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Lack of Awareness of Human Papillomavirus Testing Among U.S. Women

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Abstract

Introduction: National surveys provide important information for public health planning. Lack of preventive screenings awareness may result in unreliable survey estimates. This study examines women's awareness of receiving human papillomavirus testing using three national surveys.

Methods: In 2022, self-reported data analyses on human papillomavirus testing status among women without hysterectomy were conducted from the 2020 Behavioral Risk Factor Surveillance System (BRFSS) (n=80,648, aged 30–64 years), the 2019 National Health Interview Survey (NHIS) (n=7,062, aged 30–65 years), and the 2017–2019 National Survey of Family Growth (n=2,973, aged 30–49 years). Associations between human papillomavirus awareness status (*yes*, *no*, *don't know*) and demographic characteristics were examined with generalized multinomial logistic model to generate adjusted prevalence ratios. Adjusted risk differences were assessed with the t-test for the *Don't know* answer.

Results: A total of 21.8% or >12 million in the study population of women in the BRFSS, 19.5%, (>10.5 million women) in the NHIS, and 9.4% in the National Survey of Family Growth responded *don't know* to human papillomavirus testing awareness status question. Women aged 40–64 years in BRFSS and 50–65 years in NHIS were more likely to answer *don't know* than those aged 30–34 (p<0.05 and p<0.01, respectively). Non-Hispanic White women were more likely to answer *don't know* than non-Hispanic Native Hawaiian/Pacific Islander, non-Hispanic Black, non-Hispanic Asian, and Hispanic women in BRFSS and non-Hispanic Black women in

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SUPPLEMENTAL MATERIAL

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NHIS (adjusted prevalence ratio range=0.60–0.78; $p<0.001$ and adjusted prevalence ratio=0.72; $p<0.001$, respectively).

Conclusions: One in five women was unaware of her human papillomavirus testing status, and awareness was lower among older and non-Hispanic White women. The awareness gap may affect the reliability of estimated human papillomavirus testing population uptake using survey data.

INTRODUCTION

Current cervical cancer screening recommendations for women aged 30–65 years by the U.S. Preventive Services Task Force (2018) and the American College of Obstetricians and Gynecologists (2021) include Pap test alone, human papillomavirus (HPV) testing alone, or both (cotesting).[1-3] In 2020, the American Cancer Society recommended moving toward HPV testing alone as the preferred screening test.[4] A recent study in a nationwide convenience sample of women with private health insurance from 2013 to 2019 showed that cotesting increased in women aged 30–65 years, whereas HPV testing alone was rarely used.[5] National health surveys are critical sources for monitoring the nation's cancer screening coverage and guiding *Healthy People* objectives.[6] However, self-reported surveys may be limited in providing the most accurate information and may not yield reliable estimates of cervical cancer screening, especially if women are not aware of their testing status.[7] In this study, we estimate the prevalence of women's responses to HPV testing awareness status questions and identify the demographic characteristics associated with these responses.

METHODS

Self-reported data on women were analyzed using the 2020 Behavioral Risk Factor Surveillance System (BRFSS) (n=80,648, aged 30–64 years),[8] the 2019 National Health Interview Survey (NHIS) (n=7,062, aged 30–65 years),[9] and the 2017–2019 National Survey of Family Growth (NSFG) (n=2,973, aged 30–49 years).[10] Overall response rates were 47.9% for BRFSS, 59.1% for NHIS, and 65.3% for NSFG. Excluded from the analyses were women reporting hysterectomy (18.1% [BRFSS], 17.7% [NHIS], and 8.4% [NSFG]) and women having had cervical cancer without hysterectomy (<1%) in NHIS and NSFG. Questions about women's Pap and HPV testing experiences are in Appendix Table 1 (available online).

In 2022, unadjusted and adjusted associations between HPV testing awareness status (answers *yes*, *no*, or *don't know*) and demographic characteristics were examined. The analyses varied by survey questions, sample sizes, survey years (Appendix Tables 1 and 2, available online), and available characteristics (age, race or ethnicity, education, region, health insurance, and family income as a ratio to poverty threshold). Therefore, there was no intention to compare the surveys with one another. Percentages were weighted to each survey's study population.

