

OVERVIEW

Cancer in Asia - Incidence Rates Based on Data in Cancer Incidence in Five Continents IX (1998-2002)

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Abstract

Data from 44 cancer registries in 15 countries in Asia were published in *Cancer Incidence in Five Continents Volume IX (CI5 IX)*. These and findings from 3 other registries were here analysed to provide an overview on the incidence and characteristics of specific cancers by country/region in Asia. Using the collected database, the annual number of cancer cases and the corresponding population numbers divided into six age groups (0-29, 30-39, 40-49, 50-59, 60-69, 70 and more) were extracted and used for incidence estimation. The incidence rates of cancer across Asia vary greatly, with approximately three fold differences in both males and females.

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Introduction

Asia represented more than 60% of the world population in 2008 (World Population Prospects, The 2008 Revision) (United Nations, 2009) and according to the GLOBOCAN estimates in 2002, 45% (4.9 million) of all new cancer cases in the world diagnosed and 50% (3.4 million) of cancer deaths occurred in Asian countries (Ferlay et al, 2004).

Cancer is becoming a more important health problem in Asian countries with aging of populations and changes in lifestyles associated with economic development. This underlines the necessity of high qualified cancer registration.

Data Sources and Methods

Data from 44 population-based cancer registries in Asia published in *Cancer Incidence in Five Continents Volume IX (CI5 IX)* (Curado et al., 2007) and four submissions with permission (Jordan cancer registry, Taiwan cancer registry and two registries from Hanoi and Ho Chi Min in Viet Nam) were included in the analysis. The countries included, population data and registry details are summarized in Table 1. The populations were categorized into four groups according to the geographical location - Eastern Asia (Chinese registries, Japanese registries, Korea, and Taiwan), South-Eastern Asia (Hong Kong, Malaysian registries, Filipino registries, Singapore, Thai registries, and Viet Nam registries), Western Asia (Bahrain, Cyprus, Israel, Jordan, Kuwait, Kuwaitis, Oman, Omani and Turkish registries), and South-Central Asia (Indian registries, Pakistan registry).

Using the collected database, the annual number of

cancer cases and the corresponding population numbers divided into six age groups (0-29, 30-39, 40-49, 50-59, 60-69, 70 and more) were extracted and used for incidence estimation.

To calculate the pooled estimates of incidence rates, data from Chinese registries of mainland China (Guangzhou, Jiashan, Nangang District, Harbin City, Shanghai, and Zhongshan), Japanese registries (Aichi, Fukui, Hiroshima, Miyagi, Nagasaki, Osaka, and Yamagata), Malaysian registries (Penang, Sarawak), Thai registries (Chiang Mai, Lampang, Songkhla), Viet Namese registries (Hanoi, Ho Chi Min), Turkish registries (Antalya, Izmir), Indian registries (Chennai (Madras), New Delhi, Karunagappally, Mumbai (Bombay), Nagpur, Poona, Trivandrum), were combined for each population. Then their annual numbers of cases and population by 5-year age-group were summed up.

For the incidence rates in Cyprus, Hong Kong, Israel, Jordan, the Republic of Korea, the Philippines (Manila), Pakistan (Karachi), Singapore, Taiwan, national/regional registry data were used and in Bahrain, Kuwait, Oman, data for Bahraini, Kuwaitis, Omani were respectively used. The age-standardized rates per 100,000 person-years for male and female were computed on the basis of the world standard population (Segi, 1960).

Results

Table 1 shows the list of countries/regions with the numbers of population in 2000 and coverage (%) by cancer registries. The overall coverage percentage of each region was 6.7% for Eastern Asia, 8.7% for South-eastern Asia, 22.7% for Western Asia, and 3.2% for South-Central Asia (data not shown). The population coverage was less than

