

Lack of awareness of human papillomavirus testing among U.S. women

Zahava Berkowitz, MSPH, MSc, Jin Qin, ScD, Judith Lee Smith, PhD, Mona Saraiya, MD, MPH

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Appendix Table 1. Questions Associated with Pap and HPV Testing, by Survey

BRFSS 2020 (aged 30–64 years)	NHIS 2019 (aged 30–65 years)	NSFG 2017–2019 (aged 30–49 years)
<p>1) “Have you ever had a Pap test?”</p> <p>2) “An HPV test is sometimes given with the Pap test for cervical cancer screening. Have you ever had an HPV test?”</p>	<p>1) “Have you ever had a test to check for cervical cancer?”</p> <p>2) “At your most recent cervical cancer screening, did you have a Pap test?”</p> <p>3) “At your most recent cervical cancer screening, did you have an HPV test?”</p>	<p>1) “(In the past 12 months have you received) A Pap test - where a doctor or nurse put an instrument in the vagina and took a sample to check for abnormal cells that could turn into cervical cancer?” If the response was no, women were further asked “Do you think your last Pap test was for....?”</p> <p>2) “Have you ever had an HPV test where a doctor or nurse put an instrument in the vagina and took a sample to test for the HPV virus?”</p>

Note: BRFSS, Behavioral Risk Factors Surveillance System; NHIS, National Health Interview Survey; NSFG, National Survey of Family Growth; HPV, Human papillomavirus.

Appendix Table 2. Weighted Percentages of Pap and HPV Screening Tests Among Women, by survey

BRFSS^a Test type	BRFSS^a sample size (n)	BRFSS,^a %, 95%CI	NHIS^b Test type	NHIS^b sample size (n)	NHIS,^b %, 95% CI	NSFG^c Test type	NSFG^c sample size (n)	NSFG,^c %, 95% CI
Ever had a Pap test	80697		Pap test at most recent cervical cancer screening	7074		Combination of Pap test in the past 12 months and time range at last Pap^d	2973	
Yes		95.1 (94.7, 95.5)	Yes		94.5 (93.7, 95.2)	Yes		99.0 (98.4, 99.4)
No		4.6 (4.2, 5.0)	No		3.7 (3.1, 4.5)	No		0.9 (0.6, 1.5)
Don't know /not sure		0.3 (0.2, 0.4)	Don't know		1.7 (1.4, 2.2)	Don't know		0.1 (0.01, 0.2)
Ever had an HPV test	80648 (55,080,385 weighted)		HPV test at most recent cervical cancer screening	7062 (53,997,200 weighted)		Ever had and HPV test	2973 (36,925,359 weighted)	
Yes		49.3 (48.5, 50.1)	Yes		36.6 (35.1, 38.1)	Yes		56.8 (53.4, 60.1)
No		28.9 (28.1, 29.7)	No		43.9 (42.3, 45.5)	No		33.8 (30.4, 37.3)
Don't know/ not sure	19834 (12,023,116 weighted)	21.8 (21.2, 22.4)	Don't know	1365 (10,504,505 weighted)	19.5 (18.2, 20.8)	Don't know	285 (3,474,087 weighted)	9.4 (7.6, 11.6)

Note: BRFSS, Behavioral Risk Factor Surveillance System; NHIS, National Health Interview Survey; NSFG, National Survey of Family Growth; HPV, Human papillomavirus; CI, Confidence Interval.

^a Women in BRFSS did not have hysterectomy.

^b Women in NHIS did not have hysterectomy and had no history of cervical cancer.

^c Women in NSFG did not have hysterectomy and had no history of cervical cancer.

^dThe NSFG results for the Pap test were calculated based on two variables: (1) In the past 12 months, have you received a Pap test, and women who responded no were further asked (2) Do you think your last Pap test was...? The answer never had a Pap test (answer 6), which translated to No, was determined from the second question.

