



Original article

Cervical Cancer Screening and Sexual Risky Behaviors among a Population of Hispanic Origin


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ABSTRACT

Objective: To assess the prevalence of cervical cancer screening through Papanicolaou (Pap) test utilization and its association with sexual behaviors among a population-based sample of Hispanic women in Puerto Rico (PR).

Methods: This study was a secondary data analysis of the database of a cross-sectional study of HPV infection in PR (2010–2013; n = 554 women). Pap test utilization (past 3 years) was self-reported and sexual risky behavior was defined as an index that considered the following sexual behaviors: early age of sexual debut (≤ 16 years), 11 or more lifetime sexual partners, and 2 or more sexual partners in the last year. Multivariable logistic regression was used to estimate the magnitude of the association between sexual risk behavior and Pap test utilization, after adjusting for socioeconomic and lifestyles characteristics.

Results: The overall prevalence of Pap test utilization was 78.0%. Pap test screening varied with sexual behavior, with women with none or one risky sexual behavior having higher odds of Pap test utilization in the past 3 years (odds ratio [OR], 1.74; 95% CI, 1.03–2.93) compared with those with two or three risky sexual behaviors. This difference remained marginally significant ($p < .10$) after adjusting for age, educational attainment, smoking status and STI history (OR, 1.72; 95% CI, 0.96–3.08).

Conclusions: The prevalence of cervical cancer screening in this population (78%) is still below *Healthy People 2020* recommendations (93%). Also, women with risky sexual behaviors are less likely to have been screened. Efforts to promote cervical screening programs should focus on these high-risk women as a method for cervical cancer prevention and control.

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Cervical cancer is among the most common female cancers globally, with 528,000 new cases diagnosed and 266,000 deaths occurring worldwide in 2012 ([World Health Organization \[WHO\], 2014](#)). The commonest areas of occurrence are low- to middle-income countries, which include many women living in Latin America and the Caribbean ([WHO, 2014](#)). In the United States, cervical cancer incidence and mortality varies with race/ethnicity. The incidence in Hispanic women is higher (10.9 per 100,000) than among non-Hispanics Whites (7.2 per 100,000; [American Cancer Society, 2014](#)). Mortality is also higher among

Hispanic women (2.9 per 100,000) than among non-Hispanics Whites (2.1 per 100,000); however, African-American and American Indian/Alaska Natives have higher mortality rates (4.2 and 3.5 per 100,000 respectively; [American Cancer Society, 2014](#)). In Puerto Rico (PR), the incidence of cervical cancer is higher than among non-Hispanics Whites living in the United States ([Ortiz et al., 2010b](#)). In this population, cervical cancer is the seventh most commonly diagnosed cancer in women and represents 3.9% of all female cancer diagnoses and 2.3% of all cancer deaths ([Tortolero-Luna et al., 2013](#)). From 2006 to 2010, the median age at diagnosis was 49 years. The incidence rate of cervical cancer among women in PR decreased by an average of 2.1% per year ($p < .05$) from 1987 to 2004, although an increase of 4.5% yearly ($p < .05$) from 2004 to 2011 has been documented ([Traverso-Ortiz et al., 2014](#)). However, the mortality rate decreased by an average of 1.8% yearly ($p < .05$) from 1987 to 2010 ([Tortolero-Luna et al., 2013](#)).

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Persistent infection with human papilloma virus (HPV) 16 and 18 is the main and determining factor in the etiology of most cervical cancer (Priebe, 2013). HPV is transmitted through skin-to-skin contact during sexual activity. Women with risky sexual behaviors may be at high risk of persistent HPV infection, increasing their risk of cervical cancer. High-risk HPV infection is necessary but not sufficient to cause cervical cancer; a large number of women infected with HPV will never develop this cervical disease, meaning that other factors are involved (de Freitas, Gurgel, Chagas, Coimbra, & do Amaral, 2012).

Cervical cancer precancerous lesions are both detectable and treatable. There are several recommended screening tests for cervical cancer, including cytological testing (Pap test), HPV DNA testing for high-risk strains of the HPV virus, and visual inspection of the cervix with acetic acid (Maine, Hurlburt & Greeson, 2011; WHO, 2014). Cytological testing is the most common screening method used in developed countries and is accepted as the gold standard for screening, but it requires trained technicians and laboratories.

