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Promotora outreach, education and navigation support for HPV vaccination to Hispanic women with unvaccinated daughters

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Abstract

Background—Cervical cancer disparities persist in the predominantly Hispanic population of South Texas, and Hispanic girls are less likely to initiate and complete the three-dose HPV vaccine series. Culturally relevant interventions are needed to eliminate these disparities and improve HPV vaccine initiation and completion.

Subjects—We enrolled 372 Hispanic women from South Texas' Cameron and Hidalgo counties with a daughter aged 11–17 who had not received HPV vaccine.

Intervention—All participants received an HPV vaccine educational brochure in their preferred language (English or Spanish) and were invited to participate in the *Entre Madre e Hija* (EMH) program, a culturally relevant cervical cancer prevention program. EMH participants (n= 257) received group health education, referral and navigation support from a *promotora* (a trained, culturally competent community health worker). Those who declined participation in EMH received the brochure only (n=115).

Results—Eighty-four percent of enrolled participants initiated the HPV vaccine, and no differences were observed between EMH program and brochure-only participants. Compared to brochure-only participants, EMH participants were more likely to complete the vaccine series [Adj. OR=2.24, 95% CI (1.25, 4.02)]. In addition, participants who were employed and insured had lower odds of completing the vaccine series [Adj. OR=.45, 95% CI (.21 – .96); Adj. OR=.36, 95% CI (.13 – .98), respectively].

Conclusion—All enrolled participants had high vaccine initiation rates (>80%); however, EMH program participants were more likely to complete the vaccine series. HPV vaccine promotion efforts that include referral and navigation support in addition to education show promise.

Keywords

HPV vaccine; Hispanic; program evaluation; promotora; navigation

INTRODUCTION

Cervical cancer disparities persist in the predominantly Hispanic population in South Texas. Cervical cancer incidence is higher among women in South Texas compared to women in the rest of Texas (10.5 vs. 9.3/100,000), and both are higher than the incidence nationwide (8.1/100,000) [1]. Prevention of cervical cancer is possible through use of two vaccines (a bivalent and a quadrivalent vaccine), which protect against two strains of human papillomavirus (HPV) that cause 70% of cervical cancer cases [2]. The vaccine currently is recommended for girls/boys and young women/men aged 11–26 [3–4]. In Texas a smaller proportion of Hispanic girls aged 13–17 initiate the vaccine compared to Hispanic girls nationwide (58% vs. 65%) [5]; and fewer complete the three dose series (35% vs. 42%) [6]. This proportion falls short of the Healthy People 2020 target of 80% HPV vaccine series completion among girls ages 13–15 [7].

Parents are primary decision makers about vaccinating their adolescent children against HPV [8]. Parental barriers to US adolescent HPV vaccination include lack of health care provider recommendation, concerns about the vaccine's effect on sexual behavior, low perceived risk of HPV infection, social influences, irregular preventive care, and vaccine cost [9]. Providing information to parents that address identified barriers such as, vaccine safety, adverse effects, and the appropriate age for vaccination may reduce concerns and misconceptions about the vaccine. To increase vaccine uptake and completion among traditionally underserved populations (racial/ethnic minorities, immigrant and uninsured), efforts must also address logistical concerns (e.g., vaccine cost and access to care) [10–11] and be tailored to the target audience [12]. The *Promotora* model, considered a culturally appropriate approach for improving access to and utilization of preventive services among Hispanics, has been used successfully to address a wide range of health issues [12]. *Promotoras* are trusted community members trained to disseminate information to community networks. Their shared language and culture increases credibility of the health message. *Promotoras* can also serve as a vital link between health providers and community members.

Given cervical cancer disparities among women in South Texas and suboptimal HPV vaccination rates among Hispanic girls, efforts to prevent and control cervical cancer must continue to raise awareness of the availability of the vaccine and encourage parents with adolescent children to obtain the HPV vaccine. The purpose of this study was to determine if a *promotora*-based, cervical cancer prevention education and outreach program can impact HPV vaccination initiation and series completion among Hispanic girls in South Texas.

MATERIALS AND METHODS

The *Entre Madre e Hija* (EMH) outreach and education program, which was funded by the Cancer Prevention and Research Institute of Texas (PP110057), utilized *promotoras* and undergraduate student peer educators to deliver cervical cancer prevention information and navigation to mothers and their daughters in South Texas' Lower Rio Grande Valley. The EMH program provided health education, referral, and navigation support for HPV vaccination to Hispanic women from Hidalgo and Cameron counties in South Texas who had an adolescent daughter (aged 11–17) who was not vaccinated for HPV. *Promotoras* and student peer educators delivered the EMH program to groups of mothers and daughters. *Promotoras* re-contacted participants six months after enrollment for brochure only or six months after completion of the EMH program to assess HPV vaccination status. Program participants were enrolled between October 2011 and April 2013. The study was exempt (Category 2) from The University of Texas Health Science Center at San Antonio Institutional Review Board.

