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Barriers and Facilitators to Improving Virginia's HPV Vaccination Rate: A Stakeholder Analysis With Implications for Pediatric Nurses☆

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ABSTRACT

Purpose: Despite the evidence, the availability since 2006, and strong recommendations from many professional organizations, the human papillomavirus (HPV) vaccine has had a low uptake rate nationally and these trends have been even lower in the state of Virginia.
Design and methods: We explored key stakeholders' perspectives on factors influencing HPV vaccination in central and southern Virginia organized within the socio-ecological model (SEM) framework. We conducted semi-structured key informant interviews with 31 stakeholders involved in HPV vaccination or cancer prevention.
Results: Stakeholders identified barriers at all SEM levels: Knowledge gaps and sexuality concerns (parent-child dyad level), time constraint and inconsistent recommendation (interpersonal level), lack of leadership and informational support (organizational and community level), and an ineffective mandate (policy level). Facilitators identified were realistic/receptive attitude (parent-child dyad level), provider's strong recommendation and educational support (interpersonal level), team approach and useful data (organizational level), educational outreach and community resources (community level), and support from federal and professional organizations (policy level).
Conclusions: The stakeholder analysis provided an environmental scan of the barriers and facilitators so that an effective HPV vaccination strategy can be planned and implemented in the Commonwealth of Virginia by public health nurses.

Background

Every 20 min, someone in the United States is diagnosed with a human papillomavirus (HPV)-associated cancer, and most are acquired in young adulthood (Center for Disease Control and Prevention (CDC), 2014). With more than 79 million individuals infected and 14 million new cases each year, HPV infection is the most common sexually transmitted infection in the United States (Satterwhite et al., 2013). While most cases resolve spontaneously, persistent infections with HPV types 6, 11, 16 and 18 are most concerning because they lead to 26,000 new cancer cases annually and 90% of anogenital warts (CDC, 2012). The annual burden of HPV-related treatment for women is 3 million cases at a cost of $7 billion (CDC, 2015).

To counter this statistic, vaccines are available and recommended by the Advisory Committee on Immunization Practices (ACIP) for all young women ages 9 to 26, and to young men ages 9 to 21 (CDC, 2010; Centers for Disease Control and Prevention (CDC), 2007; Petrosky et al., 2015). Despite endorsement by many professional organizations (AAFP, AAP, ACOG, ACP, CDC, 2014; Association of Women's Health, 2010) and from the leading 69 National Cancer Institute-designated cancer centers (National Cancer Institute, 2016), the initiation and completion rate of HPV vaccination series nationally in 2016 is only at 65.1% and 49.5% for young women, 50.6% and 37.5% for young men respectively (Walker et al., 2017). In Virginia, the rate is lower at 53.6% for initiation and 39.2% completion for young women, and 56.4% initiation and 37.4% completion for young men (Walker et al., 2017). The completion rate nationally and in Virginia is far below The Healthy People 2020 goal of 80% for all three injections (United States Department of Health and Human Services, 2011) and many young men and women are still at risk for developing this highly preventive cancer and infection. Of note, in 2016 the HPV vaccination recommendation changed from three to two vaccines for those young men and women who initiate the series prior to the age of 15 (Walker et al., 2017).

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Virginia is unique because, in 2008, it was the first state to mandate HPV vaccination for adolescent girls entering middle school (Keim-Malpass, Mitchell, Deguzman, Stoler, and Kennedy, 2017). However, this legislation has faced numerous threats of appeal, and many experts have criticized its opt-out policy as being too generous because parents/caregivers can opt out for any reason, and the policy only excluded boys (Keim-Malpass et al., 2017; Pitts & Adams Tufts, 2013). Only one published study has assessed the policy context in Virginia and assessed parental response to the Virginia HPV vaccination mandate. Pitts and Adams Tufts (2013) found that parents had less trust in the vaccine because of the mandate due to the perceived political involvement and general uncertainty of government vaccination mandates.

As may be the case in other states, the presence of rural and medically underserved communities in the Commonwealth of Virginia may contribute to problems with vaccine uptake. Many of the Virginia's counties are designated as “rural” (46%) and “medically underserved” (72%) according to the Health Resources and Services Administration (HRSA, 2018). A study conducted in Kentucky found a 7-fold decrease in rural women versus urban women returning for a follow-up vaccine doses despite the vaccine being free of charge (Crosby, Casey, Vanderpool, Collins, & Moore, 2011).

