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Parent perceptions of dentists' role in HPV vaccination

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Abstract

Introduction—Offering HPV vaccine in settings beyond the traditional medical home holds promise for increasing the currently low levels of coverage. As adolescents frequently visit dentists, dental practices may be one such alternative vaccination setting. This study assessed parent attitudes about the roles dental providers could play in HPV prevention, including vaccine provision.

Methods—In September 2016, we conducted an online survey using a national sample (n=1,209) of U.S. parents of adolescent children aged 11–17. Adolescents' mean age was 14; 53% were male and 62% were non-Hispanic white. We identified correlates of parents' comfort with dentists as HPV vaccinators using multivariable logistic regression.

Results—Overall, 23% of parents reported that they would feel comfortable with their child receiving HPV vaccine from a dentist. In multivariable analyses, parents had greater odds of being comfortable if they perceived 2 or more benefits of dentists providing HPV vaccinations (OR=6.82, 95% CI:4.44–10.47) or had higher trust in their child's primary care provider (OR=1.46, 95% CI:1.06–1.83). Parents had lower odds of comfort if their child was female (OR=0.68, 95% CI:0.51–0.89) or if they had 2 of more concerns (OR=0.12, 95% CI: 0.07–0.19). Convenience (20%) and oral health expertise (20%) were the most commonly cited benefits of dentists administering the vaccine. Wanting their child's regular provider to administer and track vaccinations (61% and 58%, respectively), and lack of insurance coverage (30%) were the most commonly cited concerns. Parents expressed somewhat greater comfort with roles dentists might play in promoting HPV vaccination other than vaccine delivery, such as providing education.

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Conclusions—Parents in this sample had low comfort with dentists as HPV vaccinators. Findings from this study highlight concerns to be addressed before dental consider offering HPV vaccination in the future. Further research should assess dentists' perspectives and explore alternative roles for dental providers in HPV prevention efforts.

1. Introduction

Though human papillomavirus (HPV) vaccine has been available since 2006, coverage for adolescents in the U.S. remains low, with only 30% of boys and 40% of girls having completed the series by age 17 [1]. Parental hesitancy towards HPV vaccination is one reason for low uptake in adolescent populations, with many parents choosing initially to refuse or delay HPV vaccination, reporting that they do not know enough about it, and having concerns about its safety or effectiveness [2–4]. As with other vaccinations, additional barriers include low levels of preventive medical care among adolescents and missed opportunities for provider recommendation during existing clinical encounters [5–10]. As a multi-dose series, these barriers may be heightened for HPV vaccination [8,11]. Given these challenges, improving vaccination coverage to prevent HPV-associated cancers of the head, neck, and genital tract may require significant systems-level change.

Most adolescents receive vaccines at their primary care provider's office, but offering vaccination in alternative settings beyond the medical home has potential for increasing coverage, particularly for follow-up doses of the vaccine [12,13]. Currently, primary care providers deliver a wide range of preventive services to adolescents, including HPV vaccination and counseling, posing serious challenges given resource and time constraints on the provider and patient sides [14]. In response to these challenges, school-based clinics and pharmacies have emerged as promising alternative settings to promote and administer HPV vaccine [15,16]. In addition, the potential for dentists to use their offices as a setting for HPV vaccination and education has gained attention among dental professionals and public health researchers [14,17,18]. Dentists have grown increasingly interested in improving population health through preventive oral care, and many dentists already perform and receive reimbursement for oral cancer screenings [17,19].

Because HPV vaccination is recommended for pre-teens and young adolescents and parents are the primary decision-makers for their children's health care, parental acceptability of both the vaccine and delivery approach, are critical [1,20]. No currently available evidence demonstrates whether parents would support administration of HPV vaccine in dentists' offices, or dentists providing education on HPV or HPV vaccine. Thus, we sought to: (1) explore parents' comfort with dentists in HPV prevention roles, (2) identify factors correlated with high acceptability of dentists administering HPV vaccinations, and (3) assess parents' perceived benefits and concerns with this approach.

