RESEARCH PAPER

Dental opinion leaders' perspectives on barriers and facilitators to HPV-related prevention

Stacey B. Griner ^a, Erika L. Thompson ^b, Cheryl A. Vamos^a, Anil K. Chaturvedi^c, Coralia Vazquez-Otero^a, Laura K. Merrell^d, Nolan S. Kline ^e, and Ellen M. Daley^a

^aCollege of Public Health, University of South Florida, Tampa, FL, USA; ^bDepartment of Health Behavior and Health Systems, School of Public Health, University of North Texas Health Science Center, Fort Worth, TX, USA; ^cNational Cancer Institute, Division of Cancer Epidemiology & Genetics, Infections and Immunoepidemiology Branch, NCI Shady Grove, Bethesda, MD, USA; ^dDepartment of Health Sciences, James Madison University, Harrisonburg, VA, USA; ^eDepartment Anthropology, Rollins of College, Winter Park, FL, USA

ABSTRACT

Evidence suggests a causal connection between the Human Papillomavirus (HPV) and oropharyngeal cancers. HPV-related oropharyngeal cancers are increasing and are the most common HPV-associated cancer. Previous research suggests that dental professionals recognize a role in the prevention of HPV and oropharyngeal cancers. As an initial step to investigating effective mechanisms of incorporating HPV prevention into dental practices, including the HPV vaccine, this qualitative study explored dental opinion leaders' perspectives on barriers and facilitators to HPV-related prevention in the dental profession. Dental opinion leaders were identified through: (1) national professional organizations and advocacy groups, (2) by indication of an expert panel, and (3) focus groups conducted with oral health providers. Thirteen participants representing 11 organizations were interviewed via telephone. Interview recordings were transcribed verbatim and thematically coded using a priori and emergent codes. Opinion leaders described multi-level factors influencing dental providers' HPV-related prevention practice behaviors. Barriers included HPV as a sensitive topic and the need for HPV-related education and skills. Facilitators included perceptions of HPV prevention as part of the dental providers' role and the potential development of passive educational methods to provide HPV-related information to patients. Opinion leaders reported dental providers have a role in the prevention of HPV and oropharyngeal cancer; yet, to fully incorporate this topic into their practice, dental providers need further education and skill-based training. Opinion leaders have significant role in shaping this topic as a priority and identifying potential interventions to assist dental providers' HPV-related prevention. Future research should maximize the role of opinion leaders as key change agents.

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Introduction

Ample evidence indicates a causal connection between Human Papillomavirus (HPV) and oropharyngeal cancers.^{1–5} Globally, over 37,000 incident cases of oropharyngeal cancers are attributable to HPV.⁶ While incidence rates of these cancers related to tobacco and alcohol use are decreasing in the United States, HPV-related oropharyngeal cancers are on the rise and have doubled in the past 30 years.¹ Approximately 70% of all oropharyngeal cancers are associated with HPV.^{7,8} Additionally, oropharyngeal cancers are the most common HPV-associated cancer, with approximately 11,000 annual cases.^{5,9,10} Recent studies have indicated that the rates of HPV-related oropharyngeal cancers have surpassed those of cervical cancers,¹¹ thus, preventing HPV and HPV-associated oropharyngeal cancer is critical. One promising solution to reduce HPV-related cancers is the HPV vaccine. Although the HPV vaccine has not yet been approved for the prevention of oropharyngeal cancer, research suggests there is a significant reduction in the prevalence of oral HPV infections among those who are vaccinated.^{12–14} This reduction may be associated with the vaccine's protection against two HPV types

associated with 90% of HPV-associated oropharyngeal cancers.^{15,16} Studies suggest as many as 95% of these cases of oropharyngeal cancers could have been potentially prevented by administration of the HPV vaccine.^{14,16}

Previous research has found that dental providers (i.e., dentists and dental hygienists) recognize a role in preventing HPV and oropharyngeal cancers.^{17–19} The increase of HPV-related oropharyngeal cancers has led to calls for every dental examination to include a discussion of cancer prevention.²⁰ Moreover, due to the increase in prevalence among individuals without the traditional risk factors for cancer (i.e., tobacco and alcohol use), the American Dental Association (ADA) recommended in a 2009 statement that dentists seek information about the relationship between HPV and oropharyngeal cancers for themselves and their patients.²¹ More recently, the ADA's Center for Evidence-Based Dentistry stated "Oral health professionals should strongly and clearly recommend HPV vaccination to all age-eligible patients."²² Yet, whether and how this HPV-related prevention, including recommendation of the HPV vaccine, is currently implemented into dental practices is not well understood.

