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Pediatricians are More Supportive of the Human Papillomavirus Vaccine than the General Public

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Abstract

Objective—The purpose of this study was to determine pediatricians' attitudes about the human papillomavirus (HPV) vaccine and to compare their attitudes with those expressed by the general public.

Methods—Eight-hundred and fifty pediatricians from the American Academy of Pediatrics were surveyed, including general pediatricians (n = 450), and members of the sections of adolescent medicine (n = 200) and infectious diseases (n = 200). Pediatricians were asked to answer four items that had been included on a Wall Street Journal (WSJ) poll of the general public shortly after the HPV vaccine was approved by the Food and Drug Administration.

Results—Of 752 eligible pediatricians, 373 (50%) responded. Compared to the general public, pediatricians were less likely to agree that routine Papanicolaou smears are a better strategy for preventing cervical cancer than HPV vaccination (12% vs 45%, $P < 0.001$), that abstinence programs are a better strategy for preventing the spread of HPV (17% vs 44%, $P < 0.001$), and that HPV vaccination may encourage sexual activity (4% vs 27%, $P < 0.001$). Pediatricians were more likely to support HPV vaccination without parental permission (77% vs 47%, $P < 0.001$). There were no differences between pediatricians based on gender. General pediatricians were more likely than pediatricians affiliated with the sections of infectious diseases and adolescent medicine to endorse abstinence programs over HPV vaccination (22% vs 16% and 8%, respectively, $P = 0.01$).

Conclusion—Pediatricians are much more supportive of HPV vaccination than the general public. Pediatricians should be aware of these differences when counseling patients and their families.

Keywords

abstinence; attitudes; cervical cancer; human papillomavirus vaccine; Pap smears

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In August 2006, the Wall Street Journal (WSJ) published the results of an online survey which assessed the opinions of 2,604 US adults regarding the human papillomavirus (HPV) vaccine (Gardasil™, Merck & Co., Whitehouse Station, NJ) that had recently been approved by the Food and Drug Administration (FDA).¹ The survey found that two-thirds of parents of a female child under 18 had heard of HPV and slightly less than half were aware of the vaccine.¹ Widespread public awareness can be explained in part by the large media coverage that the vaccine received, even while in development.^{2,3} The survey also found that over 60% of parents with a daughter younger than 18 years would authorize HPV vaccination of their minor daughters.¹

Objective

This study compares the views of pediatricians and the general public by examining the responses of practicing pediatricians to four items that were included in the WSJ poll. Specifically, we examined 1) whether routine Papanicolaou (Pap) smears are a better strategy than HPV vaccination for preventing cervical cancer; 2) whether abstinence programs are a better strategy for preventing the spread of HPV; 3) whether adolescents should be able to obtain HPV vaccination without parental permission; and 4) whether HPV vaccination may encourage sexual activity. We hypothesized that physicians would be more supportive of the HPV vaccine than the general public; and that physicians would be more supportive of vaccination without parental permission. We also hypothesized that pediatricians with subspecialty affiliation with infectious diseases or adolescent medicine would be more supportive of the HPV vaccine than general pediatricians. We undertook the study in order to document attitudinal differences between pediatricians with and without subspecialty affiliation, and between pediatricians and the general public.

Methods

In October and November 2006, we surveyed 850 pediatricians to assess their attitudes about the HPV vaccine and their plans for vaccine adoption. Four statements from the WSJ online survey were included verbatim (Fig. 1). Pediatricians were randomly sampled from the web-based directory of the American Academy of Pediatrics (AAP). The AAP has over 60,000 members, and approximately 700 belong to the section of adolescent health and 750 to the section of infectious diseases. In both sections, we sampled every third member to include 200 members. We also sampled every fiftieth AAP member to include 450 pediatricians (excluding any pediatrician who was a member of a subsection except the sections of medicine/pediatrics, community pediatrics, and young physicians). General pediatricians were our primary sample because they are the most likely providers of vaccines for adolescents.

