

The Human Papillomavirus Infection in Men Study: Human Papillomavirus Prevalence and Type Distribution among Men Residing in Brazil, Mexico, and the United States

Anna R. Giuliano,¹ Eduardo Lazcano-Ponce,² Luisa L. Villa,⁴ Roberto Flores,¹ Jorge Salmeron,³ Ji-Hyun Lee,¹ Mary R. Papenfuss,¹ Martha Abrahamsen,¹ Emily Jolles,¹ Carrie M. Nielson,⁶ Maria Luisa Baggio,⁴ Roberto Silva,⁵ and Manuel Quiterio³

¹H. Lee Moffitt Cancer Center and Research Institute, Tampa, Florida; ²Instituto Nacional de Salud Pública, ³Unidad de Investigación Epidemiológica y en Servicios de Salud, Instituto Mexicano del Seguro Social, Cuernavaca, Mexico; ⁴Ludwig Institute for Cancer Research, ⁵Centro de Referência e Treinamento em DST/Aids, São Paulo, Brazil; and ⁶Oregon Health and Science University, Portland, Oregon

Abstract

Male sexual behavior influences the rates of cervical dysplasia and invasive cervical cancer, as well as male human papillomavirus (HPV) infection and disease. Unfortunately, little is known regarding male HPV type distribution by age and across countries. In samples combined from the coronal sulcus, glans penis, shaft, and scrotum of 1,160 men from Brazil, Mexico, and the United States, overall HPV prevalence was 65.2%, with 12.0% oncogenic types only, 20.7% nononcogenic types only, 17.8% both oncogenic and nononcogenic, and 14.7% unclassified infections. Multiple HPV types were detected in 25.7% of study participants. HPV prevalence was higher in Brazil (72.3%) than in the United States (61.3%) and Mexico

(61.9%). HPV16 (6.5%), HPV51 (5.3%), and HPV59 (5.3%) were the most commonly detected oncogenic infections, and HPV84 (7.7%), HPV62 (7.3%), and HPV6 (6.6%) were the most commonly detected nononcogenic infections. Overall HPV prevalence was not associated with age. However, significant associations with age were observed when specific categories of HPV, nononcogenic, and unclassified HPV infections were considered. Studies of HPV type distribution among a broad age range of men from multiple countries is needed to fill the information gap internationally with respect to our knowledge of HPV infection in men. (Cancer Epidemiol Biomarkers Prev 2008;17(8):2036–43)

Introduction

Male human papillomavirus (HPV) infection significantly contributes to infection and subsequent cervical disease in women (1-4). Case-control studies of women with cervical cancer and their husbands have shown that men's sexual behavior affects women's risk of cervical neoplasia, even when controlling for female sexual activity (1-7). In areas with a high incidence of cervical cancer, men's sexual behavior is in itself a risk factor for cervical neoplasia (7). More recently, we have recognized that HPV contributes to men's burden of diseases such as anal, penile, and oropharyngeal cancers and genital warts (8). A growing interest in understanding HPV infection in men necessitates the characterization of these infections in terms of type distribution across countries. Unfortunately, there is a paucity of studies that can shed light on male HPV type distribution in any one country or across countries.

Few HPV studies have been conducted among heterosexual men, with only a subset reporting HPV type distribution and age-specific prevalence estimates (9). No studies to date have included a broad age range of men from multiple countries, which limits our ability to draw conclusions about differences in HPV type distribution among men. For example, observed differences in HPV type distribution in men may be due to differences in tissue tropism for particular HPV types due to anatomic site sampled. Alternatively, there may be due to differences in the populations studied, similar to what we understand for cervical HPV (10). This information is needed to inform future prevention efforts that may influence infection and disease reduction in men and consequently in women. The purpose of the current study was to assess HPV type distribution among men ages 18 years and older recruited from three different countries using a common protocol for sampling and HPV detection, and to evaluate whether HPV detection differs by age and country.

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Requests for reprints: Anna R. Giuliano, H. Lee Moffitt Cancer Center and Research Institute, 12902 Magnolia Drive, MRC 2067D, Tampa, FL 33612. Phone: 813-745-6820; Fax: 813-745-1328. E-mail: Anna.Giuliano@moffitt.org

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Materials and Methods

Men enrolled from March 2005 to December 2006 in the ongoing HPV in Men (HIM) Study were included in this analysis. Participants were recruited from São Paulo, Brazil; Cuernavaca, Mexico; Tampa, Florida; and its surrounding areas. To encourage compliance with