In the United States, recommendation from a pediatrician, family practitioner, or OB/GYN is one of the most significant predictors of HPV vaccine uptake.²³ However, existing research has also indicated that dental providers have relatively low knowledge of HPV-related oropharyngeal cancers, especially on topics such as the link between oral cancers and HPV, the curability of HPV, HPV-associated outcomes in men, and the HPV vaccine.^{17,19,24-27} This lack of knowledge may be attributed to the novelty of this topic among dental professionals. As knowledge is a basic need for incorporating guidelines and recommendations into practice, agents for improving dental providers' knowledge, such as dental opinion leaders, play a critical role in identifying and transmitting information and other health messages.²⁸ Opinion leaders are people who have the ability to influence the opinions, behavior, and attitudes of groups of individuals.²⁸ Such leaders can influence professional practice by acting as change agents for the dissemination of new practices.^{28,29} With the topic of HPV-related oropharyngeal cancer becoming an emerging issue among dental professionals, opinion leaders may shed light on how organizations, practices, and other environmental attributes may shape evolving HPV-related prevention practices among dental providers. Specifically, opinion leaders act as role models for behavior change and can support the sustainability of interventions.²⁸ Additionally, opinion leaders can play an important role in the adoption process for new information or innovations.³⁰ Dental professionals may be the next group of providers to engage in HPV-related prevention and vaccination efforts. Before this is possible, however, providers' and professional opinion leaders' perceptions about HPV must be understood. Gaps exist in the literature to understand the influence of opinion leaders and their perceptions of incorporating this emerging topic into dental practices. Thus, this study explored dental opinion leaders' perspectives on barriers and facilitators to HPV-related prevention in the dental profession.

Results

Opinion leaders described both barriers and facilitators influencing dental providers' HPV-related prevention practices. Specifically, data reflect participants' views on barriers and facilitators that providers may encounter when discussing HPV and its connection to oropharyngeal cancer with patients. Facilitators influencing the inclusion of HPV-related prevention into practice included providers' perception of HPV discussions fitting into their scope of practice, and such conversations with patients would be improved by creating passive educational materials. Barriers reported by opinion leaders included the perception of HPV as a sensitive topic to discuss with patients and the need for education and skills for providers to feel confident in incorporating this topic into practice. These themes are further described below, and illustrative quotes are presented for each.

Facilitators

Role in prevention

Opinion leaders saw a critical role for dental providers in discussing HPV-related oropharyngeal cancers with their

patients. Participants felt leveraging the dental providers' perceived role in prevention would facilitate HPV-related education provision and improve health outcomes of patients. One opinion leader described it as follows:

"Our role is critical, because oral health is what our specialty is, and it's up to us to be advocates for our patients by keeping them up to date on what the latest studies show." Participant 5

Opinion leaders also felt that the release of the ADA statement regarding HPV and oropharyngeal cancer was integral in starting the conversation and would prompt more dental providers to act by educating their patients.

"I think that we have a responsibility to both examine for oropharyngeal cancers where we can, and certainly discussing the issues related to oropharyngeal cancers with patients is something that I think has become much more prominent in the work that dentists do in general, but certainly, from an education perspective, we could do that." Participant 3

"But I do think that we have to let them [patients] know, especially since the ADA got the conversation going." Participant 5

Furthermore, opinion leaders discussed dental providers' role in assessing their patient's risk factors for oropharyngeal cancer, including HPV. Participants felt that there has recently been an increase in patient receptivity to receiving general, health-related information from their dental providers, which could further facilitate this conversation.