Associations for the adjusted analyses were performed with generalized multinomial logistic model to account for the 3-level HPV testing awareness status outcome. Adjusted prevalence ratio (APR) for each subcategory was generated,[11] and adjusted risk differences

(pairwise comparisons) were calculated through predictive margins proportions. Statistical significance was assessed with *t*-test, and *p*-values were presented only for the response *don't know*. All analyses were performed with SAS-callable SUDAAN, Version 10 (Research Triangle Institute, Research Triangle Park, NC), to account for the complex structure of the data and nonresponse.

RESULTS

More than 94% of women in all surveys responded that they had had a Pap test. However, only 49.3%, 36.6%, and 56.8% of women in BRFSS, NHIS, and NSFG, respectively, responded that they had received HPV testing (Appendix Table 2, available online). Moreover, 21.8% in BRFSS and 19.5% in NHIS (representing >12 million and 10 million U.S. women, respectively) and 9.4% in NSFG were unaware of their HPV testing status. The percentage of *don't know* ranged from 16.2% for women aged 30–34 years to 29.2% for women aged 60–64 years in BRFSS (Table 1) and from 16.2% for women aged 30–34 years to 22.5% for those aged 50–54 years in NHIS (Table 2). The percentages of *don't know* in BRFSS varied from 13.0% among non-Hispanic (NH) Native Hawaiian/Pacific Islander, 15.2% among Hispanic women, and 15.6% among NH Black women to 25.6% among NH White women. In NHIS, only the percentage of NH Black women (14.5%) was lower than that of NH White women (20.9%). In BRFSS, the West had the lowest percentage (18.8 %) of women responding *don't know* than all other regions. Controlling for all other variables in each survey's model, the analyses showed that women aged 40–44 years or older (APR=1.17, 95% CI=1.04, 1.30) in BRFSS and those 50–54 years or older (APR=1.35, 95% CI=1.11, 1.66) in NHIS were significantly more likely than women aged 30–34 years to respond *don't know* to the HPV screening awareness status question ($p<0.01$ for each survey). NH Native Hawaiian/Pacific Islander women (APR=0.60, 95% CI=0.39, 0.91), NH Black women (APR=0.63, 95% CI=0.56, 0.70), Hispanic women (APR=0.64, 95% CI=0.57, 0.72), and NH Asian women (APR=0.79, 95% CI=0.66, 0.95) in BRFSS and NH Black women in NHIS (APR=0.72, 95% CI=0.58, 0.88) had significantly lower *don't know* percentages than NH White women ($p<0.01$). Education level was not associated with *don't know*. In BRFSS, women in the West were less likely to respond *don't know* to the HPV testing awareness status question than women in all other regions ($p<0.01$). No significant associations with *don't know* response of HPV testing awareness and demographic characteristics were found in NSFG (Appendix Table 3, available online).

DISCUSSION

Almost all women in the 3 surveys were aware of their Pap test status; in contrast, about 1 in 5 or >12 million U.S. women represented in BRFSS and >10 million represented in NHIS were unaware of their HPV testing status. Despite the increasing adoption of HPV testing for cervical cancer screening, national gaps in women's awareness should be communicated to researchers using national health survey data to estimate HPV testing uptake for cervical cancer screening.

Interestingly, race/ethnicity minority women were less likely than NH White women to respond *Don't know* to the HPV testing awareness status question. This finding might

partly explain the difference in women's responses between the West and all other regions. Additional BRFSS data analysis of race or ethnicity by region showed that the West had the lowest percentage of NH White women (49.3%) and the highest total percentage (45.5%) of Hispanic, NH Asian, and NH Black women (Appendix Table 4, available online).

Self-reported responses could be influenced by recall bias, especially among older women, and by low health literacy and social desirability.[12] In addition, perhaps low HPV testing awareness occurs because Pap and HPV test specimen collections are similar. A recent study with >230,000 women participants revealed the challenge of reporting cervical cancer screening estimates where authors report having to exclude >25% of the participants who were unsure about receiving up-to-date HPV tests from the analysis.[7]

Possible interventions for improving HPV testing awareness could be clearer communication between provider and patient about the test administered. For example, patient reminders that have been found to increase clinic-level rates of cervical, breast, and colorectal cancer screening[13] might also provide opportunities to improve patients' health literacy by addressing the purpose and importance of the HPV test. National and local cervical cancer screening campaigns could include education about HPV testing to increase women's awareness and knowledge about the test,[14] providing an informative statement related to HPV infection and HPV testing in surveys may help women answer related questions, and future studies need to consider the large proportion of women who are not aware of having had HPV testing.

