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Examining HPV- and HPV-Vaccine Related Cognitions and Acceptability Among US Born and Immigrant Hispanics and US Born and Immigrant non Hispanic Blacks: A Preliminary Catchment Area Study

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Abstract

Purpose: Disparities in HPV-vaccination exist. Therefore, we investigated distinctions and disparities in HPV- and HPV vaccine-related cognitions and acceptability among US born African Americans (AA) and Black immigrants, and between US born Latinas and Latina immigrants.

Methods: Secondary data analyses were conducted with 383 female adults divided into: non-Hispanic Blacks (1) AA born in the US ($n=129$) and (2) Black immigrants ($n=53$); and Hispanics (3) Latinas born in the US ($n=57$) and (4) Latina immigrants ($n=144$). HPV-related cognitions are assessed by measuring HPV-related knowledge, and HPV-vaccine related awareness, beliefs, accessibility and acceptability.

Results: Black and Latina immigrants were less likely to know where they can get/refer for HPV-vaccine ($p=.007$) than their US born counterparts. Latina immigrants were less likely to have heard of HPV-vaccine ($p=.033$), know where they can get more information about HPV-vaccine ($p=.045$), and know where they can get/refer for HPV-vaccine ($p=.001$) than US born Latinas. Both immigrant groups (Black: $p=.046$; Latina: $p=.044$) were more likely to report cost concerns than their counterparts. US born AA were the least likely to endorse HPV-vaccine safety (31.0%) and efficacy (39.7%), whereas US born Latinas endorsed efficacy (63.2%) but less safety (44.6%). Overall, vaccine acceptability was low across all groups.

Conclusions: Group disparities in HPV-vaccine cognitions emerged, but they all had notable HPV-vaccine acceptability (safety and efficacy) barriers. HPV-vaccine safety and efficacy were highly unfavorable in US born AA. The HPV-vaccine safety concerns are demonstrated with only

31–54% reporting that the “HPV vaccine is safe” --potentially increasing their risk of HPV-vaccine negation. With regards to HPV vaccine efficacy, only 40–63% of this study population endorsed HPV-vaccine efficacy. Additionally, immigrants reported greater HPV vaccine cost barriers and healthcare access concerns -- increasing their risk for HPV vaccine naïveté. Therefore, our findings on HPV-vaccine cognitions and acceptability can inform targeted strategies to increase vaccination among US and immigrant Hispanics and non-Hispanics Blacks who are at elevated risk for HPV related cancers.

Keywords

HPV; immigrants; cognitions; ethnic minorities; disparities

Human papillomavirus (HPV) is responsible for several types of cancers including cervix, vagina, penis, anus, and pharynx and genital warts [1]. The combined direct and indirect costs (e.g., productivity loss) due to these HPV-related diseases are more than \$5 billion per year in the US (see [2,3]). Fortunately, the most recently approved HPV vaccination (i.e., 9vHPV) can prevent up to 74% of invasive HPV-associated cancers and 90% of anogenital warts [1]. Thus, the World Health Organization and all Comprehensive Cancer Centers have prioritized HPV vaccination. Indeed, HPV vaccination has been singled out as “one of the most profound opportunities for cancer prevention” and top public health priority [4].

Regrettably, however, HPV vaccination in the developing world and in the U.S. has been disappointing. Additionally, although HPV infection is very common, medically underserved and ethnic minority communities are most at risk for poor outcomes due to HPV-related infections and cancers. Therefore, increasing HPV vaccination is needed for all youth, but even more urgent in African descended and Hispanic populations (see [5]) considering their elevated and disparate death rate due to cervical and other HPV-related cancers [6]. Moreover, due to lack of research, we are limited to our ability to address HPV vaccination among our increasing immigrant Black and Hispanic populations.

Many health behavior theories (e.g., [7,8]) commonly contend that people’s knowledge and belief about the health problems influences their actions. Thus, we assume that the low rates of HPV vaccination among African descended and Hispanic populations are partly due to their lack of knowledge about HPV and lack of awareness and negative beliefs regarding the HPV vaccination. Indeed, insufficient knowledge about HPV and low levels of HPV vaccine availability were reported in Hispanic populations [9–12] and African Americans (AA) [13–15]; yet, Hispanics show good HPV vaccine acceptability (e.g., [16]). However, despite large Hispanic and Black immigrant populations in the U.S., few studies have been conducted with immigrants. Although the limited literature found that Hispanic and Black immigrants have low awareness and incorrect knowledge regarding HPV and HPV-vaccine [16, 17–19], these studies were mostly qualitative (e.g., focus groups), and no research directly compared AA and US born Latinas to their immigrant counterparts to examine disparities between US born and immigrants. In sum, disparities in HPV vaccination exist, and there is little research comparing US born minorities to their immigrant counterpart. For this study, participants self-reported their identified race and country of origin. For the analyses, we classified participants into four (4) groups: Hispanic -US born Latina and immigrant Latina;

