

Letter to the Editor

HPV Infection among Uygur Women in a Rural Area of Hetian Prefecture, Xinjiang Uygur Autonomous Region, China*

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It is not clear how HPV infection is prevalent among Uygur women in Xinjiang Uygur Autonomous Region, China and whether the distribution of HPV infection is related with cervical intraepithelial neoplasia (CIN) incidence among them. A study including 883 Uygur women were conducted from 2006 to 2007 in Hetian Prefecture, Xinjiang Uygur Autonomous Region, China. Exfoliated cells were collected from the cervix for HPV DNA testing. Cervical samples were tested with liquid-based cytology. A relatively low prevalence of HPV infection, cervical intraepithelial neoplasia and cervical cancer was found in Uygur women. High-risk HPV prevalence was closely related to the severity of CIN in them.

Cervical cancer is the second most common cancer among women worldwide and has the highest cancer mortality among women in developing countries. Of the estimated 600 women that die of cervical cancer each day, 80% are from the developing countries, where access to adequate cancer screening and therapeutic interventions is limited. Sufficient epidemiological evidence has shown that human papillomavirus (HPV) is an essential cause of cervical cancer^[1]. More than 100 subtypes of HPV, including 14 high-risk subtypes, have been identified in almost all patients with cervical cancer^[2-4]. Primary and secondary prevention strategies for cervical cancer have moved towards detection and control of the virus.

In order to understand the potential impact of HPV variation and HPV-based screening, it is important to collect epidemiological data on HPV type-specific prevalence among women from different populations. The International Agency for Research on Cancer (IARC) has carried out surveys in representative samples of women worldwide and

these surveys have revealed wide variation in HPV prevalence and in the relative frequency of HPV subtypes.

Studies in China have also found considerable variability in HPV prevalence. In a high-risk rural area of Shanxi Province, it was revealed that the infection rate of high-risk HPV subtypes in women aged 35-50 years was 23.6%^[5]. Another study showed that 18.4% of women were infected with high risk HPV subtypes in Shenzhen City^[6]. Xinjiang Uygur Autonomous Region is a predominantly Uygur Muslim area where cervical cancer mortality is the highest in China. No population-based data are available on HPV infection among Uygur women in Xinjiang. The present study aimed to determine the prevalence of HPV and the relationship between the HPV infection distribution and cervical intraepithelial neoplasia (CIN) prevalence among Uygur women in a rural area of Hetian Prefecture, Xinjiang Uygur Autonomous Region, China. Data collected for this study were a part of a large-scale multi-center study conducted in 10 provinces of China from May 2006 to April 2007. Uygur women who were aged 15-54 years and married but not pregnant and had no history of pelvic radiation, hysterectomy, previous treatment for cervical cancer, or seropositive for HIV were recruited from May 2006 to April 2007 in a rural area of Hetian Prefecture, Xinjiang Uygur Autonomous Region, China. Exfoliated cells were collected from the cervix for HPV DNA testing. Cervical samples were tested with liquid-based cytology.

Distribution of HPV Subtypes Of the 883 Uygur women, 80 (9.1%) were found to be HPV positive, including 73 infected with a single HPV subtype and 7 infected with multiple subtypes. Of the 88 DNA subtype samples separated from these 80 women with positive HBV, 66 (75.0%) were high-risk

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subtypes, 9 (10.2%) were low-risk subtypes and 13 (14.8%) were other subtypes, which belonged to 24 HPV subtypes. The most common HPV type was HPV-16 followed by HPV-51, HPV-31, HPV-58, HPV-39, HPV-33, and HPV-68 (Table 1).

HPV prevalence in the current study was 9.1%, and the overall prevalence of high-risk subtypes was 6.7%, which is lower than that reported in other regions of China and other countries^[1,5-7]. HPV-16 was the most frequent type of HPV in this population, with a positive rate of 33.8%. The proportion of HPV-16 was somewhat higher in HPV positive women than in other populations^[1-5]. In this study, HPV-31, and HPV-51 were the second and third most common subtypes, which is similar to those found in other international studies. In Central Europe and South America, HPV-18 is the second most frequent type after HPV-16. In Africa, HPV-52 is the second most frequent type and HPV-8 is the third most frequent type. HPV-18 is the fourth most common type after HPV-16, HPV-52, and HPV-58 in Shenyang, China^[8]. However, in the current study, no HPV-18 was detected. Other epidemiological studies have indicated that HPV-18 is less common in patients with cervical cancer in Xinjiang Uygur Autonomous Region, China^[9].

