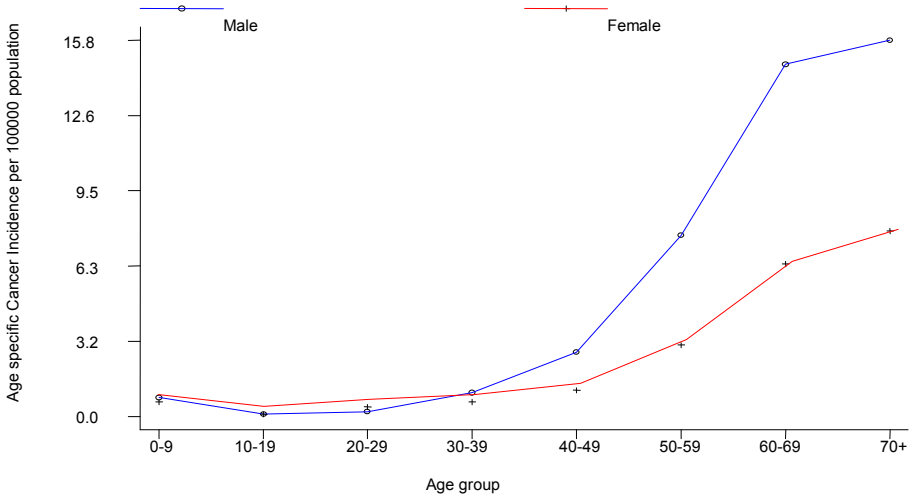
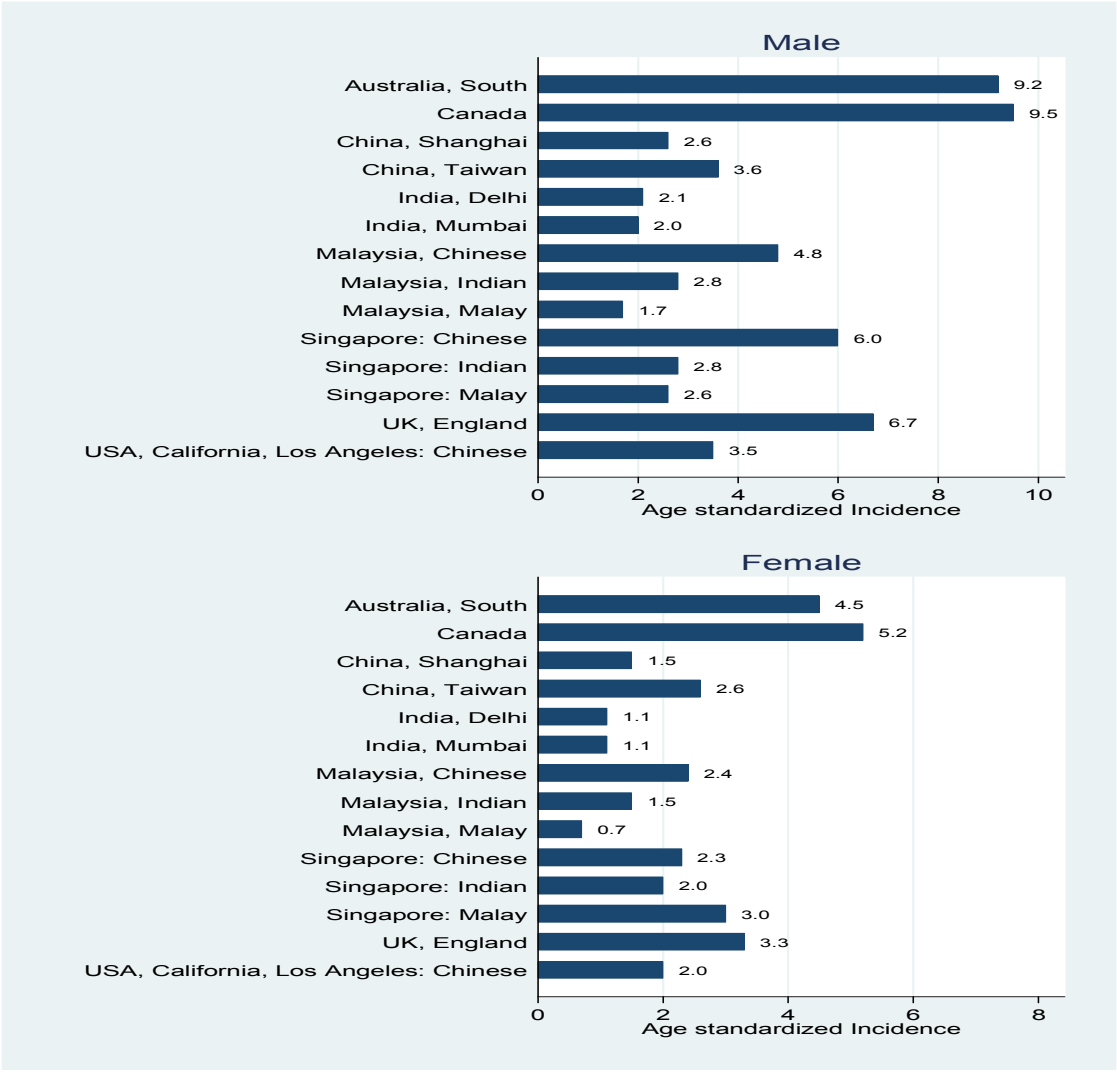


Figure 5.23.2: Kidney and Other Urinary Organs International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

5.24 BRAIN and OTHER NERVOUS SYSTEM (ICDO: C70-C72)

(Authors: Prof Dr Ahmad Zubaidi Abd Latif, Dr Ramesh A/L Narenthiranathan, Dr Fauziah Kassim)

Seven hundred and eighty nine males and 650 females were reported giving an ASR of 2.9 and 2.4 per 100,000 males and females respectively. The incidence among the major ethnic groups was similar among the males in Malaysia. However, among the females, Indians had the highest incidence as compared to the Malays and Chinese in Malaysia. Indian females in Malaysia also had a higher incidence than their counterparts in Singapore, Mumbai and Delhi.

Brain and other nervous system tumours occurred in all age groups with the highest incidence in the 60-69 year age group. Malignant gliomas were the most common histological type reported, accounting for 34.6% of all nervous system tumors.

The ASR of Malaysian males of 2.9 and females of 2.4 were similar to asian countries such as Philippines (males 3.0, females 2.3), Japan, Hiroshima (males 2.5, females 1.6) and Hong Kong (males 3.8, females 2.9) but lower than developed nations, such as Australia, New South Wales (males 6.9, females 5.0) and Canada (males 6.9, females 5.0).

Table 5.24.1: Brain and Other Nervous System Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	789	100	2.7	2.9	650	100	2.2	2.4
Malay	429	54.4	2.3	2.6	324	49.8	1.8	2.0
Chinese	232	29.4	2.9	2.9	193	29.7	2.5	2.5
Indian	61	7.7	2.3	2.6	84	12.9	3.1	3.5

Table 5.24.2: Brain and Other Nervous System Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	1.6	1.9	1.5	3.0	3.2	5.7	6.8	5.9	0.3
	Malay	1.6	1.7	1.6	2.7	2.7	5.5	5.9	3.6	0.2
	Chinese	1.5	2.2	1.2	2.3	3.4	5.1	7.9	7.0	0.3
	Indian	1.1	1.5	0.9	2.7	3.9	2.7	5.1	13.7	0.3
Female	All races	1.8	1.4	1.5	2.0	3.0	4.2	5.2	4.3	0.2
	Malay	1.2	1.2	1.3	1.7	2.7	3.8	4.7	3.4	0.2
	Chinese	2	1.6	1.6	2	2.7	4.6	5.0	4.4	0.2
	Indian	4.1	1.6	1.3	2.4	3.6	4.0	7.9	11.1	0.3

Table 5.24.3: Number of Brain and Other Nervous System cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C70.9	Meninges	19	2.4	30	4.6
C71.0	Cerebrum	189	24.0	139	21.4
C71.5	Ventricle	14	1.8	12	1.8
C71.6	Cerebellum	78	9.9	62	9.5
C71.7	Brain stem	16	2.0	23	3.5
C72.0	Spinal Cord	22	2.8	18	2.8
C72.5	Cranial Nerves	8	1.0	6	0.9
C72.9	Nervous system, NOS	443	56.1	358	55.1
	TOTAL	789	100	650	100

Table 5.24.4: Number (%) of Brain and Other Nervous System cases by morphology, Peninsular Malaysia 2003-2005

Morphology	No.	%
Unspecified malignant tumours	28	3.7
Metastatic tumours	12	1.5
Malignant melanoma, NOS	1	0.1
Germinoma	20	2.7
Other germ cell tumors	5	0.7
Hemangiopericytoma	5	0.7
Hemangioblastoma	3	0.4
Mesenchymal non meningothelial tumours	2	0.2
Craniopharyngioma	1	0.1
Medulloblastoma	85	11.3
Other embryonal tumours	21	2.8
Malignant Gliomas	262	34.6
Ependymal tumors	43	5.7
Astrocytic tumors	129	17.1
Oligodendroglial tumors	22	2.9
Neuroblastic tumors	7	0.9
Neuronal & mixed neuronal-glial tumors	6	0.8
Other Meningothelial tumors	32	4.2
Malignant Meningothelial tumors	24	3.1
Malignant Nerve Sheath tumors	4	0.6
Other Nerve Sheath tumors	8	1.0
Malignant Lymphomas	34	4.5
Chordoma	1	0.1
TOTAL	753	100