"I would like to see the day where dentists really are more the prevention experts, where you would screen patients for medical conditions, and then if something popped up, send them off to the physician." Participant 9

Passive education

Opinion leaders believed that HPV-focused patient education would be easier to incorporate into dental practices if it were presented in a passive manner (e.g., pamphlets, posters in the office or waiting room, or broad educational campaigns). Passive materials could then prompt HPV prevention communication to be initiated by the patient, rather than the dental provider.

"I think if dentists are left in a position where they are only answering questions that occur to them versus disseminating information, I think they'll do just fine." Participant 6

"Most people have no idea about the signs and symptoms. That's where dental professionals should be spending their time. There should be posters. When we go to a dermatology office, we're educated about all the signs and symptoms of skin cancer. When we go to a gynecologist, there are reports about cervical cancers and breast cancers, but we go to the dentist there is no education about oral health. If you did a screening and let's say you didn't take the time to educate your patient, in the goody bag with the toothbrush and the toothpaste, is a card and the card basically says share this card with friends and family and make sure they get an oral cancer screening, too." Participant 7

Patient-initiated discussions would allow providers to feel more comfortable with their role in HPV-related education if they were responsive to patients' concerns.

"So if there's a dissemination mechanism where the dentist doesn't actually have to have the conversation...they're all about it." Participant 6

Opinion leaders also discussed the potential for developing scripts or talking points to guide dentists to response to the patient-initiated conversations and increase the likelihood of this their preferences as follows:

"It may or may not be something the dentist wants to have sitting out in his waiting room...but it certainly can be given to them during a hygiene appointment or some other time. Patients will read it. They will get facts correct, and if they have a question after reading it, then the dentist should get to speak, and that's how he fits in the picture, but be able to answer their question." Participant 6

"Any type of talking point, bulleted point, informational piece, I think, is really valuable, that can be shared with dental hygienists to talk about recent statistics, scientific information, that sort of thing, but in a way that's short and to the point, because none of us have all the time we want anymore." Participant 10

Barriers

Sensitive topics

Opinion leaders discussed the perception of HPV as a "sensitive topic." As HPV is typically known as a sexually transmitted infection, many participants described the discomfort dental providers may feel in initiating a conversation on HPV as a risk factor for oral cancer, or even using the word "cancer". Two opinion leaders stated:

"I think that there's a real sensitivity about examining for oral cancers and talking to patients about oral cancers, especially those that have risk factors. I think it's one of those topics that it's not easy for a lot of people to talk about. I admire the people who can talk about it without flinching or blinking." Participant 2

"It's the dental professional's responsibility to use the words oral cancer when they do a screening. A lot of people get screening, but they don't even know they're getting one, because the dentist doesn't say it." Participant 6

Participants discussed that patients may not be forthcoming with potential HPV-related risk factors with their dental provider, due to concerns about privacy. For example, participants reported that patients have a perception about what they should and should not tell their dentists, which may influence the conversation. Participants stated that dental providers might also be concerned about offending their patients, especially given the unwillingness of dentists to bring up information that may sound accusatory. Opinion leaders described this common fear:

"Even when the evidence shows that that is not the case, the dentists are just very, very afraid to potentially offend the patients. It's a challenge getting dentists to bring up topics that they could see as potentially controversial or upsetting or too personal. It's unfortunately just the nature of the beast." Participant 4

"If the topic is broached in a way that doesn't make the patient feel uncomfortable – in other words, it's an educational type of conversation that you're having with the patient – and you're bringing into play all of the various risk factors that could lead to oral cancer, this is one aspect of that." Participant 10

Education and skills

With the perceived sensitive nature of this topic, opinion leaders discussed the need for knowledge and skill-based training about the relationship between HPV and

oropharyngeal cancer, and methods to incorporate primary prevention (e.g., education, referring for vaccination) into their practice. Even when dental providers are willing and have the knowledge to incorporate HPV-related primary prevention into their practice, many may need further training on patient counseling of sensitive topics.