HPV Prevalence Stratified by Cervical Cancer Diagnosis A dose-response relationship between high risk HPV subtypes and CIN was found in this study. Pathology revealed 12 (1.4%) CIN1 and 17 (1.9%) CIN2, 3, and SCC in 6, 9, and 2 patients, respectively. The high-risk HPV prevalence increased with the severity of CIN, cytological diagnosis, and VIA

($P < 0.05$), while no significant association was observed between low-risk HPV prevalence and diagnostic techniques (Table 2). Pathology revealed that the prevalence of CIN and SCC was lower than that reported in another study^[10].

Table 1. Distribution of HPV Subtypes in 88 DNA Subtype Samples Taken from Hetian Prefecture, Xinjiang Uygur Autonomous Region, China

HPV subtypes	Number	HPV Subtypes	Number
High risk (Single)		Others (single)	
HPV-16	25	HPV-40	1
HPV-31	6	HPV-53	3
HPV-33	2	HPV-62	1
HPV-35	2	HPV-66	4
HPV-39	3	hpc6108	2
HPV-45	2	Multiple	
HPV-51	7	HPV-16, 56	1
HPV-52	1	HPV-39, 53	1
HPV-58	4	HPV-39, 68	1
HPV-59	1	HPV-52, 56	1
HPV-68	1	HPV-58, 68	1
HPV-82	1	HPV-83, 84	1
Low risk (single)		HPV-16, 33, 54	
HPV-6	1		
HPV-42	3		
HPV-54	2		
HPV-61	1		

Table 2. HPV Prevalence in 883 Women Stratified by Cervical Cancer Diagnosis in Hetian Prefecture, Xinjiang Uygur Autonomous Region, China

Diagnosis	n=883	High Risk HPV (%)	P	Low Risk HPV (%)	P	Other Subtypes (%)	P
Pathology							
Normal	854	40 (4.7)		10 (1.2)		13 (5.7)	
CIN1	12	8 (66.7)	<0.05	0 (0.0)	>0.05	0 (0.0)	>0.05
CIN2/3/SCC	17	16 (94.1)		1 (5.9)		0 (0.0)	
Cytology							
Normal	741	20 (2.7)		7 (0.9)		11 (1.5)	
ASC-US	104	14 (13.5)	<0.05	2 (1.9)	>0.05	1 (1.0)	>0.05
LSIL	17	11 (64.7)		1(5.9)		0 (0.0)	
HSIL	21	19 (90.5)		1 (4.8)		1 (4.8)	
VIA							
Normal	615	38 (6.2)		8 (1.3)		12 (2.0)	
LSIL	213	16 (7.5)	<0.05	2 (0.9)	>0.05	1 (0.5)	>0.05
HSIL	54	10 (18.5)		1 (1.8)		0 (0.0)	

Note. LSIL: low-grade squamous intraepithelial lesion. HSIL: high-grade squamous intraepithelial lesion. SCC: squamous cell carcinoma. CIN: cervical intraepithelial neoplasia.

Age-Specific HPV Prevalence in Women with Different Cytological Diagnoses

The prevalence of HPV was higher in younger women with their age <35 years than in older women, and was 3.4% in normal women, which was lower than that in other Asian populations. The first peak of HPV prevalence was in younger women with their age <25 years and its second peak was observed in women aged 35-44 years. The highest HPV prevalence was found in normal women at the age of 35-44 years, in HSIL and ACS-US at age of 25-34 years, and in LSIL at the age of 45-54 years (Figure 1). A clear second peak of HPV prevalence has been observed in African, North American and European women at the age of 45 years or older^[7].

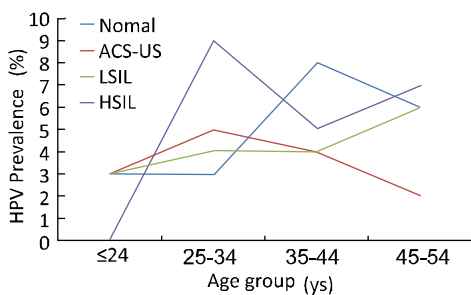


Figure 1. Age-specific HPV prevalence in women with different cytological diagnoses in Hetian Prefecture, Xinjiang Uygur Autonomous Region, China.

In summary, a relatively low prevalence of HPV infection, CIN and cervical cancer is observed in Uygur women in this study. High-risk HPV prevalence is closely related to the severity of CIN. Further studies are needed to analyze the factors, which may contribute to controlling HPV and cervical cancer in this region. The main limitation of the present study is that the participants were enrolled by convenience sampling, which may lead to selection bias and, therefore, the findings may not be applicable to all populations in this area.

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