

Fathers' intentions to accept human papillomavirus vaccination for sons and daughters: exploratory findings from rural Honduras

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Abstract

Objectives Little is known about fathers' attitudes toward human papillomavirus (HPV) vaccination in low-resource settings. We sought to determine the awareness of HPV vaccination among Honduran fathers, and to assess their intention to accept HPV vaccination for their sons and daughters.

Methods We conducted 100 structured interviews of fathers recruited from medical and business settings between May 2007 and June 2008. After assessing baseline knowledge, fathers received a brief explanation of HPV infection, cervical cancer, genital warts, and HPV vaccination. They were then asked whether they would accept HPV vaccination for their sons and daughters.

Results Prior to receiving information about HPV, 85% of fathers believed that cervical cancer was preventable, over two-thirds could correctly name some form of prevention, 22% of fathers had heard of HPV, and 17% had heard of HPV vaccination. After receiving HPV-related information, 100% of fathers intended to accept HPV vaccination for their sons and 94% intended to accept HPV vaccination for their daughters.

Conclusions Few Honduran fathers were aware of HPV or HPV vaccination, but after receiving information, most would accept HPV vaccination for their sons and daughters.

Keywords HPV vaccination · Fathers · Parental acceptance · Low-resource settings

Introduction

Cervical cancer is the second most common cancer in females worldwide. Over 529,000 new cases and 274,000 deaths occurred in 2008, 85% of these in low-resource countries (WHO 2009). Human papillomavirus (HPV) vaccination therefore holds great promise for reducing the incidence of cervical cancer in low-resource settings. Vaccinating a previously unscreened population has the potential to decrease the incidence of cervical cancer by up to 80% (Dasbach et al. 2006), and may also decrease the rates of HPV-related vaginal, vulvar, oral, anal, and penile cancers (Markowitz et al. 2007).

Adolescent girls are the primary targets of HPV vaccination efforts, though vaccinating males in addition to females has also been proposed (Elbasha and Dasbach 2010). Understanding parental vaccine acceptability is therefore vital to the implementation of national vaccination programs. Data suggest that the parents make most vaccine decisions for their adolescent children with youth having some role (Bingham et al. 2009). HPV vaccination has been seen as controversial in a range of settings due to low levels of parental knowledge about cervical cancer and HPV (Kwan et al. 2009; Li et al. 2009) and concerns that vaccinating adolescents could promote earlier or riskier sexual activity (Woodhall et al. 2007; Zimet et al. 2006).

Studies examining parental vaccine acceptability in North American and European populations indicated that most parents support HPV vaccination for their daughters (Brewer and Fazekas 2007; Mays et al. 2004; Reiter et al. 2009; Zimet et al. 2006). HPV vaccine acceptability has

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also been demonstrated in different ethnic and immigrant groups (Bair et al. 2008; Marlow et al. 2009; Perkins et al. 2010b; Scarinci et al. 2007; Watts et al. 2009). Studies of maternal acceptability in low-resource settings suggest greater acceptance of HPV vaccination compared with high-resource settings, though these studies suggest the additional relevance of vaccine cost and access to care (Dinh et al. 2007; Lazcano-Ponce et al. 2001; Madhivanan et al. 2009; Podolsky et al. 2009). Fewer studies specifically examine parental acceptability of male HPV vaccination; those that did indicated lower acceptability of vaccinating males compared to females (Liddon et al. 2010).

Literature from other sexually transmitted infection prevention efforts suggests that fathers are more likely to decline sexually transmitted infection vaccination efforts than mothers (Liddon et al. 2005). Although data regarding fathers' perceptions toward HPV vaccination are limited, studies indicated that 65% of fathers would favor vaccination and 37% of young heterosexual men were willing to be vaccinated (Pelucchi et al. 2010; Reiter et al. 2009, 2010). Fathers' viewpoints toward vaccination of their children may be especially important in socially conservative regions such as Latin America, where men are often the primary decision-makers for the family unit. However, scarce data exist that elucidate paternal perceptions of HPV vaccination in this part of the world. Given the importance of understanding social factors influencing HPV vaccine uptake in Latin America prior to undertaking public health initiatives (Winkler et al. 2008), our study objectives were to determine awareness of HPV vaccination among Honduran fathers, and to assess their intention to accept HPV vaccination for their sons and daughters.