"Dentists in general don't get great training in how to talk to patients about sensitive topics, whether it is body weight, tobacco, drugs, HPV, or other potentially sensitive behaviors. They just don't have great training or comfort in addressing those." Participant 4

"I do think that we need to come up with ways that we can educate dentists and dental hygienists to talk to patients about oropharyngeal cancers in a way that is supportive so the patients say, 'thank you for telling me about that'." Participant 3

Participants also stressed the importance for the provider to have the knowledge and skills to respond to questions from their patients or even methods to use to begin the conversation. Participants discussed specific tools and approaches which would be best received by dental providers, including scripts and talking points, training in motivation interviewing, role playing, videos, or simulations. One participant discussed resources that would be helpful to dental providers:

"I think there's got to be a very focused communication strategy for developing materials, talking points, ways to respond to patients' questions...give them the tool kit that they need to have appropriate conversations." Participant 3

Additionally, participants discussed how to best provide HPV-related education and skills-based training to dental providers, such as integrating this into continuing education courses, dental and dental hygiene training curricula, or into other required or regulatory trainings.

Discussion

This study identified the barriers and facilitators perceived by opinion leaders regarding dental providers' provision of HPV-related prevention information to patients, which may be a next step in HPV prevention approaches. Opinion leaders reported that dental providers have a role in preventing HPV and oropharyngeal cancer; yet, to incorporate this topic into their practice, providers need additional education and skill-based training on discussing sensitive topics.

This study adds to existing literature by discovering specific concerns about how this conversation could be incorporated into dental practices. Opinion leaders suggested developing passive materials to easily integrate the conversation about HPV and oropharyngeal cancer into practice. Previously, guidance such as talking points and suggested answers to patient questions about HPV have been developed.¹ The current study indicates that opinion leaders felt patients would be receptive to HPV-related risk information and primary prevention information (such as the vaccine) from dental providers, but felt providers needed increased knowledge and skills to approach this topic. Daley et al. (2016) noted specific HPV-related knowledge deficits among dental providers,²⁴ which may impact a provider's ability to integrate this behavior into their practice. However, the development of an HPV-related "tool-kit" for

dental providers has been shown to increase provider's knowledge, comfort level and preparedness to discuss HPV with their patients.³¹ These studies suggest the need to focus on the development and testing of acceptable educational materials and sources of information for dental providers.

Regarding the barriers discussed, many of the findings were consistent with previous research. For example, while opinion leaders confirmed that this discussion was within the scope of practice for dental providers, they may feel uncomfortable discussing this sensitive topic with their patients.¹⁷ Additionally, Daley et al. (2018) identified multi-level systems factors influencing whether dental providers incorporated HPV-related prevention into their practice. At the individual-level, this discussion was impacted by factors such as their patient's age and their patient's reaction to the information.³² Kline et al. (2018) reported specific barriers identified by dentists and dental hygienists to discussing HPV-related prevention with patients, including a lack of privacy, fear of offending patients, and a lack of time.¹⁹ The sensitive nature of this topic coupled with a lack of skill-based training and practical knowledge of HPV creates an area for improvement. To meet this need, both dental and dental hygiene training curricula may benefit from including best practices of patient-provider communication of sensitive topics. Non-clinical skill-based training, such as motivational interviewing and role-playing, may be lacking in dental training programs,³³ but could greatly improve providers' self-efficacy in their communication skills with patients. Understanding dental and dental hygiene students' knowledge, perceptions, and practice behaviors regarding HPV-related prevention, and patient-communication in general, could serve as areas for future improvement within dental and dental hygiene curricula.³⁴

Incorporating this topic into curricula or continuing education may prove difficult due to a lack of translation of research into practice. Previous research has suggested eliminating this barrier through collaboration among dental organizations, patient-advocacy groups, public health professionals, and the medical profession.³⁵ With opinion leaders seen as "influencers" of the adoption of innovations, they serve as key players in facilitating change in their profession.^{28,30} Additionally, as new research emerges on the relationship between HPV and oropharyngeal cancer and potential mechanisms for prevention, opinion leaders can be leveraged as resources to provide novel information to their membership.