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Table 1. List of Countries/Regions with Populations and Coverage by Cancer Registries

| Population | No. of population in 2000 (in 1,000s) | | | Registries submitted | | Registries accepted | | Data Included |
|---------------------------|---------------------------------------|---------|-----------|----------------------|------------|---------------------|------------|---------------|
| | Male | Female | Total | n | % coverage | n | % coverage | |
| Eastern Asia | | | | | | | | |
| Chinese (Mainland) | 655,211 | 618,768 | 1,273,979 | 24 | 3.4 | 5 | 1.0 | 5 |
| Japanese | 62,178 | 64,856 | 127,034 | 7 | 13.0 | 7 | 13.0 | 7 |
| Korea* | 23,121 | 23,308 | 46,429 | 8 | 100 | 8 | 100 | KCCR* |
| Taiwan | 11,375 | 10,870 | 22,245 | 1 | 100 | | | 1 |
| South-Eastern Asia | | | | | | | | |
| Hong Kong | 3,206 | 3,431 | 6,637 | 1 | 100 | 1 | 100 | 1 |
| Malaysian | 11,680 | 11,317 | 22,997 | 2 | 13.4 | 2 | 13.4 | 2 |
| Philippines | 38,151 | 37,615 | 75,766 | 3 | 17.0 | 1 | 7.0 | 1 |
| Singapore | 1,610 | 1,610 | 3,220 | 1 | 100 | 1 | 100 | 1 |
| Thai | 30,301 | 31,137 | 61,438 | 6 | 21.3 | 3 | 5.8 | 3 |
| Viet Nameese | 39,275 | 39,396 | 78,671 | 2 | 9.9 | | | 2 |
| Western Asia | | | | | | | | |
| Bahrain, Bahraini | 387 | 285 | 672 | 1 | 59.3 | 1 | 59.3 | 1 |
| Cyprus | 387 | 399 | 786 | 1 | 88.8 | 1 | 88.8 | 1 |
| Israel | 3,004 | 3,080 | 6,084 | 1 | 100 | 1 | 100 | 1 |
| Jordan | 2,590 | 2,382 | 4,972 | 1 | 100 | 1 | 100 | 1 |
| Kuwait, Kuwaitis | 1,355 | 874 | 2,230 | 1 | 38.4 | 1 | 38.4 | 1 |
| Oman, Omani | 1,423 | 1,019 | 2,442 | 1 | 71.8 | 1 | 71.8 | 1 |
| Turkish | 34,437 | 33,798 | 68,234 | 2 | 7.0 | 2 | 7.0 | 2 |
| South-Central Asia | | | | | | | | |
| Indian | 525,068 | 496,016 | 1,021,084 | 9 | 3.6 | 7 | 3.5 | 7 |
| Pakistan (Karachi) | 73,423 | 69,226 | 142,648 | 1 | 1.2 | 1 | 1.2 | 1 |

* Korea Central Cancer Registry data (1999-2001) were used

5% in China, Pakistan, and India and less than 10% in the Philippines, Thailand, and Turkey.

Tables 2, 3 and 4 provide details on quality, populations and incidence rates by sex and age group, and cumulative rates (risks, %) at age 74, respectively. In terms of the quality indices of each registry, most registries met the inclusion criteria for CI5 IX, except two registries from Viet Nam.

The incidence rates of cancer across Asia vary greatly. There were approximately three fold differences in cancer incidence rates in males and females. Men in Israel (ASR 288.0 per 100,000 males) and in the Republic of Korea (ASR 281.9) showed the highest cancer risk, but men in Oman (Omani) (ASR 100.9) and in India (103.9) showed the lowest cancer risk. Women in Israel (ASR 270.7 per 100,000 females) and in the Philippines (ASR 205.0) had

Table 2. Quality Indices for Registries Included in CIV IX for Each Country/Region

