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Utilization of Cervical Cancer Screening among Hispanic Immigrant Women in Coastal South Carolina

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Abstract

Objectives—To examine prevalence and correlates of cervical cancer screening utilization and adherence among a growing population of Hispanic immigrant women in coastal South Carolina.

Methods—We conducted a cross-sectional survey of 196 women to assess recency of screening and hypothesized study predictors (health status, beliefs, self-efficacy, having a regular provider, barriers to screening, and trust in providers). Multiple ordinal logistic regressions identified final covariates which would predict recency of screening.

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Compliance with Ethical Standards.

Conflicts of Interest

John Luque declares that he has no conflict of interest. Yelena Tarasenko declares that she has no conflict of interest. Hong Li declares that she has no conflict of interest. Caroline Davila declares that she has no conflict of interest. Rachel Knight declares that she has no conflict of interest. Rosa Alcantar declares that she has no conflict of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants in the study.

Results—Approximately 84% of women were up-to-date with their Pap tests and 47% had received a Pap test in the previous year. In the adjusted analyses, having a regular provider and having a chronic medical condition were significantly associated with recency of Pap test.

Conclusions—Differences in cervical cancer screening for participants were partially explained by psychosocial factors, health status, and individual and structural barriers to healthcare.

Keywords

Cervical cancer screening; Pap test; Hispanics/Latinos; Immigrants

The Hispanic population in South Carolina grew by 148% between 2000 and 2010 and is currently approximately 5.3% of the state's population [1]. As a population with disproportionately low rates of health insurance coverage compared to other racial or ethnic groups, Hispanics face a number of barriers to accessing preventive cervical cancer screening, most notably in states such as South Carolina that did not participate in the Medicaid expansion as stipulated by the Affordable Care Act [2]. Based on the CDC National Center for Health Statistics (NCHS) data for 2013, 72% and 74% of Hispanic women between the ages of 18–44 and 45–64, respectively, were up to date with cervical cancer screening [3]. Another survey study using several cycles of National Health Interview Survey (NHIS) data reported Hispanic women, and especially Mexican women, were less likely to be up to date (79%) compared to non-Hispanic women (83%), and this was due to a number of factors, including insurance status and length of residency in the United States [4]. Lower screening rates are associated with cancer health disparities for Hispanic women [5]. Clinician recommendations for screening and providing culturally appropriate cancer education can impact screening adherence but do not address system level barriers such as inadequate insurance coverage, high costs of health services, or challenges related to availability of Spanish language translation services [6–8].

Despite the cervical cancer screening recommendations endorsed by several professional organizations for a less-frequent screening interval of every three to five years depending on age and screening modality (Pap test only or combined with the HPV DNA test referred to as “cotesting”), there remains confusion over the recommended interval and continued overutilization of screening [9–11]. Moreover, with cotesting, women over 30 years old have the option of extending the screening interval to every five years, potentially adding to patient's concerns about using less frequent screening [12]. In some Latin American countries, the recommendation for cervical cancer screening is an annual Pap test; moreover, some of these countries have suboptimal cytology laboratories, requiring multiple repetitions of screening to achieve accurate results [13]. Therefore, recent Hispanic immigrants to the United States might be more accustomed to receiving annual cervical cancer screening.

In terms of HPV vaccination, national surveys of teenagers (NIS-teen) identified low utilization of the complete 3-shot HPV vaccine (42% 1 HPV vaccine dose) in the US, suggesting there is an education gap regarding the benefits of vaccination [14]. Research has shown some Hispanic parents may have a negative view toward the HPV vaccine in particular because of the cost of the vaccine and the perceived sexual license that the vaccination might provide to adolescent girls [15, 16]. A literature review on HPV vaccine

uptake among ethnic minorities reported that while Latina mothers were more likely to accept HPV vaccination compared to other ethnicities, Latina adolescent girls were actually less likely to complete the vaccine series than non-Hispanic White girls [17]. In sum, Hispanic immigrants are a priority population for targeted cancer screening and HPV vaccine education and prevention.

