

Maternal Support for Human Papillomavirus Vaccination in Honduras

Rebecca B. Perkins, M.D., M.Sc.,¹ Sarah M. Langrish, N.P.,²
Deborah J. Cotton, M.D., M.P.H.,¹ and Carol J. Simon, Ph.D.³

Abstract

Background: Cervical cancer is a leading cause of cancer death for women in Latin America, and vaccinating against human papillomavirus (HPV) has the potential to limit this disease. We sought to determine Honduran women's awareness of HPV vaccination and interest in vaccinating their daughters against HPV.

Methods: We interviewed mothers aged ≥ 17 at primary care clinics in Honduras. First, we collected demographic information and assessed knowledge related to cervical cancer prevention and awareness of HPV and HPV vaccination. Because most participants were not familiar with HPV, education about the relationships among HPV, sexual activity, and cervical cancer was provided before we asked participants if they would accept HPV vaccination for a 9-year-old daughter. We used multivariable logistic regression to determine predictors of vaccine acceptance.

Results: We interviewed 632 mothers. Only 13% had heard of HPV vaccination before the interview. After education, 91% would accept HPV vaccination for a 9-year-old daughter. Mothers who intended to vaccinate knew more at baseline about cervical cancer prevention than did those who did not endorse vaccination. Demographic characteristics did not predict vaccine acceptance.

Conclusions: Few Honduran mothers were aware of HPV or HPV vaccination. However, most Honduran mothers would accept HPV vaccination for their daughters after receiving education about the relationship between HPV infection and cervical cancer. Baseline cervical cancer knowledge was associated with vaccine acceptance.

Introduction

CERVICAL CANCER IS THE MOST COMMON cause of cancer death among women in developing countries.¹ In Latin America, 72,000 women develop cervical cancer and 33,000 succumb to the disease each year.² Despite attempts to improve screening and treatment programs over the past several decades, cancer incidence and mortality rates have remained high.²⁻⁶ Because almost all cervical cancer is caused by human papillomavirus (HPV) infection,⁷ HPV vaccination holds great promise for reducing the burden of cervical cancer in developing countries.

Parents and healthcare workers from low-resource nations in Latin America, including Mexico,⁸ El Salvador,⁹ Peru,¹⁰ and Brazil,¹¹ appear to support HPV vaccination. In addition, studies of Latinos and Latino immigrants in the United States also indicate high levels of HPV vaccine acceptance,¹²⁻¹⁴ in some cases higher than other ethnic groups.^{13,15,16} Higher

levels of acceptance among Latin American nationals and Latino immigrants may stem from positive views toward childhood vaccinations and personal experience with cervical cancer¹⁷.

Latin American nations stand to benefit greatly from HPV vaccination because regional cervical cancer rates are high¹⁸ and screening programs are often inadequate or inaccessible,^{4,19} but childhood vaccination programs are excellent, with immunization rates exceeding 80%²⁰. Although existing research from Latin America indicates high HPV vaccine acceptance rates, each country holds its own set of cultural beliefs and values.²¹ Therefore, acquiring additional regional acceptability data has been recommended before implementing HPV vaccination programs in Latin America.²² Our study focused on Honduras, the second poorest country in the Western Hemisphere, where cervical cancer is a leading cause of cancer death for women.² HPV vaccine was available in Honduras during the study period at a handful of private

¹Boston University School of Medicine, Boston, Massachusetts.

²Honduran Ministry of Health, Tegucigalpa, Honduras.

³Boston University School of Public Health, Boston, Massachusetts.

clinics for U.S. \$140–\$250 per dose but was not included in the government-run vaccine program that provides childhood vaccines free of charge. Consistent with other studies of HPV vaccine acceptability,^{8–10} we interviewed mothers, who are generally considered to be the most important decision makers regarding childhood vaccinations. The objectives of our study were to determine awareness of HPV vaccination among Honduran mothers and to assess their intention to accept HPV vaccination for their daughters.