| Population | No of CR | Males | | | | Females | | | |
|---------------------------|----------|-----------|----------|-----------|---------|-----------|----------|-----------|-----------|
| | | MV% | DCO% | M/I% | UB% | MV% | DCO% | M/I% | UB% |
| Eastern Asia | | | | | | | | | |
| Chinese (Mainland) | 5 | 58.4-78.0 | 0.0-2.2 | 56.7-80.3 | 0.0-1.0 | 71.1-86.4 | 0.0-1.9 | 43.5-56.0 | 0.0-0.8 |
| Japanese | 7 | 77.6-84.5 | 3.1-17.0 | 47.6-67.9 | 0.0-5.1 | 75.8-86.0 | 4.1-16.2 | 42.1-61.6 | 0.0-5.7 |
| Korea | 9 | 72.2 | 6.1 | 62.2 | - | 78.8 | 5.8 | 46.1 | - |
| Taiwan | 1 | 82.4 | - | 64.5 | - | 78.8 | - | 48.8 | - |
| South-Eastern Asia | | | | | | | | | |
| Hong Kong | 1 | 84.4 | 1.5 | 60.7 | - | 87.7 | 1.4 | 47.1 | - |
| Malaysian | 2 | 84.3-84.6 | 6.2-7.7 | 29.3-50.0 | 0.0-0.3 | 87.8-88.8 | 4.1-5.8 | 22.6-39.9 | 0.0-0.2 |
| Philippines (Manila) | 1 | 63.9 | 12.7 | - | 0.0 | 77.6 | 8.1 | - | 0.0 |
| Singapore | 1 | 87.5 | 0.0 | 65.0 | - | 92.3 | 0.0 | 47.8 | - |
| Thai | 3 | 59.9-82.8 | 4.4-12.7 | 10.5-79.8 | 0.0-0.1 | 71.3-88.9 | 2.7-8.8 | 8.8-65.8 | 0.0-0.2 |
| Viet Nameese | 2 | 53.4-64.3 | | | | 57.0-78.0 | | | |
| Western Asia | | | | | | | | | |
| Bahrain, Bahraini | 1 | 84.4 | 6.5 | 67.8 | 0.5 | 91.4 | 4.9 | 47.8 | 0.4 |
| Cyprus | 1 | 95.3 | - | 24.9 | 1.2 | 96.8 | - | 18.9 | 0.7 |
| Israel | 1 | 85.4 | 3.3 | 46.0 | 4.0 | 88.7 | 3.0 | 42.0 | 2.3 |
| Jordan | 1 | 99.7 | - | - | - | 99.6 | - | - | - |
| Kuwait, Kuwaitis | 1 | 84.3 | 12.2 | 52.4 | 0.4 | 88.6 | 9.4 | 44.3 | 0.2 |
| Oman, Omani | 1 | 89.3 | 1.1 | - | 0.7 | 92.3 | 0.5 | - | 0.2 |
| Turkish | 2 | 86.7-88.2 | 0.0-1.8 | 36.5-54.8 | 1.7-2.0 | 88.7-92.0 | 0.0-1.2 | 22.7-38.1 | 1.1-2.1 |
| South-Central Asia | | | | | | | | | |
| Indian | 7 | 73.3-88.0 | 2.4-6.9 | 37.8-54.9 | 0.0-9.3 | 78.7-92.3 | 2.0-6.5 | 0.0-5.2 | 32.1-46.0 |
| Pakistan (Karachi) | 1 | 89.5 | 1.1 | - | - | 93.2 | 0.5 | - | - |

MV: morphologically verified, DCO: Death certificate only, M/I: mortality incidence ratio, UB: unknown basis of diagnosis

Table 3. Number of Person-years and Crude and Age-standardized Cancer Incidence Rates by Sex, 1998-2002