The primary aim of this exploratory study was to examine Hispanic immigrant women's adherence to cervical cancer screening guidelines in coastal South Carolina. This study also describes these Hispanic immigrant women's attitudes about cervical cancer screening and HPV vaccination to better identify informational needs and potential community-based, cancer screening opportunities and outreach strategies for this growing population in South Carolina.

Methods

The data for this study came from a survey designed to assess utilization of cervical cancer screening by sociodemographic characteristics (e.g., language acculturation, education, socioeconomic status, marital status, and health insurance coverage) and key psychosocial predictors of cancer screening use (e.g., cancer fatalism, cancer beliefs, self-efficacy, barriers to cervical cancer screening, and trust in healthcare providers). The survey was interviewer-administered in Spanish by two bilingual, female, research assistants from January 2 to June 11, 2016. Study data were managed using REDCap (Research Electronic Data Capture) tools hosted at Medical University of South Carolina.[18] REDCap allows for data export to SAS, version 9.4 where the data were analyzed. The majority of survey items were drawn from the National Cancer Institute Health Information National Trends Survey (HINTS) [19].

Study Sample

The survey sample consisted of 196 Hispanic immigrant women between the ages of 21 and 64 years old (pre-Medicare eligible) residing in coastal South Carolina. We decided that a sample size goal of 200 women would be sufficient to conduct statistical analysis and would demonstrate the feasibility of recruiting this hard-to-reach population. Women reporting a history of cancer or those who had a total hysterectomy were excluded from study participation. Participants were recruited from multiple community sites including a flea market, free medical clinics, and churches. No individual identifiers were collected from survey participants. Upon survey completion, participants received a \$10 retail gift card and a Spanish educational brochure on cancer screening and information about low-cost health clinic locations and services. The study was approved by the Medical University of South Carolina (MUSC) Institutional Review Board and the MUSC Hollings Cancer Center Protocol Review Committee. All research participants provided informed consent.

There were a total of 200 Hispanic immigrant women survey participants, which was the survey recruitment goal. After reviewing the surveys, 4 participants were excluded who did not meet inclusion criteria for age and foreign-born status, so the final sample included 196 participants. There were 162 refusals, resulting in a total survey response rate of 55%.

Measures

Through the use of a standardized questionnaire, demographic information was obtained from all study participants. Demographic variables assessed included age, country of origin, year of immigration to the United States, household size, marital status, language acculturation, education, employment status, housing arrangement, and income. The following health-related data were collected: time passed since last cervical cancer screening exam, time passed since last doctor visit, status of any chronic health conditions, tobacco use, knowledge of HPV and the HPV vaccine, HPV vaccination status of participants' children, and family history of cancer. There were also HINTS questions on cancer beliefs, cancer information seeking, and communication with healthcare professionals. There were additional questions from three Likert-type scales. These questions were drawn from a validated 10-item cervical cancer screening self-efficacy scale ($\alpha=0.95$), [20] and a validated 5-item scale on trust in physicians ($\alpha=0.93$), [21] that had been previously validated in Spanish-speaking populations. There was also a 15-item cervical cancer screening barriers scale developed in a previous study with Latina immigrant women using qualitative methods and tested in this study [22]. Pap test adherence was considered to be within 3 years from the date of the survey for all participants [9]. Recency of Pap test was operationalized as having the most recent Pap test 1 year, 1-3 years/guideline-adherent screening, or >3 years ago or never.

