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Epidemiology and Prevention of Cervical Cancer in Indonesia, Malaysia, the Philippines, Thailand and Vietnam

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ABSTRACT

Cervical cancer remains one of the leading causes of cancers in women from Indonesia, Malaysia, the Philippines, Thailand and Vietnam. High-risk human papillomavirus (HPV) types, particularly HPV-16 and 18, are consistently identified in cervical cancer cases regardless of geographical region. Factors that have been identified to increase the likelihood of HPV exposure or subsequent development of cervical cancer include young age at first intercourse, high parity and multiple sexual partners. Cervical cancer screening programs in these countries include Pap smears, single visit approach utilizing visual inspection with acetic acid followed by cryotherapy, as well as screening with colposcopy. Uptake of screening remains low in all regions and is further compounded by the lack of basic knowledge women have regarding screening as an opporunity for the prevention of cervical cancer. Prophylactic HPV vaccination with the quadrivalent vaccine has already been approved for use in Malaysia, the Philippines and Thailand, while the bivalent vaccine has also been approved in the Philippines. However, there has been no national or government vaccination policy implemented in any of these countries.

1. Introduction

The burden of cervical cancer in Southeast Asia is moderately high, where the costs of nationwide organized cytology screening have been a significant limitation. The use of Pap testing for cytology-based screening has been highly effective in preventing cervical cancer in industrialized countries and will most likely be effective in countries where screening is limited or nonexistent. Hence, the use of alternative screening modalities, such as visual inspection of the cervix aided by acetic acid (VIA) with or without magnification, is currently under evaluation. In addition, prophylactic human papillomavirus (HPV) vaccination for the prevention of infection and related disease is being considered as an additional cervical cancer control strategy.

2. Burden of cervical cancer in Southeast Asia

2.1. Cervical cancer incidence and mortality

Cervical cancer is the leading cancer in women in Vietnam and Thailand, and the second most common cancer in Malaysia, the Philippines and Indonesia [1]. Furthermore, it is the most common cause of death in women in Vietnam, the second in Indonesia and the Philippines, third in Thailand and fourth in Malaysia [1].

In Southeast Asia, cervical cancer incidence (age-standardized rate (ASR) 15.7 per 100,000) is similar for Indonesia and Malaysia. Higher and similar ASRs are observed between the Philippines (ASR: 20.9), Thailand (ASR: 19.8) and Vietnam (ASR: 20.2) [1].

Fig. 1 shows the ASR of cervical cancer in countries with existing cancer registries and the high variability within Malaysia, the Philippines and Thailand [2]. An ASR of 17.5 was reported in the Rizal province of the Philippines (1993–1997) [3]; this rate does not differ significantly from recent unpublished data nor from that of Manila (ASR: 19.8). In Vietnam, the incidence is intermediate,

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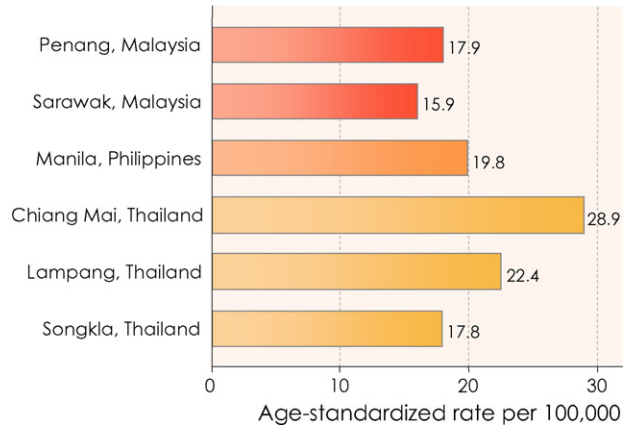

Figure 1. Age-standardized (world) incidence rates of cervical cancer by cancer registries (1998–2002) in Malaysia, the Philippines, and Thailand [2].

however rates were 4-fold higher in Ho Chi Minh City in the south compared to Hanoi in the north [3].

2.1.1. Indonesia

Each year approximately 15,000 new cervical cancer cases and 7,500 cancer-related deaths are reported. It is the second most frequent cancer in women of reproductive age 15–44 years [4].

2.1.2. Malaysia

In Malaysia, the overall incidence rate is 19.7 per 100,000 women, however differs by ethnic group. Ethnic Chinese women have the highest ASR of 28.8 per 100,000, followed by ethnic Indians with 22.4 and ethnic Malays (includes Peninsular Malaysia but not East Malaysia) with 10.5 per 100,000 women [5].

