

Original Article

Cancer Incidence And Mortality in China, 2006

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ABSTRACT

Objective: To describe the cancer incidence and mortality rates in 2006 and evaluate the cancer burden in China.

Methods: Cancer registration data in 2006 from 34 cancer registries were collected, evaluated and pooled to calculate cancer incidence and mortality rates. The data analyses included mortality to incidence ratio (MI), morphological verification percentage (MV%) and proportion of death certification only (DCO%). Cumulative incidence and mortality rates were calculated using crude data, age-standardized data, and specific data for cancer site, age, sex and area (urban or rural).

Results: In 2006, 34 registries with qualified registration data covered a total population of 59,567,322 (46,558,108 in urban areas and 13,009,214 in rural areas). The crude and age-standardized cancer incidence rates were 273.66 per 100,000 and 190.54 per 100,000, respectively. The crude and age-standardized cancer mortality rates were 175.70 per 100,000 and 117.67 per 100,000, respectively. Cancers of lung, stomach, colon and rectum, liver, and breast in female were the five most common forms of cancer in China, which accounted for 58.99% of all new cancer cases. Lung cancer was the leading cause of cancer death, followed by stomach cancer, liver cancer, esophageal cancer and colorectal cancer.

Conclusion: Cancer is still an important public health issue in China with an increasing disease burden. Specifically, the incidence rates for lung cancer, colorectal cancer and breast cancer were increasing, but those for stomach cancer and esophageal cancer were decreasing. However, age-specific incidence rate remained stable, indicating that the aging population was the major source of the increasing cancer burden.

Key words: Cancer, Cancer registration, Incidence, Mortality

INTRODUCTION

Cancer is the second leading cause of death in China^[1]. The incidence and mortality rates for most forms of cancer are increasing, and cancer is becoming one of the most serious public health issues with the socio-economical development and an aging population in China.

Although cancer registries have been established in China for more than 50 years; however, the development of the registries was relatively slow^[2]. In the 1960s, there were only two population-based cancer registries in Shanghai and Linzhou. The National Office for Cancer Prevention and Control has compiled and published a "Manual of Cancer Registration" referring to international experience and actual situations in 1982.

In 2002, Central Cancer Registries was established by the Health Ministry of China to enhance systematic management of cancer surveillance. Since then, the quantity and quality of cancer registration have greatly improved.

Furthermore, since the cancer registration reporting interval was changed from every 5 years to yearly in 2005, the National Central Cancer Registry has enhanced the management, intensified the construction of cancer registries, and improved the data quality. In the first volume of the Cancer Registry Annual Report, 36 cancer registries submitted data detailing new cancer cases and deaths in 2003^[3]. In 2007, the number of reporting registries increased to 43 and the registration data quality was also improved. In 2009, there were 49 cancer registries reporting data to the center.

The annual cancer report was published to accurately reflect the cancer burden and epidemic in China and to provide current data from registered areas for scientific researches. Based on the current situation of cancer registration and the increasing demand for cancer information to develop anti-cancer strategies, the "Program of Chinese Cancer Registry and Follow-up" was approved by the Ministry of Health^[4].

In this study, cancer incidence and mortality rates were calculated based on pooled cancer registration data. Although the representativeness of the resource at national level is still uncertain, the data covered the largest

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population and reflected the most recent and accurate estimate of cancer burden in China.

MATERIALS AND METHODS

The National Central Cancer Registry (NCCR) of China is in charge of the collection and evaluation of data from population-based cancer registries and the publication of cancer incidence and mortality rates. Local cancer registries were established for the purpose of cancer prevention programs, especially in cities and counties with high socio-economical status and better medical resources. Therefore, the national cancer registries do not cover a representative sample of the whole Chinese population.

In 2006, 49 cancer registries of 21 cities and 28 counties in 19 provinces have reported cancer registration data. Newly diagnosed cancer cases in 2006 were reported from hospitals, community health centers, centers of township medical insurance and the new rural cooperative medical systems. The death record database was linked and matched

with cancer registration database to identify cancer deaths and to supplement missing cases. Demographic information was provided by local statistics bureaus.

