

## MINI-REVIEW

# Update knowledge on cervical cancer incidence and prevalence in Asia

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### Abstract

Cervical cancer is the second most common cause of cancer-related death among women worldwide, with over 500,000 new cases diagnosed annually and 50% mortality rate in Asia. In the United States, approximately 10,370 new cases of cervical cancer are diagnosed annually, and estimated 3,710 deaths occur from the disease, making it the sixth most common cause of malignancy among American women. This study aims to provide awareness about cervical cancer as well as an updated knowledge about the prevalence and incidence of cervical cancer in Asia

**Keywords:** Cervical cancer - epidemiology - literature review - worldwide prevalence - prevalence in Asia

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### Introduction

Cervical cancer may be due to infection of human papilloma virus (Pandey et al., 2012, Tezcan et al., 2014). In 90 % of cervical cancer cases, human papilloma virus is positive (Kumar et al., 2007; Ghोजazadeh et al., 2012). In past two decades, infection from HPV has increased (Jemal A, 2005, Chen et al., 2012). Using Pap smear cancer screening can identify precancerous and potentially precancerous changes in cervical tissues and cells (Ozkahraman and Yildirim, 2012). Natphopsuk et al. reported 3.8% HPV infection in areas where cervical cancer cases are low and 8% HPV infection in areas with high incidence of cervical cancers. It is most prevalent disease after breast cancer. Despite the availability of HPV vaccine, high prevalence of cervical cancer is seen. HPV infections are mostly observed in women below 25 years of age. In Iran, cervical cancers cases are 7.8% of total cancers in women. It is 3rd main cancer of genitourinary cancers (Arab et al., 2014). The most common symptom of cervical cancer is abnormal vaginal bleeding (Kaku, et al., 2008, Berraho, et al., 2012). HPV infection is a necessary cause (99.7%) of cervical cancer; worldwide, approximately 70% of all cervical cancer cases are attributed to types 16 and 18; the next two most prevalent oncogenic types are 45 and 31, which together account for an additional 10% of all cervical cancer cases (Tewari et al., 2012). Pap smear is used for screening of 80% of women with cervical cancer (Richart, 1998). Many Primary and secondary preventive and treatable

approaches have been developed to prevent and treat the cervical cancer (Raychaudhuri and Mandal, 2012, Tewari et al., 2012; Al-Naggar, et al., 2012; Farhath et al., 2013). Giles and Garland reported that Government is not playing role regarding awareness of cervical cancer that is why majority of females are unaware from this deadly disorder (Giles and Garland, 2006). New cases of cervical cancers are 528000 in developing countries. Many studies show that general populations as well as health professionals have lack of awareness regarding HPV infection, screening and availability of vaccine (Ortashi, et al., 2013). Some studies show that cervical cancer is diagnoses in illiterate women in late stage (Kaku, et al., 2008). This study aims to provide awareness about cervical cancer as well as an updated knowledge about the prevalence and incidence of cervical cancer in Asia

### Worldwide prevalence

Epidemiological surveillance studies performed in the United States during the past two decades have documented decreased incidence rates for invasive cervical cancer. In 2011, there were 12,710 new cases of invasive cervical cancer and 4290 deaths from this disease in the United States (Siegel et al., 2011), 500,000 cases occur globally every year (Tas et al., 2010), with mortality rate of 270,000 globally that is one death per minute (Schoueri-Mychasiw et al., 2013). It is particularly distressing that more than one-third of women diagnosed with cervical cancer die. Ethnic and racial disparities,