and Non-Hispanic Black - US born African American and Black immigrants. Participants' whose country of origin was Latin American or the Caribbean and identified as Black/African descended were categorized as Non-Hispanic immigrant Black. Therefore, we investigated distinctions and disparities in HPV- and HPV vaccine-related cognitions and acceptability among these four major demographic groups: Hispanic - US born Latina and immigrant Latina; and Non-Hispanic Black - US born African American and Black immigrant. Specifically, we examined whether knowledge about HPV, and perceived awareness, beliefs, accessibility and acceptability regarding HPV vaccine differed between US born AA and Black immigrants, and between US born Latina and Latina immigrants. Informed by global HPV vaccination reports showing lower vaccine availability and higher disease burden in developing countries [20], and the fact that immigrants tend to report health access barriers [21], we hypothesized that immigrants would endorse less favorable HPV and HPV-related cognitions and vaccine acceptability compared to their US born counterparts.

Methods

Participants and procedure

This study draws from data of a study evaluating the impact of media strategies (i.e., print, radio) on increasing Pap-testing during 2009–2011. Participants were women who: 1) were adults ages 18 years, 2) self-identified as Black/African descended- or Hispanic/Latina-, 3) had no history of cancer, and 4) had at least a 4th grade fluency in English and/or Spanish. Participants were recruited from the Inland Empire region (San Bernardino and Riverside Counties) and the Service Planning Area (SPA) 3 of Los Angeles County within Southern California. Responses from a total of 383 Hispanic -US born Latina and immigrant Latina; and Non-Hispanic Black - US born African American and Black immigrant women were analyzed. Mean years of living in the US were 32.67 ($SD = 12.62$) and 21.57 ($SD = 10.32$) for Black- and Latina immigrants, respectively. Detailed participant demographic characteristics are presented in Table 1.

Study flyers, in English and Spanish, describing the study and with contact information were distributed at community events (e.g., health fairs) and in local news and advertisement circulars. Eligible women who voluntarily contacted our research office and agreed to participate were mailed a study packet containing the informed consent form, study questionnaire in their language preference (English or Spanish), and a self-addressed, stamped return envelope. Institutional Review Board approval was obtained and all participants signed an informed consent form for study participation.

Measures

Demographics.—Demographics including age, race and ethnicity, birth country, years living in the US, level of income and education, and marital status were assessed.

HPV- related cognition.—Knowledge about HPV was assessed with one item, “Do you think you can get HPV through sexual contact?” (yes/no /don’t know).

HPV vaccine-related cognitions.—HPV vaccine-related cognitions were assessed several categories including: (1) *awareness*: “Have you ever heard of the HPV vaccine or shot to prevent cervical cancer?” (yes/no); (2) *perceived accessibility*: “Does the HPV vaccine cost too much?” (yes/no /don’t know), “Do you know where you can (or refer someone else to) get the HPV vaccine?” and “Do you know where you can get more information about the HPV vaccine?” (yes/no); and (3) *belief*: “Do you believe that the HPV vaccine can prevent HPV infection and cervical cancer?” and “Do you believe that the HPV vaccine is safe?” (yes/no /don’t know).

HPV vaccine acceptability.—HPV vaccine acceptability was assessed with one item, “Would you/have you ever recommended that a relative (e.g., children, cousins) or friend get the HPV vaccine or HPV shots?” (yes/no).

Analytic plan

For the analyses, we classified participants into 4 groups: non-Hispanic Blacks (1) AA born in the US ($n=129$) and (2) Black immigrants ($n=53$); and Hispanics (3) Latinas born in the US ($n=57$) and (4) Latina immigrants ($n=144$). First, Chi-square and one-way ANOVA tests were conducted to investigate whether demographics differed between two groups (US born AA vs. Black immigrants; US born Latina vs. Latina immigrants). Second, Chi-square tests were conducted to examine whether there were any two group differences in HPV- and HPV vaccine-related cognitions (without controlling for covariates). Third, after controlling for significant covariates, binary logistic and multinomial regression analyses (don’t know response as a base outcome) were conducted regarding significant HPV- and HPV-related cognitions and vaccine acceptability. All analyses were conducted with SPSS 19.0.