Methods

Setting and participants

We conducted 100 interviews between 1 May 2007 and 1 June 2008 at one large primary care clinic affiliated with the Honduran Ministry of Health (80 interviews) and one local business, a large agricultural producer (20 interviews). Both sites were located approximately 1 h by car from the Honduran capital city of Tegucigalpa. We chose to recruit at both a healthcare setting and a business setting, as many healthy employed men in Honduras do not regularly seek medical care. We recruited fathers aged 21 years or older who were either patients or accompanying patients at the clinic or were employees of the businesses to participate in anonymous 15-min surveys. All men who were either working at the business or were present in the clinic waiting room during interview days were approached. Men with no children were excluded. All interviews were

performed in Spanish in private areas by female volunteer interviewers. No information regarding fathers' opinions on HPV vaccination was available either for Honduras or Latin America at the time that this study was performed. This was therefore an exploratory study to determine rates of HPV vaccine acceptance. To this end, we recruited a total of 100 fathers (mean age 46 years) to provide a preliminary estimate of vaccine acceptability. Fewer than 10% of those approached declined to participate, and the most common reason for declining was time constraints.

Data collection was approved by the directors of the clinical site and business, and verbal informed consent was obtained from all participants. The study was approved by the Institutional Review Board at the Boston University School of Medicine.

Structured interview: content and administration

Structured interview questions were written in English, translated to Spanish by native speakers, and back translated to ensure equivalent meanings. Structured interviews contained four sections: section 1 consisted of forced-choice questions soliciting demographic information which prior studies indicated might influence HPV vaccine acceptability such as age, education, literacy, marital status, number of children, and sexual history (Zimet et al. 2006). Section 2 assessed baseline knowledge about cervical cancer and HPV using our previously validated survey (Perkins et al. 2007, 2010a). We specifically explored participants' understanding of the purpose of the Pap test, causes of cervical cancer, means of preventing cervical cancer, and familiarity with HPV and HPV vaccination. Interview questions and participant responses are included in Table 2. Participants responded in their own words, and their answers were transcribed verbatim as single words or short phrases in Spanish. Answers were coded as correct or incorrect for the purpose of analysis. For example, the most common correct answer to the question, "What is the purpose of the Pap smear?" was "detectar cáncer" (detect cancer). Similar answers, such as detecting cervical or uterine cancer, were also included as correct responses to this question. The most common incorrect answers to this question included "chequeo médico" (medical checkup) and "examen del cuerpo" (physical examination), which we summarized in Table 2 as "general checkup."

Pilot interviews revealed that few participants had heard of HPV or HPV vaccination, thus they would have been unable to answer the questions about acceptability without first receiving information on which to base their decisions. Therefore, section 3 of the structured interview consisted of a 65 word informational script describing the frequency of HPV infection, its transmission via sexual behavior, and the relationship between HPV, cervical cancer and genital

warts. Section 4 assessed participants' intentions to vaccinate sons or daughters between the ages of 9 and 11, and also addressed the issues of teenage sexuality by asking fathers at what age they thought adolescents were currently initiating sexual activity and whether they thought HPV vaccination could lead to earlier sexual activity. Of note, questions on vaccination of sons, age of sexual debut among teens currently, and whether participants believed that HPV vaccination could lead to earlier sexual activity were added 3 months into the study period in response to issues that were arising in our parallel study with Latino immigrants in the United States (Perkins et al. 2010b), therefore, the total number of respondents for these questions was 77, not 100.