Statistical Analysis

Descriptive statistics (proportions, means, standard deviations) were generated for all variables in this study. The χ^2 test and independent samples t-test, were used to test for associations between screening recency and adherence and their hypothesized correlates. As part of the final regression model building, univariate ordinal logistic regression analyses were performed first. This type of regression analyses was used because the proportional odds assumption was not violated. We regressed the recency of screening on hypothesized study predictors one at a time. A p-value less than or equal to 0.15 was used as the initial variable selection criteria. Then, a multiple ordinal logistic regression model with forward variable selection and a significance level of 0.05 was used to identify the final covariates which would have significant impact on the outcome. The final adjusted covariates in the model were two binary variables (presence of a chronic condition and having a regular healthcare provider). Adjusted prevalences of recency of Pap test by the above-mentioned covariates are reported as average adjusted probabilities or predictive margins [23]. The multicollinearity was not a concern given satisfactory variance inflation factors ranging from 1.05 to 1.24. The significance level was set at $\alpha = 0.05$. All tests were two-tailed.

Results

Table 1 reports participants' sociodemographic and health characteristics of the 196 women included in the analysis. Participants had mean age of 38.7 years (SD = 9.3) and had been living in the United States for an average of 13.4 years (SD = 7.0). There was low English language acculturation with a mean of 0.9 (SD = 0.4), out of a possible high score of 4, indicating a preference for speaking and reading in the Spanish language. The majority of

participants were married or living with a partner (82%), originally from Mexico (70%), unemployed (71%), and uninsured (84%).

In terms of screening, 47.4% had a Pap test in the last year, 37.3% had the test between one and three years ago, 12.8% had the test over three years ago and 2.6% had never had a Pap test. Women originally from Mexico reported a lower percentage of cervical cancer screening receipt in the last three years (83%) compared to women from other Latin American countries (88%). Other most frequent countries of origin reported by our participants included Guatemala (7%), Honduras (6%), and Colombia (5%). Only 24 (12%) participants had purchased health insurance since October 2013 after the new healthcare law was passed. Half of participants reported having a regular healthcare provider, and for self-reported health status, 40% of participants rated their health as either “fair” or “poor.” Less than half (44%) had someone in their immediate family who had been diagnosed with cancer. The majority of women reported having discussions with their doctors about whether they needed a Pap test (67%). The proportion of participants who were overweight or obese according to their body mass index (BMI) was 76%. More than 50% of participants reported at least one chronic condition, such as diabetes, hypertension, heart conditions, lung disease, or arthritis. More details on the distribution of sociodemographic and health-related characteristics overall and by recency of cervical cancer screening are reported in Table 1.

Cervical cancer/HPV knowledge

Table 2 reports knowledge about HPV and cervical cancer. Slightly more than one-third reported having a discussion about the HPV vaccine (37%). The majority of women had heard of both HPV (75%) and the HPV vaccine (51%), and believed HPV was a sexually transmitted disease (67%); however, few (3%) understood an HPV infection would usually go away on its own without treatment. For women with children in the eligible age range to receive the HPV vaccine, 34% reported their children had actually received the vaccine. For the 36 Hispanic women who had children between 11–15 years old, 60 out of 110 (55%) of these children had reportedly received at least one dose of the HPV vaccine.

Cancer Beliefs, Cancer Information Seeking, Communication with Healthcare Professionals, Self-Efficacy, Barriers, and Trust in Physicians

Table 3 reports responses to adapted HINTS questions on several domains and reports results from the independent samples t-test for these continuous variables comparing women who were up to date compared to women who were past due for screening. Under the questions about cancer beliefs, there was moderate average agreement around negative beliefs toward receiving a cancer diagnosis. For example, participants agreed there were many confusing recommendations around cancer prevention and everything seemed to cause cancer. The majority of participants (62%) believed that they would encounter barriers to obtaining follow-up care in the event of a cancer diagnosis. Regarding lifetime risk of getting cancer and cancer worry, the average responses leaned towards “unlikely” in terms of risk and “slightly worried” about the possibility of being diagnosed with cancer. For the domain of cancer information seeking, responses indicated there was moderate disagreement with the statements that it was difficult or frustrating to obtain and understand cancer information. Participants expressed confidence in being able to get cancer information or

advice. They also reported more confidence in the veracity of information received from doctors, the internet, government health agencies, charitable organizations, or religious organizations. In response to questions about communication with healthcare professionals, participants were largely satisfied with their ability to ask questions, receive attention, and be involved in their healthcare decisions. Moreover, participants positively rated the quality of healthcare they received in the last year.