| Population | Males | | | | Females | | | |
|---------------------------|--------|---------|-------|--------------|---------|---------|-------|--------------|
| | PY | Cases | CR | ASR | PY | Cases | CR | ASR |
| Eastern Asia | | | | | | | | |
| Chinese (Mainland) | 27,923 | 80,757 | 289.2 | 223.6 | 27,077 | 64,498 | 238.2 | 161.7 |
| Japanese | 41,349 | 202,021 | 488.6 | 270.7 | 43,362 | 43,883 | 331.8 | 166.3 |
| Korea | 95,726 | 241,155 | 251.9 | 281.9 | 94,974 | 83,620 | 193.3 | 162.7 |
| Taiwan | 56,875 | 165,445 | 290.9 | 254.3 | 54,349 | 119,916 | 220.6 | 192.1 |
| South-Eastern Asia | | | | | | | | |
| Hong Kong | 16,353 | 56,776 | 347.2 | 259.6 | 16,921 | 45,492 | 268.9 | 190.7 |
| Malaysian | 7,769 | 8,047 | 103.6 | 143.0 | 7,624 | 8,683 | 113.9 | 138.5 |
| Philippines (Manila) | 12,991 | 14,119 | 108.7 | 209.8 | 13,446 | 18,638 | 138.6 | 205.0 |
| Singapore | 8,053 | 17,810 | 221.2 | 221.5 | 8,051 | 18,185 | 225.9 | 189.7 |
| Thai | 8,736 | 12,002 | 137.4 | 136.2 | 8,953 | 13,116 | 146.5 | 134.8 |
| Viet Nameese | 16,789 | 13,534 | 80.6 | 154.2 | 17,005 | 12,349 | 72.6 | 111.6 |
| Western Asia | | | | | | | | |
| Bahrain, Bahraini | 1,005 | 929 | 92.4 | 156.0 | 987 | 944 | 95.6 | 141.4 |
| Cyprus | 1,716 | 4,311 | 251.3 | 188.0 | 1,776 | 4,081 | 229.8 | 171.4 |
| Israel | 5,153 | 48,406 | 319.5 | 288.0 | 15,489 | 52,172 | 336.8 | 270.7 |
| Jordan | 13,182 | 9,833 | 74.6 | 132.5 | 12,024 | 9,215 | 76.6 | 126.4 |
| Kuwait, Kuwaitis | 2,110 | 1,294 | 61.3 | 119.9 | 2,167 | 1,648 | 76.1 | 127.2 |
| Oman, Omani | 3,568 | 1,859 | 52.1 | 100.9 | 3,450 | 1,627 | 47.2 | 86.5 |
| Turkish | 11,933 | 20,669 | 173.2 | 190.6 | 1,795 | 13,317 | 112.9 | 113.6 |
| South-Central Asia | | | | | | | | |
| Indian | 96,513 | 69,268 | 71.8 | 103.9 | 82,524 | 69,607 | 84.3 | 108.9 |
| Pakistan (Karachi) | 4,643 | 4,454 | 95.9 | 162.3 | 3,975 | 4,085 | 102.8 | 187.9 |

PY, Person-years (in thousands); CR, crude rate; ASR, age-standardized rate

the highest incidence rates of cancer, but women in Oman (Omani) (ASR 86.5) and in India (ASR 108.9) had the lowest. Incidence data for the major cancers in males and females are summarized in Table 5a and 5b.

Discussion

Among submissions from 77 cancer registries (18 countries), data from 44 cancer registries (15 countries)

were published in CI5 IX. The overall population coverage is 155 millions (approximately 4% of the total population in Asia) (Curado et al., 2007). There was a small increase in the number of registries from Asia compared to those in CI5 VIII (43 cancer registries from 12 countries) (Parkin et al., 2002).

The purpose of Cancer Incidence in Five Continents is to present comparable incidence rates of cancer from different populations world-wide. As described in Chapter

Table 4a. Age-specific Incidence, Crude, and Standardized (World Standard) Rates/100,000 : Males