As described above for section 2, participants responded to questions in section 4 in their own words and responses were transcribed verbatim. A majority of responses were simply "Sí" (Yes), or "No" (No). Responses which indicated assent, such as "Creo que sí" (I think so) or "¡Claro que sí!" (Of course!) were coded as *would accept vaccination*, while responses indicating doubt or negativity—"Creo que no" (I don't think so), "No sé" (I don't know)—were coded as *would not accept*. We chose to include answers which indicated doubt in the "would not accept" category to generate the most conservative estimate of acceptance rates. Participants were not asked to explain their reasons for either accepting or declining vaccination. Six fathers chose to elaborate on their reasoning, however, and the interviewers wrote down their explanations as short phrases in the participants own words.

Analysis

We used SAS statistical software Version 8.2 for descriptive data analysis (SAS Institute Inc, Cary, NC, USA); a P value <0.05 was considered statistically significant. The primary outcome was fathers' interest in vaccinating daughters against HPV. We used bivariate analyses to compare respondents who intended to vaccinate with those who did not. Due to small number of fathers declining vaccination, multivariable logistic regression was not performed.

Results

Participants' average age was 46.1 years (38 men ages 21–40, 31 men ages 41–59, and 31 men ages 60–79), the mean education level was primary school, and 87% were literate. Over 90% of participants were either formally married or in common law marriages; they had four children on average. Mean age of first sexual experience among fathers in our sample was 16.8 years. 74% of men reported having three or more lifetime sexual partners (though all but one reported being currently monogamous or abstinent), and 18% reported having one or more sexually transmitted infections in the past (Table 1).

Eighty-five percent of fathers ($n = 85$) believed that cervical cancer was preventable, and over two-thirds could correctly name some form of prevention. The connection between sexual activity and cervical cancer was mentioned

Table 1 Demographic characteristics of participating fathers

Variable	Total ($n = 100$) ^a	Would accept ($n = 94$)	Would not accept ($n = 6$)	P value
Age (years)	46.1 ± 14.5 (21–79)	46.1 ± 14.4	47.0 ± 16.0	0.88
Education level (years)	6.4 ± 4.1 (0–16)	6.3 ± 4.0	7.8 ± 6.8	0.61
Number of children	3.9 ± 2.5 (1–15)	3.9 ± 2.6	4.0 ± 2.0	0.90
Fathers' self-reported age at sexual debut (years) ^b	16.8 ± 2.5 (12–25)	16.9 ± 2.5	15.5 ± 2.7	0.17
Literate	87 (87%)	83 (88%)	4 (67%)	0.17
Marital status				
Formal marriage	60 (60%)	57 (61%)	3 (50%)	0.67
Common-law marriage	31 (31%)	28 (30%)	3 (50%)	
Single	9 (9%)	9 (10%)	0	
Three or more lifetime sexual partners	74 (74%)	70 (74%)	4 (67%)	0.34
0–1 current sexual partner	99 (99%)	93 (99%)	6 (100%)	1.00
Personal history of sexually transmitted infection	18 (18%)	16 (17%)	2 (33%)	0.29
Cigarette use	17 (17%)	16 (17%)	1 (17%)	1.00

The study reported in this article was performed in Honduras between 1 May 2007 and 1 June 2008. As no fathers *in this study* declined vaccination for sons, table reflects *would* or *would not* accept vaccination for daughters only

^a Mean ± SD (range) or n (%)

^b Two subjects were missing data, total reflects 98 subjects

by 11% ($n = 11$) fathers; six believed that cervical cancer was transmitted through sex, and an additional five stated that cervical cancer could be prevented by monogamy. A minority, 22% ($n = 22$) had heard of HPV, and three fathers named HPV as a cause of cervical cancer. Seventeen fathers (17%) had heard of HPV vaccination (Table 2).