As reported in Table 3, the cervical cancer self-efficacy scale had a mean value of 1.4 (SD = 0.5), indicating high self-efficacy for screening with most values ranging between “sure” (scored “2”) and “very sure” (scored “1”). The cervical cancer barriers scale in this study produced good internal consistency ($\alpha=0.88$). The mean value for the cervical cancer screening barriers scale was 4.1 (SD = 0.8), indicating moderately low endorsement of the list of barriers. The barriers receiving the highest endorsement were not having health insurance (3.0), cost (3.2), not knowing the cost (3.3), not having a regular doctor (3.4), and not speaking English (3.5). In response to an open-ended question about barriers to follow-up care, most cited lack of health insurance and financial resources as the major barriers. For the trust in physicians scale, the mean value was 2.1 (SD = 1.0) indicating a moderate level of trust.

Recency of Screening and Its Correlates

In the adjusted analyses, having a regular medical provider and having a chronic medical condition were each significant risk factors for forgoing a Pap test as shown in Table 4. More specifically, almost 13 percentage points more women without a regular healthcare provider had their last Pap test more than 3 years ago or never than women with a regular healthcare provider (21.4% vs. 8.6%, $P < 0.001$). The adjusted prevalence of guideline-adherent screening was 30.6% among women with a regular healthcare provider compared to 42.4% among women without a regular healthcare provider ($P < 0.001$). However, significantly more women with a healthcare provider reported having their more recent Pap in the last year (60.8%) than women without a healthcare provider (36.2%; $P < 0.001$). The adjusted prevalence of having the most recent Pap test 1–3 years ago and more than 3 years ago or never was 6.9 and 8.4 percentage points higher, respectively, among women who reported having a chronic condition compared to those who did not (P 's < 0.001). However, the adjusted probability of having a recent Pap test in the last year was 15.2 percentage points higher among women without a chronic condition than with one ($P < 0.001$).

Discussion

According to our findings, 84% of Hispanic immigrant women were guideline adherent with their Pap tests, and 47% had received a Pap test in the previous year. This is a relatively high percentage of women reporting receiving guideline-adherent screening given the low rates of health insurance in our sample and what is known about lower rates of cancer screening among foreign-born women in the United States [24, 25]. Health insurance is an important predictor for adherence to cervical cancer screening because insurance offsets some screening costs. While only 16% of participants were insured, many women knew they could receive low cost or free Pap tests at a local health department or free clinic and were

also informed of these resources through our educational brochure. Moreover, because our study was in an urban area, there are more options for low-cost screening options and follow-up care than rural areas, where transportation barriers are more cumbersome and affordable healthcare options are more limited [6, 26].

In our sample, 15% of participants were either 3 years overdue for a Pap test or had never received the test, indicating there is a high risk group in this population where barriers outweigh the benefits of screening. We tested a novel cervical cancer screening barriers scale, and it showed good internal consistency. The barriers associated with health insurance, costs, and language were ranked highest among our study participants and are consistent with other studies of screening barriers for Hispanic women [27, 28]. Across the nation, 39% of Hispanic immigrants lack health insurance compared to 17% of those born in the US, and in South Carolina, 46% of Hispanics lack health insurance [29]. In our participant sample, only 16% had health insurance. While lack of health insurance is associated with less preventive care, such as cancer screenings, it also is associated with poor outcomes for people suffering from chronic health conditions, and eventual emergency room costs for these patients are much more expensive [30].

Our study also identified other factors besides insurance which were associated with not being up to date with screening such as not knowing where to go for screening, not having a regular provider, and psychosocial factors (e.g., attitudes toward screening results and self-efficacy)[31]. Self-efficacy is an important variable for intervention programs to target and measure changes to improve cervical cancer screening adherence [20, 6]. The participants in our study were able to identify free and low-cost providers to receive their Pap exams through family planning services at the health department for example.