Figure 5.24.1: Brain and Other Nervous System Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

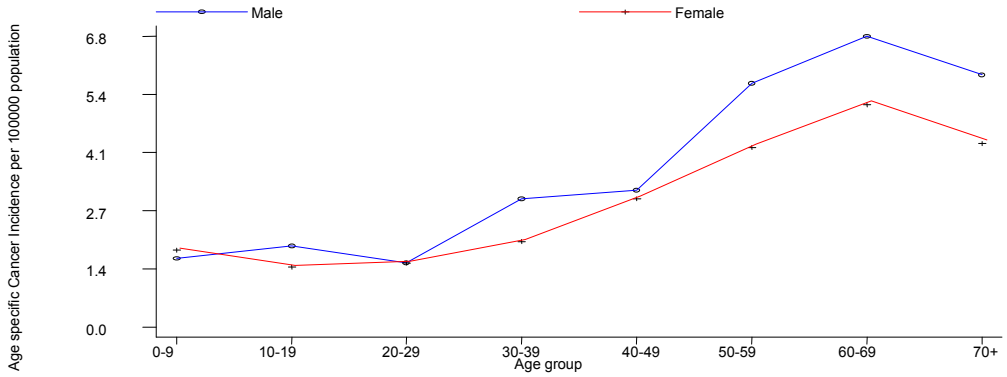


Figure 5.24.2: Brain and Other Nervous System International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

5.25 THYROID (ICDO: C73)

(Authors: Dr Noor Hisham Abdullah, Prof Dr Sharifah Noor Akmal Syed Hussain)

A total of 1596 thyroid cancers (402 males, 1194 females) were reported with an ASR of 1.6 and 4.5 per 100,000 males and females respectively. Thyroid cancer comprised 1.6% of all cancers in males and 3.1% of all cancers in females. It was the ninth commonest cancer among Malaysian women. Among Malay women, thyroid cancer ranked seventh.

The male to female sex ratio was approximately 1: 3 and was comparable to USA (SEER White) and Singapore where the sex ratios were 1: 2.8 and 1: 3.2 respectively.

The incidence increased with age, with the peak being in the age group of 60 to 69 years. Among males, the incidence of thyroid cancers was highest among the Malays as compared to the Chinese and Indians. The incidence among the females were similar among the major ethnic groups The lifetime risk of getting thyroid was 1 in 200 in all females, 1 in 500 in Malay and Indian males and 1 in 1000 in Chinese males. The most commonly reported morphology was papillary carcinoma, NOS (43.1 %).

Overall incidence in Malaysia was comparable to Singapore and USA Blacks but lower than Japan, Philippines, Manila, Finland, Belarus and USA Whites.

Table 5.25.1: Thyroid Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	402	100	1.4	1.6	1194	100	4.1	4.5
Malay	205	51.0	1.1	1.6	621	52.0	3.5	4.2
Chinese	116	28.9	1.5	1.4	341	28.6	4.5	4.1
Indian	32	8.0	1.2	1.4	113	9.5	4.2	4.2

Table 5.25.2: Thyroid Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	0	0.2	0.8	1.6	2.7	3.7	5.5	5.2	0.2
	Malay	0	0.1	0.9	1.1	2.2	3.4	5.9	6.7	0.2
	Chinese	0	0.4	0.7	1.7	2.4	2.7	4.4	3.5	0.1
	Indian	0	0	0.2	1.0	2.2	5.9	6.1	0	0.2
Female	All races	0	0.9	3.3	6.2	7.6	9.9	11.8	11.1	0.5
	Malay	0	0.8	3.1	5.4	6.4	9.7	10.6	12.2	0.4
	Chinese	0	0.6	3.1	5.1	7.7	8.9	10.6	9.1	0.4
	Indian	0	0.8	2.6	8.0	8.5	7.5	8.8	7.9	0.4

Figure 5.25.1: Thyroid Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

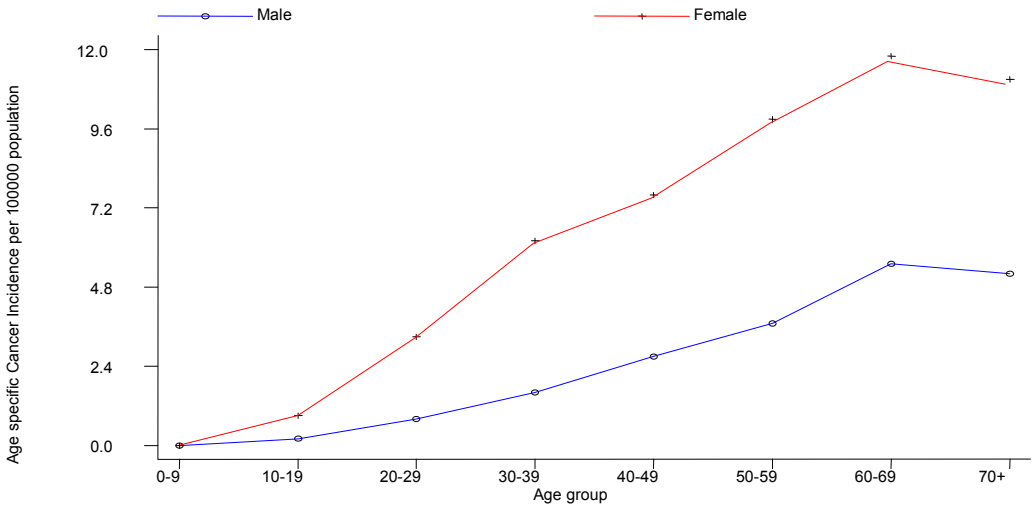
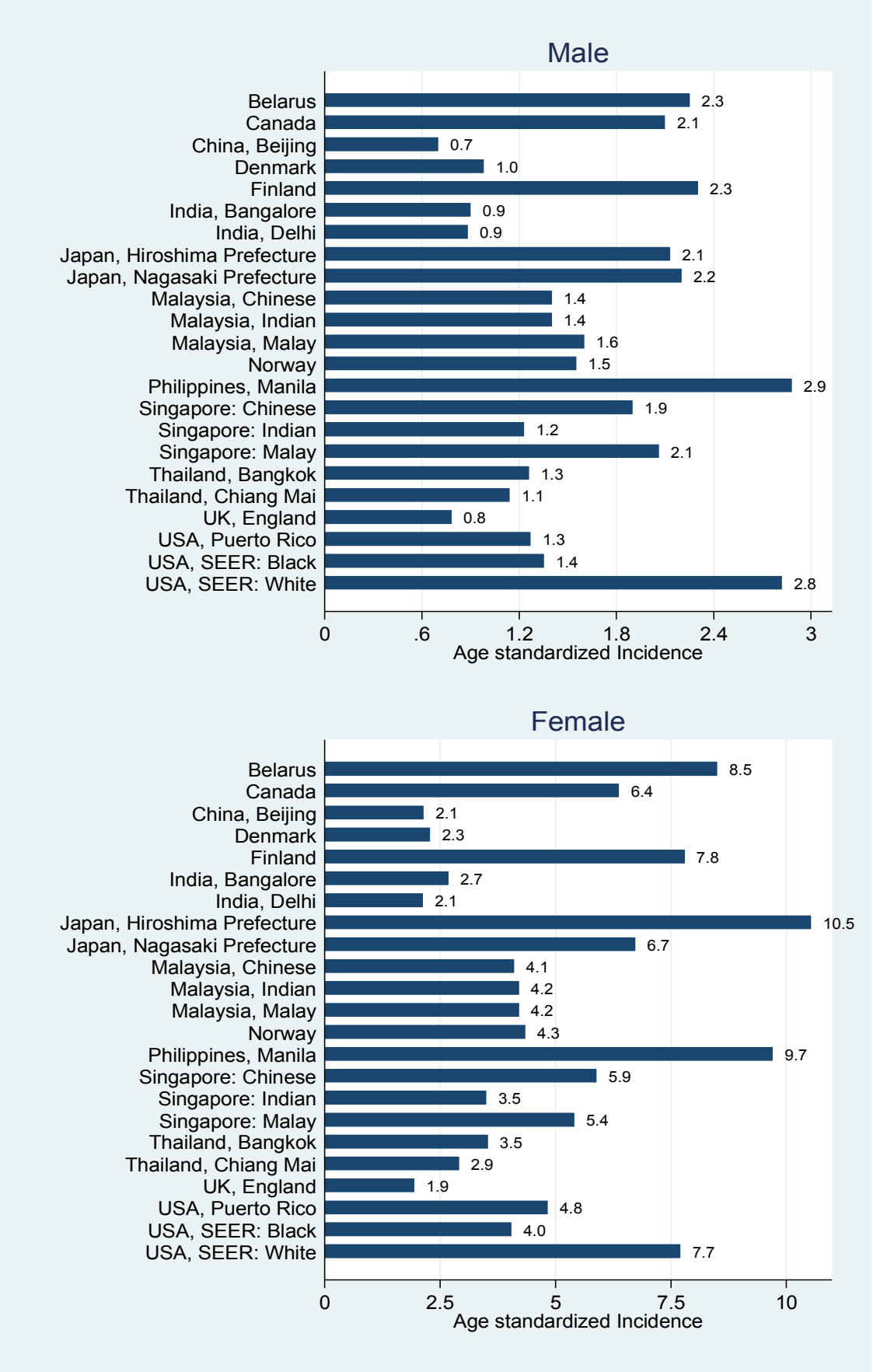