| Population | No of cases | Age unknown | 0-29 | 30-39 | 40-49 | 50-59 | 60-69 | ≥70 | ASR | Cumulative* rate risk (%) | |
|---------------------------|-------------|-------------|------|-------|-------|-------|---------|---------|--------------|---------------------------|-------------|
| | | | | | | | | | | | |
| Eastern Asia | | | | | | | | | | | |
| Chinese (Mainland) | 80,757 | 0 | 14.8 | 59.7 | 184.0 | 398.7 | 989.7 | 2,069.0 | 223.6 | 25.6 | 22.6 |
| Japanese | 202,021 | 13 | 12.8 | 40.4 | 162.5 | 490.8 | 1,286.9 | 2,694.8 | 270.7 | 31.7 | 27.2 |
| Korea | 241,155 | 3 | 14.8 | 58.1 | 199.2 | 621.0 | 1,365.3 | 2,270.8 | 281.9 | 34.3 | 29.0 |
| Taiwan | 165,445 | 0 | 17.9 | 88.8 | 242.4 | 544.7 | 1,144.4 | 1,897.0 | 254.3 | 29.3 | 25.4 |
| South-Eastern Asia | | | | | | | | | | | |
| Hong Kong | 56,776 | 20 | 18.8 | 68.2 | 199.3 | 480.4 | 1,164.5 | 2,313.1 | 259.6 | 29.7 | 25.7 |
| Malaysian | 8,047 | 4 | 14.4 | 47.4 | 118.6 | 296.2 | 663.8 | 1,016.5 | 143.0 | 17.0 | 15.6 |
| Philippines (Manila) | 14,119 | 173 | 15.6 | 50.1 | 127.9 | 398.4 | 959.2 | 1,763.8 | 209.8 | 24.5 | 21.7 |
| Singapore | 17,810 | 1 | 16.3 | 48.4 | 125.6 | 377.1 | 1,027.9 | 2,094.8 | 221.5 | 25.0 | 22.1 |
| Thai | 12,002 | 4 | 13.4 | 47.5 | 116.8 | 297.0 | 624.1 | 966.2 | 136.2 | 15.9 | 14.7 |
| Viet Nameese | 13,534 | 46 | 12.1 | 46.9 | 153.5 | 344.8 | 699.7 | 1,052.4 | 154.2 | 18.1 | 16.6 |
| Western Asia | | | | | | | | | | | |
| Bahrain, Bahraini | 929 | 0 | 13.2 | 29.9 | 85.6 | 249.3 | 666.7 | 1,618.2 | 156.0 | 18.0 | 16.5 |
| Cyprus | 4,311 | 92 | 22.9 | 57.8 | 111.0 | 319.5 | 848.3 | 1,608.4 | 188.0 | 21.8 | 19.6 |
| Israel | 48,406 | 0 | 23.0 | 70.9 | 173.2 | 501.2 | 1,421.9 | 2,592.9 | 288.0 | 34.4 | 29.1 |
| Jordan | 9,833 | 1 | 18.2 | 53.0 | 125.8 | 281.8 | 571.8 | 867.0 | 132.5 | 15.4 | 14.3 |
| Kuwait, Kuwaitis | 1,294 | 6 | 15.5 | 40.6 | 81.4 | 221.7 | 530.0 | 969.1 | 119.9 | 13.2 | 12.4 |
| Oman, Omani | 1,859 | 0 | 11.1 | 36.5 | 105.3 | 209.0 | 449.9 | 642.3 | 100.9 | 12.0 | 11.3 |
| Turkish | 20,669 | 18 | 16.4 | 45.6 | 154.7 | 434.0 | 945.2 | 1,330.1 | 190.6 | 23.6 | 21.0 |
| South-Central Asia | | | | | | | | | | | |
| Indian | 69,268 | 345 | 12.9 | 31.4 | 92.6 | 242.9 | 471.4 | 645.3 | 103.9 | 12.2 | 11.5 |
| Pakistan (Karachi) | 4,454 | 0 | 19.1 | 83.2 | 177.6 | 355.0 | 757.2 | 778.1 | 162.3 | 19.5 | 17.7 |

*, 0-74

Table 4b. Age-specific Incidence, Crude, and Standardized (World Standard) Rates/100,000 : Females