Results

Descriptive group demographics, HPV- and HPV vaccine-related cognitions, and vaccine acceptability

Group characteristics are presented in Table 1. Black immigrants were younger ($p < .001$) and more partnered ($p = .017$) than US born AA. Further, Latina immigrants were older ($p < .001$) and had lower income ($p = .004$) and education ($p < .001$) than US born Latinas.

HPV- and HPV vaccine-related cognitions are presented in Table 2. US born AA and Black immigrants significantly differed in perceived accessibility: ‘HPV vaccine cost too much’ ($p = .025$) and ‘know where you can get/refer to get HPV vaccine’ ($p = .041$). Less than 5% of US born AA, but 17.0% of Black immigrants reported that they think HPV vaccine cost too much. Also, 60.9% of US born AA compared to 44.2% of Black immigrants reported that they know where they can get HPV vaccine. Although no significant difference was found, only 39.7% and 31.0% of US born AA endorsed that the HPV vaccine is effect and safe, respectively.

US born Latinas and Latina immigrants differed in awareness and perceived accessibility (see Table 2): ‘heard of HPV vaccine to prevent cervical cancer’ ($p = .001$), ‘HPV vaccine cost too much’ ($p = .024$), ‘know where you can get more information about HPV vaccine’ ($p < .001$), and ‘know where you can get/refer for HPV vaccine’ ($p < .001$). Specifically,

1.8% of US born Latinas reported that they think HPV vaccine cost too much compared with 14.3% of Latina immigrants. Further, 23.2% of US born Latinas, but nearly half (49.3%) of Latina immigrants reported that they never heard of the HPV vaccine. Also, 26.1% of Latina immigrants vs. 60.7% in US born Latinas reported that they know where they can get more information about HPV vaccine. Additionally, 21.1% of Latina immigrants vs. 61.8% in US born Latinas reported that they know where they can/refer for HPV vaccine. Although no significant group difference was found, belief regarding vaccine efficacy was higher in US born Latinas (63.2%) than their counterparts (47.9%), but safety was higher in Latina immigrants (54.3%) than their counterparts (39.3%).

Multivariate outcomes comparing US born African-American to Black immigrant and US born Latinas to immigrant Latinas on HPV vaccine-related cognitions and vaccine acceptability

As the sample size of each group in the study was unequal, we examined the data distributions that revealed a normal distribution for each of the four groups. Further, there were no differences in the variance of the data among the four groups ($p\text{-value} = >.05$); therefore the homogeneity of variance assumption was not violated; and thus, we proceeded with conducting the planned parametric test to examine our outcomes. Controlling for significant demographics, binary logistic regression analyses were conducted to examine the group difference between US born AA and Black immigrants in perceived accessibility: Compared to US born AA, Black immigrants were less likely to know where they can get/refer for HPV vaccine ($OR = .36, p = .007$).

After taking into significant demographics, the group difference between US born Latinas and Latina immigrants remained in awareness and perceived accessibility: Compared to US born Latinas, Latina immigrants were less likely to have heard of HPV vaccine ($OR = .37, p = .033$), know where they can get more information about HPV vaccine ($OR = .41, p = .045$), and know where they can get/refer to get HPV vaccine ($OR = .21, p = .001$).

Finally, multinomial regression analyses that controlled for significant demographics showed that compared to US born AA, Black immigrants were more likely to report that the HPV- cost too much ($OR = .28, p = .046$). Also, compared to US born Latina, Latina immigrants were also more likely to report that the cost of HPV vaccine “cost too much” ($OR = 4.75, p = .044$). There was no significant difference in the vaccine acceptability either between US born AA and Black immigrants ($p = .801$) or between US born Latinas and Latina immigrants ($p = .351$). Across all the groups 35% to 43% indicated that “they ever recommended or would recommend HPV vaccine to relatives/friends” (see Table 2).

Discussion

Increasing HPV vaccination is a global health priority. Even though global immigration is increasing, little is known regarding the HPV vaccination among immigrants including within the U.S. Further, research on HPV vaccination cognitions comparing US born AA and Latinas to their immigrant counterparts is lacking. Thus, we explored whether there are group disparities in HPV- and HPV vaccine-related cognitions (e.g., knowledge, perceived

accessibility, beliefs) and vaccine acceptability between US born AA and Black immigrants, and between Latinas and Latina immigrants.