Table 5.25.3: Number (%) of Thyroid cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
8000/3	Neoplasm, malignant	1	0.1
8001/3	Tumor cells, malignant	2	0.2
8010/3	Carcinoma, NOS	26	2.8
8020/3	Carcinoma, undifferentiated type, NOS	7	0.8
8021/3	Carcinoma, anaplastic type, NOS	32	3.5
8033/3	Pseudosarcomatous carcinoma	1	0.1
8050/3	Papillary carcinoma, NOS	399	43.1
8070/3	Squamous cell carcinoma, NOS	1	0.1
8140/3	Adenocarcinoma, NOS	6	0.6
8240/3	Carcinoid tumor, NOS	1	0.1
8260/3	Papillary adenocarcinoma, NOS	193	20.9
8290/3	Oxyphilic adenocarcinoma	9	1.0
8310/3	Clear cell adenocarcinoma, NOS	1	0.1
8330/3	Follicular adenocarcinoma, NOS	144	15.6
8335/3	Follicular carcinoma, minimally invasive	6	0.6
8337/3	Insular carcinoma	2	0.2
8340/3	Papillary carcinoma, follicular variant	37	4.0
8341/3	Papillary microcarcinoma	13	1.4
8343/3	Papillary carcinoma, encapsulated	2	0.2
8500/3	Infiltrating duct carcinoma, NOS	1	0.1
8510/3	Medullary carcinoma, NOS	25	2.7
9050/3	Mesothelioma, malignant	1	0.1
9590/3	Malignant lymphoma, NOS	6	0.6
9591/3	Malignant lymphoma, non-Hodgkin, NOS	5	0.5
9670/3	ML, small B lymphocytic, NOS	1	0.1
9680/3	ML, large B-cell, diffuse, NOS	3	0.3
	TOTAL	925	100

Figure 5.25.2: Thyroid International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

5.26 LYMPHOMA

(Author: Prof Dr Peh Suat Cheng)

Lymphoma represents a combination of both Hodgkin lymphomas (HL) and non-Hodgkin's lymphomas (NHL). A total of 1828 cases were reported in males and 1306 in females. The overall male: female incidence ratio was 1.4:1. Lymphoma ranked sixth position amongst all West Malaysian males, fourth position in the ethnic Malay males, seventh position in ethnic Chinese, fifth position in ethnic Indian males; Lymphomas ranked seventh position amongst all West Malaysian females; Lymphoma ranked sixth for ethnic Malay females and tenth among ethnic Chinese females.

Ethnic data were comparable to Singapore and other regions with Indians or Chinese for both Hodgkin's Lymphoma and Non Hodgkin's Lymphoma.

The age-standardized incidence (ASR) of males and females was 7.7 and 5.3 respectively. The incidence increased with age, and a sharp rise was evident after 40 years of age for both sexes. A similar pattern was seen in all races.

Among males, the cumulative risk for Chinese and Indians (0.7) was lower than in Malays (0.8). The life time risk for Malay males was 1 in 125, 1 in 143 for Chinese and Indians. Among females, the cumulative risk for Indians was the lowest (0.4) when compared to Malays and Chinese (0.6). The life time risk for Malay and Chinese females was 1 in 167, 1 in 250 for Indian females.

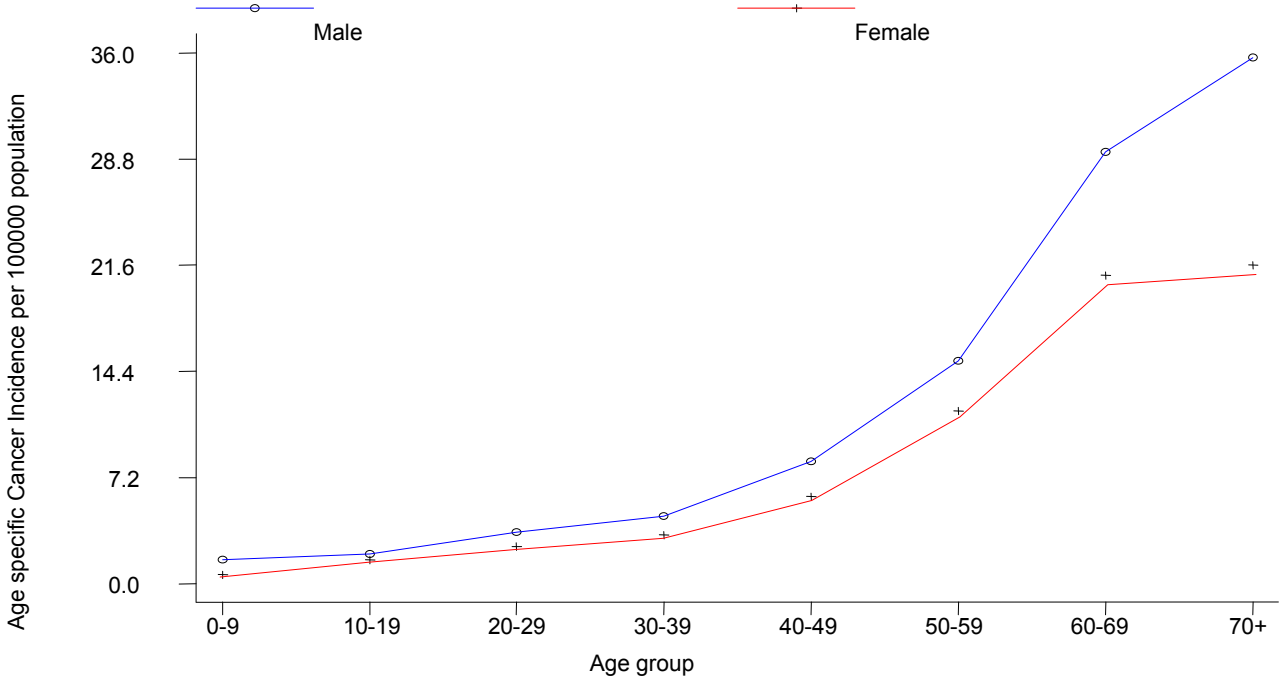
Table 5.26.1: Lymphoma Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	1828	100	6.2	7.7	1306	100	4.5	5.3
Malay	990	54.2	5.4	7.4	715	54.7	4.0	5.2
Chinese	530	29.0	6.6	6.7	400	30.6	5.2	5.0
Indian	154	8.4	5.7	6.9	92	7.0	3.4	3.8

Table 5.26.2: Lymphoma Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	1.6	2.0	3.5	4.6	8.3	15.1	29.3	35.7	0.8
	Malay	1.7	1.5	3.3	4.2	7.7	16.0	29.4	32.3	0.8
	Chinese	0.9	2.0	3.2	4.1	7.6	11.7	25.4	34.8	0.7
	Indian	1.6	4.4	3.6	4.4	6.4	11.7	20.2	35.2	0.7
Female	All races	0.6	1.6	2.5	3.3	5.9	11.7	20.9	21.6	0.6
	Malay	0.5	1.4	2.4	3.6	5.8	11.9	20.2	19	0.6
	Chinese	0.7	1.3	2.1	2.1	4.2	11.5	20.3	26.2	0.6
	Indian	0.6	2.4	3.0	2.8	3.8	7.5	10.5	12.7	0.4

Figure 5.26.1: Lymphoma Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Approximately 47.5% of lymphoma had nodal presentation, and the remaining cases had diseases reported from the extra-nodal sites, with the upper aerodigestive tract and gastrointestinal tract constituting the 2 major extra nodal sites. Based on available morphological classification (ICD-03) data, the ratio of HL: NHL was 1:6.4 (HL=13.6%; NHL= 86.4%).