Limitations

This study has several limitations. First, nonresponse bias might be a survey limitation. However, a *don't know* response would be less likely to be affected by this bias. Second, the NSFG survey had no statistically significant results, possibly because it was limited to adults aged up to 49 years. Finally, currently, there is no registry to compare the results with. However, results from medical claims database were used to assess HPV screening.

CONCLUSIONS

These results from 2 large national surveys reveal a national problem in estimating HPV testing uptake in the U.S. One in 5 U.S. women eligible for cervical cancer screening was not aware of her past HPV testing status, and awareness was lower among older and NH White women. Future studies of HPV test uptake using self-reported surveys need to take the *don't know* answer into consideration because ignoring it may lead to unreliable estimates.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Unadjusted (Weighted %) and Adjusted (APR) Associations Between Demographic Characteristics and Awareness of HPV Testing Status, BRFSS 2020

Variable	Sample size (*n*)	*Yes* (%, 95% CI), unadjusted	*No* (%, 95% CI), unadjusted	*Don't know* (%, 95% CI), unadjusted	*Yes* (APR, 95% CI), adjusted	*No* (APR, 95% CI), adjusted	*Don't know* (APR, 95% CI), adjusted	*p*-value[a] (*Don't know*)
Age group (years)								
30–34	9,637	60.0 (58.0, 62.0)	23.8 (22.0, 25.7)	16.2 (14.8, 17.6)	ref	ref	ref	ref
35–39	10,774	57.3 (55.2, 59.5)	24.9 (22.9, 27.0)	17.8 (16.3, 19.3)	0.95 (0.91, 1.00)	1.06 (0.95, 1.19)	1.10 (0.97, 1.24)	0.1328
40–44	10,877	56.6 (54.6, 58.6)	24.7 (22.9, 26.4)	18.7 (17.5, 20.0)	0.92 (0.88, 0.97)	1.08 (0.98, 1.20)	**1.17 (1.04, 1.30)**	**0.0053**
45–49	10,521	51.1 (48.9, 53.3)	26.2 (24.6, 28.2)	22.8 (21.1, 24.6)	0.84 (0.80, 0.89)	1.15 (1.03, 1.27)	**1.38 (1.23, 1.55)**	**<0.001**
50–54	12,137	43.1 (40.9, 45.2)	31.9 (29.9, 34.1)	25.0 (23.3, 26.7)	0.71 (0.67, 0.76)	1.41 (1.28, 1.56)	**1.49 (1.34, 1.67)**	**<0.001**
55–59	12,686	38.8 (36.5, 41.1)	34.4 (32.1, 36.8)	26.8 (25.0, 28.7)	0.64 (0.60, 0.68)	1.56 (1.41, 1.72)	**1.56 (1.40, 1.74)**	**<0.001**
60–64	14,016	29.1 (28.9, 32.7)	39.9 (37.9, 41.8)	29.2 (27.5, 30.8)	0.51 (0.47, 0.54)	1.82 (1.67, 1.99)	**1.69 (1.52, 1.88)**	**<0.001**
Race or ethnicity								
White NH	57,819	48.2 (47.4, 49.0)	26.3 (25.6, 27.0)	25.6 (24.2, 26.3)	ref	ref	ref	ref
Black NH	6,967	56.5 (54.1, 58.3)	27.8 (26.2, 30.1)	15.6 (14.2, 17.3)	1.15 (1.11, 1.20)	1.07 (1.00, 1.16)	**0.63 (0.56, 0.70)**	**<0.001**
AIAN NH	1,639	53.6 (46.7, 58.8)	25.5 (21.0, 30.5)	21.0 (16.6, 26.1)	1.09 (0.96, 1.23)	0.95 (0.76, 1.16)	0.88 (0.70, 1.11)	0.2762
Asian NH	2,103	40.3 (35.3, 45.3)	41.0 (35.9, 46.2)	18.8 (15.6, 22.4)	0.72 (0.63, 0.83)	1.71 (1.52, 1.92)	**0.79 (0.66, 0.95)**	**0.0047****
NHPI NH	294	53.1 (43.1, 62.3)	33.9 (25.6, 43.4)	13.0 (8.3, 19.8)	0.99 (0.82, 1.20)	1.39 (1.10, 1.77)	**0.60 (0.39, 0.91)**	**0.0017****
Other race NH	614	49.1 (41.7, 56.5)	32.4 (25.8, 39.8)	18.5 (13.5, 24.8)	1.03 (0.89, 1.18)	1.20 (0.97, 1.49)	**0.73 (0.54, 0.99)**	**0.0185***
Two or more races NH	1,826	56.2 (50.6, 61.6)	21.9 (17.6, 26.8)	21.9 (17.4, 27.2)	1.10 (0.99, 1.21)	0.88 (0.72, 1.07)	0.94 (0.75, 1.18)	0.5741
Hispanic	7,903	50.3 (47.7, 53.0)	34.4 (31.9, 37.0)	15.2 (13.7, 16.9)	1.07 (1.01, 1.13)	1.22 (1.12, 1.32)	**0.64 (0.57, 0.72)**	**<0.001**
Education								
Less than high school	4,528	42.2 (38.9, 45.6)	38.9 (35.6, 42.2)	18.9 (16.7, 21.4)	0.79 (0.72, 0.86)	1.44 (1.30, 1.59)	1.01 (0.89, 1.15)	0.8422
High school Graduate	16,414	43.7 (42.0, 45.4)	34.4 (32.7, 36.1)	21.9 (20.6, 23.2)	0.84 (0.80, 0.88)	1.37 (1.28, 1.46)	0.98 (0.91, 1.05)	0.5054
Less than college or technical school	22,003	51.3 (49.8, 52.8)	26.7 (25.3, 28.1)	22.0 (20.9, 23.2)	0.96 (0.93, 1.0)	1.10 (1.03, 1.17)	0.99 (0.93, 1.05)	0.6985
College or technical school Graduate	37,442	53.1 (52.0, 54.2)	24.4 (23.4, 25.4)	22.5 (21.7, 23.4)	ref	ref	ref	ref
Region[b]								
Northeast	17,442	49.8 (48.5, 51.1)	27.5 (26.4, 28.7)	22.7 (21.7, 23.7)	0.96 (0.92, 1.01)	0.97 (0.90, 1.05)	**1.15 (1.05, 1.26)**	**0.001****
Midwest	22,156	46.3 (45.0, 47.6)	29.1 (27.9, 30.3)	24.6 (23.5, 25.8)	0.88 (0.84, 0.93)	1.06 (0.98, 1.15)	**1.22 (1.11, 1.34)**	**<0.001**
South	22,346	49.1 (47.8, 50.5)	29.0 (27.8, 30.3)	21.8 (20.8, 22.9)	0.92 (0.88, 0.97)	1.02 (0.94, 1.11)	**1.18 (1.07, 1.29)**	**<0.001**