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however, still exist. In a surveillance, epidemiology, and end results analysis of 13 US cancer registries containing cases from 1992 to 2003 (McDougall et al., 2003), Hispanic whites had the highest incidence rate of cervical cancer overall (24 per 100,000), squamous cell carcinoma (18 per 100,000), and adenocarcinoma (5 per 10,000). Non-Hispanic whites had the lowest rates of cervical cancer overall (11 per 100,000) and squamous cell carcinoma (7 per 100,000), while African-Americans had the lowest rate of adenocarcinoma (2 per 100,000). In Thailand, HPV infection is most prevalent in vulvar and cervical lesions (Natphopsuk et al., 2013). In a recent study using data obtained from the cancer in North America (CINA) deluxe 1995-2004 database created by the North American Association of Central Cancer Registries (NAACCR), African-American and Hispanic US populations continue to have the highest rates of invasive cervical cancer compared to non-Hispanic whites (Horner et al., 2011). Variations in screening utilization and socioeconomic status are thought to account for the majority of the racial/ethnic disparities. Number of death due to cervical cancer is 250,000. In kingdom of Saudi Arabia, cervical cancers are 33.5% of genital cancers (Mahoka and Raheem, 2008). WHO reported that new cases of cervical cancer are 152 and 55 women die due to cervical cancer per year in Saudi Arabia. Most common age of women affected with cervical cancer is between 15 and 44 years in Saudi Arabia. Number of new cases of cervical cancers is 529800 and 85% cases are found in developing countries (Jemal et al., 2011). Prevalence of cervical cancer is 32.4 per 100000 populations annually (Ferlay et al., 2010). In Nepal, death of female is 21% of all female cancers (Pradhananga et al., 2009). It is estimated that 31% of cancer occur in uterine cervix or breast in women Worldwide (Zechariah et al., 2014). Studies regarding cervical cancers have been conducted in 187 countries that indicate cervical cancer as important cause of death among women aged 15 and above. Incidence of cervical cancer was 378,000 cases in 1980 and incidence of cervical cancer was 465,000 in 2010 (Foreman et al., 2011). It is estimated the increase in incidence of cervical cancer is 40% in young women in recent decades (Foley et al., 2011). Arbyn et al reported that 503 patients with cervical cancer were registered in 2008 and 85% of patients were from developing countries. Arbyn stated that there is significant difference in prevalence of cervical cancer in developed and developing counties (Arbyn et al., 2011). Similar difference in occurrence of cervical cancer in developing and developed countries was reported in Asia in 1970. Incidence of cervical cancer is high in Korea, Japan and India (Beiki et al., 2012). Incidence of cervical cancer in Turkey is 4.4%. (Karadag et al., 2014). Cases of cervical cancer in Australia in 1982 were 530 that are two times more than cases in 2009. Number of new cases registered are 37 daily. Tas et al reported 500,000 cases of cervical cancer as global burden each year (Tas et al., 2010), and number of death due to cervical cancer was 270,000 globally that indicate one death occurs in two minutes due to cervical cancer worldwide (Schoueri-Mychasiw et al., 2013). Cervical cancer is more in young girls in current years as compared to previous years

(Demirtas and Acikgoz, 2013). In one study conducted on 1,741 women in Lampang and Songkhla, cities in northern Thailand and southern Thailand respectively. Prevalence of HPV was 8.0 and 3.6% in Lampang and Songkhla respectively and overall prevalence was 6.3% (Sukvirach et al., 2003).

## Prevalence in Asia

Cervical cancer is third most common disease in Asia and fourth most common cause of death in female. Cervical cancer has higher incidence than any other cancer and greatest threats to women's health (Wang et al., 2013). Various studies have been conducted regarding cervical cancer in countries such as India, Thailand and Indonesia, Japan, Saudi Arabia, Jordan, Iran, Oman, Korea, Mongolia, Pakistan, Vietnam, Malaysia and Philippine (Wang, 2001; Qasem, 2001; Al Hamdan et al., 2001; Deerasamee et al., 2001; Gajalakshmi et al., 2001; Rosemawati and Sallehudin, 2001; Esteban et al., 2001; Ahn, 2001; Sarjadi and Trihartini, 2001). Cervical cancer was ranked number one in India among all countries. Cervical cancer is major problem in Asia. Incidence of cervical cancer is decreasing due to infrastructure and facilities for early diagnosis in advanced counties but it is still major problem in India. In Asian populations, human papilloma virus is prevalent in sex workers (Ghim et al., 2002; Anh et al., 2003; Shin et al., 2003). New cases of cervical cases were 90,708 in India in 2007 and 5 year survival rate was 48% (Nandakumar et al., 2009). New cases of cervical cancer in India are 126000 annually (Sankaranarayan et al., 2003). In India, 75% of cases of cervical cancers are in advance stage. Prevalence of human papilloma virus is less in Muslim women that may be due to religious practices and socio-economical cultures in Muslim societies. This reduction is attributed to male circumcision; studies show that male circumcision in Muslim societies reduces risk of HPV infection (Kjaer et al., 1991). More than 80% of cervical cancers are found in India and China (Rai et al., 2014; Li et al., 2013). An estimated 79% of these cases occur in developing countries. In 2010, 266000 deaths and 528000 new cases of cervical cancer were reported. In less developed countries, 85% of cervical cancer cases are reported that are 12% of total cases of cancer in women. About 6000 cervical cancer cases are diagnosed in China and 30000 deaths occur annually. In Asian countries, morbidity and mortality due to cervical cancer has been increased (Zhou et al., 2012; Antic et al., 2014; Filipi et al., 2014; Karadag et al., 2014; Tungsrihong et al., 2014). More than 80% of the women diagnosed with cervical cancer live in the developing countries, such as China and India. Prevalence of HPV infection was 44.4% in female between ages of 17 to 19 years in China. Prevalence of HPV infection was 13.5% in Shenzhen city, China and prevalence was 30.2% in Shanghai city (Wang et al., 2013). In India, number of patients with cervical cancers is 122844 and 67477 die from cervical cancer (Ferlay et al., 2010). In developing countries, cervical cancer causes 80% deaths as observed in Pakistan (Moosa et al., 2014). When cancer becomes invasive then vaginal bleeding occurs. In low resource