Pediatricians were excluded if they resided outside the United States, did not have an email address, or had graduated from medical school prior to 1960. An introductory letter was sent describing the study, followed one week later with an email and a link to the confidential, web-based survey. If the email bounced, the pediatrician was excluded; otherwise nonresponders were sent a second email two weeks later. A third contact was made to all nonresponders by fax or mail.

Criterion variables for this analysis are responses to the four items from the WSJ poll (Fig. 1). The response options for each item were: agree strongly; agree somewhat; disagree somewhat; disagree strongly; and not sure. For further analyses, we grouped those who responded “agree strongly” and “agree somewhat” as supportive of the statement; and those who responded “disagree strongly” and “disagree somewhat” as nonsupportive of the statement. “Not sure” responses were coded as “not sure.” We utilized the χ^2 test (2×3 tables) and Fisher exact test to examine differences in responses comparing pediatricians to the general public and then

comparing pediatricians by: specialty affiliation; gender; type of practice; geographic location; religious affiliation; percentage of patients with public aid or no insurance; self-described liberal versus conservative orientation with respect to controversial social issues; and two measures of physicians' religious attitudes that have been used to create a measure of "intrinsic religiosity."⁴ We then used multivariate logistic regression to examine response predictors for each survey item, after adjustment for physicians' demographic characteristics and those characteristics that had statistically significant associations (at $P < 0.05$) on bivariate analysis. Analyses were conducted using SPSS[®] for Windows Version 15.0.1 (SPSS Inc, Chicago, IL) and STATA[®] 10.0 (StataCorp LP, College Station, TX). This study was approved by the University of Chicago Institutional Review Board which waived the requirement for written informed consent.

Results

Of the 850 potential participants, 59 were excluded because of nonfunctioning email addresses, 38 because they were no longer practicing or reported they did not feel qualified to answer, and 1 because the physician practiced outside of the United States. Of the remaining 752 pediatricians, 373 (50%) returned complete or partially complete questionnaires.

Characteristics of respondents are listed in Table 1. The average age was 48 ± 9 years; 52% were female, and slightly less than half graduated from medical school before 1985. The sample was geographically diverse, with slightly over half in private practice and almost one third in academic medicine. Over half were self-described as Christian, 22% as Jewish, and 12% had no religious affiliation. Twenty-six percent had high religiosity, and 24% were identified as socially conservative. General pediatricians were more likely to have graduated medical school after 1985 ($P = 0.01$), more likely to be in private practice ($P < 0.001$) and had the lowest percentage of patients with public aid insurance ($P < 0.001$). Members of the section of infectious diseases were more likely to be male ($P = 0.05$). The respondents were equally distributed by geography, religion, and intrinsic religiosity, although general pediatricians were much more likely to describe themselves as socially conservative ($P < 0.05$).

Figure 2 presents data comparing all pediatricians to respondents to the WSJ poll. Compared to the general public, pediatricians were less likely to agree that routine Pap smears are a better strategy than HPV vaccination for preventing cervical cancer (12% vs 45%, $\chi^2 P < 0.001$), that abstinence programs are a better way of preventing the spread of HPV (17% vs 44%, $\chi^2 P < 0.001$), and that HPV vaccination may encourage sexual activity (4% vs 27%, $p < 0.001$). Pediatricians were more likely to support vaccination without parental permission (77% vs 47%, $P < 0.001$). For all four items, less than 4% of pediatricians answered "not sure," whereas 16 to 23% of the public expressed uncertainty.