2. Methods

2.1 Participants and Procedures

We conducted an online survey administered to a national sample of parents of adolescents ages 11–17 in September 2016. Survey respondents were members of a standing panel of

U.S. adults maintained by GfK, a survey research company [21]. Participants were recruited through list-assisted addressed based sampling with phone call follow-ups for non-responsive households [21]. Respondents received points exchangeable for small cash payments from the company as an incentive for completing surveys. Harvard Pilgrim Health Care Institute's Institutional Review Board (IRB) approved the original study's protocol. The University of Minnesota IRB determined this secondary analysis exempt from review. Of the 2580 panelists invited to complete the eligibility screening survey, a total of 1253 met the inclusion criteria and completed the survey (response rate = 59% based on the American Association of Public Opinion Research formula 4) [22]. The present analysis excluded 44 respondents with missing data, resulting in a final analytic sample size of 1209 parents.

2.2 Measures

Throughout the survey, parents were asked to answer questions about their 11–17 year old child; parents with multiple children in the age range were asked to answer about the child with the most recent birthday. The survey provided parents with information about oral HPV and dentists as vaccinators before items about dentists' HPV prevention roles: "Some types of HPV can cause mouth and throat cancer. The HPV vaccine can protect against some of these types," and "In some states, dentists who have completed special training are allowed to give vaccines."

A single item assessed parent comfort with dentists as HPV vac cinators: "Imagine you and your [son/daughter] decided to get [him/her] the HPV vaccine, how comfortable would you be with [child's name] getting the HPV vaccine from a dentist?" Four survey questions assessed parents' comfort with dentists taking on other HPV prevention roles including: providing written information about HPV vaccine, talking to parents about HPV vaccine, talking to children about HPV vaccine, and finally, recommending that children get the HPV vaccine from their regular doctor. Response options for all comfort variables used a 5-point scale ranging from "very uncomfortable" (1) to "very comfortable" (5). Consistent with the approach taken in other research [13], we dichotomized responses into "comfortable" (responses of "very comfortable" and "somewhat comfortable") or "not comfortable" (responses of "very uncomfortable," "somewhat uncomfortable," and "neither uncomfortable nor comfortable") for analyses.

The survey assessed parents' perceived benefits and concerns with dentists administering HPV vaccinations with two parallel questions: "What [benefits/concerns] would you have with [child's name] getting the HPV vaccine at the dentist's office?" Parents selected all that apply from predefined lists developed based on existing literature about HPV vaccination and alternative vaccination settings [13,23,24]. Potential benefits included: convenience, trust in dentist to administer the vaccine, belief that dental office staff would have appropriate skills to administer the vaccine, child's comfort at the dental office, and dental expertise in oral health. Potential concerns (or perceived drawbacks) included: that insurance might not cover the vaccine, that staff may not be good at giving shots, that staff might not be able to answer questions, that staff might not be able to deal with side effects, the belief that dentists should not give vaccines, preference for vaccine delivery by child's regular care

provider, and preference for regular provider to keep track of all of their child's vaccines. Additionally, parents could also select "I would see no [benefits/concerns]."

Parents reported demographic information about themselves, their child, their household and their child's access to health care services. Information about the parents included sex, race/ethnicity, education level, and their perceptions of the quality of their relationship with their child's healthcare provider [25]. Information about the household included income and urbanicity (based on living within a metropolitan statistical area, as defined by the U.S. Census Bureau) [26]. Information about the child included sex, age, race/ethnicity and health care access and use including whether they had health insurance, a regular health provider and regular oral health care clinic, and their HPV vaccination status. For vaccination status, which reflects parents' HPV vaccination intent and behavior, we combined two separate items assessing the number of doses of HPV vaccine the child had received and, for those who reported none, parent's intent to vaccinate their child to create a three-level variable (not vaccinated and does not intend to vaccinate in next 12 months; not vaccinated but intends to vaccinate in next 12 months; and vaccinated).

2.3 Analyses

We first descriptively assessed parents' comfort with potential HPV prevention roles. We then used bivariate logistic regression to identify correlates of comfort with dentists as HPV vaccinators, and entered all significant variables ($p < .05$) into a multivariable logistic regression model. We conducted all analyses using Stata software version 14.2 (Statacorp, College Station, TX). Significance testing used two-tailed tests and a critical α of 0.05, unless otherwise noted.

3. RESULTS

3.1 Sample Characteristics

Characteristics of the study sample are shown in Table 1. About half of parents were female and most had at least some college education or more. Parents reported similar proportions of children by sex. Most parents reported living in an urban area, over half had at least some college education, and over half reported household incomes about $75,000. Almost all children had health insurance coverage and very few had not visited a dental clinic for routine care within the last year.

