



ICO Monograph Series on HPV and Cervical Cancer: Asia Pacific Regional Report

Epidemiology and Prevention of Human Papillomavirus and Cervical Cancer in China and Mongolia

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ABSTRACT

To develop a comprehensive intervention policy for future management of cervical cancer in China and Mongolia, it is essential to review the prevalence of human papillomavirus (HPV) infection, cervical cancer incidence and mortality, status of cervical screening and issues related to prophylactic HPV vaccines. Invasive cervical cancer (ICC) remains an important health problem among women in both China and Mongolia. However, a significant proportion of the burden is observed in rural settings. In areas of China and Mongolia where data are available, HPV prevalence is relatively high, with sexual activity being the most important risk factor. Nationwide programs for cervical cancer screening do not exist, and the majority of women have never been screened. However, government and non-governmental organizations have been collaborating to establish demonstration centers in both high- and low-resource settings to provide screening and obtain geographic specific data. To date, the prophylactic HPV vaccines are not licensed in China or Mongolia, although with wide coverage, the HPV vaccine could potentially prevent as much as three quarters of ICC cases among Chinese and Mongolian women. Ultimately, the introduction of HPV vaccination will present specific challenges, as well as opportunities, for developing advocacy, information and communication strategies that will involve policymakers and the general public.

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1. Introduction

The total population of China and Mongolia in 2006 was approximately 1.3 billion and 2.6 million, the life expectancy of females in 2005 was 74 years and 68 years, and the gross national product per capita in 2005 was US\$1,740 and US\$720, respectively [1]. Nationwide programs for cervical cancer screening are not well established in China or Mongolia. Furthermore, the majority of women have never been screened, particularly women in rural areas with poor access to health resources. In the context of human papillomavirus (HPV) vaccines and new HPV DNA screening tests, it could be expected that these tools will significantly decrease the cervical cancer burden. In this article, prevalence and risk factors of HPV infection and cervical cancer, prevention by screening and prospects of HPV vaccination in China and Mongolia will be described.

2. Incidence and mortality of cervical cancer

2.1. Incidence

In China, a systematic and national level cancer registry still does not exist. Among cancer registry data published in the latest release of the International Agency for Research on Cancer (IARC) Cancer in Five Continents, only one registry in the region, in Shanghai, is available [2]. Sample surveys were the only source for national cervical cancer incidence data, however, these are not representative of China overall.

Five registries, including Shanghai, (1998–2002) have reported invasive cervical cancer (ICC) incidence data (Fig. 1) [2]. Incidence rates of cervical cancer ranged from 2.4 per 100,000 women in Jiashan to 4.6 per 100,000 women in Guangzhou. From the five cancer registries, almost no cases of cervical cancer were observed among women aged 15–24 years, however the age-specific rates ranged between 5 to 7 cases per 100,000 women aged 35–64, with a second peak of incidence observed among women over 65 years of age (Fig. 2). Based on limited data from China, specific geographical areas appear to have notably high cervical cancer incidence

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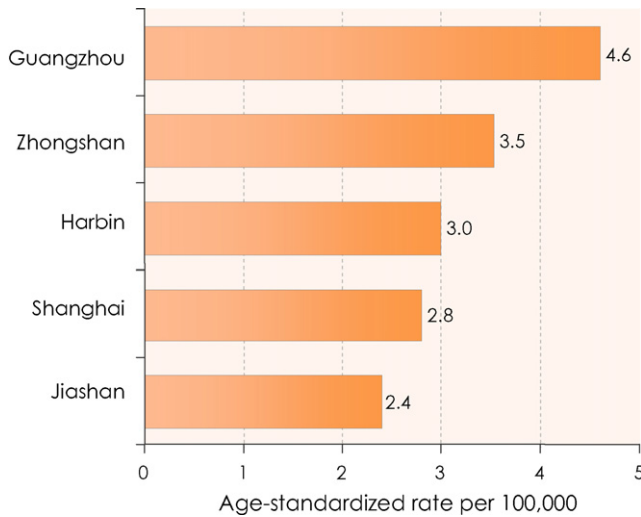


Fig. 1. World age-standardized incidence rates of cervical cancer by cancer registries (1998–2002) in China. [2].

rates, such as Yangcheng, Shanxi, with an age-adjusted estimated incidence rate of 81 per 100,000 women between 1998–2002 [3]. Thus, cervical cancer remains an important health problem among women, with a particularly high burden observed in the rural areas of China.