Table 5.26.3: Number of Lymphoma cases by subsite, Peninsular Malaysia 2003-2005

	Subsite	Male		Female	
		No.	*%*	*No.*	*%*
C00.0 – C76.5	Extra nodal	891	48.7	652	49.9
C77.0 – C77.9	Nodal	820	44.9	575	44.0
C80.9	Unknown primary site	117	6.4	79	6.0
	TOTAL	1828	100	1306	100

Table 5.26.4: Number (%) of Lymphoma cases by morphology, Peninsular Malaysia 2003-2005

	Morphology	No.	%
9590/3	Malignant lymphoma, NOS	223	10.0
9591/3	Malignant lymphoma, non-Hodgkin, NOS	835	37.5
9650/3	Hodgkin lymphoma, NOS	148	6.7
9651/3	Hodgkin lymphoma, lymphocyte-rich	9	0.4
9652/3	Hodgkin lymphoma, mixed cellularity, NOS	34	1.5
9653/3	Hodgkin lymphoma, lymphocyte deplet., NOS	5	0.2
9659/3	Hodgkin lymph., nodular lymphocyte predom.	8	0.4
9663/3	Hodgkin lymphoma, nodular sclerosis, NOS	62	2.8
9664/3	Hodgkin lymphoma, nod. scler., cellular phase	2	0.1
9665/3	Hodgkin lymphoma, nod. scler., grade 1	3	0.1
9670/3	ML, small B lymphocytic, NOS	46	2.1
9671/3	ML, lymphoplasmacytic	3	0.1
9673/3	Mantle cell lymphoma	7	0.3
9675/3	ML, mixed sm. and lg. cell, diffuse	8	0.4
9679/3	Mediastinal large B-cell lymphoma	2	0.1
9680/3	ML, large B-cell, diffuse, NOS	316	14.2
9684/3	ML, large B-cell, diffuse, immunoblastic, NOS	16	0.7
9687/3	Burkitt lymphoma, NOS	43	1.9
9690/3	Follicular lymphoma, NOS	67	3
9691/3	Follicular lymphoma, grade 2	11	0.5
9695/3	Follicular lymphoma, grade 1	10	0.4
9698/3	Follicular lymphoma, grade 3	4	0.2
9699/3	Marginal zone B-cell lymphoma, NOS	23	1.0
9700/3	Mycosis fungoides	6	0.3
9701/3	Sezary syndrome	2	0.1
9702/3	Mature T-cell lymphoma, NOS	66	3.0
9705/3	Angioimmunoblastic T-cell lymphoma	3	0.1
9708/3	Subcutaneous panniculitis-like T-cell lymphoma	2	0.1
9709/3	Cutaneous T-cell lymphoma, NOS	8	0.4
9714/3	Anaplastic large cell lymphoma, T-cell and Null cell type	16	0.7
9717/3	Intestinal T-cell lymphoma	1	0
9719/3	NK/T-cell lymphoma, nasal and nasal-type	11	0.5
9727/3	Precursor cell lymphoblastic lymphoma, NOS	9	0.4
9728/3	Precursor B-cell lymphoblastic lymphoma	3	0.1
9729/3	Precursor T-cell lymphoblastic lymphoma	13	0.6
9731/3	Plasmacytoma, NOS	10	0.4
9732/3	Multiple myeloma	177	8.0
9733/3	Plasma cell leukemia	5	0.2
9734/3	Plasmacytoma, extramedullary	2	0.1
9750/3	Malignant histiocytosis	1	0
9755/3	Histiocytic sarcoma	2	0.1
9757/3	Interdigitating dendritic cell sarcoma	1	0
9758/3	Follicular dendritic cell sarcoma	1	0
	TOTAL	2224	100

5.26.1 Hodgkin's Lymphoma

In HL, the male: female ratio was 1.3 : 1, with a distinct bimodal peak in the ASR, uniformly seen in both the sexes; the first peak in the third decade of life, and the second peak over the sixth and seventh decades. The bimodal peak incidence was also reported in Penang Cancer Registry report 1999-2003, and also noted in Singapore patients (1998-2001), and other Asian populations such as China (Hong Kong) and Japan (Osaka). However, bimodal peaks were not observed in Australia (New South Wales), the UK (England) and Sweden (Cancer Incidence in Five Continents, volume VIII, IARC Scientific Publications No. 155). The commonest subtype of HL reported was Nodular sclerosing HL, closely followed by Mixed cellularity HL.

Table 5.26.1.1: Hodgkin Lymphoma Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	212	100	0.7	0.7	164	100	0.6	0.6
Malay	113	53.3	0.6	0.7	92	56.1	0.5	0.5
Chinese	50	23.6	0.6	0.6	37	22.6	0.5	0.5
Indian	34	16.0	1.3	1.2	25	15.2	0.9	0.9

Table 5.26.1.2: Hodgkin Lymphoma Age specific Cancer Incidence per 100,000 population (CR) by sex, Peninsular Malaysia 2003-2005

Age, year	Male			Female			Both		
	No.	*%*	*CR*	*No.*	*%*	*CR*	*No.*	*%*	*CR*
0-9	22	10.4	0.3	3	1.8	0	25	6.6	0.2
19-Oct	38	17.9	0.6	43	26.2	0.7	81	21.5	0.7
20-29	55	25.9	1.1	51	31.1	1.1	106	28.2	1.1
30-39	26	12.3	0.6	20	12.2	0.5	46	12.2	0.6
40-49	22	10.4	0.6	16	9.8	0.5	38	10.1	0.6
50-59	29	13.7	1.2	11	6.7	0.5	40	10.6	0.9
60-69	15	7.1	1.2	13	7.9	1.0	28	7.4	1.1
70+	5	2.4	0.7	7	4.3	0.8	12	3.2	0.8

Figure 5.26.1.1: Hodgkin Lymphoma Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

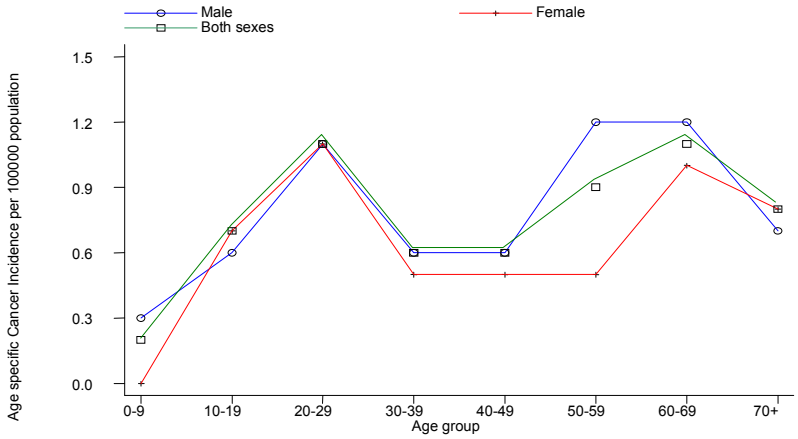
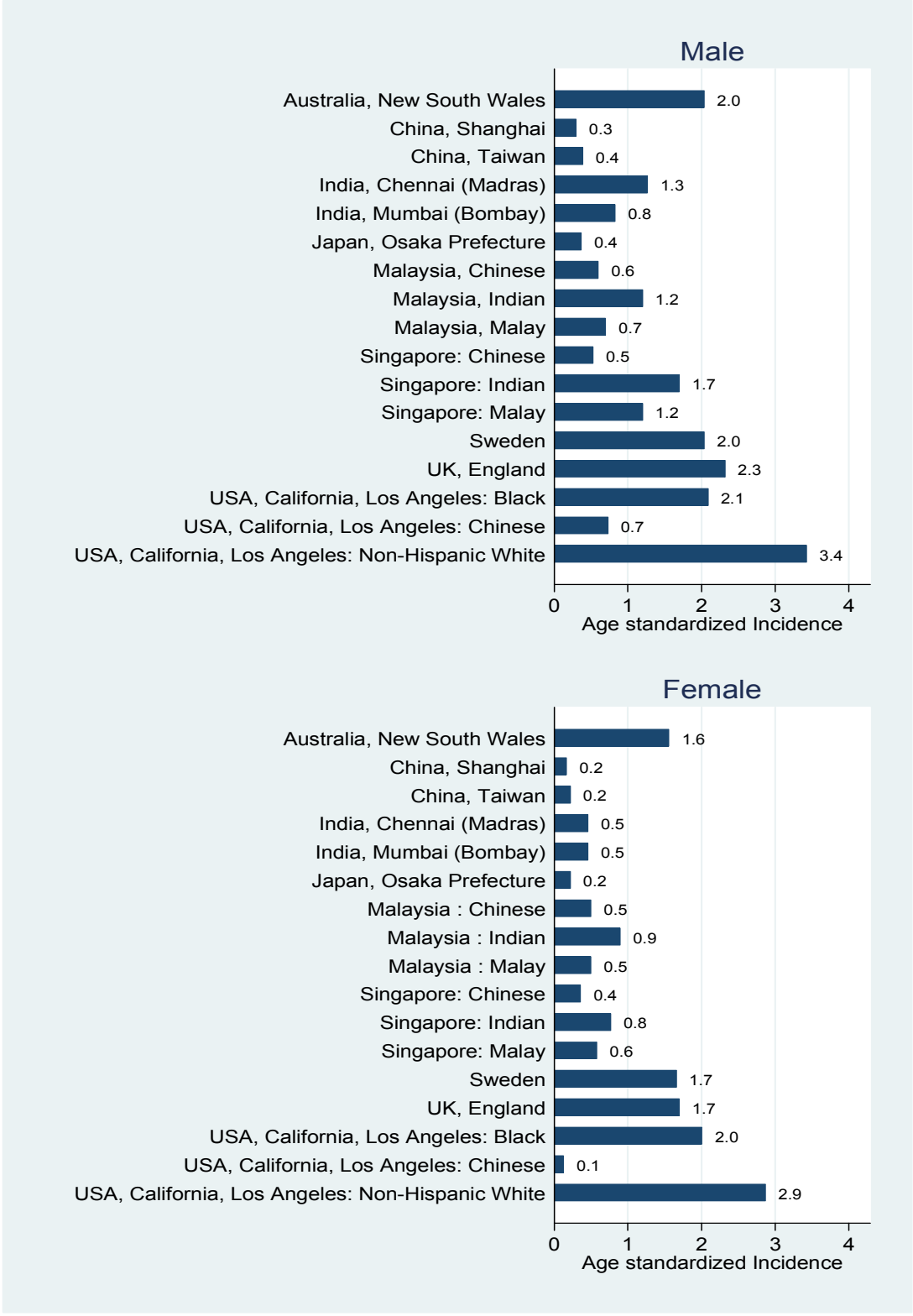


Figure 5.26.1.2: Hodgkin Lymphoma International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.26.2 Non Hodgkin's Lymphoma

In NHL, the male: female incidence ratio was 1.4 : 1. There was no observable bimodal peak in the ASR. Diffuse large B-cell lymphoma was the most common subtype of non-Hodgkin lymphomas.