Materials and Methods

Setting and participants

We conducted a cross-sectional survey using clinical populations in rural Honduras. We interviewed 632 mothers between January 1, 2006, and July 1, 2007, at two clinics that were located approximately 1 hour by car from the capital city of Tegucigalpa. We selected two large clinics in the region; one was affiliated with the Honduran Ministry of Health, and the other was a privately run clinic that served the rural poor. We conducted two to four sessions per month, choosing busy clinical days when preventive care or ophthalmology consultations were offered. We chose to recruit at ophthalmology sessions in addition to preventive care sessions because cervical cancer screening is available during preventive care sessions; therefore, women recruited during those sessions might have a higher awareness of HPV. During each study session, volunteers approached all women in the waiting area to determine eligibility and desire to participate in a 15-minute survey about vaccinations. Mothers aged ≥ 17 years were eligible for participation in the study; women who did not have any children were excluded. Over 90% of those approached agreed to participate. Approximately 8–10 interviews were conducted per session. All interviews were conducted in Spanish and took place in a private area. Data collection was approved by the directors of each clinical site, and verbal informed consent was obtained from all participants. The use of deidentified data for research purposes was approved by the Institutional Review Board at Boston University School of Medicine.

Survey instrument: Content and administration

Survey questions were written in English, translated to Spanish by native speakers, and back-translated to ensure equivalent meanings. Surveys contained four sections. Section 1 consisted of forced-choice questions soliciting demographic information that prior studies indicated might influence HPV vaccine acceptability⁹: age, marital status, education, parity, use of family planning, sexual history, prior cervical cancer screening history, and prior history of cervical dysplasia. Section 2 was used to assess baseline knowledge about cervical cancer prevention and awareness of HPV and HPV vaccination, with the goal of understanding the effects of preexisting ideas on vaccine acceptability. We used our previously validated, four-item survey that contained the following questions²³: What is the purpose of the Pap smear? What causes cervical cancer? Can cervical cancer be prevented? How can cervical cancer be prevented? To address the subjects of HPV and HPV vaccination, we added two additional questions: Have you heard of HPV? Have you heard of a vaccine against cervical cancer? Answers to open-

ended questions were noted by the interviewer as brief phrases in the participant's own words. For example, the purpose of the Pap smear is to *detectar cáncer* (detect cancer), or cervical cancer is caused by *infecciones* (infections) or *relaciones sexuales* (sexual relations). Answers were coded into categories using our previously developed coding system.²³

Pilot interviews revealed that few participants had heard of HPV or HPV vaccination. Therefore, Section 3 of the survey, which was administered after the assessment of cervical cancer prevention knowledge and HPV awareness, consisted of a short, standardized educational script (65 words in Spanish). We emphasized the commonness of HPV infection, discussed its transmission via sexual behavior, highlighted the causal link between HPV infection and cervical cancer, and discussed the potential benefits of vaccination against HPV with regard to cervical cancer prevention. Section 4, which was administered after this education, addressed our primary outcome variable: HPV vaccine acceptability. We evaluated acceptability with the following question: If you had a 9-year-old daughter, would you be interested in vaccinating her against HPV? (The age of 9 was chosen because (1) 9 is the youngest age for which HPV vaccine is approved, (2) vaccination of 9-year-olds may prove the most feasible for school-based vaccination programs, and (3) we were unlikely to overestimate maternal acceptance as vaccination tends to be more controversial in younger girls.²⁴ For women over age 50, the question included the phrase, daughter or granddaughter. We included grandmothers because many family decisions include discussions among family members of different generations. Therefore, if grandmothers strongly opposed HPV vaccination, they might influence mothers to decline vaccination for their daughters.) Participants responded in their own words, and their responses were transcribed verbatim. The majority of responses were simply *sí* (yes) or *no* (no). Responses that indicated assent, such as *Creo que sí* (I think so) or *¡Claro!* (Of course!) were coded as would accept, and responses indicating doubt or negativity, *Creo que no* (I don't think so) or *No se* (I don't know) were coded as would not accept. We chose to include answers indicating doubt in the would not accept category to generate the most conservative estimate of acceptance rates.

