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Challenges in educating women about human papillomavirus (HPV) and HPV screening test results: Experience from an HPV demonstration project in North-Eastern Thailand

Research advances have identified persistent high-risk human papillomavirus (HPV) infections as the cause of almost all cervical cancers, and allowed for the development of several HPV tests to screen for precancerous cervical lesions [1]. The World Health Organization released new cervical cancer screening guidelines in 2013, recommending the use of primary HPV testing as the preferred screening method in areas where high quality cytology-based screening programs do not already exist [2]. The incorporation of HPV tests for cervical cancer screening has several benefits: i) they have higher sensitivity than Pap tests for the detection of precancerous cervical lesions [3]; ii) HPV tests have a high negative predictive value that could enable programs to extend screening intervals [4]; iii) some HPV tests can be processed on the same day to provide rapid results and quick treatment, if needed [5]; and iv) HPV testing also allows for the possibility of self-collection of samples by women which can increase screening coverage in hard-to-reach populations or in areas with limited health professionals [6]. As cervical cancer screening programs incorporate HPV tests for primary screening, there is a need to examine HPV knowledge in women to evaluate and inform HPV education efforts.

As part of the demonstration project investigating the efficacy of primary HPV testing for cervical cancer screening in Northern Thailand described in a manuscript this issue, “*Comparative accuracy of Pap smear and HPV screening using COBAS Test in Ubon Ratchathani in Thailand*,” we examined HPV knowledge and attitudes toward HPV test results among Thai women. Prior to the start of the project, all the participating doctors and nurses attended a three-day workshop on HPV infection, HPV screening tests, communication of HPV test results, and study procedures of the project. Women aged 30–60 years, who were attending primary healthcare centers in Ubon Ratchathani province for routine cervical cancer screening with a Pap test, were eligible to participate in the project and receive primary HPV testing concurrently. Women who agreed to participate in the project provided consent, after which nurses at the health centers briefly educated each woman about cervical cancer and screening with high-risk HPV tests. This demonstration was approved by the ethics committee of the National Cancer Institute, Bangkok, Thailand.

The education session conducted by the nurses covered six key points about HPV: i) persistent HPV infection is the major cause of cervical cancer; ii) HPV is sexually transmitted by skin-to-skin contact; iii) HPV infection is common, asymptomatic, and most HPV infections clear on their own; iv) cervical cancer is preventable by screening with HPV and Pap tests as well as HPV vaccination; v) an HPV-negative result means that a woman's risk of cervical cancer in the next few years is low; and vi) an HPV-positive result does not mean that a woman is going to get cervical cancer, but indicates a need to follow-up based on health provider's recommendations. All this HPV information was presented in a brochure that nurses reviewed with each woman; a copy of the brochure was given to each woman to take with her. After the education session, samples for screening with both HPV and Pap tests were collected. Details on project procedures include HPV testing are described in the aforementioned article.

The HPV testing process and sending HPV results back to the primary health centers took approximately one month, from the date of sample collection. Women were notified by the community health workers to return to the primary health centers for their results and the nurses informed all women of their results. All HPV-positive women were invited to answer two questions examining HPV knowledge (HPV is a sexually transmitted disease and HPV infection can progress to cancer) and one question examining their attitudes toward their HPV results. A similar number of HPV-negative women, roughly matching in age-range to the HPV-positive women, were randomly selected and also invited to answer the same questions. Participant responses were summarized and chi-square tests were conducted to compare attitudes toward HPV testing and HPV knowledge among HPV-positive and HPV-negative women.

A total of 5004 women were enrolled in the demonstration project, and 174 (3.5%) women had HPV-positive results. Of these, 165 (94%) women agreed to answer questions about HPV knowledge and attitudes toward HPV test results, and 165 HPV-negative women were also randomly selected to answer the same questions. This sample of 330 women (165 HPV+, 165 HPV-) was representative of the overall study population with similar distributions of age and district of residence. Almost half (44.9%) of the women were in the 40–49 year age range, 27.3% were 30–39 years and 27.9% were 50–59 years. In comparison to the HPV-positive women, the random sample of HPV-negative women selected was slightly older, with a larger proportion of women in the 40–49 year age range (39.4% for HPV+ and 50.3% for HPV-) (Table 1).