Population-based research to date has identified several key factors contributing to the lagging HPV vaccination rate. The most common barriers were cost (Ferrer, Trotter, Hickman, & Audrey, 2014; Garcini, Galvan, & Barnack-Tavlaris, 2012), individual/parental barriers (Rambout, Tashkandi, Hopkins, and Tricco, 2014), lack of health care providers' recommendations at the interpersonal level (Bartlett & Peterson, 2011; Head, Vanderpool, & Mills, 2013; Kessels et al., 2012), and health disparities (Gelman et al., 2013). Strong facilitators of HPV vaccination included health care provider's recommendations, free HPV vaccines, and positive vaccine attitudes held by parents and young adults (Holman et al., 2014). The interactions of the various levels of the socio-economical model showed that overall, women who live in the South (Rahman, Laz, and B. A. B., 2013), have low-income (Jeudin, Liveright, Del Carmen, & Perkins, 2014), and are of racial/ethnic minorities (Gelman et al., 2013) were less likely to initiate and/or complete the vaccination series.

The socio-ecological model (SEM) posits that complex interactions at the intrapersonal, interpersonal, organizational, community, and public policy levels shape health behavior (Mcleroy, Bibeau, Steckler, and Glanz, 1988). For the adolescent, health care decision is often tied to the parent and labeled as “Parent-child dyad” at the intrapersonal level. Public policy, community support programs, and institutional processes further impact HPV vaccination. To better understand barriers and facilitators to HPV vaccination, the interactions between these levels are examined. The purpose of this study is to identify barriers and facilitators to HPV vaccination using the SEM model as a conceptual framework for improving HPV vaccination initiation and uptake in young men and women ages 9 to 26. The data from this study will provide an environmental scan so that future programs can be developed to improve the HPV vaccination rate and cancer prevention in Virginia.

Material and methods

A descriptive qualitative study was initiated using a purposive sampling technique to identify stakeholders involved with aspects of care related directly to HPV vaccination (pediatrics, family medicine, women's health, state Health Departments), policy, industry, research, or cancer outreach/community engagement. Individuals not involved in HPV vaccination or cancer outreach were excluded. Twenty-eight interviews with 31 stakeholders were conducted over the phone or in person. The interviews occurred individually or in a group setting. Stakeholders were identified as registered nurses or nurse practitioners ($n = 7$), medical doctors (n = 7; with specialty in pediatrics, family practice, gynecology, oncology, and pathology), pharmacy or industry ($n = 5$), health department (n = 5), community programs ($n = 6$), and health research professors ($n = 4$). Since stakeholders had multiple roles, the roles identified do not equal to 31. The stakeholders had an average of 12.5 years of experience, with a range of 1 month to 48 years of experience or in their current position. Stakeholders represented public and private institutions. Ten stakeholders provided direct patient care with regard to HPV administration and/or education.

After IRB approval, a primary investigator sent an email message to all stakeholders requesting that they email or schedule the interview. The email message contained information regarding the study, confidentiality and protection of identity, risks, benefits, and voluntary nature of the interview. We conducted the interview via phone or during a site visit using the key informant semi-structured questions. After consent for recording, a digital voice recorder was used to record the interview so that an accurate transcription could be done for later review and analysis. The interview recording was transcribed verbatim. The interviewer also took written notes to capture the key points of each interview. If the individual stakeholder did not agree to audio recording ($n = 2$), we sent the typed interview summary to the stakeholder for review to ensure the accuracy of the information.

Qualitative methods were guided by conventional content analysis. Members of the research team applied codes to the qualitative interviews line-by-line using the a priori framework provided by the SEM model. Coded lines were grouped to form inductively derived themes. Final theme development was reached through consensus among the research team. Trustworthiness was addressed by the lead author reflecting on prior assumptions and beliefs about the topic and allowing for an open review and audit process among the research team.

Results

Several barriers and facilitators were identified at all levels of the SEM and are shown in Fig. 1. Themes and exemplars for barriers are described in Table 1 and for facilitators in Table 2.

Parent-child dyad level

Stakeholders identified knowledge gap, fear, sexuality belief, and healthy adolescents as barriers to care at the parent-child level. Often parents did not perceive the HPV vaccine as a routine part of adolescent care and did not schedule an appointment unless the child was sick or needed a sports physical. Once at the appointment, the parents frequently expressed concerns and fear regarding the vaccine safety, efficacy, side effects, and what they heard from social media. The adolescents also mentioned the fear of needles as a barrier to initiating and completing injections. Parents also articulated that they did not think their children needed the vaccine because of their religion, or because their children were not sexually active, or that the vaccine promoted promiscuity. A small group of parents were not interested in any vaccine or the government or doctors telling them what their child needed or did not need. Knowledge regarding the cost associated with the vaccine and the medical visit may also prohibit some parents or young adults from accessing care. Lack of knowledge regarding the need, how to, and when to return for subsequent injections also prevented many adolescents from receiving their second and third shots.

Interpersonal Level

Time constraint and inconsistent or lack of recommendation by the health care provider (HCP) are barriers at the Interpersonal level. Gynecologists and oncologists involved with treating HPV-related cancers strongly recommended the vaccines and cannot understand why the vaccination rate is not higher. One stakeholder said that pediatricians and family practice providers are not making the strong recommendation for the vaccine and organizations are not holding them