Setting and study participants

Researchers at the Institute for Health Promotion Research at the University of Texas Health Science Center partnered with the Texas A&M University *Colonias* Program, which has more than 20 years of experience working with local community leaders and conducting outreach among residents of *colonias* (unincorporated settlements where many people live in impoverished conditions and lack basic services) in the Lower Rio Grande Valley (LRGV). The *Colonias* Program maintains 10 community resource centers (CRCs) in the LRGV. These CRCs provide health and social services to local residents, support community education and outreach through an established *promotora* program, and serve as a community gathering place where residents exchange information, identify local problems, and develop solutions. The EMH program was offered in 3 CRCs located in Hidalgo (Alton and San Carlos) and Cameron (Cameron Park) counties.

Hidalgo and Cameron counties have a bilingual (Spanish and English) population estimated at more than 1.1 million and the highest rates of high school dropouts, poverty, and unemployment in the nation [13–16]. About 89% of residents in these counties are Hispanic [17–18]. Also, the region is designated as a Medically Underserved Area and Health Professional Shortage Area by the U.S. Department of Health and Human Services [13, 15].

Recruitment

Promotoras recruited participants at health fairs, community events, and approached women one-on-one within their assigned CRC and surrounding *colonias*. Eligible participants were women of self-reported Hispanic ethnicity with a daughter aged 11–17 who had not received the HPV vaccine and resided in Cameron or Hidalgo counties. Eligibility was ascertained using a screening survey administered in-person by a trained *promotora*. For women with more than one vaccine-eligible daughter, the daughter with the next birthday in the given calendar year was enrolled. All assessments, including vaccine status, were in reference to the enrolled daughter. Other daughters could participate in the education sessions but no information was collected on them. Eligible women who agreed to participate completed an

interviewer-administered survey, were provided an HPV vaccine educational brochure, and invited to a health education session for mothers and daughters. The tri-fold color brochure was developed specifically for the project and available in English or Spanish.

INTERVENTION

The EMH program was delivered by the unique combination of *promotoras* and student peer educators. Three *promotoras* were hired through the *Colonias* Program and housed at one of three CRCs. Members from Kappa Delta Chi, a service based sorority at the University of Texas-Pan American, served as student peer educators. Trained *promotoras* and student peer educators delivered one-hour, health education sessions to mothers and daughters, separately.

Education Sessions

Table 1 provides a brief description of the education content offered to mothers and daughters. *Promotoras* used a flipchart or PowerPoint (PPT) to facilitate presentation of the information. Flipcharts are a simple, efficient option for *promotoras* because they are easy to transport and set-up. At the CRCs, *promotoras* had access to laptops, audiovisual equipment, and a large educational space that was amenable to using PowerPoint (PPT) presentations for sessions, if desired. The flip chart was a more portable option and better suited for smaller groups or one-to-one sessions. Both the flipchart and PPT contained the same educational content, were developed in a bilingual format (Spanish and English), and provided talking points for the *promotoras*. We used simple wording for medical terms and wrote talking points at a fifth-grade reading level. The EMH program, informed by the Health Belief Model, addressed attitudes and beliefs about the cervical cancer, HPV and the HPV vaccine, perceived benefits and barriers to vaccination, provided cues to action and social support [19–20].

The daughters' education sessions were delivered by student peer educators. Materials for the daughters' sessions incorporated the same health content provided to mothers but presented in a manner geared to capture the interest of both middle-school and high-school age girls. The session was designed to be interactive with several hands-on activities and learning games.

Referrals & Navigation Support

After an education session, participants were provided a community resource sheet that included information on local clinics offering free or low-cost HPV immunizations and tips on how to prepare for an appointment (e.g., what documents to take, what questions to ask). Participants received a follow-up telephone call from a *promotora* one week after the education session to determine whether they had made an appointment or required health care navigation support (e.g., needed assistance making an appointment, finding a clinic). Participants with scheduled appointments were contacted by telephone to determine appointment adherence and to remind them about the second and third dose of the HPV vaccine at two and six months after the initial dose.