setting, third common cause of women death is cervical cancer (Zhao et al., 2012). Prevalence of cervical cancer is 19.5 per 100,000 in 2008 that was less than 9 per 100,000 in 2002 that indicates increasing prevalence of cervical cancer in Pakistan.

## Conclusion

The incidence and prevalence of cervical cancer is high in Asia due to lack of awareness regarding HPV infection, screening and availability of vaccine. To prevent this cancer health professionals are the best and reliable medium that can help to increase awareness of the public. To decrease morbidity and mortality due to cervical cancer is needed to educate medical professionals regarding HPV infection and development of cervical cancer, early screening, early diagnosis and early treatment.

## References

- AAntic LG, Djikanovic BS, Antic DZ, et al (2014). Differences in the level of knowledge on cervical cancer among health care students, midwives and patients in Serbia. *Asian Pac J Cancer Prev*, **15**, 3011-5.
- Ahn Y-O (2001). Population-based cancer registries in Korea. *Asian Pac J Cancer Prev*, **2**, 39-42.
- Al Hamdan N, Bazarbashi S, Ajarim D, et al (2001). Cancer 799. registration in Saudi Arabia. *Asian Pac J Cancer Prev*, **2**, 61-4.
- Al-Naggar RA, Isa ZM (2010). Perception and opinion of medical students about Pap smear test: a qualitative study. *Asian Pac J Cancer Prev*, **11**, 435-40.
- Arab M, Giti Noghabaei G, Kazemi SN (2014). Comparison of crude and age-specific incidence rates of breast, ovary, endometrium and cervix cancers in Iran, 2005. *Asian Pac J Cancer Prev*, **15**, 2461-4
- Arbyn M, Castellsague X, de Sanjose S, et al (2011). Worldwide burden of cervical cancer in 2008. *Ann Oncol*, **22**, 2675-86.
- Beiki O, Hall P, Ekbohm A, Moradi T (2012). Breast cancer incidence and case fatality among 4.7 million women in relation to social and ethnic background: a population-based cohort study. *Breast Cancer Res*, **14**, 5.
- Berraho M, Bendahhou K, Obtel M, et al (2012). Cervical cancer in Morocco: epidemiological profile from two main oncological centers. *Asian Pac J Cancer Prev*, **13**, 3153-7.
- Chen Q, Luo ZY, Lin M, et al (2012). Prevalence and genotype distribution of human papillomavirus infections in women attending hospitals in Chaozhou of Guangdong province. *Asian Pac J Cancer Prev*, **13**, 1519-24.
- Deerasamee S, Martin N, Sontipong S, et al (2001). Cancer 750. registration in Thailand. *Asian Pac J Cancer Prev*, **2**, 79-84.
- Demirtas B, Acikgoz I (2013). Promoting attendance at cervical cancer screening: understanding the relationship with Turkish womens' health beliefs. *Asian Pac J Cancer Prev*, **14**, 333-40.
- Esteban DB, Laudico AV, Uy N (2001). Cancer 768. registration in the Philippines. *Asian Pac J Cancer Prev*, **2**, 55-60.
- Farhath S, Vijaya PP, Mumtaj P (2013). Cervical cancer: is vaccination necessary in India? *Asian Pac J Cancer Prev*, **14**, 2681-4.
- Ferlay J, Shine HR, Bray F, et al (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN. *Int J Cancer*, **127**, 2893-917.
- Filipi K, Khani A (2014). Assessment of cervical cytological data in Albanian females. *Asian Pac J Cancer Prev*, **15**, 2129-32.
- Foley G, Alston R, Geraci M, et al (2011). Increasing rates of Cervical Cancer in young women in England. *Br J Cancer*, **105**, 177-84.
- Foreman J, Foruzanfar H, Allyne M, et al (2011). Breast and cervical cancer in 187 countries between 1980 and 2010. *Lancet*, **378**, 1461-84.