Table 5.26.2.1: Non Hodgkin Lymphoma Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	1389	100	4.7	6.0	994	100	3.4	4.2
Malay	760	54.7	4.1	5.9	555	55.8	3.1	4.2
Chinese	424	30.5	5.3	5.4	313	31.5	4.1	3.9
Indian	98	7.1	3.7	4.7	55	5.5	2.0	2.4

Table 5.26.2.2: Non Hodgkin Lymphoma Age specific Cancer Incidence per 100,000 population (CR) by sex, Peninsular Malaysia 2003-2005

Age, year	Male			Female			Both		
	No.	*%*	*CR*	*No.*	*%*	*CR*	*No.*	*%*	*CR*
0-9	60	4.3	0.9	25	2.5	0.4	85	3.6	0.6
19-Oct	60	4.3	1.0	36	3.6	0.6	96	4.0	0.8
20-29	99	7.1	2.0	56	5.6	1.2	155	6.5	1.6
30-39	135	9.7	3.4	95	9.6	2.3	230	9.7	2.9
40-49	226	16.3	6.5	166	16.7	4.8	392	16.4	5.7
50-59	290	20.9	12.3	229	23.0	10.1	519	21.8	11.2
60-69	310	22.3	24.8	227	22.8	17.6	537	22.5	21.2
70+	209	15.0	30.8	160	16.1	18.7	369	15.5	24.1

Figure 5.26.2.1: Non Hodgkin Lymphoma Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

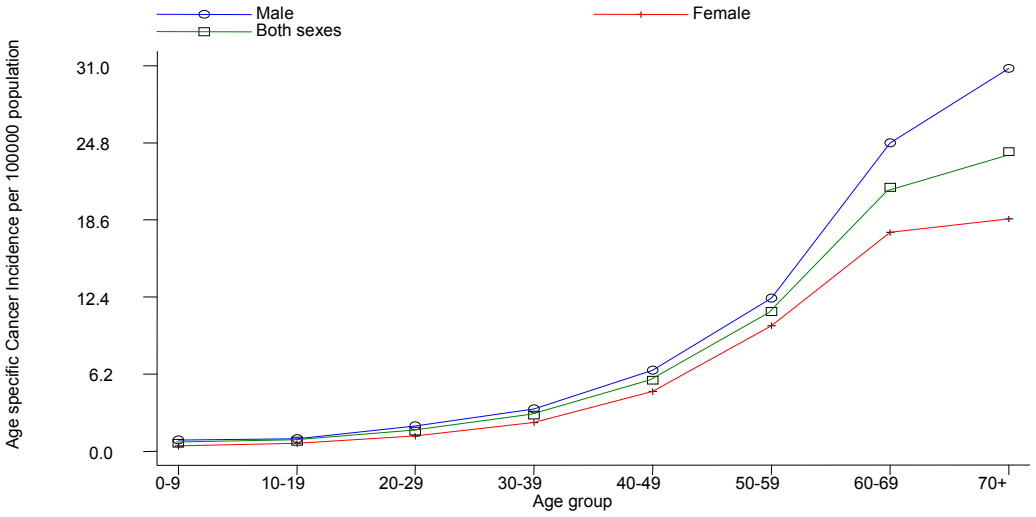
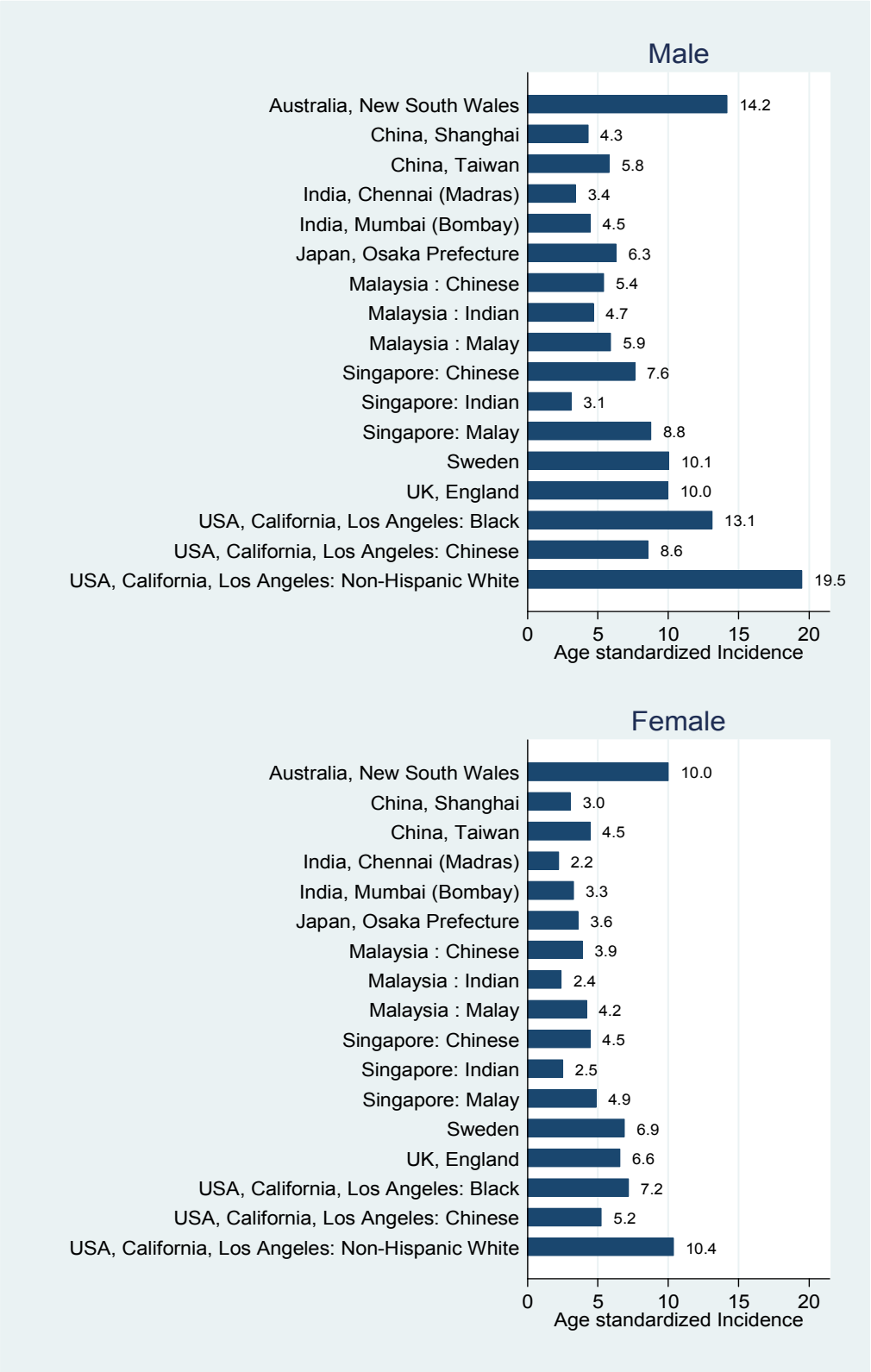


Figure 5.26.2.2: Non Hodgkin Lymphoma International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



Chapter 5 (continued)

SELECTED CANCER SITES IN PENINSULAR MALAYSIA, 2003-2005

5.27 LEUKAEMIA

(Authors: Dr S. Visalachy Purushotaman, Dr Jameela Sathar, Prof Dr Rosline Hassan)

A total of 3328 cases of all leukaemias were reported in a 3-year period between 2003 and 2005 with a sex ratio of 1.4 : 1 in favour of males. The age-specific cancer incidence curve was bimodal. Malays and Indians had higher age specific incidences as compared to the Chinese for both males and females in Malaysia.