Irrespective of HPV test results, most of the women reported not knowing the answers to the two questions on HPV knowledge (Table 1). More than half of the women with HPV-positive and HPV-negative results did not know that HPV is a sexually transmitted disease (55.8% and 65.5% respectively), or that HPV infection can progress to cancer (55.3% and 50.3%, respectively). The only difference observed in HPV knowledge based on HPV test results was that a higher proportion of HPV-positive women reported knowing that HPV is sexually transmitted in comparison to the HPV-negative women (35.8% versus 16.9%, respectively). The majority of the HPV-positive women reported being worried or very worried about their test results (25.5% and 38.8%, respectively), whereas almost all of the HPV-negative women reported being very relieved or somewhat relieved by their test results (72.7% and 23.0%, respectively).

Our brief examination of HPV knowledge and attitudes towards HPV test results among Thai women had two key findings: i) women's HPV

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Table 1

Knowledge and attitudes towards HPV and HPV test results by HPV status among Thai women in Ubon Ratchathani province in 2014.

	HPV-positive women N=165		HPV-negative women N=165		Chi ² P-value ^a
	No.	%	No.	%	
Age					0.065
30–39	54	32.7	36	21.8	
40–49	65	39.4	83	50.3	
50–59	46	27.9	46	27.9	
HPV Knowledge					
HPV is sexually transmitted					
Yes	59	35.8	28	16.9	< 0.001
No	14	8.5	29	17.6	
Don't know	92	55.8	108	65.5	
HPV infection can progress to cancer					
Yes	70	42.5	64	41.2	0.285
No	7	4.2	14	8.5	
Don't know	88	53.3	83	50.3	
Attitude towards HPV test result					
Very worried	42	25.5	0	–	N/A ^a
Somewhat worried	64	38.8	0	–	
Neither worried not relieved	54	32.7	7	4.3	
Somewhat relieved	5	3.0	38	23.0	
Very relieved	0	–	120	72.7	

^a Chi-square value for attitudes towards HPV result was not calculated due to several cells with zero responses.

knowledge was low even after education by nurses; and ii) HPV-positive test results caused anxiety in most of the women. Our findings showing low HPV knowledge are similar to those from another study among Thai women in Bangkok which found that approximately half of the women did not know that HPV is a sexually transmitted disease or that persistent HPV infection causes cervical cancer (50.6% and 45.2%, respectively) [7]. These findings from Thailand are similar to those from other Asian countries; studies in Chinese women found that only 15–38% of women had ever heard of HPV [8,9] and low HPV knowledge has also been documented in Indian women [10].

Our study found that most of the Thai women with HPV-positive results were very worried or somewhat worried about their results. The adverse psychological consequences of a positive HPV test result including anxiety and stress, self-blame, powerlessness, feeling stigmatized and worried about disclosing to others have been documented in other studies [11,12]. Several studies have also documented the complex association between adverse emotional reactions to HPV-positive test results and HPV knowledge; knowing that HPV is a common infection has been associated with reduced anxiety whereas knowledge of HPV being a sexually transmitted infection has been associated with higher levels of emotional distress [13,14]. This highlights the need for tailoring and piloting the specific HPV messages provided to women to minimize adverse emotional reactions.

The main strength of this assessment is that it was conducted as part of routine cervical cancer screening in a highly compliant population, and captures the challenges in providing HPV education in a middle-income country, like Thailand. The limitations of this assessment include the few questions that were administered to assess HPV knowledge and attitudes towards HPV results, the selection of a random sample of HPV-negative women who were slightly older than the HPV-positive women, and the relatively small subset of women included in this assessment. Additionally, although an educational workshop for healthcare providers was conducted prior to starting the demonstration project, we did not evaluate the HPV education or communication practices of the doctors and nurses during the project. Communication practices of healthcare providers regarding HPV and HPV test results could vary greatly and subsequently determine participants' HPV knowledge, particularly in the context of co-testing with cytology tests [15].

This assessment of HPV knowledge and attitudes toward HPV test results among Thai women highlights the need for communication research and pilot testing of HPV education materials similar to what has been conducted by screening programs in high-income countries [16,17]. Low- and middle-income countries that may be focused on starting or maintaining cervical cancer screening programs may continue to be challenged with refining key messages so that they are culturally-appropriate and minimize adverse emotional reactions.

The findings and conclusion of this presentation do not necessarily represent the official position of the U.S. Centers for Disease Control and Prevention.

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