Appendix Table 3. Unadjusted (weighted %)^a and Adjusted (APRs)^b Associations between demographic characteristics and awareness of HPV testing status,^c NSFG 2017-2019.^d

Variable	Sample size (n)	Yes (% ^a , 95% CI) Unadjusted	No (% ^a , 95% CI) Unadjusted	Don't know (% ^a , 95% CI) Unadjusted	Yes (APR, 95% CI) Adjusted	No (APR, 95% CI) Adjusted	Don't know (APR, 95% CI) Adjusted	p-value (Don't know)
Age group (years)								
30-34	966	61.8 (56.1, 67.1)	28.9 (24.6, 23.6)	9.3 (6.6, 13.2)	Ref	Ref	Ref	
35-39	787	61.1 (55.5, 66.4)	30.7 (25.1, 37.1)	8.2 (5.6, 11.7)	1.00 (0.90, 1.10)	1.05 (0.87, 1.26)	0.88 (0.56, 1.37)	0.5700
40-44	638	54.9 (49.0, 60.5)	35.0 (29.6, 40.8)	10.2 (7.1, 14.3)	0.89 (0.78, 1.02)	1.19 (0.97, 1.47)	1.11 (0.73, 1.68)	0.6365
45-49	582	47.9 (41.8, 54.2)	41.9 (35.6, 48.5)	10.1 (6.8, 14.8)	0.77 (0.67, 0.88)	1.47 (1.21, 1.78)	1.07 (0.74, 1.54)	0.7244
Race or Ethnicity								
NH White	1390	57.3 (52.4, 62.0)	32.6 (28.1, 37.3)	10.2 (7.9, 13.1)	Ref	Ref	Ref	
NH Black	532	58.9 (49.3, 67.8)	30.8 (22.5, 40.5)	10.4 (6.4, 16.3)	1.04 (0.86, 1.26)	0.92 (0.67, 1.27)	1.02 (0.62, 1.68)	0.9342
Hispanic	762	51.3 (45.9, 56.7)	40.7 (35.3, 46.3)	8.0 (5.4, 11.6)	0.96 (0.85, 1.10)	1.11 (0.93, 1.32)	0.83 (0.52, 1.33)	0.4293
NH Other	289	62.1 (54.0, 69.5)	31.1 (24.5, 38.5)	6.8 (4.0, 11.4)	1.06 (0.93, 1.22)	0.99 (0.78, 1.26)	0.67 (0.40, 1.15)	0.1069
Education								
< HS	468	50.6 (42.3, 58.9)	41.6 (33.5, 50.1)	7.8 (4.8, 12.5)	0.92 (0.79, 1.07)	1.19 (0.96, 1.47)	0.87 (0.46, 1.65)	0.6654
HS	603	52.9 (45.6, 60.0)	37.2 (31.1, 43.8)	9.9 (6.7, 14.5)	0.95 (0.82, 1.10)	1.08 (0.90, 1.29)	1.02 (0.63, 1.66)	0.4341
graduate								
< college	779	59.2 (53.7, 64.4)	31.4 (26.7, 36.4)	9.5 (6.7, 13.3)	1.02 (0.93, 1.12)	0.97 (0.82, 1.14)	0.98 (0.63, 1.53)	0.4397
≥ college	1123	59.1 (54.7, 63.4)	31.2 (27.0, 35.6)	9.7 (9.0, 13.2)	Ref	Ref	Ref	
Poverty level income								
<139%	940	53.3 (47.4, 59.0)	38.0 (31.9, 44.5)	8.8 (6.1, 12.4)	0.87 (0.74, 1.01)	1.26 (0.98, 1.63)	1.04 (0.59, 1.83)	0.8972
139-400%	1166	55.8 (50.9, 60.5)	34.4 (30.5, 38.7)	9.8 (7.4, 12.9)	0.91 (0.82, 1.01)	1.16 (0.95, 1.41)	1.08 (0.75, 1.57)	0.6661
>400%	867	60.6 (55.2, 65.8)	29.9 (25.0, 35.3)	9.5 (6.6, 13.5)	Ref	Ref	Ref	
Health insurance								
Private only	1817	57.3 (52.8, 61.7)	32.8 (28.6, 37.4)	9.8 (7.5, 12.7)	Ref	Ref	Ref	
Public only	745	58.9 (52.2, 65.4)	32.0 (25.9, 38.8)	9.1 (5.8, 13.7)	1.09 (0.95, 1.25)	0.87 (0.66, 1.14)	0.95 (0.57, 1.60)	0.5691
None	411	50.2 (44.1, 56.3)	42.2 (36.5, 48.0)	7.6 (4.5, 12.6)	0.96 (0.84, 1.10)	1.10 (0.90, 1.34)	0.85 (0.48, 1.52)	0.8542