The percentage of women who had never been screened is similar to another study which used NHIS data and reported 11% of Mexican immigrant women in their sample had never had a Pap test [24]. Moreover, this same study found that women with <25% of their life spent in the United States had significantly higher rates of never having received screening compared to women with a longer duration of US residence (19% vs. 10%)[24]. While our study explored this covariate, it was not a significant predictor in our multivariable models, despite the same pattern of differences between women with varying lengths of time living in the United States and not being up to date or never having received screening (24% of women <25% life in the US vs. 13% of women ≥25% life in the US). We did not collect information on citizenship status, so depending on a women's immigration status and qualifications for government programs, there might have been additional factors, such as perceived discrimination in healthcare, that could have affected women's access to cervical cancer screening or other healthcare services [32, 33].

In terms of the relationship between screening and having a medical home, significant differences in guideline-adherent cervical cancer screening were identified between women who did and did not have a regular healthcare provider. For safety net patients, lack of access to transportation and not having a regular provider have been found to be associated with a late stage cervical cancer diagnosis [34]. Therefore, addressing these critical barriers to access and connecting patients with a medical home is a priority for uninsured, foreign-born

patients, who oftentimes cannot afford the treatment costs, thus explaining their attitude of not wanting to know about a positive cancer screening test [35].

The HPV vaccine question indicated that 55% of mothers with children in the 11 to 15 year old range had received at least one dose of the vaccine. In South Carolina, the latest NIS-Teen data report that 53.7% of girls and 34.3% of boys aged 13–17 years old had received at least one dose of the HPV vaccine [36]. Therefore, the vaccination rates combined with the data on knowledge of the HPV vaccine by mothers reveal that misconceptions about the vaccine persist, and continued education and messages about the benefits of vaccination are needed.

A study using 2007 HINTS data indicated most women (65%) in the United States received cervical cancer screening annually, despite guidelines that recommend less frequent screening [37]. Based on more recent HINTS data, the percentages of women receiving annual screening fell to 46% in 2014 and 47% in 2015 suggesting that providers may be communicating with patients to engage in less frequent screening [19]. According to the same HINTS data, 74% of all women in 2014 and 77% in 2015 were up to date (<3 years) with cervical cancer screening. Moreover, 80% of Hispanic respondents in 2014 and in 2015 were up to date. Our findings followed a similar trend as the national data with 47% of Hispanic women receiving annual screening and 85% of Hispanic women reporting being up to date. Our results indicate that provider communication even with hard-to-reach uninsured populations may be contributing to less frequent annual screening despite potential language barriers.

We reported women with at least one chronic condition were less likely to be up to date with cervical cancer screening [38]. In our study, we combined five different chronic conditions into one summary variable due to sample size considerations for our multivariate analysis; however, other studies have found variations in adherence to breast and cervical cancer screening depending on the specific chronic condition [38]. The multivariate results identified a complicated relationship between recency of screening and having a chronic health condition, since while a person may have more contact with healthcare providers due to a health condition, receiving preventive screenings is not always prioritized by these patients.

There were several study limitations. Since this was a cross-sectional survey, causation could not be determined. In addition, the primary study outcome was based on self-report. For this exploratory study, confirmation of screening receipt was beyond the scope of the research. Recency of screening might have been over-reported because of response bias. Second, the convenience sampling method used in flea markets, churches, and free clinics limits the generalizability of study findings. Despite these limitations, the main strength of this study was the community-based outreach strategy to reach Hispanic immigrant women who were largely uninsured and do not often participate in research.

In conclusion, our exploratory study provides strong pilot data for future research. We tested the first iteration of a cervical cancer screening barriers scale that was the culmination of previous qualitative work to develop the items, and the scale exhibited good internal

consistency. Many of the items we used in the survey were adapted from HINTS, so the questions produced reliable data that can be compared with the national survey. While the survey approach has strengths, we are currently conducting a qualitative study to more thoroughly explore barriers to healthcare for uninsured Hispanic immigrant women that cannot be captured in a survey, such as how they prioritize healthcare spending, cultural beliefs toward disease prevention and treatment, and perceived discrimination in healthcare encounters. In addition, our results will inform interventions to increase rates of cervical cancer screening in Hispanic immigrant populations.