Measures

Demographics—Participants provided demographic information regarding birthplace, age, education, marital status, employment, health insurance, health status and acculturation (i.e., years living in U.S. and language preference). Age and years living in U.S. (for foreign-born) were measured as continuous variables. Birthplace, marital status, education, employment, health insurance and language preference were coded as dichotomous. Birthplace was coded as 1 = US, 0 = Mexico. Marital status was coded as 1 = married/common law, 0 = divorced, separated, never married, widowed. Education was coded 0 = <High School, 1 = High school graduate/GED. Employment was coded as 1 = full/part-time, 0 = not employed. Health Insurance was coded as 1 = Yes, 0 = No. Language preference for reading and speaking was coded as 1 = Both Spanish and English Equally or Mostly English, 0 = Mostly Spanish. Health status was coded in three ordered categories, 1 = Poor/Fair, 2 = Good, 3 = Very Good/Excellent.

Vaccine Status—To obtain self-reports of daughter's HPV vaccine status, *promotoras* contacted participants six months after attending an education session (for EMH program participants) or six months after obtaining the educational brochure (brochure only participants). The number of HPV vaccine doses ranged from 0 to 3 doses. Two vaccine status variables were computed: Vaccine Initiated = 1 (yes) if doses > 0 and Vaccine Completed = 1 (yes) if doses = 3.

Data Analysis

Descriptive statistics were used to characterize socio-demographic data. Differences in baseline socio-demographic variables between groups (EMH program vs brochure only) were assessed using independent t or χ^2 tests, as appropriate (Table 2). Vaccine outcomes (initiation and completion) between the two groups were assessed using the χ^2 test. The association between vaccine outcomes and program group was examined using logistic regression modeling adjusting for socio-demographic characteristics (i.e., education, language preference, health status, employment, and marital status). Only characteristics with p-values less than 0.10 in univariate analyses with the vaccine outcomes were included in the regression models (Table 3).

RESULTS

We screened 944 women to determine if they were eligible; of these, 337 were ineligible. Reasons for ineligibility included: no daughter aged 11–17 (n=112, 33.2%); daughter already initiated (n=175, 51.9%) or completed (n=44, 13.1%) vaccine; not Hispanic (n=2, 0.5%); or missing data (n=6, 1.8%). Of the 607 eligible women, 202 (33.3%) refused participation, 33 (5.4%) had missing data, and 372 completed a baseline survey and received an HPV educational brochure. Of these 372 enrolled participants, 257 participated in the EMH program (68.1%) and 115 received the Brochure Only (30.9%). Six month follow-up rates 80.9% (n=208) and 69.6 (n=80) among EMH program and brochure only participants, respectively.

Table 2 describes the 372 enrolled participants by group [EMH program, n=257 (68.1%) or brochure only, n=115 (30.9%)]. The majority of participants in both groups were married, unemployed, had less than a high school education, and no health insurance. The average age of mothers was 38.4 years in EMH and 37.4 years in the brochure only group. Significant group differences existed for US born (brochure only participants were more likely to be born in the US), years living in the US for foreign born (12.5 years for EMH program vs. 15.6 years for brochure only), language preference (EMH program participants preferred mostly Spanish) and health status (EMH program participants more frequently reported their health status as “good”).

Eight-four percent of participants in both groups (Brochure only and EMH) initiated HPV vaccination; however compared to brochure only, EMH participants were more likely to complete the vaccine series (42.5% vs. 72.2%, $p<.001$). The regression analysis (Table 3) with the full sample adjusting for demographic confounders revealed significant associations for employment, health insurance and the study groups. Participants who were employed (outside the home part-time or full-time) had lower odds of completing the vaccine series compared to participants who were not employed (Adj. OR = 0.45, $p=.04$). Participants who were insured had lower odds of completing the vaccine series compared to participants who were not insured (Adj. OR = 0.36, $p=.05$). In addition, EMH participants were more likely to complete the three-dose series compared to those in the brochure only group (Adj. OR= 2.24, $p=.01$)

DISCUSSION

Vaccine initiation rates in both groups (84%) were substantially higher than the initiation rates reported for Texas (58%) and the nation (65%) [6]. This result suggests that our *promotora* outreach and brief contact/education on cervical cancer prevention using the brochure exposed participants to our health promotion message (e.g., HPV vaccination), gained their initial attention, and prompted them to initiate the vaccine (cue to action in Health Belief model). However, EMH program participants were more likely to complete the series with over 70% of EMH program participants reporting that their daughter completed the 3-dose vaccine series. This completion rate is higher than rates reported for Texas (35%) and the nation (42%) [6], suggesting that the additional support provided by *promotoras*, such as appointment reminders and health care navigation, may be important. A recent study found that a brief clinician-focused intervention was effective in cueing the physician and family to act and promoted HPV vaccine initiation; yet, the same study found that a family-focused intervention that included telephone appointment reminders was needed to promote HPV vaccine series completion [21].