Analysis

We used SAS statistical software version 8.2 for data analysis (SAS Institute Inc., Cary, NC). A $p < 0.05$ was considered significant. Answers to the four cervical cancer prevention knowledge questions were coded thematically and categorized as correct or incorrect using our previously developed coding system (see Table 2 items 1–4 for correct answers). The number of correct answers was summed to give a total cervical cancer prevention knowledge score (0–4 correct). The primary outcome was mothers' interest in vaccinating 9-year-old daughters against HPV. We performed bivariate analyses to determine associations between demographic and knowledge variables and HPV vaccine acceptance, using chi-square and Fisher exact tests for categorical variables and t tests for continuous variables. We then performed a multivariable logistic regression analysis to determine the independent contributions of associated factors to our primary outcome variable, HPV vaccine acceptance. We included all variables with theoretical significance in our model: age,

marital status, parity, age at first vaginal sex, use of family planning, prior Pap smear history, literacy, education, and total cervical cancer prevention knowledge score. We excluded result of last Pap smear, history of cervical dysplasia, and number of lifetime sexual partners because of the small number of women reporting abnormal Pap smears, history of dysplasia, or more than two lifetime partners. We used total cervical cancer prevention knowledge score rather than including individual knowledge-related variables due to collinearity of responses.

Results

The mean age of our 632 participants was 38.4 years. Participants ranged in age from 17 to 78 years; 174 participants were <age 30, 358 participants were between the ages of 30 and 50, and 100 participants were >age 50 (Table 1). The mean education level was 5.7 years; 84% reported that they were literate. Nearly 90% of participants were either formally married or in common law marriages; the average parity was

3.8 children. Mean age of first vaginal sex was 18.3 years. All but 2 mothers stated they were currently monogamous or abstinent, and >80% reported only one or two lifetime partners. Most participants (84%) reported having a Pap smear within the past 3 years, and 4% reported a prior history of cervical dysplasia.

Baseline cervical cancer prevention knowledge assessment (Table 2) indicated that most participants understood that cervical cancer was preventable and knew that Pap smears were used to detect cancer. Knowledge of HPV and HPV vaccination was more limited, however. Less than one quarter of mothers had heard of HPV, and only 3 participants were specifically able to cite HPV as a cause of cervical cancer. A minority of women (13%) had heard of a vaccine against cervical cancer, and only 1 woman cited HPV vaccination as a means of preventing cervical cancer.

Vaccine acceptability after education was high among the cohort: 91% of mothers ($n = 576$) would vaccinate a 9-year-old daughter. Of the 56 women who would not accept vaccination, 22 intended to decline vaccination, and 34 were unsure.

TABLE 1. ASSOCIATION OF DEMOGRAPHIC INFORMATION WITH INTENTION TO ACCEPT HUMAN PAPILLOMAVIRUS VACCINATION

Characteristic	Total (n = 632) Mean \pm SD (range) n	Would accept (n = 576) Mean \pm SD (range) n	Would not accept (n = 56) Mean \pm SD (range) n	p value (t-test)
Age (years)	37.9 \pm 12.2 (17–78) 632	37.8 \pm 12.0 (17–78) 576	38.4 \pm 14.0 (23–74) 56	0.70
Education level (years)	5.7 \pm 3.7 (0–16) 555	5.7 \pm 3.7 (0–16) 501	6.3 \pm 4.4 (0–15) 54	0.29
Parity	3.8 \pm 2.4 (1–12) 631	3.8 \pm 2.4 (1–12) 576	3.6 \pm 2.6 (1–12) 55	0.60
Age at first vaginal sex (years)	18.3 \pm 3.2 (11–36) 619	18.3 \pm 3.1 (11–36) 564	18.5 \pm 3.4 (12–32) 55	0.51
Characteristic ^a	n (%)	n (%)	n (%)	p value Chi-square or Fisher exact test
Literate ^b	470 (84)	428 (85)	42 (78)	0.17
Marital status				0.46
Formal marriage	246 (39)	221 (39)	25 (45)	
Common law marriage	310 (49)	283 (49)	27 (48)	
Single	73 (12)	69 (12)	4 (7)	
Lifetime sexual partners (≤ 2)	544 (86)	496 (86)	48 (89)	0.57
Using contraception ^c	459 (81)	419 (81)	40 (87)	0.33
Date of last Pap smear				0.92
Within the last 3 years	524 (84)	478 (84)	46 (82)	
More than 3 years ago	61 (10)	55 (10)	6 (11)	
Never	39 (6)	35 (6)	4 (7)	
Result of most recent Pap test				0.45
Dysplasia	3 (0.5)	3 (0.5)	0	
Negative	541 (92)	495 (92)	46 (88)	
Unsure	45 (8)	39 (7)	6 (11)	
Prior history of cervical dysplasia	22 (4)	19 (4)	3 (5)	0.46