Variable	Sample size (*n*)	*Yes* (%, 95% CI), unadjusted	*No* (%, 95% CI), unadjusted	*Don't know* (%, 95% CI), unadjusted	*Yes* (APR, 95% CI), adjusted	*No* (APR, 95% CI), adjusted	*Don't know* (APR, 95% CI), adjusted	*p*-value[a] (*Don't know*)
West	18,704	51.6 (49.4, 53.8)	29.5 (27.5, 31.7)	18.8 (17.4, 20.4)	ref	ref	ref	ref
Health insurance								
Yes	72,322	50.2 (49.3, 51.0)	27.7 (26.9, 28.5)	22.1 (21.5, 22.8)	ref	ref	ref	ref
No	8,113	43.8 (41.3, 46.4)	36.9 (34.1, 39.1)	19.6 (17.8, 21.6)	1.15 (1.08, 1.23)	0.84 (0.78, 0.91)	0.94 (0.86, 1.04)	0.2351

Note: Boldface indicates statistical significance (*$p<0.05$ and **$p<0.01$).

Percentages were weighted to the BRFSS study population using SAS-callable SUDAAN, Version 10. Associations for the adjusted analysis were performed with generalized multinomial logistic model using a robust variance estimator. APRs for each subcategory in each model were generated. Adjusted risk differences (pairwise comparisons) were calculated through predictive margins proportions, and statistical significance was examined with the *t*-test. The *p*-values were presented only for the response *don't know*. A detailed description of the question is *An HPV test is sometimes given with the Pap test for cervical cancer screening. Have you ever had an HPV test?* BRFSS 2020 includes women aged 30–64 years without hysterectomy.