| Population | No of cases | Age unknown | 0-29 | 30-39 | 40-49 | 50-59 | 60-69 | ≥70 | ASR | Cumulative* rate | risk (%) |
|---------------------------|-------------|-------------|------|-------|-------|-------|---------|---------|--------------|------------------|-------------|
| Eastern Asia | | | | | | | | | | | |
| Chinese (Mainland) | 64,498 | 0 | 15.7 | 77.5 | 222.6 | 364.7 | 624.4 | 1,071.8 | 161.7 | 18.1 | 16.6 |
| Japanese | 143,883 | 37 | 12.9 | 79.4 | 236.5 | 370.5 | 623.9 | 1,216.7 | 166.3 | 18.1 | 16.6 |
| Korea | 183,620 | 2 | 20.2 | 109.2 | 240.0 | 386.7 | 580.0 | 887.2 | 162.7 | 18.0 | 16.5 |
| Taiwan | 119,916 | 0 | 19.3 | 113.6 | 264.4 | 439.3 | 723.6 | 1,176.6 | 192.1 | 21.3 | 19.2 |
| South-Eastern Asia | | | | | | | | | | | |
| Hong Kong | 45,492 | 22 | 20.3 | 103.7 | 267.5 | 423.4 | 676.2 | 1,328.2 | 190.7 | 20.5 | 18.5 |
| Malaysian | 8,683 | 7 | 15.1 | 84.3 | 208.5 | 365.3 | 510.1 | 637.0 | 138.5 | 15.3 | 14.2 |
| Philippines (Manila) | 18,638 | 235 | 17.6 | 108.4 | 278.3 | 500.5 | 777.5 | 1,121.4 | 205.0 | 23.1 | 26.0 |
| Singapore | 18,185 | 9 | 16.2 | 94.7 | 267.9 | 460.5 | 659.6 | 1,272.2 | 189.7 | 20.3 | 18.4 |
| Thai | 13,116 | 1 | 16.9 | 91.6 | 208.5 | 342.9 | 506.8 | 575.9 | 134.8 | 15.1 | 14.0 |
| Viet Nameese | 12,349 | 32 | 13.0 | 57.8 | 167.4 | 320.4 | 419.1 | 462.1 | 111.6 | 12.7 | 11.9 |
| Western Asia | | | | | | | | | | | |
| Bahrain, Bahraini | 944 | 1 | 12.7 | 87.6 | 205.8 | 326.7 | 522.3 | 815.4 | 141.4 | 15.8 | 14.6 |
| Cyprus | 4,081 | 54 | 25.5 | 100.1 | 238.9 | 444.4 | 587.3 | 822.4 | 171.4 | 18.8 | 17.1 |
| Israel | 52,172 | 0 | 24.0 | 125.8 | 335.5 | 666.8 | 1,084.0 | 1,699.7 | 270.7 | 30.5 | 26.3 |
| Jordan | 9,215 | 0 | 16.4 | 89.0 | 197.3 | 335.3 | 478.0 | 446.0 | 126.4 | 14.1 | 13.1 |
| Kuwait, Kuwaitis | 1,648 | 3 | 14.7 | 67.0 | 200.5 | 304.6 | 475.3 | 617.7 | 127.2 | 14.0 | 13.0 |
| Oman, Omani | 1,627 | 2 | 12.7 | 54.3 | 129.0 | 204.5 | 300.6 | 374.9 | 86.5 | 9.9 | 9.4 |
| Turkish | 13,317 | 21 | 14.0 | 63.2 | 172.3 | 284.4 | 417.9 | 565.1 | 113.6 | 12.8 | 12.0 |
| South-Central Asia | | | | | | | | | | | |
| Indian | 69,607 | 346 | 11.4 | 59.1 | 171.6 | 306.9 | 418.2 | 432.8 | 108.9 | 12.3 | 11.6 |
| Pakistan (Karachi) | 4,085 | 0 | 17.5 | 148.4 | 294.5 | 576.4 | 755.5 | 421.5 | 187.9 | 21.0 | 19.0 |

*, 0-74

5: Comparability and quality of data in Cancer Incidence in Five Continents Volume 9, many indices were considered as inclusion criteria (Curado et al., 2007).

Of the data quality indicators, percentage of microscopic verification (MV) index was specifically low in data from Asian cancer registries due to the high proportions of liver cancer (Curado et al., 2008). For

Table 5a. Age-standardized (World Standard) Incidence Rates per 100,000 by Major Site and Country - Males

