US Health Care Clinicians' Knowledge, Attitudes, and Practices Regarding Human Papillomavirus Vaccination: A Qualitative Systematic Review

Brittany L. Rosen, PhD, CHES; Allie Shepard, MA, CHES; Jessica A. Kahn, MD, MPH

From the University of Cincinnati, School of Human Services (Dr Rosen and Ms Shepard), Cincinnati Children's Hospital Medical Center, Division of Adolescent and Transition Medicine (Dr Kahn), and University of Cincinnati, College of Medicine (Dr Kahn), Cincinnati, Ohio
Dr Kahn chaired the review committee for a grant to the Society for Adolescent Health and Medicine evaluating public health demonstration project proposals to improve adolescent vaccination; grant funding for this program was from Merck,Inc. Dr Kahn also cochaired 2 human papillomavirus vaccine clinical trials in HIV-infected individuals, which were funded by the National Institutes of Health (grant numbers U01 HD 040533 [NICHD], U01 HD 040474 [NICHD], UM1CA121974 [NCI], and U01 CA121947 [NCI]) but for which Merck & Co, Inc provided vaccine and immunogenicity titers. The remaining authors have no conflicts of interest to disclose.
Address correspondence to Brittany L. Rosen, PhD, CHES, University of Cincinnati, School of Human Services, PO Box 210068, Cincinnati, Ohio 45221 (e-mail: brittany.rosen@uc.edu).
Received for publication April 16, 2017; accepted October 21, 2017.

ABSTRACT

Clinicians' recommendation for the human papillomavirus (HPV) vaccine appears to be an important driver of parental decisions about vaccination. Our aim was to synthesize the best available evidence exploring the perceptions and experiences regarding HPV vaccination, from the perspective of the US clinician. We conducted a comprehensive literature search of Academic Search Complete, CINAHL Plus, Communication & Mass Media Complete, Consumer Health Complete (EBSCOhost), ERIC, Health and Psychosocial Instruments, MEDLINE with full text, and PsycINFO databases. We identified 60 eligible articles: 48 quantitative and 12 qualitative. We extracted the following information: study purpose, use of theory, location, inclusion criteria, and health care provider classification. Results were organized into 5 categories: 1) clinicians' knowledge and beliefs about HPV and the HPV vaccine, 2) clinicians' attitudes and beliefs about recommending HPV vaccines, 3) clinicians' intention to recommend HPV vaccines, 4) clinicians' professional practices regarding HPV vaccination, and 5) patient HPV vaccination rates. Although clinicians were generally supportive of HPV vaccination, there was a discrepancy between clinicians' intentions, recommendation practices, and patient vaccination rates. Studies reported that clinicians tended not to provide strong, consistent recommendations, and were more likely to recommend HPV vaccines to girls versus boys and to older versus younger adolescents. Analyses revealed a number of facilitating factors and barriers to HPV vaccination at the clinician, parent/patient, and systems levels, including clinician knowledge, clinician beliefs, and office procedures that promote vaccination. This review provides an evidence base for multilevel interventions to improve clinician HPV vaccine recommendations and vaccination rates.

KEYWORDS: attitudes; health knowledge; nurses; human papillomavirus vaccines; physicians; pediatrics

ACADEMIC PEDIATRICS 2018;18:S53–S65

HUMAN PAPILLOMAVIRUS (HPV) is the most common sexually transmitted infection, with a prevalence rate of 43% among US adults.[1] HPV might have serious health consequences for men as well as women, including anogenital cancers (cervical, vaginal, vulvar, penile, and anal), oropharyngeal cancers, and anogenital warts.[2] To prevent the potential health consequences, 3 HPV vaccines (2-valent, 4-valent, and 9-valent) have been licensed in the United States. Data from clinical trials have shown that these vaccines are almost 100% effective in preventing infection and precancers caused by the targeted HPV types, if given before HPV acquisition,[3–8] and that the 4-valent and 9-valent vaccines are highly effective in preventing anogenital warts.[5–7] HPV vaccine introduction in real-world settings has led to dramatic declines in vaccine-type HPV prevalence and anogenital warts.[9–11] Despite the potential for HPV vaccines to decrease morbidity and mortality associated with these outcomes, vaccine uptake remains below the Healthy People 2020 objective of 80% coverage. In the United States during 2014 to 2015, only 43% of 13- to 17-year-old girls and 32% of 13- to 17-year-old boys had completed the HPV vaccine series.[12]

Health care clinicians play a key role in HPV vaccine uptake, and clinicians' recommendation for the vaccine appears to be an important driver of parental decisions to vaccinate their child.[13] However, research has shown that there are considerable missed clinical opportunities to recommend and administer the HPV vaccine. Furthermore, higher quality and strength of HPV vaccine recommendations predict a higher odds of initiation and vaccine series completion.[14] However, the strength and consistency of clinician recommendations for HPV vaccine is lower than for other adolescent vaccines: in 1 study, two-thirds of 11- and 12-year-old girls did not receive an HPV vaccine

at a visit during which they received at least 1 other vaccine.[15] Missed opportunities to vaccinate have been cited as the primary reason the United States has not achieved high HPV vaccination rates.[16]

Because of relatively low rates of HPV vaccination, the importance of clinicians' vaccine recommendation, and missed opportunities to vaccinate, understanding health care clinicians' knowledge, attitudes, and professional practices regarding the HPV vaccine is important for developing evidence-based interventions to improve the consistency and strength of HPV vaccine recommendations. Therefore, our aim was to synthesize the best available evidence on the perceptions and experiences regarding HPV vaccination, from the perspective of the US clinician.