3.2 Parent Comfort with Dentists in HPV Prevention Roles

About a quarter (23%) of parents reported that they would feel "very" or "somewhat" comfortable with their child receiving HPV vaccine from a dentist (together categorized as "comfortable"); about a quarter were "neither comfortable nor uncomfortable" (22%) and the remainder were either "somewhat" or "very" uncomfortable (55%; together categorized as "not comfortable"). A higher proportion of parents expressed comfort with dentists performing other, non-vaccinator HPV prevention roles. Parents expressed the greatest comfort with dentists providing written information about HPV (51%), with fewer expressing comfort with dentists speaking with them directly about HPV vaccine (48%),

recommending that they seek HPV vaccination from their child's regular care provider (46%), or speaking with their child about HPV vaccine (41%).

3.3 Correlates of Comfort with Dentists as HPV Vaccinators

Table 2 presents results of logistic regression models. In multi- variable analyses, parents had greater odds of being comfortable with a dentist administering HPV vaccine if: they had high (vs. low) quality relationships with their child's primary care provider (OR = 1.27, 95% CI 0.96–1.68; they intended to get their child HPV vaccine in the next 12 months (OR = 2.02, 95% CI 1.44–2.83); of if their child had already received at least 1 dose of HPV vaccine (OR = 2.23, 95% CI 1.52–3.27). Parents of female children had lower odds of being comfortable than did parents of males (OR = 0.65, 95% CI 0.50–0.86).

3.4 Perceived Benefits and Concerns

Fig. 1 presents parents' perceived benefits and concerns with dentists administering HPV vaccine. Over half of parents (61%) indicated that they saw no benefits to this approach. The most frequently endorsed benefits were convenience (20%) and dentists' expertise in oral health care (17%). Fewer than one in ten parents endorsed any of the remaining benefits. In contrast, only 8% of parents reported that they had no concerns. Almost two-thirds of parents indicated that they would want their child's regular provider to administer their HPV vaccines (61%), or that they wanted their child's primary care provider to keep track of all their child's vaccinations (58%). Over one in four parents reported having each of the remaining concerns, which included the belief that dentists should not administer vaccines, insurance might not cover vaccine, and staff "may not be good at giving shots."

4. Discussion

4.1 Findings

HPV vaccine administration in alternative settings has the potential to increase low vaccination coverage among adolescents in the U.S. Dental practices are regularly accessed by most adolescents, yet, to our knowledge, this is the first study to examine parents' perceptions of dentists as HPV vaccinators. In this sample, we found that only one quarter of parents would feel comfortable with dentists administering HPV vaccine to their adolescent children. Comfort was somewhat greater among parents whose children had already received HPV vaccine and among those who intend to have their children vaccinated than among those who did not intend to vaccinate in the next 12 months. Previous research using similar methods has found greater levels of parental acceptability with other potential alternative vaccination settings such as schools and pharmacies [13,15]. Since few dental practices currently administer any type of vaccines, this difference may reflect parents' greater familiarity with other alternative settings that currently offer vaccines. Despite their low levels of comfort with dentists as vaccinators, parents reported somewhat higher levels of comfort with dentists in other HPV prevention roles including providing written information about vaccination or talking to parents about HPV. Parents with male children were more likely to report higher comfort with their child receiving HPV, findings that parallel a 2013 study exploring parent comfort with HPV vaccine in other alternative settings [13]. This difference may be due in part to patterns of parental concerns about HPV vaccination which

vary by adolescents' sex. For example, recent research finds that fewer parents of boys (vs. girls) report concerns about side effects, which may translate into greater comfort with vaccination in an alternative setting [27]. These findings, along with those regarding parents' perceived concerns and benefits highlight potential areas for future research and intervention.

Many parents reported concerns, including the belief that staff may not be good at giving shots, that insurance may not cover vaccination, and that staff may not be able to deal with side effects. In previous studies exploring oral health care providers' capacity to participate in HPV vaccination or education delivery, focus group participants including dentists and dental hygienists identified many of these concerns as barriers they would need to address before their workplaces could take on additional HPV prevention roles [17]. Though over half of parents reported that they would see no benefits with getting their child vaccinated at a dentist's office, parents who selected at least one benefit most often cited the potential convenience and dentists' expertise in oral health. Both benefits support delivering valuable HPV education to parents and adolescents in dental office settings. Current best practice guidelines encourage primary care providers to present HPV vaccination as a routine intervention designed to prevent cancer, bundling it with other adolescent vaccines with historically higher uptake, and addressing parent questions and concerns as needed [28]. When parents are exposed to more recommendations from trusted health experts to get their child HPV vaccine, they may be more likely to follow through with vaccination [5]. Dentists could be valuable allies to adolescents' regular care providers since they may interact with adolescent patients and parents more regularly and can reinforce HPV vaccination recommendations.