We also found that employed women were less likely to report daughter’s completion of the vaccine series. *Promotoras* reported that they encountered challenges making and having mothers keep vaccine appointments because vaccines were only offered during business hours, requiring mothers to take time off work and/or have their daughter miss school. Alternative intervention strategies that address logistical concerns, such as offering vaccine clinics on evenings and weekends, may be needed to increase vaccine completion. We also found that women with health insurance had lower odds of completing the vaccine. Only

10% of participants reported having some form of health insurance, of these, 40% had private or employer-based insurance. It may be that out of pocket costs (co-pays, vaccine coverage) associated with these plans posed an additional barrier to receiving care.

Through our outreach and recruitment efforts we discovered that many women reported their daughters had initiated but not completed the vaccine series. Of those screened for eligibility in our sample, over 50% had already initiated but not completed the vaccine. *Promotoras*' anecdotally reported that many mothers were not aware that the vaccine required three doses or did not know the timing of the doses. In addition, because we offered the EMH program in two US-Mexico border counties, some women were confused by differences between US and Mexico HPV vaccine recommendations. In Mexico, the second dose is given six months (versus two months in the US) after the first, and the third dose is given 60 months (versus six months in the US) after the first dose [22]. Outreach and education efforts must increase community awareness that the HPV vaccine requires three doses to be effective and emphasize the importance of timely completion by US recommendations. In addition, efforts are needed to identify girls that need to complete the series and re-connect them with the healthcare system so they can "catch-up" on their doses. In our study, although these women were not eligible for participation, *promotoras* provided them with the educational brochure, emphasized the importance of completing the series, and encouraged women to have their daughters complete HPV vaccination.

This study has limitations. The primary outcome, vaccine status, is self-reported and may be impacted by recall bias. However, few HPV vaccine promotion studies in the literature include vaccination as an outcome [21, 23]. Also, six month retention rates were low in the brochure only group. No incentives or specific retention activities were used in the brochure only group. Retention rates were likely higher in EMH because the *promotoras* had more intensive and frequent contact with participants during the six month follow-up period. Additionally, the non-randomized design resulted in non-equivalent groups at baseline. Participants in the EMH program were more likely to be foreign born, had lower educational attainment and preferred mostly Spanish. Perhaps the Spanish-speaking immigrants opted for the EMH program because they needed more orientation and support to navigate the US health care system, or English-dominant speakers might perceive that they can get their own information through usual health dissemination channels. These differences need to be further explored to elucidate how best to target health promotion communication strategies to different segments of the Hispanic population in South Texas.

The intervention program was designed for mothers and daughters and did not include young men. At the time that EMH program was conceptualized and funded the routine HPV vaccination in males was not recommended by the Advisory Committee on Immunization Practices [24]. Although the largest number of HPV-associated cancers occur in women, an estimated 7,000 HPV 16- and 18-associated cancers (anal, oropharyngeal and penile) occur in men each year [24]. Vaccination of males provides direct preventive health benefits to males and by association also could reduce disease and cancers in females. Although the family-oriented approach used in EMH could be adapted to incorporate males, the most effective ways to deliver education to young adolescents of both genders, together or separately, remains to be evaluated.

Much more research is needed in the area of HPV vaccine promotion if we are to achieve the Healthy People 2020 target of 80% HPV vaccine series completion among girls aged 13–15 [7]. Although a brief intervention that cues parents to action may be sufficient to promote vaccine initiation, close follow-up and reminders, as well as eliminating logistical barriers, will be needed to ensure vaccine series completion.

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Table 1*Entre Madre e Hija* education session content for mothers and daughters