After receiving information, 94% ($n = 94$) of fathers would vaccinate a 9 to 11-year-old daughter if vaccine were available and 100% ($n = 77$) would vaccinate a son. Fathers who elaborated on their reasons for choosing to vaccinate their daughters and sons ($n = 4$) stated that they wished to protect their children and to prevent cancer. Two of the six fathers who declined vaccination elaborated on their reasons for doing so. One stated that vaccination would “remove the morality from sex,” and the other simply stated that he had concerns related to sexuality. Fathers stated that they believed teens were currently initiating sexual activity at the age of 13.9 years, on average 3 years earlier than the fathers themselves. Most fathers (68%, $n = 52$) did not believe that vaccination would promote earlier sexual activity. Fathers who elaborated on their reasons for believing that vaccination would not result in earlier sexual activity ($n = 2$) stated that parenting and education were the most important factors in teens’ decisions to become sexually active. A minority of fathers (18%, $n = 14$) did believe that vaccination might lead to earlier sexual activity, but all still favored vaccination for both sons and daughters. No factors were predictive of the intent to vaccinate daughters in bivariate analyses (Tables 1, 2), though power was constrained by small number of fathers declining vaccination. As all

fathers wished to vaccinate their sons, bivariate analyses were not performed for this outcome.

Discussion

We found limited awareness of HPV and HPV vaccination among Honduran fathers. Nevertheless, 94% of fathers surveyed would accept HPV vaccination for their daughters and 100% for their sons given basic information about the vaccine and cervical cancer prevention. This acceptance rate is comparable to that previously described in Honduran mothers from the same population (Perkins et al. 2010a) and is comparable to the acceptance rates found in other studies of mothers in Latin America and female Latina immigrants in the US (Bair et al. 2008; Lazcano-Ponce et al. 2001; Lee et al. 2010; Perkins et al. 2010b; Podolsky et al. 2009; Watts et al. 2009). However, the acceptance rate in this study of Honduran fathers was higher than the rates noted in other studies of parental acceptance with primarily Caucasian populations in North America and Europe (Zimet et al. 2006).

Scant literature exists that examines parental opinions on vaccinating sons, and acceptability varied greatly among available studies. All studies in one review showed a slight preference among parents to vaccinate daughters over sons (Watts et al. 2009), with one US-based study showing vaccine acceptability for sons as low as 18%. In contrast, a focus group study from Malaysia found that a majority of participants favored vaccinating boys and men, and participants did not think that HPV vaccination would

Table 2 Knowledge about cervical cancer and human papillomavirus (HPV)

Knowledge assessment questions (Section 2 of structured interview)	Total ($n = 100$) ^a	Would accept	Would not accept	<i>P</i> value
(1) What is the purpose of the Pap smear? <i>Correct:</i> detect cancer <i>Other answers included:</i> general checkup, inspection of birth control device	49 (49%)	45 (48%)	4 (67%)	0.43
(2) What causes cervical cancer? <i>Correct:</i> infection ^b , sexual activity <i>Other answers included:</i> poor hygiene, use of birth control	11 (11%)	11 (12%)	0	1.0
(3) Can cervical cancer be prevented? (yes)	85 (85%)	80 (85%)	5 (83%)	1.0
(4) How can cervical cancer be prevented? ^c <i>Correct:</i> Pap smears, medical treatments, safe sexual practices <i>Other answers included:</i> good hygiene, proper nutrition	69 (81%)	65 (69%)	4 (67%)	1.0
5) Have you heard of HPV? (yes)	22 (22%)	21 (22%)	1 (17%)	1.0
6) Have you heard of a vaccine against cervical cancer? (yes)	17 (17%)	15 (16%)	2 (33%)	0.27

The study reported in this article was performed in Honduras between 1 May 2007 and 1 June 2008. As no fathers in this study declined vaccination for sons, table reflects *would* or *would not* accept vaccination for daughters only

^a n (%) correct

^b Three fathers specifically stated that human papillomavirus (HPV) infection caused cervical cancer