Results showed that compared to US born Americans, immigrants were less informed regarding vaccine availability and accessibility. First, both AA and Latina immigrants reported that they were less likely to know where they can get/refer for HPV vaccine compared to their counterparts. Second, compared to US born Latinas, Latina immigrants were less likely to have heard of HPV vaccine and know where they can get more information about HPV vaccine. Further, compared to their counterparts, immigrants more likely to choose that the vaccine cost “too much”: 17% of Black immigrants and 14.3% of Latina immigrants. This higher vaccine cost concern among immigrants may indicate that immigrants may have greater challenges accessing preventive care and may less likely to have a medical home. Given the high Latino/a immigrant [22] and rapidly increasing Black immigrant populations in the US [23], these disparities highlight the need for more efforts to inform immigrant communities about HPV vaccination availability (vaccination site) and accessibility (no cost or reduced cost), especially targeting immigrant populations. Given that the patterns of disparities between US born Americans and immigrants were similar regardless of ethnicity (i.e., AA, Latinas), it might be possible to employ a general, immigration-status focused vaccination programs at community level. However, future study should be conducted to examine potential cultural differences (e.g., religious/spiritual beliefs, stigma) to develop tailored interventions.

Even in US born minorities, however, we found that overall knowledge about HPV vaccine availability and accessibility were not satisfactory. More than one-third of US born minorities (either AA or Latina) did not know where they can get more information about the HPV vaccine and did not know where they can get/or refer others for the vaccine. Further, more than 85% US born Americans chose don’t know about the cost of vaccine. Therefore, continued efforts should be employed to promote vaccination in ethnic minorities, in general.

Contrary to previous studies, less than half --across all groups -- reported that they would recommend/ever have recommended the vaccine to their relatives or friends (e.g., [16]). This surprisingly lower acceptance rate is consistent with women’s overall unclear beliefs regarding the efficacy and safety about the HPV vaccine. Even though a fair amount of US born AA was aware of vaccine availability, their beliefs about vaccine effectiveness and safety were highly unclear: More than half of US born AA and slightly less than half of Black immigrants reported that they don’t know the efficacy and safety of the HPV vaccine. Specifically, we noted that only 39.7% and 31.0% of US born AA favorably endorsed their beliefs about vaccine efficacy and safety, respectively. Interestingly, US born Latina reported conflicting attitude: Although 63.2% of Latinas endorsed that they believed the efficacy of the vaccine, only 44.6% of them endorsed that they believed the safety of the vaccine. The, safety and efficacy concerns are prominent within this study populations; it may be important for providers to attend to and reduce these concerns to improve vaccination especially among US born AA.

The cross-sectional, exploratory study, and the use of self-report measures with single item are limitations of the current research. Although this study was not conducted in vaccine eligible youth, the sample comprised of women (including mothers), whose decision can be critical for children's and relatives' vaccination. Thus, assessing HPV- and HPV vaccine-related cognitions and vaccine acceptability in adult women is highly important. To our best knowledge, this is the first study comparing AA and Latinas to their immigrant counterparts. Our results support the urgent need for the intervention development for HPV vaccination improvements for underserved populations (ethnic minorities and immigrants) due to their higher HPV-related cancer incidence and mortality. A focus on prevention through vaccination will reduce these persistent disparities.

In sum, our findings revealed some important discoveries. Group disparities in HPV-vaccine cognitions emerged, but they all had notable HPV-vaccine safety and efficacy unease. However, the findings suggest that US born Latinas lean towards more favorable vaccine efficacy and acceptability compared to their immigrant counterpart and any African descended group in this study. HPV-vaccine safety and efficacy were highly unfavorable in US born AA. The HPV-vaccine safety concerns are demonstrated with only 31–54% reporting that the “HPV vaccine is safe” --potentially increasing their risk of HPV-vaccine negation. With regards to HPV vaccine efficacy, only 40–63% of this study population endorsed HPV-vaccine efficacy. Additionally, immigrants reported greater HPV vaccine cost barriers and healthcare access concerns -- increasing their risk for HPV vaccine naiveté. Further confirmatory research is needed with these vulnerable but understudied populations. However, our findings on vaccine cognitions and acceptability can inform targeted strategies to increase vaccination with the Latin American and Caribbean regions, and among US and immigrant Hispanics and non-Hispanics Blacks -- who are at elevated risk for HPV related cancers.