Comparing all leukemias, the Age specific incidence of Indians in Malaysia was higher than their counterparts in Singapore and Chennai, whereas the age specific incidence for Chinese and Malays was comparable between Malaysia and Singapore. The Chinese in Malaysia had rates comparable to Hong Kong and Shanghai.

Table 5.27.1: Leukaemia Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	1914	100	6.5	7.0	1414	100	4.9	5.2
Malay	1233	64.4	6.7	7.2	888	62.8	5.0	5.3
Chinese	427	22.3	5.4	5.6	317	23.6	4.1	4.2
Indian	152	7.9	5.7	6.5	138	10.3	5.1	5.5

Table 5.27.2: Leukaemia Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	9.1	4.4	3.8	5.0	5.1	7.6	14.6	15.8	0.6
	Malay	9.7	5.0	3.8	5.1	5.1	7.8	14.5	14.8	0.6
	Chinese	6.1	2.7	2.5	4.7	4.3	6.4	12.9	18.6	0.5
	Indian	9.2	3.3	3.2	2.9	3.9	8.6	20.2	7.8	0.6
Female	All races	6.3	3.7	2.3	4.1	4.7	5.6	10.2	11.8	0.4
	Malay	7.1	3.5	2.3	4.3	4.6	6.0	10.2	9.7	0.4
	Chinese	3.9	3.3	2.2	3.1	3.5	4.2	9.1	13.5	0.4
	Indian	5.4	4.6	0.9	4.3	7.1	7.5	13.2	9.5	0.5

Figure 5.27.1: Leukaemia Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

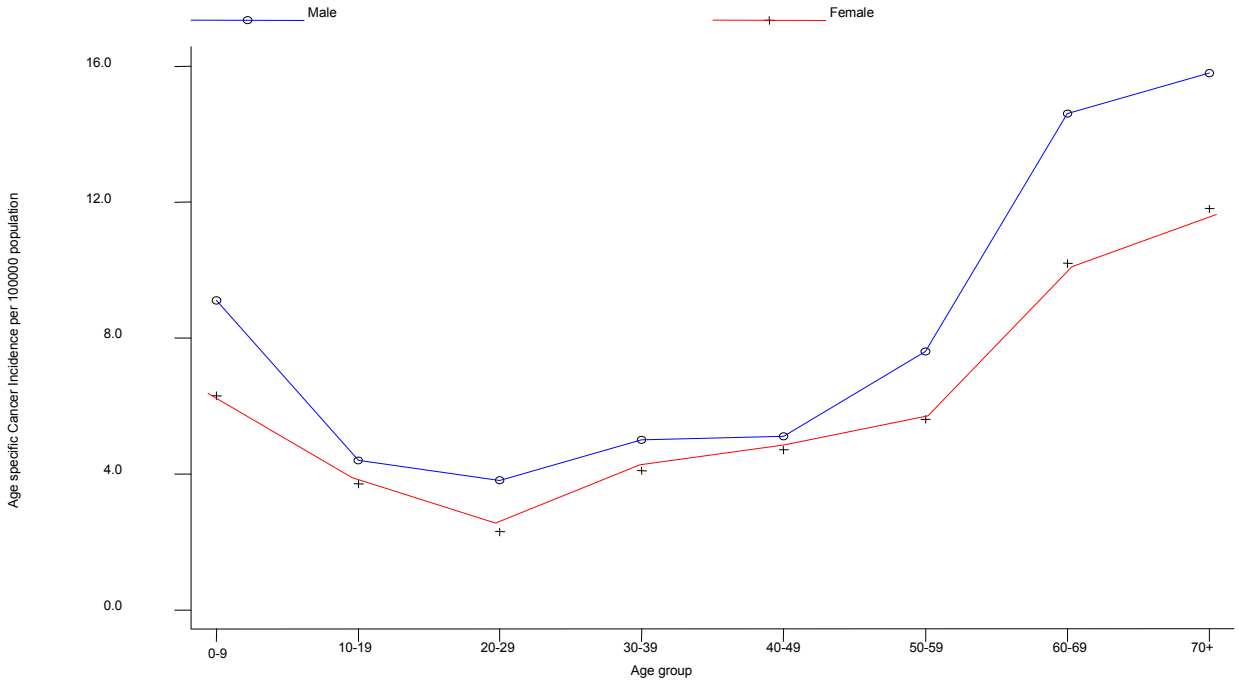
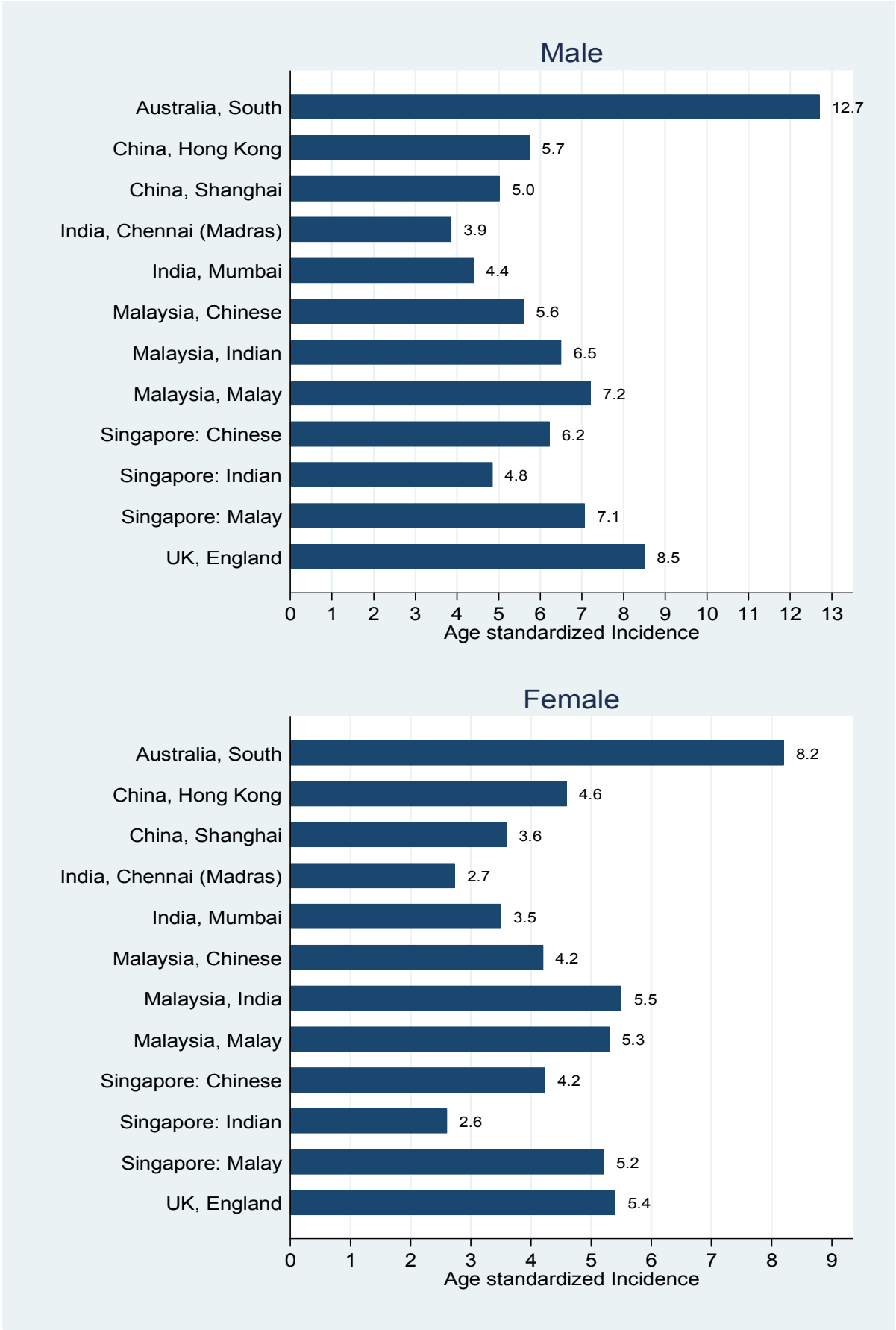


Figure: 2.27.2: Leukaemia International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.27.1 LYMPHATIC LEUKAEMIA

(Authors: Dr S. Visalachy Purushotaman, Dr Jameela Sathar, Prof Dr Rosline Hassan)

A total of 1296 cases of lymphoid leukaemias were reported in a 3-year period between 2003 and 2005 with male to female ratio of 1.6 : 1. The age-specific cancer incidence curve was bimodal, with one third of total number of cases occurring in childhood below 10 years of age while one-fifth in the older age group above 50 years.

Indians in Malaysia had a higher incidence than their counterparts in Singapore and Chennai, India. Chinese in Malaysia had a comparable incidence to Chinese in Singapore for both sexes. The incidence in males and females in Malaysia was lower than in United Kingdom or Australia.

