



## Service quality and parents' willingness to get adolescents HPV vaccine from pharmacists



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### ABSTRACT

We sought to examine whether pharmacy service quality was associated with parents' willingness to have immunizing pharmacists administer human papillomavirus (HPV) vaccine to their adolescent children. Participants were a national sample of 1504 US parents of adolescents ages 11 to 17 who completed an online survey in 2014. Analyses used structural equation modeling. Parents rated service quality and feelings of satisfaction with their pharmacies as moderate to high. Many (44%) were willing to get HPV vaccine from immunizing pharmacists for their adolescent children. Compared with parents who went to chain pharmacies, parents who went to independent pharmacies gave higher ratings of service quality (professionalism, confidentiality, milieu, all  $p < .001$ ). Parents who went to clinic pharmacies, compared with parents who went to chain pharmacies gave lower ratings for milieu ( $p < .01$ ). Parents who went to independent pharmacies had lower willingness to get HPV vaccine from pharmacists compared to parents who went to chain pharmacies ( $p = .001$ ), but there was no difference in willingness for parents who went to clinic *versus* chain pharmacies. Service quality and satisfaction partially mediated the effect between independent pharmacies compared to chain pharmacies and willingness ( $p < .05$ ). Parents who knew their pharmacists or expressed more confidence in HPV vaccine also had higher willingness to get their children HPV vaccine from pharmacist. Many parents were willing to go to immunizing pharmacists for their children's HPV vaccination. Pharmacies that are considering offering HPV vaccine may be able to improve vaccine uptake by increasing perception of service quality.

### 1. Introduction

Coverage for HPV vaccine in the US has lagged considerably behind other vaccines for adolescents introduced around the same time: tetanus, diphtheria, and acellular pertussis (Tdap) and meningococcal vaccinations (Walker et al., 2017). To improve access to and opportunities for HPV vaccinations, the President's Cancer Panel and the National Vaccine Advisory Committee recommended expanding HPV vaccine provision in pharmacies (Committee, 2015; Rimer et al., 2014). Since 1994, pharmacists have played an increasingly large role in immunization efforts (Schaffer et al., 2008), and may be well positioned to improve HPV vaccine uptake. For instance, 20% of U.S. adults received

their influenza vaccine from chain or supermarket pharmacies in 2011–2012 (Lu et al., 2014). Pharmacies have tremendous potential reach within communities; consumers make an estimated 250 million visits to pharmacies each week (American Pharmacists Association, 2014a), and about 93% of U.S. residents live within five miles of a community pharmacy (National Association of Chain Drug Stores, 2010). Pharmacies also have longer operating hours and are easier to access within communities compared to traditional medical settings when considering vaccination services (Dempsey and Zimet, 2015; Goad et al., 2013; Ndiaye et al., 2003; Postema and Breiman, 2000).

A recent study found that almost one third of parents were willing to get their children HPV vaccine at pharmacies (Calo et al., 2017).

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However to the best of our knowledge, this and other studies about pharmacy-located adolescent vaccinations have not examined whether the type of pharmacies parents typically use impacts their willingness to get their children HPV vaccine from pharmacists. As such, the purpose of our study was to examine how the type of pharmacy parents report using is associated with their willingness to get their children HPV vaccine from pharmacists. This is important to understand because parents may hesitate to engage in pharmacy-located adolescent vaccination as they may perceive health care quality to be different at various pharmacies.

We proposed two hypotheses test in our study. First, we hypothesized that parents who go to independent pharmacies or pharmacies located in a clinic or hospital have higher willingness to get their children HPV vaccine from a pharmacist than parents who go to chain pharmacies (*Hypothesis 1*). Consumer Reports showed that parents highly rate independent-owned pharmacies or pharmacies located in health systems like Kaiser Permanente, while less favorably rating chain pharmacies like Walgreens and Walmart (Report, 2016). Second, we hypothesized that the association of pharmacy type parents use and parents' willingness to get their children HPV vaccine from a pharmacist will be mediated by perceptions of service quality and overall satisfaction with health care services at the pharmacy (*Hypothesis 2*). Varying perceptions of service quality and feelings of satisfaction may, in part, explain why parents' willingness to have their children vaccinated from pharmacists may differ by the type of pharmacy parents use. Marketing research has demonstrated that consumer perceptions of service quality and their feelings of satisfaction are strong predictors of consumer engagement with services (Bitner, 1990; Brady and Robertson, 2001; Cronin Jr and Taylor, 1992; Gotlieb et al., 1994; Mohr and Bitner, 1995; Oliver, 1981). The conceptualization that service quality perceptions for a particular business will elicit an emotional response of satisfaction, which in turn leads to engagement with an established or new service or product in that business, is grounded in Lazarus' emotion and adaptation (Lazarus, 1991) and Bagozzi's self-regulation of attitudes and intentions frameworks (Bagozzi, 1992). By extension, it may be reasonable to conclude that consumers' service quality perceptions may vary by the types of pharmacy they go to, which in turn results in varying levels of satisfaction and willingness to receive new services like adolescent vaccination.