METHODS

For the purpose of this review, health care clinician was defined as an individual qualified to deliver health care services (eg, physicians, clinical nurses, school nurses) to patients within the recommended age group for vaccination (9–26 years of age). A comprehensive literature search of Academic Search Complete, CINAHL Plus with Full Text, Communication & Mass Media Complete, Consumer Health Complete (EBSCOhost), ERIC, Health and Psychosocial Instruments, MEDLINE with Full Text, and PsycINFO databases was conducted, using variations and Boolean connectors with the following terms: human papillomavirus, vaccine, immunization, vaccine, health care provider, perception, and practice. In addition to the electronic searches, each article was scanned in Scopus for potentially missed citations that cited the article produced in the initial search.

The following criteria were used for inclusion of articles in this review: 1) original empirical reports (including quantitative and qualitative studies) published in a peer-reviewed, English language journal, 2) studies conducted in the United States, 3) data collection took place after the US Food and Drug Administration approval of the vaccine (2006), and 4) methodology included examination of the knowledge, perceptions, and/or professional practices of health care professionals regarding the HPV vaccine. Articles were excluded if they were commentaries, editorials, or personal perspectives. All articles published through August 2016 were retrieved (the date in which searching began). Information concerning the time frame the data were collected, purpose of the study, use of theory, location of study, inclusion criteria, classification of health care provider, study design, and sample size were extracted from eligible studies. Additionally, information about clinicians' knowledge about, perceptions of, and practices regarding the HPV vaccine were extracted. Data were abstracted and entered into a database by Dr Rosen and Ms Shepard. Dr Rosen independently abstracted the data from the first 35 articles (all articles published from 2008 to 2014), and Ms Shepard independently abstracted the data from the remaining 22 articles (published from 2015 to 2016). Dr Rosen and Ms Shepard also identified themes and subthemes through content analysis on the basis of the data in the articles. Dr Kahn conducted an independent review of the themes and subthemes providing validation of data classification, as well as reviewing the abstracted data to ensure the data were aligned with the themes and subthemes. Any discrepancies in classification were resolved through discussion between Dr Rosen, Ms Shepard, and Dr Kahn.

RESULTS

Sixty articles were identified for this review, including 48 quantitative and 12 qualitative studies. The range of publication dates included 2008 through 2016: most studies (n = 15) were published in 2016, and most of these (n = 13) were conducted in 2010. Five studies did not provide information about the geographic area where the research was conducted. In 25 studies, data were derived from a national data set. The remainder of the studies reported data collected from states in the Northeast (n = 6), Midwest (n = 10), South (n = 12), and West (n = 2) as defined by the US Census Bureau. Participants in the studies included pediatricians (n = 29), family practitioners (n = 26), obstetricians and gynecologists (n = 12), physicians not otherwise classified (n = 13), nurse practitioners (n = 13), general practitioners (n = 8), internal medicine physicians (n = 7), registered nurses (n = 6), physician assistants (n = 5), preventive medicine physicians (n = 2), and school nurses (n = 2). Of the 48 quantitative studies, the sample size ranged from 50 to 2119 clinician participants. The sample size in the 12 qualitative studies ranged from 8 to 61 participants. Twelve of the 48 quantitative studies explicitly stated using a theory or model to collect and/or analyze data, including theory of planned behavior (n = 5), competing demands model (n = 4), diffusion of innovations (n = 3), health belief model (n = 2), shared decision-making framework (n = 1), and transtheoretical model (n = 1). Four of the studies reported using more than 1 theory or model. Analytic methods included grounded theory/constant comparison methods in 6 of the qualitative studies. Study characteristics are shown in Table 1.

We organized study results into the following primary categories: 1) clinicians' knowledge and beliefs about HPV and the HPV vaccine, 2) clinicians' attitudes and beliefs about recommending HPV vaccines, 3) clinicians' intention to recommend HPV vaccines, 4) clinicians' professional practices regarding HPV vaccination, and 5) patient HPV vaccination rates. For the last 3 categories (intention to recommend HPV vaccines, professional practices regarding HPV vaccination, patient HPV vaccination rates) we also included factors associated with each of these outcomes if the data were available. Within each category, themes were identified and subthemes classified through content analysis. For results that are summarized in the following sections and also presented in tables, citations are included in each table.