| Population | C00-14 | C15 | C16 | C18-21 | C22 | C33-34 | C61 |
|---------------------------|--------|------|------|--------|------|--------|------|
| Eastern Asia | | | | | | | |
| Chinese | 12.4 | 10.5 | 28.7 | 25.2 | 29.1 | 53.2 | 6.0 |
| Japanese | 6.4 | 11.2 | 58.8 | 44.4 | 28.7 | 41.8 | 14.8 |
| Korea | 6.4 | 8.3 | 65.9 | 29.5 | 44.9 | 51.1 | 8.5 |
| Taiwan | 32.3 | 8.4 | 17.5 | 32.3 | 52.6 | 37.1 | 14.1 |
| South-Eastern Asia | | | | | | | |
| Hong Kong | 24.3 | 9.5 | 14.7 | 39.2 | 29.5 | 57.9 | 15.0 |
| Malaysia | 17.8 | 2.2 | 12.3 | 17.4 | 9.6 | 27.1 | 7.6 |
| Philippines | 12.4 | 3.1 | 7.9 | 24.3 | 21.7 | 51.7 | 25.3 |
| Singapore | 17.0 | 5.0 | 18.3 | 40.1 | 18.8 | 45.3 | 17.3 |
| Thai | 12.1 | 3.8 | 4.8 | 10.3 | 18.8 | 32.1 | 5.0 |
| Viet Nam | 14.3 | 5.6 | 24.7 | 12.9 | 20.6 | 32.0 | 3.0 |
| Western Asia | | | | | | | |
| Bahrain | 6.6 | 4.2 | 8.5 | 13.2 | 5.3 | 34.2 | 14.3 |
| Cyprus | 3.6 | 1.1 | 7.0 | 21.6 | 3.2 | 24.8 | 40.8 |
| Israel | 6.0 | 2.1 | 11.6 | 41.7 | 3.3 | 32.2 | 50.2 |
| Jordan | 4.9 | 1.7 | 6.8 | 14.8 | 2.6 | 17.6 | 12.1 |
| Kuwaitis | 4.4 | 2.2 | 3.4 | 13.7 | 8.4 | 15.6 | 10.5 |
| Omani | 4.3 | 2.6 | 13.4 | 5.3 | 7.4 | 9.8 | 10.5 |
| Turkish | 5.9 | 2.1 | 10.9 | 13.9 | 3.4 | 64.6 | 15.2 |
| South-Central Asia | | | | | | | |
| Indian | 18.4 | 6.6 | 5.3 | 5.6 | 3.3 | 10.6 | 6.5 |
| Pakistan | 30.7 | 6.7 | 6.0 | 7.1 | 5.4 | 25.2 | 10.1 |

C00-14, Head and Neck; C15, Oesophagus; C16, Stomach; C18-21, Colorectal Anus; C22, Liver; C33-34, Lung; C61, Prostate

example, the MV% of liver cancer gradually decreased in the data from some Asian registries. In the practice guidelines, the diagnostic criteria of hepatocellular carcinoma included the non-invasive methods defined by the European Association for the Study of the Liver (Bruix et al., 2001) and by the American Association for the Study of Liver Disease (Bruix and Sherman, 2005). In the regions with a high proportion of liver cancer among the total number of incidence cases, the overall MV% was highly affected by the MV% of liver cancer. Therefore, MV% without liver cancer was considered as one of the criteria for acceptance.

There were clear geographical differences in risk by cancer site within Asian populations. For males, incidence rates of cancers of head and neck, esophagus, stomach, and liver were higher in Eastern Asia than those in Western Asia. In Western Asia, incidence rates of cancers of colorectal anus and prostate were higher than in Eastern Asia. For females, geographical variations by cancer sites were much more variable than in males. These geographical variations might be explained in part due to differences of prevalence of known risk factors (Park et al., 2008).

Among 49 countries/regions in Asia, data from 15 countries/regions were available for the present study. Even though some registries published their data recently, data of more than 30 countries/regions are not available to be included in this study. The registries which did not cover the entire population are mostly from urban areas, such as Manila in the Philippines and the two cities in Viet Nam. Thus there are potential limitations for their applicability to subsequent study populations.