For dental practices to become viable alternative setting for HPV vaccination, significant changes to existing infrastructure and policy would be needed. For example, only some states, including Minnesota and Illinois, currently allow specially trained dentists to vaccines at all [29,30]. If allowed to administer vaccines, dental offices would need to be equipped for legal and safe refrigerated vaccine storage for vaccination to be feasible [15]. Additionally, private insurers would need to reimburse a new category of providers for time spent educating or vaccinating patients, and government payers such as the Vaccines for Children (VFC) program, would need to allow dentist reimbursement. Dental practices would also need to be able to access and use state immunization registry systems and the Vaccine Adverse Effects Reporting System (if their patients suffered any side-effects from HPV vaccine) [31]. Participation in these systems is necessary to facilitate effective care coordination and reporting but could require an additional investment in time and training.

4.2 Strengths and Limitations

This study offers novel information about parent attitudes towards dentists in HPV vaccination and other HPV-prevention roles and is strengthened by a large sample. Limitations include a cross- sectional design and parent report. Although our sample was drawn from a national panel that is similar to the U.S. population on many demographic characteristics, as with other survey research, our findings may not be generalizable to parents who opted not to participate [21]. While parents are the primary decision-makers

regarding HPV vaccination as children age, young people become increasingly involved in these decisions [31]. Thus, future research should investigate the attitudes of preteens and adolescents themselves. Further, survey questions asked parents to consider a hypothetical situation where they had already decided for their child to get vaccinated, which means responses may not reflect their actual comfort or behavior if faced with a real opportunity to have their child vaccinated by a dentist. Despite the hypothetical scenario, it is also possible that our findings reflect parents' attitudes towards HPV vaccine, at least in part, rather than solely their comfort with dental practices as an alternative setting. Additionally, the survey did not include some variables that may influence parental attitudes towards HPV vaccination and dentists as vaccinators. For example, families with limited access to their child's physician or who have accessed health care in setting outside the traditional medical home (e.g., school-based clinics, pharmacies) may have more interest in receiving vaccines in an oral health care setting.

4.3 Conclusions

Our findings in this study exploring parent comfort with dentists as HPV vaccinators suggest that a focus on non-vaccination HPV prevention and education roles in the alternative setting of dental practices may be most fruitful. Future research should more thoroughly assess dentists' readiness to deliver effective HPV counseling or education and establish whether this practice would make a meaningful difference in adolescent HPV vaccination rates. Establishing a solid evidence base before changing preventive health care delivery policies and practices could facilitate greater acceptance among parents, and more efficient implementation by providers. Improving adolescent HPV vaccination coverage remains an important public health goal. Whether through partnering with oral health providers for educational or communication-focused interventions, or through administering HPV vaccine through dental practices, the use of dental offices as alternative settings to promote adolescent HPV vaccination merits further investigation.

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Highlights

- This study assessed parents' comfort with dental providers in HPV prevention roles
- Only one-quarter of parents were comfortable with dentists administering HPV vaccine
- More parents were comfortable with dentists in non-vaccination roles