The precise role dentists will play in preventing HPV-related oropharyngeal cancer in the future continues to evolve. Prior to including this information in dental and dental hygiene curricula, there are many factors to consider, such as determining dental providers' provision or recommendation of the HPV vaccine to patients. At current, the vaccine is not approved for prevention of oropharyngeal cancer, but may be in the future.³⁶ Evidence indicates a causal association between HPV-16 and oropharyngeal cancer, suggesting the vaccine has the potential to prevent HPV-related oropharyngeal cancer, but more research is needed.^{21,37} In addition to the ADA's recommendation focused on HPV-related education, The Association of State and Territorial Dental Directions has endorsed the promotion of the HPV vaccine to reduce the risk of HPV-related oral

cancers.³⁸ Even with this recommendation, there is a need to focus on the development of guidance to discuss HPV-related oropharyngeal cancer. This guidance may come from the dental communities' current processes in discussing other sexually transmitted infections with oral manifestations, such as syphilis or Herpes Simplex Virus.³⁹ However, given the sensitive nature of these topics, passive materials for patient engagement may serve as a potential starting point for future multi-level interventions.^{32,40}

Although the FDA recently modified the age indications for the HPV vaccine to age 45, the target population for the HPV vaccine is primarily children and adolescents (ages 9 to 13). In the dental setting, the patient's age further complicates the sensitive nature of this discussion since the conversation would occur with the patients' parents. Literature suggests that physicians and nurses are more hesitant to recommend or discuss HPV vaccination with parents or guardians compared to other vaccines⁴¹ and this conversation may be even more complex in the dental setting because parents may not anticipate vaccine-related discussions. However, previous literature has shown parents are receptive to oral health providers communicating with them about sensitive topics affecting their children such as healthy weight and obesity.⁴² The acceptability of this discussion differed based on word choice used in providers' presentation of the issue, and 60% of parents preferred that the information be discussed without the child present.⁴² Specific to HPV, the approach by the dental providers should focus on the vaccine's cancer prevention properties rather than beginning this discussion about a potentially sensitive topic. This approach would facilitate a more acceptable conversation between dental providers and parents. Both dentists and dental hygienists in a previous study identified patient characteristics, such as age, as potential barriers to communicating about HPV prevention with their patients, but also identified strategies to potential strategies to overcome these barriers.^{26,27} These strategies included personalized techniques to meet the needs of individual patients, and further training in motivational interviewing and communication skills.^{26,27} This need for education and skills was described by opinion leaders as well, which may indicate a need for further research on acceptable approaches to incorporate this discussion into practice given the impact of patient characteristics, such as age, on the conversation. Additionally, with the recent change in age indications for the HPV vaccine, future research should explore the patient perceptions and acceptability of dental provider's role in HPV-related prevention. Specific studies should focus on the parents of vaccine-age children to determine successful communication interventions with parents and identify best practices for communicating about HPV prevention with parents.

Findings from this study should be considered in context with the limitations. This small sample size of opinion leaders may not be reflective of all dental professional organizations or advocacy groups, however, data redundancy was reached and previous research has indicated 6–12 interviews as an appropriate sample size.^{43,44} Additionally, we asked participants in this study to identify other opinion leaders (leaders and advocacy groups) we should be speaking with, which also became redundant. The participants included in this study were identified by a national expert panel and by practicing

dental providers, which may have introduced selection bias. However, opinion leaders are key agents to provide this initial perspective and, in the future, facilitate the process of developing and disseminating materials for HPV-related cancer prevention.

Conclusion

Dental professionals are uniquely positioned to provide information to their patients regarding the link between HPV and oropharyngeal cancers, HPV-related prevention, and the HPV vaccine. The facilitators discovered in this study indicate a need to leverage dental providers' role in prevention and to develop passive materials for dental offices. However, barriers exist to fully incorporate this topic into their practice, including the need for more education and further skill-based training. Increasing dental provider awareness, knowledge, and self-efficacy of this topic can ultimately serve to reduce HPV-related oropharyngeal cancer morbidity and mortality, and opinion leaders can serve to facilitate this process.