- Gajalakshmi V, Shantha V, Swaminathan R (2001). Cancer registration in India. *Asian Pac J Cancer Prev*, **2**, 13-20.
- Ghim S-J, Basu PS, Jenson AB (2002) Cervical cancer: etiology, pathogenesis, treatment, and future vaccines. *Asian Pac J Cancer Prev*, **3**, 207-14.
- Ghojzadeh M, Azar ZF, Saleh P (2012). Knowledge and attitude of Iranian university students toward human papilloma virus. *Asian Pac J Cancer Prev*, **13**, 6115-9.
- Giles M, Garland S (2006). A study of women's knowledge. *Asian Pac J Cancer Prev*, **15**, 2014-83.
- Horner M (2011). U.S. geographical distribution of prevaccine era cervical cancer screening, incidence, stage, and mortality. *Cancer Epidemiol Biomarkers Prev*, **20**, 591-9.
- Jemal A, Murray T, Ward E, et al., (2005) Cancer statistics. *CA Cancer J Clin*, **55**, 10-30.
- Karadag G, Gungormus Z, Surucu R (2014). Awareness and practices regarding breast and cervical cancer among Turkish women in Gaziantep. *Asian Pac J Cancer Prev*, **15**, 1093-8.
- Kaku M, Mathew A, Rajan B (2008). Impact of socio-economic factors in delayed reporting and late-stage presentation among patients with cervix cancer in a major cancer hospital in South India. *Asian Pac J Cancer Prev*, **9**, 589-94.
- Karadag G, Gungormus Z, Surucu R, et al (2014). Awareness and practices regarding breast and cervical cancer among Turkish women in Gaziantep. *Asian Pac J Cancer Prev*, **15**, 1093-8.
- Li J, Huang R, Schmidt JE, et al (2013). Epidemiological features of human papillomavirus (HPV) infection among women living in Mainland China. *Asian Pac J Cancer Prev*, **14**, 4015-23.
- McDougall JA, Madeleine M (2003). Racial and ethnic disparities in cervical cancer incidence rates in the United States, 1992-2003. *Cancer Causes Control*, **8**, 1175-86.
- Makoha FW, Raheem MA (2008). Gynecological cancer incidence in a hospital population in Saudi Arabia: the effect of foreign immigration over two decades. *J Obstet Gynaecol Res*, **34**, 538-42.
- Moosa NY, Khattak N, Alam MI, et al (2014). Comparison of cervical cell morphology using two different cytology techniques for early detection of pre-cancerous lesions. *Asian Pac J Cancer Prev*, **15**, 975-81.
- Nandakumar A, Ramnath T, Meesha C (2009). Magnitude of cancer cervix in India. *Indian J Med Res*, **130**, 219-21.
- Natphopsuk S, Settheetham-Ishida W, Pientong C, et al (2013). Human papillomavirus genotypes and cervical cancer in northeast Thailand. *Asian Pac J Cancer Prev*, **14**, 6961-4.
- Ortashi O, Raheel H, Shalal M et al (2013). Awareness and knowledge about human papillomavirus infection and vaccination among women in UAE. *Asian Pac J Cancer Prev*, **14**, 6077-80.
- Ozkahraman S, Yildirim B (2012). Knowledge levels of Turkish nurses related to prevention and early diagnosis of cancer. *Asian Pac J Cancer Prev*, **13**, 6105-8.
- Parkin DM, Bray F, Ferlay J, et al., (2005). Global cancer statistic. *CA Cancer J Clin*, **55**, 74-8.
- Pandey S, Mishra M (2012). Human papilloma virus screening in North Indian Women. *Asian Pac J Cancer Prev*, **13**, 2643-46
- Pradhananga KK, Baral M, Shrestha BM (2009). Multi-institution hospital-based cancer incidence data for Nepal: an initial report. *Asian Pac J Cancer Prev*, **10**, 259-62.
- Qasem MB (2001). Cancer registration in Jordan. *Asian Pac J Cancer Prev*, **2**, 37-8.