Table 2 shows the percentage of pediatricians who agreed with each survey item, stratified by specialty, gender, religiosity, and liberal versus conservative social views. The three groups of pediatricians were similar with respect to three of the four survey questions. Support for abstinence programs was highest among general pediatricians and lowest among adolescent medicine specialists (22% and 8%, respectively, $\chi^2 P = 0.01$). There was no difference by gender for any item. Pediatricians with high intrinsic religiosity were more likely to agree that abstinence programs are a better strategy ($\chi^2 P < 0.001$), and less likely to support vaccination without parental permission ($\chi^2 P = 0.01$). Pediatricians who self-described as very liberal were less likely to agree that abstinence programs are a better strategy ($\chi^2 P < 0.001$) or that vaccination may encourage sexual activity (Fisher exact test, $P = 0.01$).

Multivariable logistic regression was performed for each item. Although effects were in the same direction as for unadjusted analyses, no variables remained statistically significant as

predictors for believing that routine Pap smears are a better strategy for preventing cervical cancer or that vaccination may encourage sexual activity. Adolescent medicine physicians were less likely than general pediatricians to believe that abstinence programs are a better strategy (odds ratio [OR] = 0.3, 95% confidence interval [CI]: 0.1–0.7), as were the liberal (OR = 0.4, 95% CI: 0.2–0.7) and the very liberal (OR = 0.2, 95% CI: 0.1–0.6) compared to the conservative. Compared to those with low religiosity, those with moderate and high religiosity were more likely to endorse abstinence education (OR = 3.8, 95% CI: 1.5–9.2 and OR = 5.5, 95% CI: 2.6–11.8, respectively). Compared to conservatives, those who were liberal (OR = 1.9, 95% CI: 1.0–3.5) and very liberal (OR = 4.2, 95% CI: 1.6–11.2) were more likely to support vaccination without parental permission. Nevertheless, even the most conservative physicians and the most religious physicians were less likely than the public to support the utility of abstinence programs or to believe the vaccine would encourage sexual activity, and were more supportive of vaccination without parental permission.

Discussion

HPV is sexually transmitted and is the causative agent of greater than 97% of cervical cancers.^{5–7} The vaccine is being recommended for younger adolescents because its efficacy is greater when the individual has no prior exposure to the virus.^{8–10} If all young women were vaccinated, it is projected that the HPV vaccine could reduce the lifetime risk of cervical cancer by 20 to 66%.^{10–12} Thus, the vaccine can be framed as a vaccine to prevent the transmission of a sexually transmitted disease and/or as a vaccine to prevent cervical cancer.

Whether framing will influence HPV vaccine uptake is unknown. A few studies have shown that parents are more concerned about the severity of the infection and vaccine efficacy than about whether the vaccine will prevent a sexually transmitted infection.^{13,14} Another study¹⁵ found that general attitudes towards vaccines were the best predictor of acceptance of an HPV vaccine.

The framing debate may affect attitudes about independent adolescent consent for vaccination. A study¹⁶ in the United Kingdom found that some parents interpreted independent adolescent consent for the vaccine as encouraging sexual promiscuity, which the researchers feared might detract from the vaccine's function in cancer prevention. This may help explain why less than half of US parents supported vaccination without parental permission,¹ whereas over 75% of our pediatrician respondents did.

Several studies have found that physician recommendation is an important factor in parents' attitudes towards vaccines and vaccine uptake.^{14,17–21} Our study^{22,23} found that pediatricians are highly supportive of the HPV vaccine, a finding obtained in two other recent studies. The first study,²² conducted before FDA approval of the HPV vaccine, found that over 98% of physicians would recommend the vaccine to patients if the vaccine were recommended by the AAP or the Centers for Disease Control and Prevention. The second study,²³ conducted shortly after approval of the HPV vaccine, found that 88% of pediatricians would use the HPV vaccine, but many would do so at an older patient age than the proposed recommendations. It also found that 60% of respondents thought that parents would be concerned that HPV vaccination might encourage risky sexual behaviors, and 11% reported that they themselves had this concern.²³ In contrast, our study found <5% of pediatricians expressing this concern.

The WSJ poll found differences in responses by gender for most items (data not shown), but we did not find a correlation based on physician gender. Other demographic characteristics, however, did correlate with some attitudinal differences—specifically, intrinsic religiosity, self-described social conservativeness, and subspecialty affiliation.