Note: NSFG, National Survey of Family Growth; HPV, Human papillomavirus; CI, Confidence Interval

^a Percentages were weighted to the NSFG study population using SAS-callable SUDAAN version 10.

^b Associations for the adjusted analysis were performed with generalized multinomial logistic model using a robust variance estimator. Adjusted prevalence ratios (APRs) for each subcategory in each model were generated. Adjusted risk differences (pairwise comparisons) were calculated via predictive margins proportions and statistical significance was examined with the t-test. The *p-values* were presented only for the response “don’t know”.

^c A detailed description of the question is “Have you ever had an HPV test where a doctor or nurse put an instrument in the vagina and took a sample to test for the HPV virus?”

^d Women aged 30-49 years without hysterectomy and no history of cervical cancer.

No Significant results were found for the association between the response “Don’t know” and demographic characteristics.

Appendix Table 4. Weighted Percentages^a and 95% CIs for Race or Ethnicity by Region^b, BRFSS 2020.^c

Variable	Northeast (n=17057) %, 95% CI	Midwest (n=21883) %, 95% CI	South (n =21968) %, 95% CI	West (n =18345) %, 95% CI
Race or ethnicity				
NH White	64.5 (63.2, 65.7)	75.1 (73.6, 76.4)	55.3 (54.0, 56.7)	49.3 (47.1, 51.4)
NH Black	11.9 (11.0, 12.8)	10.5 (9.7, 11.4)	19.3 (18.0, 20.3)	4.6 (3.7, 5.7)
NH AIAN	0.2 (0.1, 0.4)	0.9 (0.7, 1.1)	0.8 (0.7, 1.1)	1.9 (1.6, 2.3)
NH Asian	6.9 (6.1, 7.7)	3.2 (2.6, 3.9)	3.7 (3.1, 4.5)	11.5 (9.7, 13.6)
NH NHPI	0.04 (0.02, 0.09)	0.04 (0.02, 0.1)	0.1 (0.06, 0.2)	0.4 (0.3, 0.5)
NH Other	0.8 (0.7, 1.0)	0.4 (0.3, 0.5)	0.5 (0.4, 0.6)	0.5 (0.4, 0.8)
one race				
NH Two or more races	0.9 (0.8, 1.1)	1.1 (0.9, 1.2)	1.3 (1.1, 1.6)	2.4 (0.9, 3.0)
Hispanic	14.8 (13.9, 15.7)	8.9 (7.7, 10.2)	18.9 (17.6, 20.3)	29.4 (27.3, 31.6)

Note: BRFSS, Behavioral Risk Factor Surveillance System; HPV, Human papillomavirus; NH, Non-Hispanic; AIAN, American Indian or Alaska Native; NHPI, Native Hawaiian/Pacific Islander; CI, Confidence Interval; n=sample size.

^a Percentages were weighted to the BRFSS study population using SAS-callable SUDAAN version 10.

^b The United States regions are based on the U.S. Census designation (<http://www.robsslink.com/SAS/sascds/census.png>)

^c Women aged 30-64 years without hysterectomy.