2.1.3. The Philippines

According to the Filipino cancer registry 2005 annual report, the incidence of cervical cancer remained stable from 1980 to 2005 [6]. The overall 5-year survival rate was 44% and mortality rate was 1 per 10,000 women. The high mortality rate is attributed to the fact that 75% of women are diagnosed at late stage disease with treatment being frequently unavailable, inaccessible or non-affordable.

The Philippines General Hospital (PGH) has been the country's government tertiary center reporting the highest number of new cervical cancer cases. In 2006, 466 new cases were reported, of which 68% were squamous cell carcinoma, 21% adenocarcinoma, 3% adenosquamous and 8% of other histology. More than 70% of cases presented at stage IIB disease or greater, with 40–45% in stage IIIB. Treatment-related costs for patients with cervical cancer exceeded twice the average annual income in the Philippines with an average cost of US$350–1,100 for diagnosis and pretreatment evaluation, US$1,100–4,850 for surgery and US$2,100–6,000 for chemoradiation) [7].

2.1.4. Thailand

In 2002, 6,243 new cervical cancer cases and 2,620 cancer-related deaths were reported [1]. Incidence of cervical cancer from 1990 to 2000 remained constant. Squamous cell carcinoma is the most common histopathological type accounting for 80–86%, followed by adenocarcinoma/adenosquamous carcinoma accounting for 12–19% [8]. The age of women diagnosed with cervical cancer presented as early as 20 years and peaked in women 45–50 years. Most cases are diagnosed in advanced stages of disease with 51% in International Federation of Gynecology and Obstetrics (FIGO) stage II and 31% in stage III. The overall 5-year survival rates are 68.2% in Chiang Mai and 54.5% in Khon Kaen. The annual cost of care is estimated at US$10 million [9].

2.1.5. Vietnam

There are over 29 million women in Vietnam over the age of 15 years. More than 6,000 new cases of cervical cancer and 3,000 deaths are estimated each year. Cervical cancer ranks as the second most common cancer in women ages 15–44 years [4].

3. HPV prevalence in Southeast Asia

3.1. HPV prevalence in cervical cancer: Indonesia, Malaysia, the Philippines and Thailand

Fig. 2 shows the five most frequent HPV types in cervical cancer in Indonesia, Malaysia, the Philippines and Thailand [10,11]. No data are available for Vietnam. HPV-16 and 18 are the two most common HPV types in Southeast Asia, although HPV-18 alone is relatively more frequent compared to the type distribution estimates in the rest of the world. This is noteworthy for Indonesia where it is the leading HPV type in cervical cancer (52 cases of 121). It is unclear why HPV-18 has such a high prevalence in this population [12]. The estimate for Malaysia is based on a small number of cases ($N = 23$) and there was a high number of co-infections for HPV-16 and 18, therefore, the interpretation of these data is limited.

3.2. HPV prevalence in women with normal cytology: Indonesia, the Philippines, Thailand and Vietnam

There is a wide variation of the five most frequent high-risk HPV types in women with normal cytology in Southeast Asia (Fig. 3). No data are available for Malaysia. HPV-16 remains the most frequent type in Thailand and Vietnam, and the second most frequent type for Indonesia and the Philippines. Although the HPV type distribution in cervical cancer for Vietnam is unknown, HPV-18 ranks as the fourth most frequent type in women with normal cytology. In Indonesia, HPV-51 is the most common HPV type although not identified as one of the five most prevalent types in cervical cancer cases, implying its less relative importance for disease. HPV-18 is the most frequent type in cervical cancer cases but it is not highly prevalent in women with normal cytology in Indonesia [11–13].

4. Risk factors for HPV infection and cervical cancer

The prevalence of cofactors - smoking, oral contraceptive use, and fertility - for cervical carcinogenesis in Southeast Asia are shown in Table 1.

4.1. Indonesia

Similar to other countries, factors that increase the risk of cervical cancer include young age at first intercourse, multiple sexual partners and high parity. A cervical cancer case-control study among women in Jakarta reported that women having more than one sexual partner (OR: 5.83; 95% confidence interval (CI): 2.98–11.36) and high parity (>3) (OR: 2.7; 95%; CI: 1.55–4.72) were at an increased risk for cervical cancer and women with an older age (≥20 years) at first sexual intercourse (OR = 0.48; 95% CI: 0.28–0.85) were at a decreased risk [12].

4.2. Malaysia

In a cross-sectional school survey of 12–19 year old adolescents, 5.4% (of which 8.3% were males and 2.9% were females) reported