Originally, cancer registries were primarily concerned with the description of cancer patterns, trends in cancer occurrence and etiology of cancer. More recently, in the

Table 5b. Age-standardized (World Standard) Cancer Incidence Rates per 100,000 by Major Site and Country - Females

| Population | C00-14 | C15 | C16 | C18-21 | C22 | C33-34 | C50 | C53 | C73 |
|---------------------------|--------|-----|------|--------|------|--------|------|------|------|
| Eastern Asia | | | | | | | | | |
| Chinese (Mainland) | 5.6 | 2.7 | 13.8 | 20.6 | 8.8 | 21.1 | 31.2 | 3.2 | 4.1 |
| Japanese | 2.1 | 1.7 | 22.8 | 25.8 | 9.2 | 13.1 | 35.1 | 6.7 | 5.6 |
| Korea | 1.8 | 0.6 | 25.9 | 17.7 | 12.0 | 12.5 | 23.3 | 15.4 | 12.2 |
| Taiwan | 5.8 | 0.8 | 9.1 | 25.3 | 20.4 | 18.0 | 35.3 | 21.3 | 7.3 |
| South-Eastern Asia | | | | | | | | | |
| Hong Kong | 9.3 | 1.7 | 7.3 | 28.4 | 7.3 | 23.4 | 41.3 | 9.8 | 7.2 |
| Malaysia | 8.9 | 1.7 | 6.9 | 14.0 | 3.4 | 10.7 | 29.4 | 16.8 | 3.5 |
| Philippines (Manila) | 6.9 | 0.8 | 5.4 | 18.5 | 7.0 | 14.8 | 55.2 | 19.8 | 11.1 |
| Singapore | 5.9 | 1.1 | 9.9 | 29.3 | 4.8 | 16.4 | 54.1 | 10.6 | 6.6 |
| Thai | 5.3 | 1.0 | 3.2 | 8.6 | 7.2 | 18.6 | 20.6 | 23.8 | 4.9 |
| Viet Nameese | 6.5 | 0.9 | 11.6 | 8.9 | 4.9 | 9.0 | 21.5 | 15.3 | 3.3 |
| Western Asia | | | | | | | | | |
| Bahrain, Bahraini | 2.6 | 1.8 | 5.4 | 7.3 | 3.1 | 11.8 | 46.8 | 6.0 | 7.7 |
| Cyprus | 2.2 | 0.3 | 4.3 | 16.9 | 1.1 | 5.0 | 62.2 | 4.3 | 9.3 |
| Israel | 2.8 | 0.9 | 6.3 | 33.8 | 1.5 | 12.1 | 92.2 | 5.4 | 11.7 |
| Jordan | 2.5 | 0.9 | 3.7 | 13.3 | 1.5 | 3.6 | 42.5 | 3.3 | 5.2 |
| Kuwait, Kuwaitis | 3.1 | 1.6 | 2.6 | 12.5 | 3.6 | 4.6 | 41.3 | 4.5 | 7.3 |
| Oman, Omani | 2.0 | 2.7 | 6.2 | 3.7 | 3.2 | 2.3 | 14.6 | 6.5 | 5.9 |
| Turkish | 2.6 | 1.0 | 5.2 | 9.7 | 1.3 | 5.6 | 33.3 | 5.1 | 3.9 |
| South-Central Asia | | | | | | | | | |
| Indian | 7.8 | 4.3 | 2.6 | 4.2 | 1.5 | 2.9 | 27.3 | 18.2 | 2.0 |
| Pakistan (Karachi) | 23.8 | 8.6 | 3.6 | 5.2 | 3.7 | 3.6 | 69.0 | 7.5 | 2.9 |

C00-14, Head and Neck; C15, Oesophagus; C16, Stomach; C18-21, Colorectal Anus; C22, Liver; C33-34, Lung; C50, Breast; C53, Cervix; C73, Thyroid

last 20 years, cancer registries provided not only information on the incidence and characteristics of specific cancers, but also represented the basis of cancer control planning and evaluation and the care of individual cancer patients and their survival (Parkin, 2006). The results with high quality could be used for cancer treatment and cancer control. The extent of collaboration in cancer research between developing and developed countries was suggested to enhance either hospital-based or population-based cancer registries and to be available cancer data in developing countries (Valsecchi and Steliarova-Foucher, 2008). Through the collaboration and twining of cancer registries within the Asian countries, the results with high quality at the international level might be obtainable. Then development of cancer control strategy should be taken account together with prevalence of risk factors and the amount of level of incidence obtained from population-based cancer registry with high completeness.

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