^aPercentages relate to total number of responses for each variable and may not reflect total number. No patterns were observed for missing data.

^bLiteracy was measured by self-report. Participants were asked if they could read or write. Those who responded *sí* (yes) were considered literate; those who responded *no* (no) or *un poco* (a little) were considered illiterate.

^cThe high levels of contraceptive use in our study may reflect the Honduran Ministry of Health's promotion of birth spacing and limited family size via heavily subsidized family planning methods that are offered through public health clinics.

TABLE 2. ASSOCIATION OF CERVICAL CANCER PREVENTION KNOWLEDGE AND AWARENESS OF HUMAN PAPILLOMAVIRUS AND HUMAN PAPILLOMAVIRUS VACCINE WITH INTENTION TO ACCEPT VACCINATION

Question ^a	Total (n = 632) n (%) correct	Would accept (n = 576) n (%) correct	Would not accept (n = 56) n (%) correct	p value total correct vs. total incorrect Chi-square or Fisher exact test
What is the purpose of the Pap smear?				0.24
Correct				
Detect cervical, vaginal, uterine cancer	125 (20)	115 (20)	10 (18)	
Detect cancer and infection	113 (18)	104 (18)	9 (16)	
Detect cancer only	157 (25)	145 (25)	12 (21)	
Incorrect				
Detect infection only	48 (8)	43 (7)	5 (9)	
General health maintenance ^b	159 (25)	145 (25)	14 (25)	
Unsure	30 (5)	24 (4)	6 (11)	
Why does cervical cancer develop?				0.05
Correct				
Infection	25 (4)	25 (4)	0	
Sexual activity ^c	47 (7)	45 (8)	2 (4)	
Incorrect				
Not taking care of oneself ^d	29 (5)	29 (5)	0	
Unsure	531 (84)	477 (83)	54 (96)	
Can cervical cancer be prevented?				0.01
Correct				
Yes	537 (85)	496 (86)	41 (73)	
Incorrect				
No	20 (3)	17 (3)	3 (5)	
Unsure	75 (12)	63 (11)	12 (21)	
How can cervical cancer be prevented? ^e				
Correct				0.75
Medical treatment	117 (22)	110 (22)	7 (17)	
Monogamy/abstinence/condoms	75 (14)	67 (14)	8 (20)	
Pap smears	220 (41)	207 (42)	13 (32)	
Incorrect				
Taking care of oneself ^f	60 (11)	56 (11)	4 (10)	
Unsure	65 (12)	56 (11)	9 (22)	
Have you heard of HPV? ^g (Yes)	55 (23)	53 (24)	2 (11)	0.25
Have you heard of a vaccine against cervical cancer? (Yes)	82 (13)	74 (13)	8 (15)	0.75

^aPercentages relate to total number of responses for each variable and may not reflect total number.

^bAnswers included such statements as *A saber como está adentro* (To know how you are inside) and *detectar muchas cosas* (to find many things).

^cAnswers included such statements as *muchas parejas* (many sexual partners), *de relaciones sexuales* (from sexual relations), and *del esposo* (from the husband).