## 2. Methods

### 2.1. Data source and procedures

The Adolescent Vaccinations in Pharmacies (AVIP) Study was an online, cross-sectional survey of U.S. parents of adolescents conducted from November 2014 to January 2015. Study participants were members of an existing, national panel of non-institutionalized adults maintained by a survey company (GfK, 2015). The national panel was created through probability-based sampling of U.S. households using a combination of random-digit dialing and address-based sampling frames. Eligible respondents were parents of at least one child ages 11 to 17 who lived with them at least half of the time. Parents answered survey items about their children who they identified at the beginning of the survey.

The survey company randomly selected 2845 parents from a panel comprised of members from all 50 states and the District of Columbia. About 14% ( $n = 391$ ) of invited panelists were not eligible to complete the survey. Of the 2454 eligible parents, 1518 completed some portion of the survey. After we excluded 14 panelists who did not complete at least two-thirds of the survey, our final analytic sample contained 1504 parents. The response rate was 61% (1504/2454) based on American Association for Public Research Response Rate Five (Callegaro and DiSogra, 2008; The American Association for Public Opinion Research, 2015). Participants' sociodemographic characteristics appear in Table 1.

**Table 1**  
Sample demographic characteristics ( $n = 1504$ ).

	<i>n (%) or mean (SD)</i>
<b>Parent characteristics</b>	
<i>Sex</i>	
Male	668 (44)
Female	836 (56)
<i>Age (yrs)</i>	43.9 (7.84)
<i>Education</i>	
High school degree or less	576 (38)
Some college or more	928 (62)
<i>HPV vaccine confidence</i>	3.65 (.77)
<i>Pharmacy type used for index child's prescriptions</i>	
Chain pharmacy	829 (55)
Grocery store pharmacy	169 (11)
Big box pharmacy	218 (15)
Clinic pharmacy	124 (8)
Independent pharmacy	155 (10)
<i>Familiarity with pharmacist at the pharmacy</i>	
Not well at all	907 (61)
Moderately well	479 (32)
Very well	108 (7)
<b>Child characteristics</b>	
<i>Sex</i>	
Male	765 (51)
Female	739 (49)
<i>Age (yrs)</i>	14.0 (2.01)
<i>Race</i>	
White	1175 (79)
Black	160 (11)
Other	153 (10)
<i>Ethnicity</i>	
Non-Hispanic	1236 (83)
Hispanic	258 (17)
<i>HPV vaccination status</i>	
0 doses	808 (54)
≥ 1 dose	458 (30)
Series completion	237 (16)
<i>Vaccinated in alternative settings</i>	
No	994 (66)
Yes	510 (34)
<b>Household characteristics</b>	
<i>Income</i>	
\$0–\$34,999	329 (22)
\$35,000–\$74,999	470 (31)
\$75,000 or more	705 (47)
<i>Urbanicity</i>	
Non-metropolitan statistical area	236 (16)
Metropolitan statistical area	1268 (84)
<i>Region</i>	
Northeast	261 (17)
Midwest	393 (26)
South	499 (33)
West	351 (23)

Note. Frequencies for specific characteristics may not total to 1504 participants due to missing data.

### 2.2. Measures

#### 2.2.1. Survey item development

We developed survey items based on previous research among parents, adolescents, and health care providers (Gilkey et al., 2015; McRee et al., 2010; McRee et al., 2011; Reiter et al., 2009; Reiter et al., 2011), or adapted items from other sources (Cronin Jr and Taylor, 1992; North Carolina Health and Human Services, 2013; US Department of Health Human Services, 2011). We cognitively tested the AVIP survey with 18 parents of adolescents ages 11 to 17 to ensure the clarity of survey items, and we pre-tested the instrument with 26 parents from the national panel to ensure proper survey functionality. The full AVIP survey instrument is available online at [www.unc.edu/~ntbrewer/hpv.htm](http://www.unc.edu/~ntbrewer/hpv.htm).

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