GLOBOCAN estimates of cervical cancer incidence in Mongolia are based on unpublished national data, and places Mongolia at an intermediate rates (18 per 100,000 women) [4].

2.2. Mortality

In China, there have been two national surveys that examined the causes of death: one conducted in the 1970's and another in the 1990's. Overall mortality rates for cervical cancer declined from 10.7 to 3.9 per 100,000 women over these two decades [5]. This decline in mortality, however, was not consistent across geographical regions. Mortality appeared to decline less in rural areas, compared to urban areas, and where specific regional data exist in Shanxi and Gansu, death rates attributable to cervical cancer remained greater than 30.0 per 100,000 women [5,6].

In Mongolia, cervical cancer mortality is estimated at 10.2 per 100,000 women [4].

3. HPV epidemiology

3.1. HPV prevalence and type-specific distribution in the general population

The earliest population-based prevalence survey of HPV infection was conducted in a rural area of China, with a high mortality rate of cervical cancer (Xiangyuan, Shanxi Province). This was a collaborative research project by the Cancer Institute/Hospital Chinese Academy of Medical Sciences (CICAMS) and the Cleveland Clinic Foundation (CCF) [7]. Using Hybrid Capture[®] 2 (HC2) (Qiagen Gaithersburg, Inc., MD, USA (previously Digene Corp.)), the overall prevalence of high-risk HPV was 20.8% among women aged 35–50 years [7]. Another IARC/CICAMS multi-center population-based survey was conducted in women aged 15–59 years from three different areas of China (Yangcheng County, Shanxi Province; Shenzhen City, Guangdong Province and Shenyang City, Liaoning Province) using a general primer (GP) 5+/6+ mediated polymerase chain reaction assay (PCR) to detect HPV DNA. The overall HPV prevalence for these three regions ranged from 14.8% to 16.8% [8–10]. The most common HPV type in each area was HPV-16, followed by HPV-58 then 52, although HPV type distribution varied between women with normal cytology or cervical cancer (Fig. 3) [8–10].

HPV prevalence surveys have increased our understanding of the burden of HPV infections among Chinese women, although relatively few women less than 20 years of age were included in the surveys. Therefore, it will be important to study a larger population of young women (≤ 20 years of age) to assess the age of first HPV acquisition and peak HPV prevalence. This information is required to develop guidelines regarding the most appropriate age for future implementation of prophylactic HPV vaccines in China.

In Ulaanbaatar, the capital city of Mongolia, a recent population-based HPV prevalence study among women aged 15–59 years showed 35% of women had prevalent HPV infections. The highest prevalence (48.4%) was in women less than 25 years of age. HPV prevalence declined with age, but remained above 25% in all age groups (Fig. 4). HPV-16 was also the most frequently detected type, followed by HPV-31 and 35 [11]. HPV prevalence in Ulaanbaatar is one of the highest reported worldwide and suggests, in the absence of data from rural areas and accurate cancer incidence

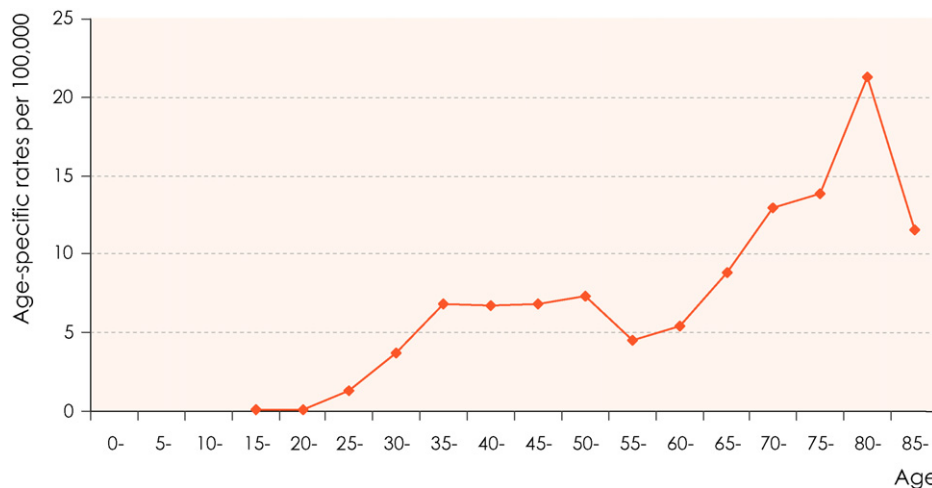


Fig. 2. Age-specific incidence rates of cervical cancer in five cancer registries (1998–2002) in China, Mainland. [2].

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