[a] *p*-Values are for pairwise comparisons.

[b] The U.S. regions are based on the U.S. Census designation (http://www.robslink.com/SAS/sascds/census.png).

AIAN, American Indian or Alaska Native; APR, adjusted prevalence ratio; BRFSS, Behavioral Risk Factor Surveillance System; HPV, human papillomavirus; NH, non-Hispanic; NHPI, Native Hawaiian/Pacific Islander.

Table 2.

Unadjusted (Weighted % and 95% CI) and Adjusted (APR and 95% CI) Associations Between Demographic Characteristics and Awareness of HPV Testing Status, NHIS 2019

Variable	Sample size (*n*)	*Yes* (%, 95% CI) unadjusted	*No* (%, 95% CI) unadjusted	*Don't know* (%, 95% CI) Unadjusted	*Yes* (APR, 95% CI) adjusted	*No* (APR, 95% CI) adjusted	*Don't know* (APR, 95% CI) adjusted	*p*-value[a] *(Don't' know)*
Age group (years)								
30–34	1,199	52.1 (48.7, 55.5)	31.7 (28.8, 34.7)	16.2 (14.0, 18.6)	ref	ref	ref	ref
35–39	1,132	45.8 (42.0, 49.0)	35.8 (32.4, 39.4)	18.7 (16.0, 21.7)	0.88 (0.79, 0.97)	1.12 (0.98, 1.28)	1.16 (0.94, 1.42)	0.1741
40–44	947	43.8 (40.0, 47.8)	37.6 (33.6, 41.8)	18.6 (15.7, 21.8)	0.84 (0.75, 0.93)	1.19 (1.04, 1.38)	1.14 (0.92, 1.40)	0.2484
45–49	843	36.2 (32.3, 40.3)	44.9 (40.6, 49.2)	18.9 (16.0, 22.3)	0.70 (0.62, 0.79)	1.41 (1.24, 1.60)	1.17 (0.95, 1.45)	0.1583
50–54	854	29.7 (26.2, 33.5)	47.8 (43.7, 51.8)	22.5 (19.2, 26.1)	0.57 (0.50, 0.66)	1.51 (1.33, 1.72)	1.35 (1.11, 1.66)	**0.0046** **
55–59	911	25.0 (21.9, 28.3)	54.0 (50.4, 57.7)	21.0 (18.0, 24.3)	0.49 (0.42, 0.56)	1.70 (1.52, 1.90)	1.27 (1.03, 1.56)	**0.0265** *
60–65	1,175	18.5 (16.0, 21.4)	60.0 (56.6, 63.2)	21.5 (18.6, 24.6)	0.36 (0.31, 0.43)	1.89 (1.69, 2.12)	1.29 (1.05, 1.59)	**0.0189** *
Race and ethnicity								
White NH	4,601	34.4 (32.6, 36.3)	44.6 (42.6, 46.7)	20.9 (19.3, 22.7)	ref	ref	ref	
Black NH	852	42.6 (38.6, 46.8)	42.9 (38.8, 47.0)	14.5 (12.0, 17.5)	1.22 (1.10, 1.35)	0.96 (0.86, 1.06)	0.72 (0.58, 0.88)	**0.0005** **
Asian NH	424	33.0 (27.6, 38.8)	47.9 (42.3, 53.5)	19.2 (15.6, 23.4)	0.84 (0.69.1.01)	1.16 (1.03, 1.31)	0.93 (0.75, 1.16)	0.5340
All other groups including 2 or more races NH	193	42.5 (34.7, 50.7)	38.1 (29.6, 47.4)	19.4 (13.6, 26.8)	1.16 (.95, 1.42)	0.88 (0.70, 1.11)	0.95 (0.67, 1.35)	0.7721
Hispanic	992	41.0 (37.4, 44.8)	41.3 (37.5, 45.1)	17.7 (14.8, 21.0)	1.15 (1.04, 1.28)	0.94 (0.85, 1.05)	0.86 (0.71, 1.05)	0.1168
Education								
Less than high school	551	32.0 (27.6, 38.8)	47.9 (42.8, 52.9)	20.1 (16.5, 24.3)	0.83 (0.70, 0.97)	1.09 (0.96, 1.23)	1.15 (0.91, 1.44)	0.2567
High school Graduate	1,239	33.0 (29.9, 36.3)	48.7 (45.2, 52.3)	18.2 (15.8, 20.9)	0.92 (0.83, 1.03)	1.09 (0.99, 1.19)	0.96 (0.82, 1.15)	0.7087
Less than college or technical school	2,071	38.2 (35.5, 40.9)	41.7 (38.9, 44.5)	20.1 (18.0, 22.5)	1.01 (0.93, 1.10)	0.96 (0.89, 1.04)	1.07 (0.93, 1.23)	0.3686
College/technical school Graduate	3,183	38.5 (36.4, 40.6)	42.3 (40.2, 44.4)	19.3 (17.6, 21.0)	ref	ref	ref	ref
Region								
Northeast	1,257	37.1 (33.6, 40.9)	42.4 (38.4, 46.6)	20.5 (17.6, 23.7)	0.96 (0.85, 1.09)	1.00 (0.88, 1.13)	1.07 (0.88, 1.31)	0.4849
Midwest	1,558	34.3 (31.3, 37.4)	44.4 (40.8, 47.9)	21.4 (18.6, 24.4)	0.87 (0.78, 0.98)	1.08 (0.97, 1.20)	1.10 (0.91, 1.33)	0.3392
South	2,452	35.4 (32.9, 38.0)	46.5 (43.8, 49.3)	18.1 (15.9, 20.5)	0.85 (0.77, 0.95)	1.15 (1.05, 1.26)	0.98 (0.82, 1.18)	0.8598

