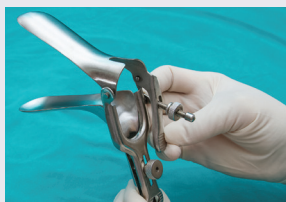


Cervical Cancer Screening in Developing Countries: Using Visual Inspection Methods

Haeok Lee, RN, MN, PhD, FAAN, Younhee Kang, RN, MSN-ANP, PhD, and Woong Ju, MD, MPH, PhD



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Background: Cervical cancer is the fourth most common cancer among women worldwide. Most diagnoses occur in developing countries where cases are detected in later stages with poorer prognoses. Cervical cancer is a preventable disease; however, most women in developing and resource-limited countries do not have the access to the same methods of cervical cancer screening as women in developed countries.

Objectives: The objectives of this review are to examine and discuss (a) the burden of cervical cancer in developing countries, (b) the socioeconomic determinants of primary and secondary prevention of cervical cancer, and (c) the use of visual inspection methods of screening with acetic acid (VIA) and Lugol's iodine (VILI) as alternative strategies for cervical cancer screening in areas with limited resources.

Methods: A critical review was conducted of the literature and recommendations on the role of VIA in cervical cancer prevention in developing countries.

Findings: Visual inspection methods of screening for cervical cancer have emerged as a low-cost, safe, and effective alternative to cytology screening and can be administered to a large proportion of targeted women in developing countries. VIA and VILI can be performed by nurses, midwives, and paramedic staff after a short competency-based training program. In addition, visual screening provides immediate results in real time, permitting a single-visit, screen-and-treat approach, which is an effective strategy to overcome issues of nonadherence to follow-up visits among women in developing countries.

Haeok Lee, RN, MN, PhD, FAAN, is a professor in the College of Nursing and Health Sciences at the University of Massachusetts in Boston; and Younhee Kang, RN, MSN-ANP, PhD, is a professor in the College of Health Sciences and Woong Ju, MD, MPH, PhD, is an associate professor in the School of Medicine, both at Ewha Womans University in Seoul, South Korea. The authors take full responsibility for the content of the article. The authors did not receive honoraria for this work. The content of this article has been reviewed by independent peer reviewers to ensure that it is balanced, objective, and free from commercial bias. No financial relationships relevant to the content of this article have been disclosed by the authors, planners, independent peer reviewers, or editorial staff. Lee can be reached at haeok.lee@umb.edu, with copy to editor at CJONEditor@ons.org. (Submitted February 2015. Revision submitted March 2015. Accepted for publication April 3, 2015.)

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Cervical cancer, a gender-specific disease, is caused by infection with the human papillomavirus (HPV) (World Health Organization [WHO], 2007, 2014). Genital HPV infection is the most common sexually transmitted infection in the United States and in other countries, with infection rates ranging from 14%–90% (Centers for Disease Control and Prevention [CDC], 2014; Forman et al., 2012; WHO, 2007, 2014). More than 100 types of HPV have been identified, about 40 of which can infect the genital area (CDC, 2014). High-risk types of HPV cause virtually all cervical cancer; cause most anal cancers; and cause some vaginal, vulvar, penile, and oropharyngeal cancers (Forman et al., 2012). The International Agency for Research on Cancer (IARC) assessed the carcinogenic risk of the biologic agents and

classified HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59 as carcinogenic to humans (WHO, 2007). Most high-risk HPV infections are asymptomatic, with most infections clearing in one to two years (Koutsky, 1997; Spitzer, 2006). However, the transient nature of the infection may cause cytologic abnormalities, which may progress to invasive cancers.

Although HPV vaccination and cervical cancer screening have been demonstrated to be effective in prevention of cervical cancer in developed countries (CDC, 2010; Markowitz et al., 2013; National Cancer Institute [NCI], 2014; WHO, 2014), these methods are too expensive for use in resource-limited and developing countries. Therefore, a need exists for inexpensive prevention methods to detect cervical precancers and cancers earlier in these countries. Several screening strategies have