^c Only fathers who believed that cervical cancer was preventable were asked to name forms of prevention

promote promiscuity (Wong 2010). Several factors may contribute to Honduran fathers' favorable attitudes toward HPV vaccination as demonstrated in our study. Cervical cancer is a leading cause of cancer death among Honduran women (Parkin et al. 2008), and a previous survey of this community found that 30% of people had a personal acquaintance that had suffered from the disease (Perkins et al. 2007). Thus fathers may have been motivated to prevent a disease that they had encountered in their community. In addition, Latin American nationals and Latino immigrants often hold favorable opinions toward vaccines in general (Bair et al. 2008; Constantine and Jerman 2007; Watts et al. 2009), so the Honduran fathers we interviewed may have perceived that the HPV vaccine would improve the health similar to other vaccines. Finally, the high rate of sexually transmitted infections among our participants may have contributed toward favorable attitudes toward a vaccine specifically targeting a sexually transmitted infection.

To our knowledge, few studies have specifically examined perceptions of fathers toward vaccination of both daughters and sons in low-resource settings. We found that fathers accepted HPV vaccination for both sons and daughters, and most did not believe that HPV vaccination would promote earlier sexual activity in their children. Even those who were concerned that vaccination could promote earlier sexual debut did not see this as grounds to decline vaccination of their children. In fact, our participants' responses suggest that vaccination of sons as well as, daughters can be acceptable to fathers. This finding challenges stereotypes that fathers in conservative, largely Catholic societies would oppose HPV vaccination due to concerns about promoting sexual activity. This is consistent with prior studies that demonstrate lack of a definitive link between sexual and religious attitudes of parents and vaccine decision making (Bair et al. 2008; Constantine and Jerman 2007; Dinh et al. 2007).

Our study has several limitations. Participants were recruited via convenience sampling in two distinct settings and in small numbers, which limits the generalizability of our findings. Specifically, the average educational level (6.4 years) and literacy rate (87%) in our sample were higher than the regional averages of 3 years and 70% respectively (Honduras 2004). Another possible source of bias was female researchers interviewing male subjects. Additionally, we did not ask participants whether they had sons versus daughters, or whether their children would be age eligible for vaccination. Prior research in Latino populations does, however, suggest that there is no difference in vaccine acceptability between parents with and without age-eligible children in the same population (Lazcano-Ponce et al. 2001). Finally, because only six fathers declined vaccination for daughters and none declined vaccination for sons, we did not have sufficient statistical

power to perform logistic regression to determine factors that contributed to fathers' decisions to decline vaccination for their children. This study was not designed to probe fathers' attitudes around vaccine decisions, and we present very limited data on fathers' reasons for either accepting or declining vaccination. However, the opinions expressed by Honduran fathers echoed those of Latino immigrants participating in our in-depth, qualitative research on HPV vaccination in the United States (Perkins et al. 2010b). Future studies in Honduras incorporating qualitative interview techniques could better address such questions.

Preliminary work suggests that incorporation of HPV vaccination into cervical cancer prevention efforts could be cost effective in Latin America when compared with conventional cytology-based screening (Agosti and Goldie 2007; Goldie et al. 2008a, b; Reynales-Shigematsu et al. 2009). However, HPV vaccination is not routinely offered in most Latin American nations, in part because of the high cost of the vaccine. Other studies from Latin America have demonstrated favorable attitudes toward HPV vaccination among mothers; our study indicates the high levels of support among fathers as well. Because research indicates the superior outcomes for reproductive health programming when men are involved (Dudgeon and Inhorn 2004), the receptiveness of fathers toward HPV vaccination in our study suggests an important potential impact of incorporating men as partners and fathers into vaccine advocacy and broader cervical cancer prevention campaigns in the region.

In conclusion, few Honduran fathers were aware of HPV or HPV vaccination. However, most Honduran fathers would accept HPV vaccination for their sons and daughters after receiving information about the relationship between HPV infection and cervical cancer. If replicated in larger studies, this finding could have important implications for HPV vaccination and cervical cancer prevention programs in low-resource settings.

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Conflict of interest The authors declare that they have no competing interests.

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