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Pap smear use in California: are we closing the racial/ethnic gap?

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Abstract

Background. Minority women continue to be disproportionately affected by cervical cancer. Minority population groups at high risk for cervical cancer may be failing to fully comply with screening recommendations. The use of Pap smears among women in California was evaluated to identify ethnic groups at higher risk for noncompliance with cervical cancer screening.

Methods. Cross-sectional analysis of 2001 California Health Interview Survey data. Logistic regression was used to assess the independent contribution of race/ethnicity to the use of Pap smears.

Results. Hispanic (aPR = 1.03, 95%CI 1.02–1.05) and Black (aPR = 1.03, 95% CI 1.001–1.06) women are more likely to report a Pap smear in the past 3 years as compared to White women. Asians were the least likely to report cervical cancer screening despite a more favorable sociodemographic profile. Screening rates varied among Hispanic or Asian subgroups; Mexicans, Vietnamese, Chinese, and South Asians are particularly underserved.

Conclusions. In contrast to the country as a whole, Hispanic women in California are more likely to report a recent Pap smear as compared to White women. However, racial/ethnic disparities in Pap smear use persist; Asian women are the least likely to report cervical cancer screening as compared to any other group.

Keywords: Cervical cancer; Pap smear; Race/ethnicity; Screening

Introduction

The incidence and mortality rates of invasive cervical cancer in the United States have continuously decreased in the past decades [1,2] as the use of Pap smears has increased [3]. However, minority women continue to be disproportionately affected by cervical cancer [1]. Although invasive cervical cancer can be prevented by regular screening [4], the prevalence of Pap smear testing remains relatively low among minority populations such as Hispanics and Asians [5]. In a recent analysis of National Health Interview Survey data, after adjusting for sociodemographic and access factors, only 77.8% of Hispanic and 70.8% of Asian women reported having a Pap smear in the past 3 years as compared to 84.1% of Black and 83.4% of White women [6].

California has more cervical cancer cases than any other state; nearly 14% of all new cases nationwide are diagnosed in women residing in this state [7,8]. A sizeable population and an incidence rate that is higher than the national average are the major contributors to the increased burden [7,8]. According to data from the Surveillance, Epidemiology and End Results program, the age-adjusted cervical cancer incidence rate in California from 1996 to 2000 was 10.5 per 100,000 as compared to 9.5 nationwide [8]. Although the proportion of women in California who report having a Pap smear in the past 3 years or ever is similar to the national rates [3], minority population groups at high risk for cervical cancer may be failing to fully comply with screening recommendations as suggested by prior studies at the national level [5]. However, there is limited research on Pap smear use trends among ethnic groups in California.

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California has one of the largest proportions of minority populations in the country; one in every three state inhabitants is of Hispanic origin and one in nine of Asian descent [9]. These sizable minority populations include several subgroups that may be impacted differently by barriers to cervical cancer screening [10–17]. According to current population trends, within the next 30 years, the racial/ethnic composition of the United States will resemble that of California today [18]. Consequently, identifying subpopulations at risk for lack of cervical cancer screening is an imperative public health goal. In this study, data from the recently created California Health Interview Survey was used to assess the impact of race/ethnicity and Hispanic and Asian subgroups on Pap smear use among women in California.

Methods

Data source and study population

Data from the 2001 California Health Interview Survey (CHIS) was analyzed. The CHIS is a random-digit dial telephone survey of the state of California civilian, non-institutionalized population and was conducted for the first time in 2001. Personnel from CHIS interviewed one randomly selected adult in each of the 55,428 households sampled in the state. The interviews were conducted in six languages: English, Spanish, Chinese (Mandarin and Cantonese dialects), Vietnamese, Korean, and Khmer (Cambodian) according to participants preference or proficiency. The overall response rate for the 2001 CHIS adult survey was 37.7%. For the 2001 CHIS adult survey, the success rate of introducing the survey to a household was 59.2%; yet only 63.7% of them successfully concluded the complete interview for a final response rate of 37.7% [19].

Pap smear use among all eligible women living in California was examined; the sample included women age 18 or older without a hysterectomy. To assess predictors of Pap smear use among Hispanic and Asian subgroups, the two largest minority racial/ethnic groups in the state, two additional subanalyses that included only members of these groups were performed.

All women who self-identified as Hispanic were further categorized into the following subgroups: Mexican, Central American, South American, and other Hispanics. Puerto Ricans, Cubans, Dominicans, and European Hispanics were grouped together under other Hispanics since they constitute a very small percentage of Hispanics in California.

Women in the Asian subanalysis came from the CHIS Random Digit Dialing sample and from a CHIS oversample done to increase the numbers of several Asian ethnic subgroups [20]. Asians included Chinese, Filipino, Japanese, Vietnamese, Korean, and South Asian (Bangladeshi, Indian, Pakistani, Sri Lankan, and more than one of these nationalities) subgroups.

Variables assessed

The outcomes of interest were having a recent Pap smear and ever having one. Women who reported receiving a Pap smear in the previous 3 years were considered to have recent screening according to the United States Preventive Services Task Force guidelines [21]. Since nearly half of the cervical cancers diagnosed in the United States occur in women who have never been screened, ever having a Pap smear was considered particularly relevant [22]. Both outcomes of interest were assessed separately in each population group: all women, Hispanics and Asians.

A multivariable logistic regression model for each outcome of interest was developed. Self-reported race/ethnicity (White, Black, Hispanic, Asian, and "other" race) was the main independent variable in the models for all women. Pacific Islanders were included in the Asian category due to their small numbers. The "other" race category included women who self-identified with more than one race or with a group other than the four described above. Hispanic or Asian subgroups were the main independent variables in the models assessing Pap smear use among these minority groups. White women were the referent group in the main analysis and Mexican or Japanese women were the referents in the subanalyses.

All models adjusted for factors associated with the outcomes of interest in the current literature [10,11,15–17]. These included age (18–30, 31–40, 41–50, and $\geq$ 51), educational attainment (less than high school, high school, or more than high school), annual household income [coded as "low" for income less than two times the Federal Poverty Level (FPL) or "high" for two times or more], having health insurance (any coverage or no insurance) and self-reported health status (excellent, very good or good, and fair or poor).

English language proficiency was also included as a controlling variable in the Hispanic and Asian subgroup models and it contained four categories according to the ability to speak English: "very well", "well", "not well", and "not all".

This research project was approved by the Institutional Review Board at the University of California, Irvine.

Analysis

All analyses were performed with SAS Callable SUDAAN Release 8.0.2 (Research Triangle Institute, Research Triangle Park, NC) to account for the CHIS' complex sampling design and to obtain proper variance estimations. The data analysis was done in four phases. First, descriptive statistics for each study variable were generated. Second, to characterize factors associated with the outcomes of interest, a bivariable analysis using Chi-square tests to compare categorical variables was conducted. Two-tailed P values less than or equal to 0.05 were