Table 5.27.1.1: Lymphatic Leukaemia Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	799	100	2.7	2.7	497	100	1.7	1.7
Malay	543	68	3.0	2.9	331	66.6	1.8	1.8
Chinese	151	18.9	1.9	2.1	100	20.1	1.3	1.4
Indian	74	9.3	2.8	2.9	48	9.7	1.8	2.0

Table 5.27.1.2: Lymphatic Leukaemia Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	5.9	2.5	1.1	1.0	1.3	1.4	3.6	3.8	0.2
	Malay	6	2.9	1.2	1.0	1.3	1.4	4.1	3.6	0.2
	Chinese	4.9	1.2	0.7	0.9	0.8	1.3	2.6	4.6	0.1
	Indian	6.9	2.7	1.1	1.2	1.4	0.9	4.0	2.0	0.2
Female	All races	4.0	1.7	0.6	0.6	1.0	0.8	1.5	2.3	0.1
	Malay	4.5	1.6	0.5	0.5	0.9	1.0	0.9	1.6	0.1
	Chinese	2.4	1.6	0.6	0.9	1.1	0.3	1.5	3.2	0.1
	Indian	3.9	1.6	0.2	0.7	1.1	2.2	3.5	3.2	0.1

Figure 5.27.1.1: Lymphatic Leukaemia Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

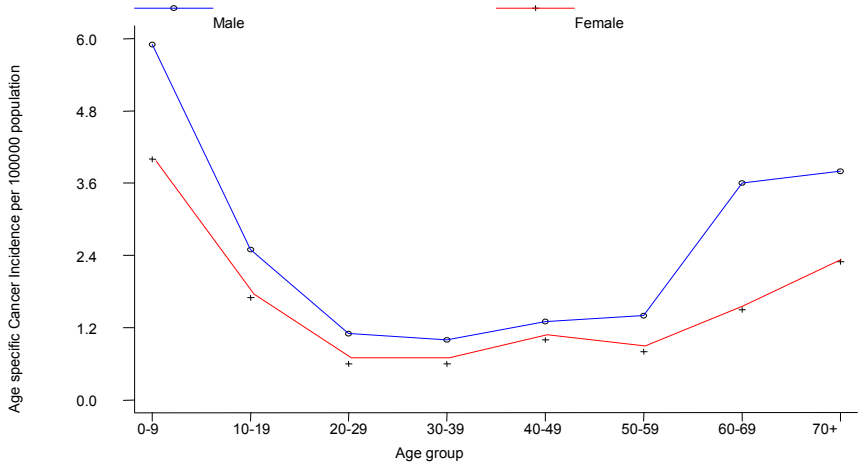
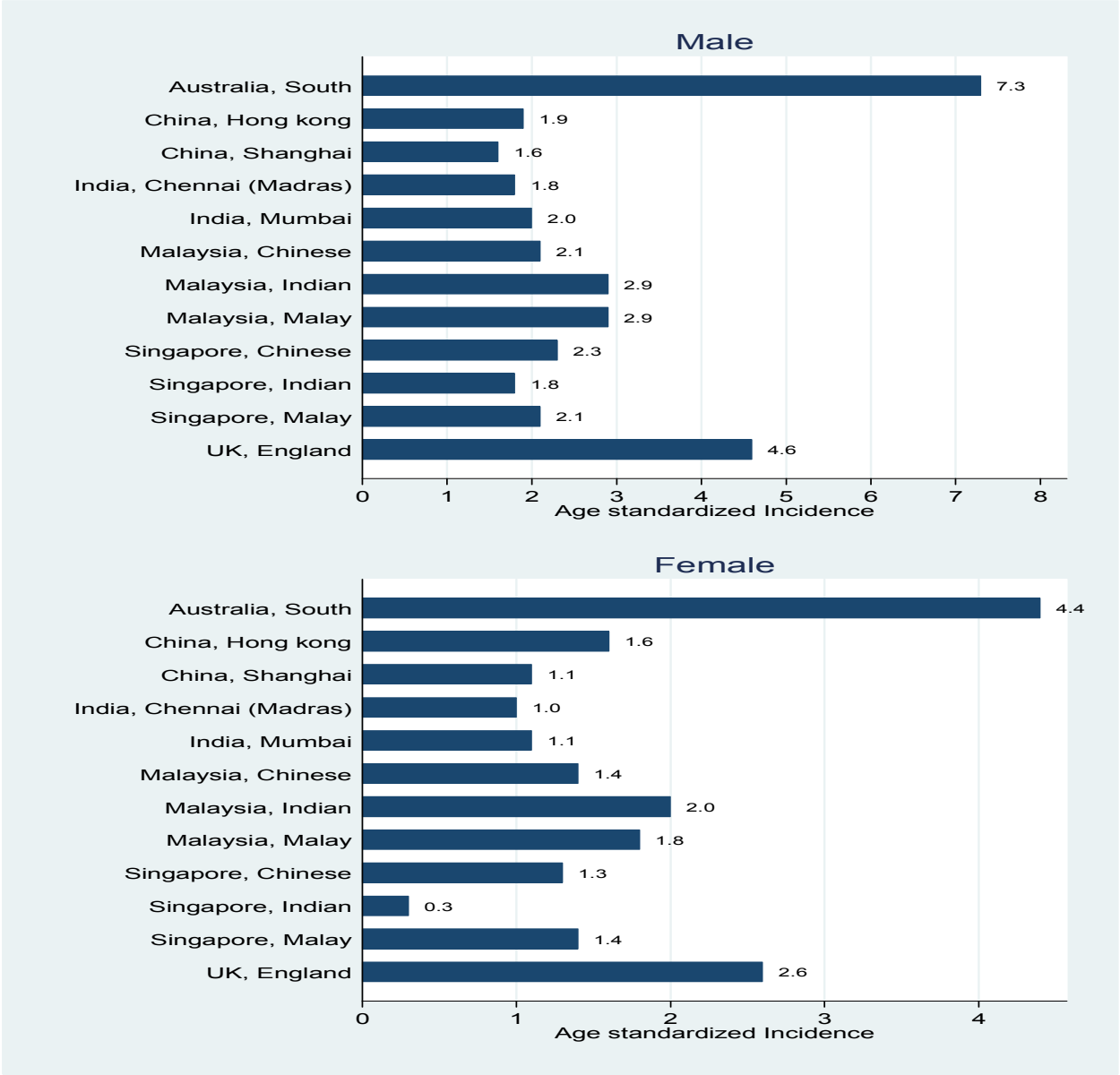


Figure: 2.27.1.2: Lymphoid Leukaemia International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



5.27.2 MYELOID LEUKAEMIA

(Authors: Dr S. Visalachy Purushotaman, Dr Jameela Sathar, Prof Dr Rosline Hassan)

One thousand, six hundred and forty six cases of myeloid leukaemia were reported from 2003 to 2005. There were more males compared with females with a sex ratio was 1.2:1. The age-specific cancer incidence increased with age.

The age-standardized incidence among the major ethnic groups in both males and females were similar in Malaysia.

Indians in Malaysia had a higher incidence than their counterparts in Singapore and Chennai, India. Chinese in Malaysia had a comparable incidence to Chinese in Singapore for both sexes. The incidence in males and females was lower than in Australia.

Table 5.27.2.1: Myeloid Leukaemia Cancer Incidence per 100,000 population (CR) and Age-standardized incidence (ASR), by sex and ethnicity, Peninsular Malaysia 2003-2005

Ethnic groups	Male				Female			
	No.	*%*	*CR*	*ASR*	*No.*	*%*	*CR*	*ASR*
All races	888	100	3.0	3.4	758	100	2.6	2.8
Malay	527	59.3	2.9	3.3	451	59.5	2.5	2.8
Chinese	239	26.9	3.0	3.0	187	24.7	2.4	2.4
Indian	64	7.2	2.4	3.0	75	9.9	2.8	3.0

Table 5.27.2.2: Myeloid Leukaemia Age specific Cancer Incidence per 100,000 population, by ethnicity and sex, Peninsular Malaysia 2003-2005

		Age groups, year								
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	CumR
Male	All races	2.1	1.4	2.2	3.4	3.2	5.4	9.4	8.9	0.3
	Malay	2.5	1.4	2.0	3.4	3.1	5.4	8.4	8.1	0.3
	Chinese	0.9	1.2	1.6	3.4	3.1	4.7	9.3	10.4	0.3
	Indian	1.4	0.6	1.9	1.5	1.7	6.8	14.1	5.9	0.3
Female	All races	1.6	1.6	1.6	3.0	3.0	4.2	7.4	8.0	0.3
	Malay	1.9	1.5	1.6	3.1	2.8	4.5	7.5	7.2	0.3
	Chinese	0.9	1.7	1.7	1.9	2.4	3.3	6.6	8.2	0.2
	Indian	0.6	2.4	0.6	3.1	5.2	5.3	8.8	4.8	0.3

Figure 5.27.2.1: Myeloid Leukaemia Age specific Cancer Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005