Materials and methods

This study utilized semi-structured interviews to collect perspectives on incorporating HPV prevention into dental practices. The sampling technique for this study was homogeneous purposive sampling, and opinion leaders were identified through three strategies. First, national professional organizations and advocacy groups were contacted to identify a leader within their organization or group. Concurrently, a national expert panel comprising dental practitioners and researchers identified leaders in the field. Additionally, as part of a larger study to understand dental providers' HPV-related knowledge, focus group participants (dentists and dental hygienists) identified national opinion leaders who have shared HPV-related information with them.^{19,26,27,32} Inclusion criteria were (a) holding a current administrative, leadership, and/or governance position within a dental professional society, and (b) over 21 years old. While no participants declined to participate, we were unable to make contact with members of two identified organizations. The sample was 54% female and included those in positions such as president, director, founder, and chair; however, the participant's organizations have not been included to protect their privacy. Additionally, other demographic information, such as race, ethnicity, or age, were not collected. This study received approval from the University of South Florida's Institutional Review Board and participants provided verbal informed consent.

We conducted telephone interviews (approximately 45 minutes, conducted by EMD) with thirteen participants representing eleven organizations between April and October 2015. There were no repeat interviews. This sample size was determined based on the identified organizations, however, two organizations did not participate. Supplementary field notes were taken during the interviews by SBG and NSK and debriefing sessions were held following each interview. Participants received a \$100 gift card. A semi-structured interview guide (Table 1) was developed using constructs from the Diffusion of Innovations model (e.g., compatibility, complexity, relative advantage).⁴⁵ This theory-based interview guide was developed

Table 1. Interview guide used in opinion leader interviews via phone.

In 2012, the American Dental Association's Council on Scientific Affairs put out a statement encouraging dentists to educate themselves and their patients about the relationship between HPV and oropharyngeal cancer. We are now doing a follow up study to determine the effect of this statement on oral health providers.
Can you tell me a little but about your organization?
How did it form?
Why did it form?
What is your response to the ADA's guideline?
Has your organization endorsed this?
What role do oral health providers play in discussing HPV related oropharyngeal cancer with their patients?
As a dentist, would you approach talking about HPV differently from talking about any other risk factors related to oropharyngeal cancer (i.e. tobacco and alcohol)?
Can you tell me why that is?
Have you had the opportunity to have a conversation about HPV and oropharyngeal cancer with a patient yet?
In the case that a patient comes to you with a question about HPV and oropharyngeal cancer, what would you need to feel better prepared to have that talk?
Thinking of your role as _____ [title/role] of the [organization], how do you think the members of the _____[organization] view the role of oral health providers in discussing HPV related oropharyngeal cancer with their patients?

and modified by members of the research team and the expert panel. However, the overall results of this paper are presented in the context of barriers and facilitators to identify key challenges and leverage points that could guide the development of future interventions. Prior to conducting the interviews, the interview guide was reviewed and pilot tested with members of the investigator team and the expert panel who have specializations in dentistry and dental hygiene and modified based on their feedback. Interview audio-recordings were transcribed verbatim and verified against the audio file and edited, however the final transcripts were not returned to participants for comments. The final transcripts were independently coded by two researchers (SBG and LKM) using *a priori* codes for thematic analysis in MaxQDA software. An example of the coding tree used in this analysis is presented below.

DOI Construct: Compatibility

- Barriers
- HPV is a sensitive topic
- Uncomfortable topic for patient
- Uncomfortable topic for provider
- Provider concerned with patient perceptions/opinions
- Privacy
 - Need for education and skills
 - Patient counseling
 - Motivational interviewing skills
 - Role playing/simulation training
 - Scripting
 - Include in dental education and training

Data were displayed into a matrix formation and the research team discussed the salience of the themes and resolved any coding discrepancies between the two coders. The extent to which the themes recurred across the transcripts was assessed, and finally the themes were grouped into facilitators and barriers and summarized.⁴⁶

Disclosure of potential conflicts of interest

One author, Ellen Daley PhD, serves on the Merck Pharmaceuticals HPV vaccine advisory board. All authors on this manuscript declared no conflicts of interest.

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ORCID

Stacey B. Griner <http://orcid.org/0000-0002-2774-5841>
Erika L. Thompson <http://orcid.org/0000-0002-7115-0001>
Nolan S. Kline <http://orcid.org/0000-0002-8537-3396>

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