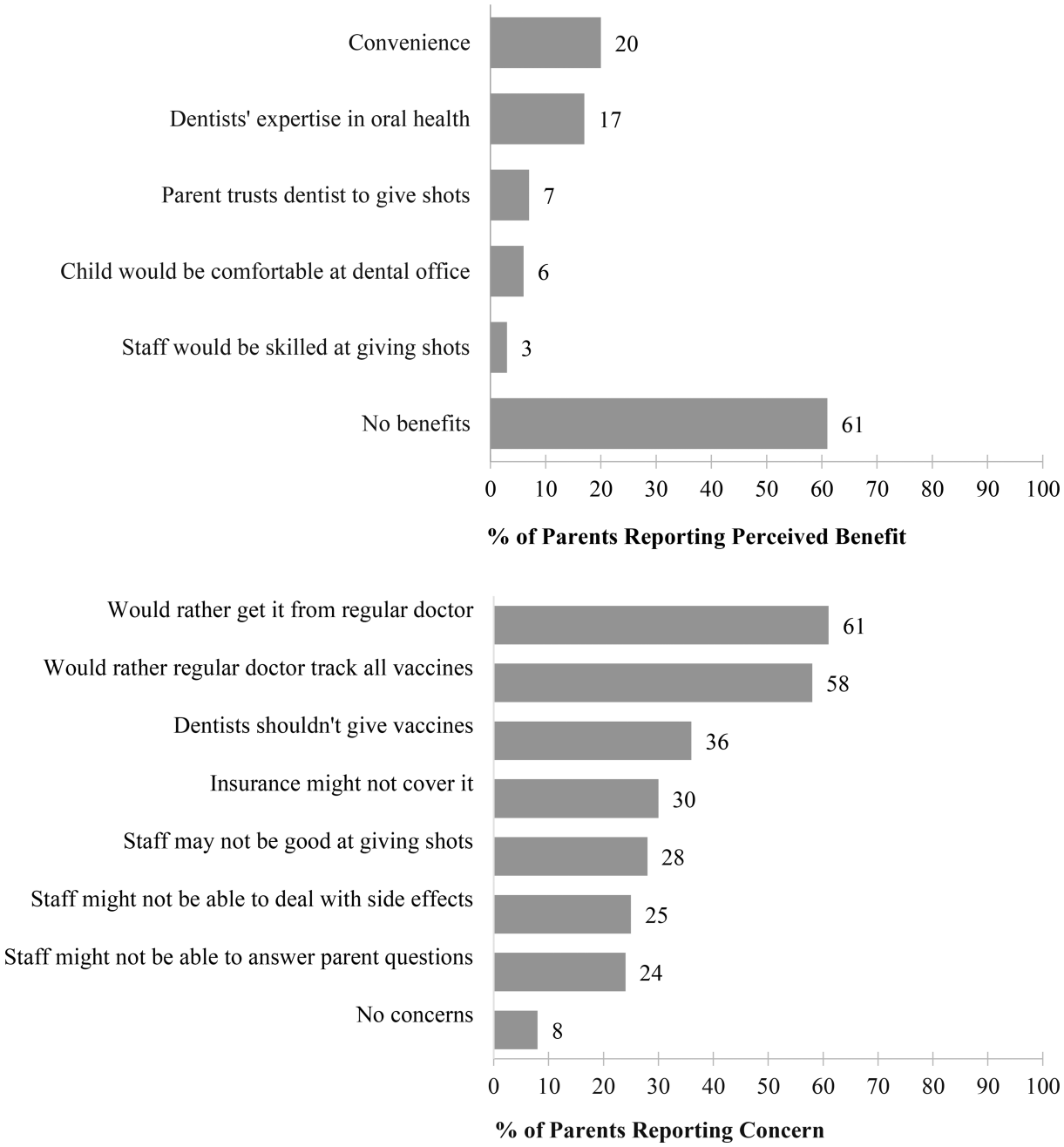

Figure 1.
Parents' perceived benefits and concerns with dentists as HPV vaccinators

Table 1

Demographic characteristics of parents, their children, and their households

	n	(%)
Parent characteristics		
Sex		
Male	590	(48.8)
Female	619	(51.2)
Educational attainment		
≤ High school degree	479	(39.6)
Some college, no degree	316	(26.1)
College degree or more	414	(34.2)
Child characteristics		
Sex		
Male	636	(52.6)
Female	573	(47.4)
Age, in years		
11–12	326	(27.0)
13–15	496	(41.0)
16–17	387	(32.0)
Race/Ethnicity		
White, non-Hispanic	751	(62.1)
Black, non-Hispanic	102	(8.4)
Hispanic	251	(20.8)
Other, non-Hispanic[b]	105	(8.7)
Household characteristics		
Annual income		
<$35,000	252	(20.8)
$35,000–$74,999	335	(27.7)
≥$75,000	622	(51.5)
Urbanicity[a]		
Rural	167	(13.8)
Urban	1042	(86.1)
Healthcare-related characteristics		
Child has health insurance coverage		
No	65	(5.4)
Yes[c]	1144	(94.6)
HPV vaccination status		
Not vaccinated, does not intend to vaccinate in next 12 months	414	(34.2)
Not vaccinated, intends to vaccinate in next 12 months	522	(43.2)
Vaccinated[d]	273	(22.6)

[a] As determined by MSA status

[b]Other race includes adolescents whose parents identified them as Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, more than one race, or none of these.