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Sociodemographic Characteristics and Perceptions of Hispanic Immigrant Women Reporting Most Recent Pap Test by Time Interval, 2016

Table 1

Characteristics	Total (n) ^a	Pap 1 yr., %	Pap >1–3 yrs., %	Pap 3 yrs. or no Pap %	P-values
Overall	196	47.4	37.3	15.4	–
Age group (years)					
21–30	37	56.8	32.4	10.8	0.535
31–45	118	45.8	39.8	14.4	
46–64	41	43.9	34.1	22.0	
Marital status					
Single/Other	36	50.0	27.8	22.2	0.287
Married/living with a partner	160	46.9	39.4	13.8	
Education					
<11 years	83	38.6	42.2	19.3	0.137
12 years or HS	70	57.1	34.3	8.6	
Some college, tech, or higher	43	48.8	32.6	18.6	
Employed					
Yes	56	46.4	39.3	14.3	0.924
No	140	47.9	36.4	15.7	
Speak English					
Very well or well	53	47.2	35.8	17.0	0.917
Not well or not at all	143	47.6	37.8	14.7	
Country of origin					
Mexico	137	46.7	36.5	16.8	0.679
Other Latin American country	59	49.2	39.0	11.9	
Proportion of Life Spent in U.S.					
<25%	37	51.4	24.3	24.3	0.089
25%	156	46.8	40.4	12.8	
BMI ^b					
Normal weight, 18.5–24.9	45	51.1	35.6	13.3	0.763
Overweight, 25.0–29.9	69	42.0	39.1	18.8	

Characteristics	Total (n) ^a	Pap 1 yr., %	Pap >1- 3 yrs., %	Pap 3 yrs. or no Pap %	P-values
Obese, 30.0	74	48.6	39.2	12.2	
Health insurance coverage					
Yes	31	45.2	41.9	12.9	0.799
No	164	48.2	36.0	15.9	
Have a regular provider					
Yes	98	55.1	37.8	7.1	0.004
No	97	40.2	36.1	23.7	
Frequency of provider visits					
None	52	17.3	51.9	30.8	<0.001
1 time	48	54.2	33.3	12.5	
2 times	39	61.5	25.6	12.8	
3 times	55	61.8	34.5	3.6	
History of smoking cigarettes					
Yes	29	48.3	31.0	20.7	0.606
No	167	47.3	38.3	14.4	
Self-reported health status					
Excellent/very good	38	52.6	39.5	7.9	0.268
Good	79	51.9	35.4	12.7	
Fair/poor	79	40.5	38.0	21.5	
Current chronic health condition ^c					
Yes	81	39.5	45.7	14.8	0.090
No	113	54.0	31.0	15.0	
Depression or anxiety disorder					
Yes	59	42.4	37.3	20.3	0.395
No	137	49.6	37.2	13.1	
Family history of cancer					
Yes	86	38.4	41.9	19.8	0.063
No	110	54.5	33.6	11.8	
Looked for cancer information					
Yes	128	49.2	38.3	12.5	0.299

Characteristics	Total (n) ^a	Pap 1 yr., %	Pap >1– 3 yrs., %	Pap 3 yrs. or no Pap %	P-values
No	67	43.3	35.8	20.9	
Chances of getting cancer					
Very unlikely/unlikely	106	51.9	31.1	17	0.467
Neither unlikely nor likely	29	37.9	48.3	13.8	
Very likely/likely	59	45.8	40.7	13.6	
Confidence in taking good care of own health					
Completely/very confident	120	63	40	17	0.330
Somewhat confident	38	34.2	50.0	15.8	
Little/not confident	38	44.7	36.8	18.4	
Worry about getting cancer					
Slightly/not at all	115	43.5	41.7	14.8	0.590
Somewhat	42	52.4	33.3	14.3	
Moderately/extremely	39	53.8	28.2	17.9	
Heard of HPV					
Yes	146	49.3	37.7	13.0	0.260
No	49	40.8	36.7	22.4	
Doctor has told you that you could choose to have the Pap test					
Yes	131	46.6	40.5	13.0	0.278
No	65	49.2	30.8	20.0	

Note: BMI = body mass index.