^dAnswers included such statements as *falta de higiene* (lack of hygiene) and *por no visitar al médico* (not going to the doctor).

^eThis question was asked only to participants who believed cervical cancer was preventable.

^fAnswers included such statements as *aseo* (hygiene) and *protegiendose* (protecting yourself).

^gThis question was added approximately 8 months into the study period. Patients who had heard of HPV or vaccination stated that ads were running on radio and television.

Two indicators of baseline cervical cancer prevention knowledge were associated with support of HPV vaccination. Mothers who intended to vaccinate a 9-year-old daughter were more likely to believe that cervical cancer was preventable (86% vs. 73%, $p = 0.01$) and had a slightly better understanding of the causes of cervical cancer (12% vs. 4%, $p = 0.05$) than mothers who did not intend to vaccinate. The rest of the demographic variables, cervical cancer prevention knowledge, and awareness of HPV and HPV vaccine awareness were not significantly associated with vaccine acceptance in bivariate analyses (Tables 1 and 2). Multivariable logistic regression confirmed an association between total cervical cancer prevention knowledge score and intention to vaccinate

against HPV ($p = 0.02$); no demographic variables were significant in multivariate analysis.

Discussion

We found very limited awareness of HPV and HPV vaccination among Honduran mothers. Despite limited knowledge, however, 91% of Honduran mothers intended to accept HPV vaccination for their daughters after receiving information about HPV and the vaccine. This acceptance rate is higher than rates noted in previous studies from North America and Europe²⁴ but comparable to acceptance rates found in other Latin American studies and studies of Latino immigrants in

the United States.^{8-10,13,16,17} The high acceptability of vaccination after a brief educational intervention highlights the need and opportunity to make education about HPV, HPV vaccination, and reproductive health available to the general public.

Conservative social values, such as those in Honduras, may be perceived as barriers to sexual education and HPV vaccination in some settings. Indeed, studies of primarily nonimmigrant, Caucasian parents in the United States and Europe highlighted concerns that vaccination against a sexually transmitted infection (STI) might encourage sexual activity among young girls.^{24,25} These fears were not prominent in Latino populations in the United States,^{16,17} however, and did not appear to hinder acceptance among our Honduran participants despite explicit description of the transmission of HPV via sexual activity. Because 95% of Hondurans self-identify as Catholic²⁶ and premarital sex by women is strongly discouraged,²⁷ education about STIs could be considered inappropriate and vaccination against an STI could be perceived as unnecessary. However, the mothers in our study welcomed education and responded to a brief intervention with overwhelming support for vaccination, perhaps indicating that education about HPV and other reproductive health issues would be both acceptable and desirable.

Mothers generally believe that vaccinating their children will protect their health,¹⁷ and, after learning about the connection between HPV infection and cervical cancer, participants' desire to prevent cervical cancer may have outweighed any concerns about the sexual transmission of HPV. Cervical cancer is a leading cause of death for women in low-resource settings,¹ and in this region of Honduras, 30% of women have known a friend or relative who has suffered from the disease.²³ Both personal experience with cervical cancer²⁴ and perceived severity of disease²⁸ have been associated with intention to vaccinate in prior studies, and the high levels of vaccine support among participants may reflect their desires to protect their daughters from cancer.

We found that women who knew more about cervical cancer prevention were more likely to support HPV vaccination. Other studies have also demonstrated an association between cervical cancer prevention knowledge and HPV vaccine acceptability.^{8,25} This finding underscores the importance of continuing cervical cancer screening and education programs for adult women in the age of HPV vaccination. Not only are screening programs crucial to protect the health of mothers and grandmothers who are not candidates for vaccination, but also the increased awareness of cervical cancer prevention among parental decision makers may facilitate HPV vaccination campaigns.