- Rai AK, Das D, Katak AC, et al (2014). Hybrid capture 2 assay based evaluation of high-risk HPV status in healthy women of north-east India. *Asian Pac J Cancer Prev*, **15**, 861-5
- Raychaudhuri S, Mandal S (2012). Current status of knowledge, attitude and practice (KAP) and screening for cervical cancer in countries at different levels of development. *Asian Pac J Cancer Prev*, **13**, 4221-7.
- Rosemawati A, Sallehudin AB (2001). Cancer registration in Malaysia. *Asian Pac J Cancer Prev*, **2**, 43-5.
- Sarjadi, Trihartani P (2001). Cancer registration in Indonesia. *Asian Pac J Cancer Prev*, **2**, 21-4.
- Schoueri-Mychasiw N, McDonald PW (2013). Factors Associated with Underscreening for Cervical Cancer among Women in Canada. *Asian Pac J Cancer Prev*, **14**, 6445-50.
- Shin HR, Lee DH, Herrero R, et al (2003). Prevalence of human papillomavirus infection in women in Busan, South Korea. *Int J Cancer*, **103**, 413-21.
- Siegel R, Brawley O, Jemal A (2011). Cancer statistics, 2011: the impact of eliminating socioeconomic and racial disparities on premature cancer deaths. *CA Cancer J Clin*, 212 - 36.
- Sukvirach S, Smith JS, Tunsakul S, et al (2003). Population-based human papillomavirus prevalence in Lampang and Songkla, Thailand. *J Infect Dis*, **187**, 1246-56.
- Tas F, Isler A, Esenay F (2010). Awareness of Turkish nursing students about risk factors for cervical cancer and prophylactic human papillomavirus vaccine. *Sex Disabil*, **28**, 245-53.
- Tewari KS, Monk BJ (2012). Invasive cervical cancer. In: DiSaia P, Creasman W (eds) *Clinical Gynecologic Oncology*, 8th edn. Philadelphia, PA: Elsevier, 24-28.
- Tezcan S, Ozgur D, Ulger M, et al (2014). Human papillomavirus genotype distribution and E6/ E7 oncogene expression in Turkish women with cervical cytological findings. *Asian Pac J Cancer Prev*, **15**, 3997-4003
- Tungsrithong N, Kasinpila C, Maneenin C, et al (2014). Lack of significant effects of *Chlamydia trachomatis* infection on cervical cancer risk in a nested case-control study in North-East Thailand. *Asian Pac J Cancer Prev*, **15**, 1497-500.
- Wang YY, Li L, Wei S et al (2013). Human papillomavirus (HPV) infection in women participating in cervical cancer screening from 2006 to 2010 in Shenzhen City, South China. *Asian Pac J Cancer Prev*, **14**, 7483-7.
- Wang JL, Yang YZ, Dong WW, et al (2013). Application of human papillomavirus in screening for cervical cancer and precancerous lesions. *Asian Pac J Cancer Prev*, **14**, 2979-82.
- Wang Q (2001). Cancer registration in China. *Asian Pac J Cancer Prev*, **2**, 3-8.
- Zechariah A, Hassan S, Samuel K, et al (2014). Nurses role in cervical cancer prevention and its treatment- A critical review. *Asian Pac J Nurs*, **1**, 1-5.
- Zhao FH, Tiggelaar SM, Hu SY, et al (2012). A multi-center survey of HPV knowledge and attitudes toward HPV vaccination among women, government officials, and medical personnel in China. *Asian Pac J Cancer Prev*, **13**, 2369-78.
- Zhou X, Gu Y, Zhang SL (2012). Association between p53 codon 72 polymorphism and cervical cancer risk among Asians: a HuGE review and meta-analysis. *Asian Pac J Cancer Prev*, **13**, 4909-14.