Importantly, these findings suggest fixable HPV-vaccine barriers for our medically vulnerable population, if we build community responsive HPV-vaccination programs/ interventions with appropriate awareness and information including HPV-vaccine safety and efficacy, and accessibility (low to no cost), then they might come.” Including considerations of HPV vaccine cognitions as well as overall vaccination cognitions, may inform tailoring strategies to increase vaccination in the US and Latin America including the Caribbean. Future research, policy and practice must put more targeted efforts to increase HPV-vaccination among diverse US populations including immigrant communities to achieve our goal to protect our children against HPV related cancers.

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Table 1

Participant demographic characteristics

Variable	Group					
	African Descended			Latina		
	Born in the US (<i>n</i> = 129)	Immigrant (<i>n</i> = 53)	Difference ^a (df)	Born in the US (<i>n</i> = 57)	Immigrant (<i>n</i> = 144)	Difference ^a (df)
Mean age (SD)	46.32 (14.32)	35.79 (10.64)	5.40(126.83)***	34.19 (13.49)	45.13 (9.16)	-5.63(77.33)***
Income (%)			4.26(4)			15.37(4)**
15K	23.1	15.6		21.4	41.5	
<15K– 25K	14.9	13.3		21.4	26.7	
<25K– 45K	19.0	15.6		25.0	20.7	
<45K– 75K	20.7	17.8		23.2	8.1	
>75K	22.3	37.8		8.9	3.0	
Education (%)			1.15(4)			58.91(4)***
Less than high school	3.9	3.9		7.1	68.2	
High school/GED	12.4	11.8		33.9	11.4	
Some college/vocational/associate	50.4	45.1		42.9	13.6	
At least college graduate	33.4	39.3		16.1	6.9	
Marital status (%)			5.73(1)*			1.44(1)
Unpartnered	59.2	39.6		25.0	17.5	
Partnered	40.8	60.4		75.0	82.5	

Note.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Table 2

Group differences with regard to HPV- and HPV vaccine-related characteristics

Variable	Group (%)					
	African Descended			Latina		
	Born in the US (<i>n</i> = 129)	Immigrant (<i>n</i> = 53)	χ^2 (df)	Born in the US (<i>n</i> = 57)	Immigrant (<i>n</i> = 144)	χ^2 (df)
HPV knowledge						
1. Do you think you can get HPV through sexual contact?			3.95(2)			1.31(2)
Yes	54.3	68.0		50.9	58.7	58.7
No	18.9	8.0		28.1	26.1	26.1
Don't know	26.8	24.0		21.1	15.2	15.2
HPV vaccine awareness						
1. Have you ever heard of the HPV vaccine or shot to prevent cervical cancer?			2.78(1)			11.22(1)**
Yes	70.6	57.7		76.8	50.7	
No	29.4	42.3		23.2	49.3	
HPV vaccine perceived accessibility						
1. Does the HPV vaccine cost too much?			7.37(2)*			7.46(2)*
Yes	4.7	17.0		1.8	14.3	
No	10.2	9.4		12.3	4.9	
Don't know	85.0	73.6		86.0	80.8	
2. Do you know where you can get more information about the HPV vaccine?			.60(1)			20.97(1)***
Yes	68.2	62.3		60.7	26.1	
No	31.8	37.7		39.3	73.9	
3. Do you know where you can (or refer someone else to) get the HPV vaccine?			4.19(1)*			29.93(1)***
Yes	60.9	44.2		61.8	21.1	
No	39.1	55.8		38.2	78.9	
HPV vaccine belief						
1. Do you believe that the HPV vaccine can prevent HPV infection and risk of cervical cancer?			2.62(2)			3.84(2)
Yes	39.7	52.8		63.2	47.9	

Variable	Group (%)					
	African Descended			Latina		
	Born in the US (<i>n</i> = 129)	Immigrant (<i>n</i> = 53)	χ^2 (df)	Born in the US (<i>n</i> = 57)	Immigrant (<i>n</i> = 144)	χ^2 (df)
<i>No</i>	7.1	5.7		5.3	8.5	
<i>Don't know</i>	53.2	41.5		31.6	43.7	
2. Do you believe that the HPV vaccine is safe?			4.51(2)			1.68(2)
<i>Yes</i>	31.0	42.3		44.6	54.3	
<i>No</i>	6.2	11.5		16.1	34.3	
<i>Don't know</i>	62.8	46.2		39.3	11.4	
HPV vaccine acceptability						
1. Would you recommend/have you ever recommended that a relative or friend get the HPV vaccine or HPV shots?			.06(1)			.87(1)
<i>Yes</i>	41.1	43.1		64.9	42.3	
<i>No</i>	58.9	56.9		35.1	57.7	

Note.

* $p < .05$ ** $p < .01$ *** $p < .001$.