This study has several limitations. All participants were attending medical clinics; therefore, they may have a higher opinion of medical interventions than those who do not seek healthcare. The average educational level (5.7 years) and literacy rate (84%) in our sample were higher than the regional average (3 years and 70% respectively),²⁹ which may limit generalizability to less educated populations. We did not ask mothers if they had daughters who were age eligible for vaccination, although prior research failed to show a difference in HPV vaccine acceptance rates between women with and without age-eligible children.⁸ We did not ask mothers who declined vaccination to elaborate on their reasons for doing so. Finally, the possibility exists that awareness of HPV

and HPV vaccine has increased since the time of this study, which may impact acceptance of vaccination.

Although parental refusal of HPV vaccination may be a barrier to vaccination in some countries, research to date in Latin America has shown favorable attitudes toward HPV vaccination. However, no resource-poor nations currently provide routine HPV vaccination to adolescent girls outside of privately funded demonstration programs because of the high cost of HPV vaccination. Future research should focus on maximizing public awareness of HPV and HPV vaccination as well as identifying systems barriers that hinder the implementation of both vaccination and screening and treatment programs in low-resource settings, with the goal of improving access to vaccination for young adolescents and screening and treatment for older women.

Conclusions

HPV vaccination has the potential to greatly reduce cervical cancer mortality in resource-poor nations if the public accepts vaccination of young girls against this STI. Despite limited knowledge about HPV, >90% of Honduran mothers intended to accept HPV vaccination for their daughters after education was provided about HPV and the vaccine.

Acknowledgments

We acknowledge Ines Espinoza for her help with collecting interviews. Research support for this project was provided by the Building Interdisciplinary Research Careers in Women's Health (BIRCWH) Program (K12HD043444-06) and an American Cancer Society Mentored Research Scholar Grant (MRSG09-151-01).

Disclosure Statement

No competing financial interests exist for any of the authors.

References

1. Denny L. The prevention of cervical cancer in developing countries. *Br J Obstet Gynaecol* 2005;112:1204-1212.
2. Parkin DM, Almonte M, Bruni L, Clifford G, Curado MP, Pineros M. Burden and trends of type-specific human papillomavirus infections and related diseases in the Latin America and Caribbean region. *Vaccine* 2008;26 (Suppl 11):L1-L15.
3. Hernandez-Avila M, Lazcano-Ponce EC, de Ruiz PA, Romieu I. Evaluation of the cervical cancer screening programme in Mexico: A population-based case-control study. *Int J Epidemiol* 1998;27:370-376.
4. Lazcano-Ponce EC, Moss S, Alonso de Ruiz P, Salmeron Castro J, Hernandez Avila M. Cervical cancer screening in developing countries: Why is it ineffective? The case of Mexico. *Arch Med Res* 1999;30:240-250.
5. Palacio-Mejia LS, Rangel-Gomez G, Hernandez-Avila M, Lazcano-Ponce E. Cervical cancer, a disease of poverty: Mortality differences between urban and rural areas in Mexico. *Salud Publica Mex* 2003;45 (Suppl 3):S315-S325.
6. Robles SC, White F, Peruga A. Trends in cervical cancer mortality in the Americas. *Bull Pan Am Health Organ* 1996;30:290-301.
7. Bosch FX, Lorincz A, Munoz N, Meijer CJ, Shah KV. The causal relation between human papillomavirus and cervical cancer. *J Clin Pathol* 2002;55:244-265.