Despite these demographic differences, we found a general consensus among pediatricians that HPV vaccination is a better strategy for reducing cervical cancer than abstinence education or routine Pap smears. In contrast, the WSJ poll found the public divided about the merits of HPV vaccination in preventing cancer and reducing the spread of HPV.¹ Since studies find parents receptive to educational interventions,^{15,24} pediatricians should be prepared to take a proactive role in educating families about the vaccine's role in preventing cancer.

Our study had at least four limitations. First, our 50% response rate is consistent with surveys of physicians in the published literature,²⁵ but it is impossible to know whether responders and nonresponders have similar attitudes. Second, we had no input into the design or analysis of the WSJ data, and we conducted our survey by e-mail and fax/letter, whereas the WSJ survey was conducted as a phone interview. Differences in survey administration may have had some affect on survey responses. Third, our survey was administered after the HPV vaccine had been approved by the FDA and endorsed by the Advisory Committee on Immunization Practices (ACIP) in June 2006, but the recommendation by the AAP was still several months away. Many insurance companies and health care organizations were still developing policies and practice guidelines regarding HPV vaccine implementation. Whether professional endorsement or insurance coverage would affect the pediatricians' attitudes is unknown, but one would suspect it would promote even greater acceptance and possibly further exaggerate the differences between pediatricians and the public. Fourth, the study was not powered to pick up small and subtle differences so that a larger study may find statistically significant associations that were not detectable in our study.

Conclusion

Pediatricians, both generalists and subspecialists, are much more supportive of HPV vaccination than the public, and this remains true even for the pediatricians who are highly religious and who describe themselves as social conservatives. It is important for pediatricians to appreciate these differences when counseling families.

Key Points

- Pediatricians are much more likely to believe that the human papillomavirus (HPV) vaccine will reduce HPV infection and cervical cancer than the general public.
- Pediatricians are much less likely to believe that HPV vaccination will encourage sexual activity than the general public.
- Pediatricians are much more supportive of permitting adolescents to have access to the HPV vaccine without parental consent.

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Please state the extent to which you agree with the following four statements about HPV vaccination. (Agree Strongly to Disagree Strongly)

1. *Instead of paying for expensive vaccines, money should be spent making sure women and teens get routine Pap smears—a test that is very effective in diagnosing cervical cancer.* [**Pap smears are a better strategy**]
2. *Abstinence programs rather than medical treatment are a better way of preventing the spread of the HPV virus.* [**Abstinence programs are a better strategy**]
3. *A teenage girl should be able to get the HPV vaccine without her parents' permission.* [**Girls should not need parents' permission**]
4. *The HPV vaccine may encourage young girls to become sexually active.* [**Vaccination may encourage sexual activity**]

Above are the verbatim statements from the Wall Street Journal poll: "Seventy Percent of U.S. Adults Support Use of the Human Papillomavirus (HPV) Vaccine." On the web at:

<http://www.harrisinteractive.com/news/allnewsbydate.asp?NewsID=1080>. Last accessed June 6, 2007.

Following each statement is an abbreviated phrase that will be used to refer to the statement throughout this manuscript.

Fig. 1.

Measures of attitudes regarding human papillomavirus (HPV) vaccination.

Fig. 2.
Percent of pediatricians and the public supporting each statement.