Regular cervical cancer screening using Pap test has been effective in reducing the incidence of this disease in developed countries (McGraw & Ferrante, 2014; Sankaranarayanan, 2014). Data from the 2010 National Health Interview Survey (NHIS) indicate that 83% of women aged 21 to 65 years in the United States have had a Pap test within the past 3 years, as recommended by the U.S. Preventive Services Task Force (USPSTF; U.S. Centers for Disease Control and Prevention [CDC, 2012]). Although this seems to be a relative high screening rate, it is below the 90.0% and 93.0% targets established by *Healthy People 2010* and *Healthy People 2020*, respectively. Among women living in the United States, screening varies with socioeconomic position and within racial/ethnic subgroups (CDC, 2012). Some factors that have been associated with not undergoing screening for cervical cancer are advanced age, limited education, and low income (Akers, Newmann & Smith, 2007). Currently, 50% of all cervical cancers cases occur in females who never had a Pap test until they were diagnosed with the disease, and an additional 10% of cases occur in females who have not been screened in the previous 5 years (Saslow et al., 2012). In addition, although HPV vaccines have been introduced and recommended for women aged 9 to 26 years as a method for cervical cancer prevention, vaccinated women still need screening to ensure protection because the vaccine does not protect against all HPV types (Maine et al., 2011; WHO, 2014; Wilyman, 2013).

Studies have documented that risky sexual behavior patterns, although they increase the likelihood of getting HPV and therefore the possible development of cervical cancer, are associated with a better adherence to the recommendations of Pap test screening, possibly owing to the presence of some gynecological symptoms (Aguilar-Pérez, Leyva-López, Angulo-Nájera, Lazcano-Ponce, & Salinas, 2003; Hewitt, Devesa, & Breen, 2002; Puig-Tintoré et al., 2008; Smith et al., 2011). Gynecological symptoms probably motivate women to use health services, where Pap test is offered, which suggest that the main strategy for Pap test use may be opportunistic (Aguilar-Pérez et al., 2003). Studies have also correlated cervical cancer risk indexes with Pap test utilization (Aguilar-Pérez et al., 2003; Hewitt et al., 2002). These studies have observed that high-risk sexual practices and history of sexually transmitted infections (STIs) are associated with increased Pap test use.

In PR, the prevalence of cervical cancer screening during the past 3 years among women aged 18 years or older (71.9%) in 2006 is also below the *Healthy People 2010* and *Healthy People*

2020 targets, and factors including routine medical checkup, high income, and physical activity have been associated with increased use of cervical cancer screening (Ortiz et al., 2010a). Meanwhile, a considerable prevalence of high-risk sexual behaviors was documented in an island-wide population-based study, including early age of onset of sexual activity and multiple sexual partners, being the younger cohorts the ones who showed riskier sexual behaviors (Ortiz et al., 2011). Given the importance of the Pap test in cervical cancer prevention and given the limited amount of data on the association between sexual behaviors and Pap test use, this study aimed to assess the prevalence of Pap smear utilization and its association with sexual risk behaviors in Hispanic women aged 18 to 64 years living in the San Juan metropolitan area (SJM) of PR. Information generated by this study will support the development of targeted cervical cancer prevention and control efforts among high-risk groups in PR and potentially other Hispanic populations.

Materials and Methods

Data Source

Data derived from the *HPV Infection in a Population-based Sample of Women in Puerto Rico* study were used to examine the relationship between risky sexual behavior and Pap test utilization. The parent study was a cross-sectional study based on data obtained from August 2010 to May 2013. This study was approved by the Institutional Review Board of the University of Puerto Rico, Medical Sciences Campus. It was a population-based, computer-assisted, home-based personal interview of a representative sample of noninstitutionalized women aged 16 to 64 years living in the SJM of PR. The sample selection was identified through a complex sampling, which is a cluster probability sampling design with unequal selection probability in four stages of households in the SJM (1,070,719 inhabitants of whom 570,435 were women, according to the Census 2010). The first stage consisted of a systematic random selection of 50 census blocks groups defined by age group and socioeconomic status (household value). In the second stage, a single block was randomly selected from each block group. In the third stage, segments of approximately 12 to 16 consecutive households were numbered in each census block, and one was randomly selected. One eligible female from each selected household was selected randomly for the interview process, controlling the desired number of participants by established age groups (16–34, 35–49, and 50–64 years) in the final stage. Only one woman per household was invited to participate. If more than one woman was eligible in a household, a simple random sampling was used to select one of them. The study population of the parent study included 566 noninstitutionalized women aged 16 to 64 nonpregnant and resident of selected housing. Inclusion criteria also included ever having had sexual intercourse and not having human immunodeficiency virus (response rate, 83.4%).

The current study limited its analysis to women aged 18 to 64 years because by 2010 some guidelines recommended Pap test screening among women aged 18 years and older (Vesco et al., 2011) and study recruitment began in August 2010. Thus, from the total study sample ($n = 566$), six women aged 16 or 17 were excluded from the analysis. Also, another six women who did not provide enough information to determine Pap test utilization or provide incomplete information in response to sexual behavior were excluded. The final size of the study group for this analysis was 554 women (99% of age-eligible women).

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