8. Lazcano-Ponce E, Rivera L, Arillo-Santillan E, Salmeron J, Hernandez-Avila M, Munoz N. Acceptability of a human papillomavirus (HPV) trial vaccine among mothers of adolescents in Cuernavaca, Mexico. *Arch Med Res* 2001;32: 243–247.
9. Podolsky R, Cremer M, Atrio J, Hochman T, Arslan AA. HPV vaccine acceptability by Latino parents: A comparison of U.S. and Salvadoran populations. *J Pediatr Adolesc Gynecol* 2009;22:205–215.
10. Lee FH, Paz-Soldan VA, Carcamo C, Garcia PJ. Knowledge and attitudes of adult Peruvian women vis-a-vis human papillomavirus (HPV), cervical cancer, and the HPV vaccine. *J Low Genit Tract Dis* 2010;14:113–117.
11. de Carvalho NS, Teixeira LM, Pradel EM, Gabardo J, Joly C, Urbanetz AA. Vaccinating against HPV: Physicians' and medical students' point of view. *Vaccine* 2009;27:2637–2640.
12. Sanderson M, Coker AL, Eggleston KS, Fernandez ME, Arrastia CD, Fadden MK. HPV vaccine acceptance among Latina mothers by HPV status. *J Womens Health* 2009;18: 1793–1799.
13. Watts LA, Joseph N, Wallace M, et al. HPV vaccine: A comparison of attitudes and behavioral perspectives between Latino and non-Latino women. *Gynecol Oncol* 2009;112: 577–582.
14. Bair RM, Mays RM, Sturm LA, Zimet GD. Acceptability of the human papillomavirus vaccine among Latina mothers. *J Pediatr Adolesc Gynecol* 2008;21:329–334.
15. Constantine NA, Jerman P. Acceptance of human papillomavirus vaccination among Californian parents of daughters: A representative statewide analysis. *J Adolesc Health* 2007;40:108–115.
16. Scarinci IC, Garces-Palacio IC, Partridge EE. An examination of acceptability of HPV vaccination among African American women and Latina immigrants. *J Womens Health* 2007; 16:1224–1233.
17. Perkins RB, PierreJoseph N, Marquez C, Iloka S, Clark JA. Why do low-income, minority parents choose HPV vaccination for their daughters? *J Pediatr* 2010;157:617–622.
18. Arrossi S, Sankaranarayanan R, Parkin DM. Incidence and mortality of cervical cancer in Latin America. *Salud Publica Mex* 2003;45 (Suppl 3):S306–314.
19. Agurto I, Bishop A, Sanchez G, Betancourt Z, Robles S. Perceived barriers and benefits to cervical cancer screening in Latin America. *Prev Med* 2004;39:91–98.
20. UNICEF. UNICEF in Latin America and the Caribbean. Available at www.unicef.org/lac/unicef_in_lac.pdf. Accessed April 10, 2010.
21. Roniger L, Herzog T. The collective and the public in Latin America: Cultural identities and political order. Portland, OR: Sussex Academic Press, 2000.
22. Winkler JL, Wittet S, Bartolini RM, et al. Determinants of human papillomavirus vaccine acceptability in Latin America and the Caribbean. *Vaccine* 2008;26 (Suppl 11):L73–79.
23. Perkins RB, Langrish S, Stern LJ, Simon CJ. A community-based education program about cervical cancer improves knowledge and screening behavior in Honduran women. *Rev Panam Salud Publica* 2007;22:187–193.
24. Zimet GD, Liddon N, Rosenthal SL, Lazcano-Ponce E, Allen B. Psychosocial aspects of vaccine acceptability. *Vaccine* 2006;24 (Suppl 3):S201–209.
25. Davis K, Dickman ED, Ferris D, Dias JK. Human papillomavirus vaccine acceptability among parents of 10- to 15-year-old adolescents. *J Low Genit Tract Dis* 2004;8:188–194.
26. CIA- The world factbook- Honduras. Available at www.cia.gov/library/publications/the-world-factbook/geos/ho.html. 2009 Accessed April 10, 2010.
27. Merrill T. Honduras: A country study. Washington, DC: GPO for the Library of Congress, 1995.
28. Mays RM, Sturm LA, Zimet GD. Parental perspectives on vaccinating children against sexually transmitted infections. *Soc Sci Med* 2004;58:1405–1413.
29. Secretary of State of Honduras Presidential Report: Information by department and municipality: Appendix 4; 2004:1–37.

Address correspondence to:
 Rebecca B. Perkins, M.D., M.Sc.
 Department of Obstetrics and Gynecology
 Boston University School of Medicine
 85 E. Concord Street, 6th Floor
 Boston, MA 02118
 E-mail: rebecca.perkins@bmc.org