The quality, comparability, completeness and validity of the cancer registration data were evaluated with the key criteria of proportion of morphological verification (MV%), percentage of cancer cases identified with death certification only (DCO%) and mortality to incidence ratio (MI). Based on the "Guideline of Chinese Cancer Registration" and the standard of data inclusion in "Cancer Incidence in Five Continents Volume IX"^[5], we used MS-FoxPro, MS-Excel, and IARCrgTools issued by IACRC and IACR to check and evaluate the data^[6, 7]. Data from 34 cancer registries were accepted as national pooled data for annual report (Table 1). Data on cancer sites were coded using ICD-10 and ICD-O-3, and stratified by sex and age retrieved from the database. Crude, site, sex- and age-specific, age-standardized cancer incidence and mortality rates were calculated. The locations of the cancer registries were documented as either urban or rural.

Table 1. Population, number of new cases and deaths in 34 selected cancer registries in 2006

Registry	Location (Urban=1 Rural=2)	Population			Cancer new cases			Cancer death		
		Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Beijing	1	7271915	3680515	3591400	18773	9748	9025	11289	6741	4548
Shexian	2	389687	202502	187185	1127	695	432	854	562	292
Cixian	2	614984	314372	300612	1799	1058	741	1360	829	531
Yangcheng	2	387276	196119	191157	1205	691	514	830	482	348
Shenyang	1	3457140	1718118	1739022	8390	4407	3983	6419	3835	2584
Dalian	1	2150818	1082540	1068278	7813	4249	3564	4030	2469	1561
Anshan	1	1464324	731631	732693	3924	1975	1949	2503	1491	1012
Benxi	1	961221	480358	480863	2195	1297	898	1556	1013	543
Haerbin-daoli	1	687501	336197	351304	1861	1025	836	958	587	371
Haerbin-nangang	1	1025636	516335	509301	2261	1206	1055	1448	882	566
Shanghai	1	6155216	3095815	3059401	23028	12012	11016	14202	8284	5918
Jintan	2	565848	272445	293403	1361	876	485	1108	727	381
Suzhou	1	6122760	3034113	3088647	16535	9776	6759	11388	7272	4116
Qidong	2	1126547	555880	570667	3365	2063	1302	2643	1719	924
Haimen	2	1024610	468396	556214	3206	1947	1259	2413	1570	843
Huai'an	1	1211086	624640	586446	2379	1439	940	1748	1070	678
Jianhu	2	805604	413617	391987	1965	1244	721	1533	984	549
Dafeng	2	729236	366806	362430	2101	1269	832	1568	957	611
Yangzhong	2	272046	134758	137288	1153	664	489	868	534	334
Hangzhou	1	6346572	3205971	3140601	16270	9152	7118	10572	6878	3694
Jiaxing	1	502585	251409	251176	1409	823	586	896	594	302
Jiashan	2	380812	189910	190902	1165	699	466	797	528	269
Haining	2	646141	320101	326040	1344	762	582	829	515	314
Ma'anshan	1	613867	315171	298696	991	575	416	748	505	243
Changle	2	662137	349033	313104	1291	814	477	833	599	234
Linqu	2	798485	405194	393291	1581	985	596	1355	860	495
Feicheng	2	736064	356308	379756	1776	1104	672	1431	888	543
Linzhou	2	1014170	518204	495966	2008	1136	872	1570	927	643
Wuhan	1	4733240	2445066	2288174	11791	6616	5175	6118	3914	2204
Guangzhou	1	3854227	1971090	1883137	12824	7127	5697	6190	4013	2177
Sihui	2	409467	211829	197638	602	403	199	440	311	129
Zhongshan	2	1415381	708166	707215	2829	1622	1207	2007	1333	674
Fusui	2	428208	227166	201042	572	430	142	482	370	112
Yanting	2	602511	313943	288568	2119	1305	814	1676	1032	644
Total		59567322	30013718	29553604	163013	91194	71819	104662	65275	39387