[c]Child has either private or public health insurance coverage

[d]Child has received at least 1 dose of HPV vaccine

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Table 2

Correlates of parents' comfort with dentists administering HPV vaccinations to their adolescent children

	Comfortable (N=273)		Not Comfortable (N=936)		Bivariate		Multivariable	
	n	(%)	*n*	%	OR	95% CI	OR	95% CI
Parent characteristics								
Sex								
Male	140	(23.7)	450	(76.3)		Ref		---
Female	133	(21.5)	486	(78.5)	0.88	(0.67–1.15)		---
Educational attainment								
High school degree or less	108	(22.6)	371	(77.5)		Ref		
Some college, no degree	61	(19.3)	255	(80.7)	0.82	(0.58–1.17)		---
College degree or more	104	(25.1)	310	(74.9)	1.15	(0.85–1.57)		---
Child characteristics								
Sex								
Male	164	(25.8)	472	(74.2)		Ref		Ref
Female	109	(19.0)	464	(81.0)	0.68	(0.51–0.89) **	0.65	(0.50–0.86) **
Age, in years								
11–12	66	(20.3)	260	(79.8)		Ref		---
13–15	118	(23.8)	378	(76.2)	1.23	(0.88–1.73)		---
16–17	89	(23.0)	298	(77.0)	0.89	(0.82 –1.69)		---
Race/Ethnicity								
White, non-Hispanic	164	(21.8)	587	(78.2)		Ref		---
Black, non-Hispanic	21	(20.6)	81	(79.4)	0.93	(0.56–1.55)		---
Hispanic	61	(24.3)	190	(75.7)	1.15	(0.82–1.61)		---
Other, non-Hispanic[a]	27	(25.7)	78	(74.3)	1.24	(0.77–1.98)		---
Household characteristics								
Annual income								
<$35,000	57	(22.6)	195	(77.4)		Ref		
$35,000–$74,999	67	(20.0)	268	(80.0)	0.86	(0.57–1.27)		---
≥$75,000	149	(24.0)	473	(76.1)	1.08	(0.76–1.53)		---

	Comfortable (N=273)		Not Comfortable (N=936)		Bivariate		Multivariable	
	n	(%)	*n*	%	OR	95% CI	OR	95% CI
Urbanicity[b]								
Rural	45	(27.0)	122	(73.1)		Ref		---
Urban	228	(21.9)	814	(78.1)	0.76	(0.52–1.10)		---
Healthcare-related characteristics								
Child has health insurance coverage								
No	11	(16.9)	54	(83.1)		Ref		
Yes	262	(22.9)	882	(77.1)	1.45	(0.75–2.83)		
Parent-provider relationship quality[c]								
Low	121	(19.71)	493	(80.3)		Ref		Ref
High	152	(25.6)	443	(74.5)	1.40	(1.07–1.83) *	1.27	(0.96–1.68)
Adolescent has regular dental clinic								
No	18	(25.7)	52	(74.3)		Ref		---
Yes	255	(22.4)	884	(77.6)	0.83	(0.48–1.45)		---
Number of times/year adolescent visits dental clinic for routine work								
none	17	(21.8)	61	(78.2)		Ref		---
1	72	(21.9)	257	(78.1)	1.01	(0.55–1.83)		---
≥2	184	(22.9)	618	(77.1)	1.07	(0.61–1.87)		---
HPV vaccination status								
Not vaccinated, does not intend to vaccinate in next 12 months	61	(14.7)	353	(85.3)		Ref		Ref
Not vaccinated, intends to vaccinate in next 12 months	136	(26.1)	386	(74.0)	2.04	(1.46–2.85) ***	2.02	(1.44–2.83) ***
Vaccinated[d]	76	(27.8)	197	(72.2)	2.23	(1.53–3.26) ***	2.23	(1.52–3.27) ***

Note. Percentages may not total 100 due to rounding. OR: odds ratio. CI: confidence interval. Dashes (---) indicate the variable was not included in the multivariable model because it was not associated at $p<.05$ in bivariate analyses.

[a] Other race includes adolescents whose parents identified them as Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, more than one race, or none of these.

[b] As determined by MSA status

[c] Based on mean of 4 items assessing: overall satisfaction, having information needs met, spending enough time, and following a provider's advice (α=.81)

[d] Child has received at least 1 dose of HPV vaccine

* $p<.05$

** $p<.01$

**** $p<001$