Mothers Curriculum	Daughters Curriculum
<p>Participants attended a didactic session given by a <i>promotora</i>. Cervical Cancer, HPV, HPV vaccine curriculum (Flipchart)</p> <ul style="list-style-type: none"> • What is cervical cancer? • What causes cervical cancer? (risk factors) • What is HPV? • What are the symptoms? • How can HPV infection be prevented? • What is the HPV vaccine? • How is it administered? • What is the cost of the vaccine? • What is the difference between a Pap test and a pelvic exam? <p>Communication about sex curriculum *</p> <ul style="list-style-type: none"> • Are you ready? Ready to Talk <ul style="list-style-type: none"> – Learn importance of opening lines of communication with their children about sex. • When parents talk, kids listen <ul style="list-style-type: none"> – Learn about barriers and anxieties that prevent parents from having conversations with their kids about waiting to have sex. • Tips for talking <ul style="list-style-type: none"> – Learn ideas about how to begin and sustain conversation with their kids about waiting to have sex • Wrap up and next steps <ul style="list-style-type: none"> – Reflect on the content learned, ask questions, and make a commitment to implement what they have learned. 	<p>Participants attended a small group discussion given by a student peer educator.</p> <p>Understanding reproductive health</p> <ul style="list-style-type: none"> • Identify the organs of the female reproductive system and explain their function. • <u>Interactive activity:</u> <ul style="list-style-type: none"> – Engage in labeling activity using a 3-D model of reproductive system <p>Introduction to Cervical Cancer, Pap test and HPV vaccine</p> <ul style="list-style-type: none"> • Define cancer and cervical cancer • Describe what a doctor does during a Pap test • Discuss risk conditions/factors for developing cervical cancer and ways to prevent (HPV Vaccine) and detect (Pap test) cervical cancer. • <u>Interactive activity:</u> <ul style="list-style-type: none"> – Learn how a doctor performs a Pap test using a speculum, brush and 3-D model of reproductive system. <p>Understanding STI and HPV</p> <ul style="list-style-type: none"> • Examine facts and create posters about HPV. • Discuss the causes of most common STI's and describe symptoms, transmission, consequences of infection and ways to prevent HPV. • <u>Interactive activities:</u> <ul style="list-style-type: none"> – Create a poster on HPV facts as a group – Science-based activity to demonstrate transmission of infectious agent through exchange of fluids.

*
 from Parents Speak Up National Campaign

Table 2

Characteristics of participants at baseline by group

Variable	EMH Program (n=257)	Brochure Only (n=115)	Total ^a (n=372)	P value ^b
Age, y	38.4 (8.2)	37.4 (7.7)	38.1 (8.0)	0.31
Married	198 (81.5)	85 (75.9)	283 (79.7)	0.22
Education HS/GED	34 (14.0)	25 (23.3)	59 (16.6)	0.05
Employed	38 (15.6)	20 (17.7)	58 (16.3)	0.62
Country of Origin (US born)	25 (10.4)	27 (24.3)	52 (14.8)	0.001
Years Living in US among foreign Born	12.5 (6.2)	15.6 (8.2)	13.3 (7.0)	0.003
Language Preference (Both/Mostly English)	27 (11.6)	28 (25.5)	55 (16.0)	0.001
Insured	24 (10.0)	12 (10.6)	36 (10.2)	0.86
Health Status				< 0.001
Poor/Fair	30 (12.6)	29 (25.4)	59 (16.8)	
Good	199 (50.0)	33 (28.9)	152 (43.2)	
Very Good/Excellent	89 (37.4)	52 (45.6)	141 (40.1)	

Note: The data shown are mean (SD) or number (%).

^a Sample size varies due to missing data.^b P values for differences at baseline between study groups are from two-sided t-tests for continuous variables or chi-square tests for proportions.

Table 3

Logistic regression analyses predicting HPV vaccine completion

Variable	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	P value
Employment				
Employed	0.41 (0.21 – .79)	.01	0.45 (0.21 – 0.96)	0.04
Unemployed	1.00 (reference)		1.00 (reference)	
Marital Status				
Married	1.92 (1.06 – 3.45)	.03	1.44 (0.76 – 2.73)	0.27
Not Married	1.00 (reference)		1.00 (reference)	
Education				
HS Education	0.54 (0.28 – 1.03)	.06	0.89 (0.41 – 1.95)	0.78
< HS education	1.00 (reference)		1.00 (reference)	
Preferred Language				
Both/Mostly English	0.41 (0.20 – .87)	.02	0.97 (0.31 – 3.05)	0.96
Mostly Spanish	1.00 (reference)		1.00 (reference)	
Country of Origin				
US	0.46 (0.23 – 0.94)	.03	0.88 (0.29 – 2.71)	0.82
Mexico	1.00 (reference)		1.00 (reference)	
Health Insurance Status				
Insured	0.29 (0.12 – 0.68)	.01	0.36 (0.13 – .98)	0.05
Uninsured	1.00 (reference)		1.00 (reference)	
Health Status				
Poor/Fair	0.65 (0.33, 1.27)	.21		
Good	0.76 (0.45 – 1.31)	.33		
Very Good/Excellent	1.00 (reference)			
Study Group				
EMH Program	2.40 (1.42 – 4.06)	.001	2.24 (1.25 – 4.02)	0.01
Brochure Only	1.00 (reference)		1.00 (reference)	

^a Adjusted for all other variables in the model.