^aTotal may not be 196 because of missing data.

^bAccording to recommendations by the National Heart, Blood, and Lung Institute.[39]

^cDerived variable from 5 different types of chronic conditions including: diabetes, high blood pressure, heart conditions, chronic lung disease (or asthma, emphysema, chronic bronchitis), and arthritis or rheumatism

Table 2**Cervical Cancer Screening and HPV Vaccine Knowledge and Adherence, 2016**

Characteristics	Women (<i>n</i> = 196), <i>N</i> (%)
Do you think HPV is a sexually transmitted disease?	
Yes	132 (67%)
No, Not Sure, or had not heard of HPV	64 (33%)
Do you think HPV requires medical treatment or will usually go away on its own without treatment?	
Requires medical treatment	160 (97%)
Will usually go away on its own	5 (3%)
Have you ever heard of the cervical cancer vaccine or HPV shot?	
Yes	101 (51%)
No	95 (49%)
In the last 12 months, has a doctor or health care professional recommended that you or someone in your immediate family get an HPV shot or vaccine? (Mothers with children 9–27 yrs.)	
Yes	61 (36%)
No	110 (64%)
Children (11–15 yrs.) have received the HPV shot	
Yes	60 (55%)
No	50 (45%)

Note. Missing values or deselected cases are not included in count data.

Table 3

Item Responses for Cancer Beliefs, Information Seeking, Communication with Healthcare Professionals, and Summary Scales for Cervical Cancer Self-Efficacy, Cervical Cancer Barriers, and Trust in Physicians with Screening Adherence, 2016

Characteristics	Pap 3 yrs. Mean $\pm$ SD	Pap >3 yrs. Mean $\pm$ SD	P-values
<i>Cancer Beliefs^a</i>			
It seems like everything causes cancer	2.7 $\pm$ 1.0	2.8 $\pm$ 1.0	0.511
There's not much you can do to lower your chances of getting cancer	3.0 $\pm$ 0.9	3.3 $\pm$ 0.9	0.093
There are so many different recommendations about preventing cancer, it's hard to know which ones to follow	2.2 $\pm$ 1.0	2.5 $\pm$ 1.0	0.151
In adults, cancer is more common than heart disease	2.2 $\pm$ 0.9	2.6 $\pm$ 1.0	0.093
I'd rather not know my chance of getting cancer	3.5 $\pm$ 1.1	3.8 $\pm$ 0.7	0.044 *
<i>Cancer Fatalism and Worry</i>			
How likely are you to get cancer in your lifetime? ^b	2.7 $\pm$ 1.2	2.6 $\pm$ 1.1	0.761
How worried are you about getting cancer? ^c	2.4 $\pm$ 1.2	2.5 $\pm$ 1.0	0.678
<i>Cancer Information Seeking^a</i>			
It took a lot of effort to get the information you needed	3.2 $\pm$ 1.1	3.1 $\pm$ 1.2	0.854
You felt frustrated during your search for information	3.3 $\pm$ 1.0	3.0 $\pm$ 1.1	0.417
You were concerned about the quality of the information	2.6 $\pm$ 1.1	2.6 $\pm$ 1.3	0.866
The information you found was hard to understand	3.1 $\pm$ 1.1	3.3 $\pm$ 1.1	0.551
<i>Communication with Healthcare Professionals^d</i>			
How often did they give you the chance to ask all the health-related questions you had?	1.5 $\pm$ 0.8	2.4 $\pm$ 1.2	0.012 *
How often did they give you the attention you needed to your feelings and emotions?	1.6 $\pm$ 0.9	2.1 $\pm$ 1.0	0.042 *
How often did they involve you in decisions about your healthcare as much as you wanted?	1.6 $\pm$ 0.8	2.4 $\pm$ 1.0	<0.001 *
How often did they make sure you understood the things you needed to do to take care of your health?	1.4 $\pm$ 0.7	1.6 $\pm$ 1.1	0.345
How often did they explain things in a way you could understand?	1.2 $\pm$ 0.6	1.7 $\pm$ 0.9	0.074
How often did they spend enough time with you?	1.4 $\pm$ 0.8	1.9 $\pm$ 1.1	0.027 *
How often did they help you deal with feelings of uncertainty about your health or healthcare?	1.6 $\pm$ 0.9	2.2 $\pm$ 1.3	0.093
In the past 12 months, how often did you feel you could rely on your doctors, nurses, or other healthcare professionals?	1.7 $\pm$ 0.8	2.0 $\pm$ 1.0	0.152
<i>Quality of Healthcare</i>			
Overall, how would you rate the quality of healthcare you received in the past 12 months? ^e	2.1 $\pm$ 1.0	2.7 $\pm$ 1.0	0.062
<i>Cervical Cancer Self-Efficacy Scale^f</i>	1.3 $\pm$0.4	1.6 $\pm$0.8	0.073
<i>Cervical Cancer Screening Barriers Scale^g</i>	4.1 $\pm$0.8	3.8 $\pm$0.8	0.054
<i>Trust in Physicians Scale^g</i>	2.0 $\pm$0.9	2.3 $\pm$1.2	0.137