Variable	Sample size (*n*)	*Yes* (%, 95% CI) unadjusted	*No* (%, 95% CI) unadjusted	*Don't know* (%, 95% CI) Unadjusted	*Yes* (APR, 95% CI) adjusted	*No* (APR, 95% CI) adjusted	*Don't know* (APR, 95% CI) adjusted	*p*-value[a] *(Don't' know)*
West	1,794	40.1 (37.2, 43.1)	40.9 (38.0, 43.8)	19.0 (16.7, 21.6)	ref	ref	ref	ref
Health insurance								
Yes	6,582	36.5 (35.0, 38.1)	43.9 (42.2, 45.6)	19.6 (18.3, 21.0)	ref	ref	ref	
No	479	38.3 (32.9, 43.9)	43.6 (37.8, 49.6)	18.1 (14.2, 22.8)	1.02 (0.88, 1.18)	1.00 (0.87, 1.16)	0.96 (0.75, 1.24)	0.7741
Ratio of family income to poverty threshold (%)								
<2.5	2,346	37.1 (34.7, 39.6)	44.6 (42.0, 47.1)	18.3 (16.4, 20.3)	0.96 (0.88, 1.05)	1.04 (0.97, 1.13)	0.96 (0.85, 1.13)	0.6053
2.5 to <4.0	1,475	36.3 (33.2, 39.4)	44.0 (40.7, 47.4)	19.7 (17.3, 22.4)	0.93 (0.84, 1.03)	1.06 (0.97, 1.15)	1.01 (0.87, 1.17)	0.6053
≥4.0	3,241	36.4 (34.4, 38.5)	43.4 (41.3, 45.4)	20.2 (18.5, 22.0)	ref	ref	ref	ref

Note: Boldface indicates statistical significance (*$p<0.05$ and **$p<0.01$).

Percentages were weighted to the NHIS study population using SAS-callable SUDAAN, Version 10. Associations for the adjusted analysis were performed with generalized multinomial logistic model using a robust variance estimator. APRs for each subcategory in each model were generated. Adjusted risk differences (pairwise comparisons) were calculated through predictive margins proportions, and statistical significance was examined with the *t*-test. The *p*-values were presented only for the response *don't know*. A detailed description of the question is *At your most recent cervical cancer screening did you have an HPV test?* NHIS 2019 included women aged 30–65 years without a hysterectomy and no history of cervical cancer.

[a] *p*-Values are for pairwise comparisons.

APR, adjusted prevalence ratio; HPV, human papillomavirus; NH, non-Hispanic; NHIS, National Health Interview Survey.