Table 1

Demographics

	All respondents (n = 373) ^a	General pediatrics (n = 170)	Infectious disease (n = 97)	Adolescent medicine (n = 100)	P (χ^2)
Age, mean years $\pm$ SD	48 $\pm$ 9	47 $\pm$ 10	45 $\pm$ 7	52 $\pm$ 7	—
Sex, n (%)					
Women	181 (52)	92 (56)	33 (39)	53 (55)	0.05
Men	170 (48)	74 (44)	51 (61)	43 (45)	
Year graduated from medical school, n (%)					
Before 1985	151 (44)	55 (35)	47 (52)	49 (53)	0.01
1985 or later	189 (56)	103 (65)	43 (48)	43 (47)	
Practice setting, n (%)					
Academic medical center	109 (31)	18 (11)	43 (49)	47 (49)	<0.001
Private practice	199 (56)	122 (73)	37 (43)	34 (35)	
Other	48 (13)	26 (16)	7 (8)	15 (15)	
Estimated % of patients with public aid, n (%)					
<20%	137 (39)	82 (50)	21 (25)	31 (33)	<0.001
20–49%	97 (28)	39 (24)	36 (42)	22 (23)	
50–79%	63 (18)	21 (13)	16 (19)	25 (26)	
>80%	53 (15)	22 (13)	12 (14)	17 (18)	
Region, n (%)					
West	71 (20)	32 (19)	23 (24)	16 (16)	0.70
Midwest	76 (21)	30 (18)	22 (23)	24 (24)	
Northeast	97 (27)	46 (28)	24 (25)	27 (27)	
South	119 (33)	59 (35)	28 (29)	32 (32)	
Religious affiliation, n (%)					
Christian	196 (57)	97 (61)	45 (53)	50 (54)	0.29
Jewish	74 (22)	28 (18)	21 (25)	23 (25)	
None	40 (12)	22 (14)	7 (8)	11 (12)	
Other	32 (9)	11 (7)	12 (14)	9 (10)	
Religiosity, n (%)					
Low	188 (57)	84 (55)	48 (58)	51 (55)	0.63
Moderate	58 (17)	22 (15)	17 (21)	18 (20)	

	All respondents (n = 373) ^a	General pediatrics (n = 170)	Infectious disease (n = 97)	Adolescent medicine (n = 100)	P (χ^2)
High	87 (26)	46 (30)	18 (22)	23 (25)	
Liberal versus conservative, n (%)					
Very liberal	81 (24)	27 (17)	20 (23)	32 (35)	<0.05
Liberal	182 (53)	83 (52)	48 (56)	47 (51)	
Conservative/very conservative	81 (24)	51 (32)	17 (20)	13 (14)	

Percentages in this table do not all sum to 100 because of rounding.

^aSix respondents did not identify their section membership.

Table 2

Agreement with each survey statement, stratified by pediatrician characteristics

	Pap smears are better strategy n (%)	Abstinence programs are better strategy n (%)	Girls should not need parents' permission n (%)	Vaccination may encourage sexual activity n (%)
Specialty				
General pediatricians	14 (8)	37 (22)	118 (75)	7 (4)
Infectious disease	14 (16)	14 (16)	66 (75)	4 (5)
Adolescent medicine	12 (12)	8 (8)	78 (80)	2 (2)
<i>P</i> (χ^2)	0.17	0.01	0.28	0.60 ^a
Gender (%)				
Male	18 (11)	29 (17)	124 (74)	6 (4)
Female	22 (12)	30 (17)	137 (75)	7 (4)
<i>P</i> (χ^2)	0.69	0.92	0.83	0.81 ^a
Religiosity (%)				
Low	19 (10)	13 (7)	142 (81)	5 (3)
Moderate	5 (9)	12 (21)	48 (86)	4 (4)
High	15 (18)	31 (36)	57 (67)	7 (8)
<i>P</i> (χ^2)	0.14	<0.001	0.01	0.20 ^a
Liberal versus conservative (%)				
Very liberal	8 (10)	4 (5)	72 (89)	0 (0)
Liberal	17 (9)	24 (13)	135 (75)	5 (3)
Conservative/very conservative	14 (18)	29 (37)	50 (62)	7 (9)
<i>P</i> (χ^2)	0.14	<0.001	0.001	0.01 ^a

^a Because of small cell sizes, tests of significance for agreement with the statement "vaccination may encourage sexual activity" are by Fisher exact test.