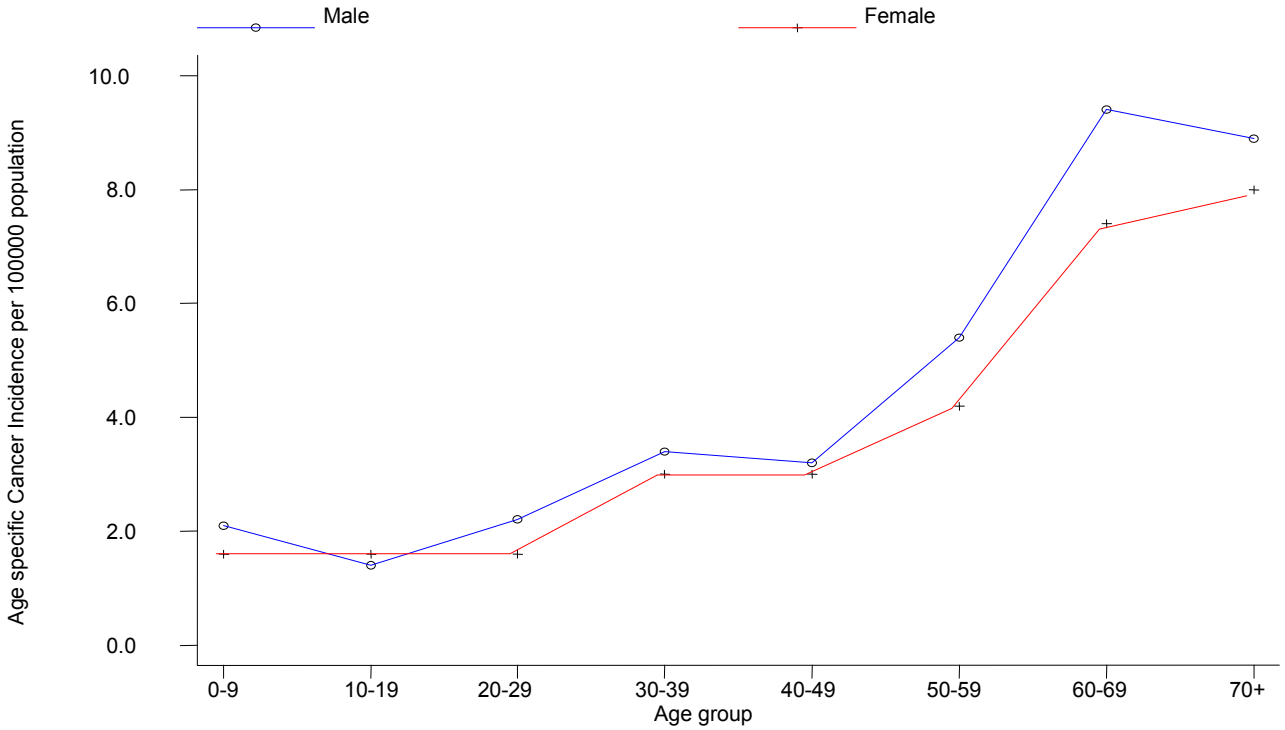
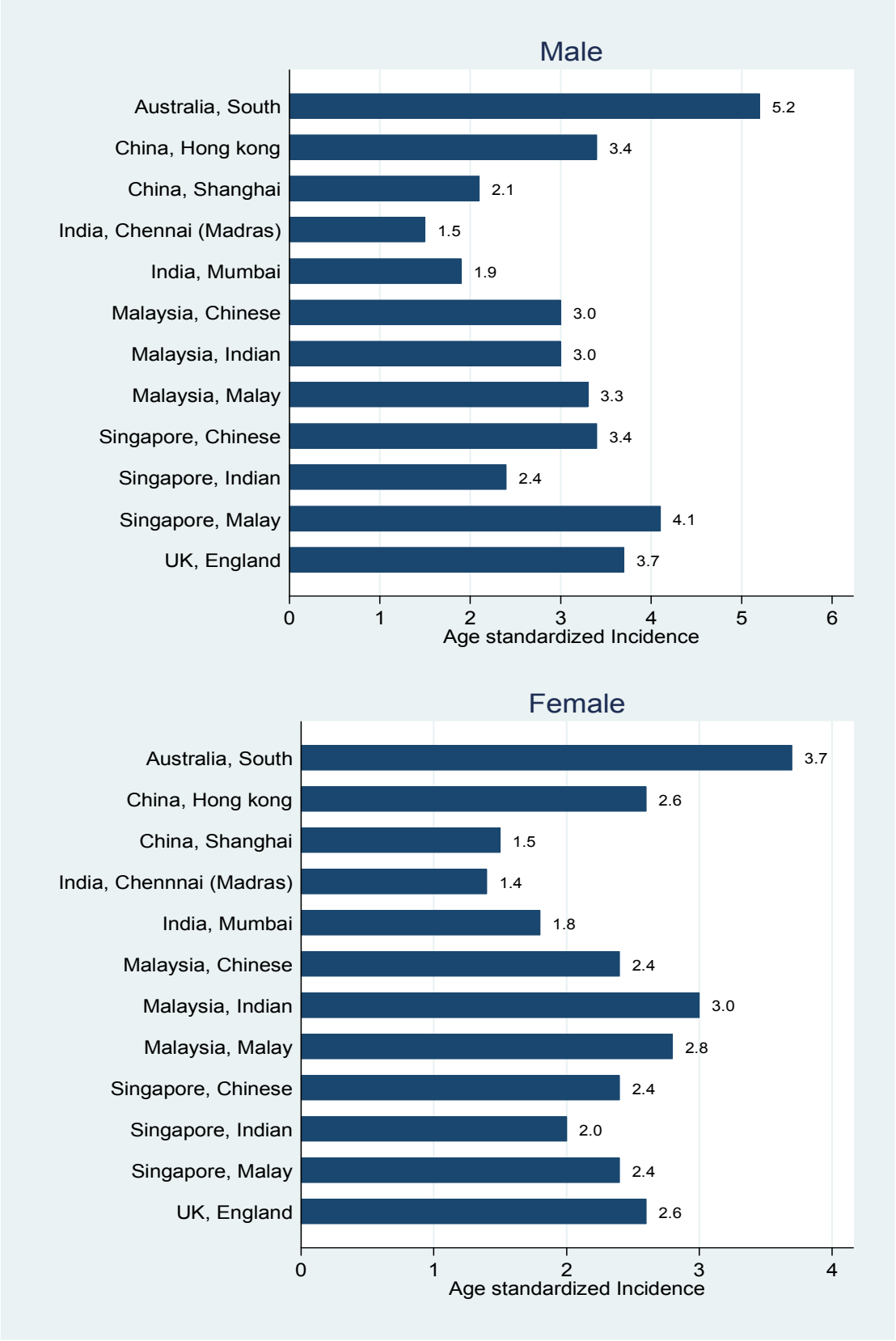


Figure: 2.27.2.2: Myeloid Leukaemia International comparisons – Age-standardized Incidence per 100,000 population by sex, Peninsular Malaysia 2003-2005



REFERENCES

1) **First Report of the National Cancer Registry. Cancer Incidence in Malaysia 2002.** Lim, GCC and Halimah, Y. National Cancer Registry. Kuala Lumpur 2003.

2) **2nd Report of the National Cancer Registry. Cancer Incidence in Malaysia 2003.** Lim, GCC and Halimah, Y. National Cancer Registry. Kuala Lumpur 2004.

3) **International Classification of Diseases for Oncology 3rd edition**. Fritz. A., Percy. C., Jack. A., Shanmugaratnam, K., Sobin, L., Parkin, D. M. and Whelan, S. World Health Organization, Geneva, 2000.

4) **Cancer Incidence in Five Continents Volumes I to VIII**. Parkin, D.M., Whelan, S.L., Ferlay, J. and Storm, H. IARC CancerBase No 7, Lyon, 2005.

5) **Malaysia, Year Book of Statistics 2006**. Department of Statistics, Malaysia, 2006.

6) **Health Facts 2002**. Planning and Development Division (Information and Documentation System Unit), Ministry of Health Malaysia, 2004.

7) **Health Facts 2003**. Planning and Development Division (Information and Documentation System Unit), Ministry of Health Malaysia, 2004.

8) **Health Facts 2004**. Planning and Development Division (Information and Documentation System Unit), Ministry of Health Malaysia, 2005.

9) **Health Facts 2005**. Planning and Development Division (Information and Documentation System Unit), Ministry of Health Malaysia, 2006.

10) **Trends In Cancer Incidence in Singapore 1968-2002.** A Seow, W P Koh, K S Chia, L M Shi, H P Lee, K Shanmugaratnam (editors). Singapore Cancer Registry Report No. 6. Singapore Cancer Registry, 2004.

11) **Penang Cancer Report 1999-2003**. Bina Rai, S., Devaraj, T., Aishah, K., Rokiah, M. and Nor Asikin, A.K. Penang Cancer Registry, 2005.

12) **Kelantan Cancer Registry Report 1999-2003**. Fauziah, M.N., Hamizah, M.S., Norazmi, A., and Lila, P.M.M. Kelantan Cancer Registry, 2006.

13) **Epidemiology of Cancer in Sarawak 1996-2000**. Ooi, CH., Kiyu, A., Yao, SK., Helli, B., Mastulu, W. and Assan, J. Sarawak Cancer Registry, Sarawak Health Department, Sarawak. 2005.