Notes.

* p < 0.05.

^a Scale response categories for these groups of questions are: 1 = "strongly agree"; 2 = "somewhat agree"; 3 = "somewhat disagree"; 4 = "strongly disagree".

^b Scale response categories for this item are: 1 = “very unlikely”; 2 = “unlikely”; 3 = “neither unlikely or likely”; 4 = “likely”; 5 = “very likely”

^c Scale response categories for this item are: 1 = “not at all”; 2 = “slightly”; 3 = “somewhat”; 4 = “moderately”; 5 = “extremely”

^d Scale response categories for this group of questions are: 1 = “always”; 2 = “usually”; 3 = “sometimes”; 4 = “never”.

^e Scale response categories for this item are: 1 = “excellent”; 2 = “very good”; 3 = “good”; 4 = “fair”; 5 = “poor”.

^f Scale response categories for this scale are: 1 = “very sure”; 2 = “sure”; 3 = “neutral”; 4 = “unsure”; 5 = “very unsure”.

^g Scale response categories for these scales are: 1 = “strongly agree”; 2 = “somewhat agree”; 3 = “neutral”; 4 = “somewhat disagree”; 5 = “strongly disagree”. For the first item in the Trust in Physicians Scale, the values are reverse coded to compute the summary score.

Values in **bold** represent summary scale scores.

Table 4

Recency of Pap Test by Selected Characteristics, 2016

Characteristics	<i>Pap 1</i> , % ($\pm$ SD)	<i>Pap >1- 3</i> , % ($\pm$ SD)	<i>Pap 3 or no Pap</i> , % ($\pm$ SD)
Have a regular provider			
Yes	60.8 (18.6) ^a	30.6 (12.0) ^b	8.6 (8.1) ^c
No	36.2 (18.5) ^a	42.4 (9.0) ^b	21.4 (14.4) ^c
Current chronic health condition			
Yes	39.8 (20.3) ^a	40.3 (9.6) ^b	20.0 (15.6) ^c
No	55.0 (21.1) ^a	33.4 (12.2) ^b	11.6 (21.1) ^c

Notes. A multiple ordinal logistic regression model with forward variable selection and alpha = 0.05 were used to identify the final covariates that had a significant statistical impact on recency of screening.

Same superscripts mark statistically significant differences in adjusted prevalence of Pap test use by selected characteristics. P< 0.05 based on paired t-tests.