

# The Role of the Media on Parental Confidence in Provider HPV Recommendation

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## Research article

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## **Abstract**

## **Background**

Despite a growing understanding of the importance of provider HPV recommendation on parental acceptance, US HPV vaccination rates remain suboptimal. Given the prevalence and use of the media for health decisions, this study examined the relationship between the media and provider HPV recommendation on parental HPV vaccine hesitancy.

## **Methods**

Thirty individual interviews with vaccine accepting mothers in the Midwest were conducted to examine their experiences with initial hesitancy to accept HPV vaccination at point of provider recommendation and their suggestions for improving the HPV vaccine patient/provider recommendation experience.

## **Results**

Results found that the media served as an antecedent to hesitancy for three main vaccination concerns: protection, efficacy and sexual stigma. A model for understanding the influence of the media as it relates to the three topical HPV vaccination concerns and its process on parental HPV vaccine decision making emerged.

## **Conclusions**

Findings suggest that mothers experience hesitations from passive and active HPV vaccination media information that prompt confusion and fear with accepting provider HPV vaccination recommendation. Providers' approach to HPV vaccination recommendation must consider concerns reported in the media with delivery techniques modified to adjust to parental fears absorbed from adverse media information.

## **Background**

Many studies have documented high rates of parental hesitancy around human papillomavirus (HPV) vaccination, contributing to delay of vaccination or vaccine refusal [1, 2, 3]. Low coverage rates have prompted a great deal of research on the determinants of HPV vaccination, and the literature consistently highlights the powerful influence of healthcare providers' recommendations on parental HPV decisions and uptake; those who receive a provider recommendation are more likely to vaccinate their children than those who do not [1, 4]. However, the fact that a parent chooses vaccination does not necessarily mean that he/she is confident in the vaccination decision. Larson and colleagues posit that hesitancy exists along a continuum of indecision to include individuals who are neither strongly pro- nor anti-vaccine [5]. Vaccine-hesitant parents may accept certain vaccines, refuse others, delay initiation, or accept but feel

unsure about doing so [5–6]. Several studies show that educated parents may be more likely to experience hesitation upon recommendation than less educated parents [7, 8, 9]. One theory behind this observation is that educated parents are more likely to have access to specific sources of media, such as the Internet, which may expose them to contradictory information about vaccines, including HPV vaccine [10, 11, 12]. Additionally, educated parents may feel more confident in their ability to interpret complex scientific and clinical health information, which may allow them to ignore their providers' advice if contradictions exist [10]. Research has found that parents who do not have their children vaccinated often have researched the topic extensively [10, 13].

In today's health conscious society, seeking information about health topics is increasing, with one in three US adults using the internet in 2013 to self-diagnose or learn about a health concern [14]. The growth in internet use and increase in health information available on the web has changed the landscape of health information [14]. At one time, medical knowledge was almost entirely disseminated by health professionals. Now, anyone can share medical content, both accurate and inaccurate, that is accessed via web-based searches. In addition to active information-seeking, the media's ubiquitous presence in everyday lives presents opportunities for passive exposure to varying and often conflicting opinions on health behaviors, including vaccinations. Given the presence and potential influence of the media on HPV vaccination attitudes [15], more exploration is needed to focus on the ways in which media exposure to HPV vaccination information may affect parental decisions about provider HPV recommendations [15].

The purpose of this study was to understand the complex relationship between provider HPV vaccination recommendation, media, and vaccine hesitancy among a group of educated mothers who had vaccinated a child against HPV, but remained hesitant. The goal was to delineate the process by which the media may act as a moderating variable, influencing the way parents respond to the provider's HPV vaccine recommendation. Mothers' perspectives were also elicited on ways to improve the provider/patient HPV recommendation experience in light of the current media environment.

## Methods

### Procedure

The approach used in this study was based on the social-ecological model and the health belief model (HBM). Social-ecological systems theory is a model that underscores how characteristics of the environment influence individual health behavior and outcomes, while the HBM is a social psychological health behavior change model developed to explain and predict health-related behaviors, particularly in regard to the uptake of health services such as vaccination [16, 17]. A previous analysis of these data focused on the nature of HPV vaccine hesitancy among mothers who had chosen to vaccinate their children (manuscript under review). For the present study, additional respondents were added and the analysis concentrated on the influences of the media on hesitation, within the context of a provider's recommendation.

Thirty mothers from the Midwest U.S. were recruited for this study. Only mothers were included because research shows that they are most often the primary vaccination decision-makers for their children or share this role with a parenting partner [18]. Mothers were eligible to participate if they had at least one child 9–18 years old who had been vaccinated for HPV and had obtained a bachelor's degree or higher. The sample was obtained through a combination of purposive and snowball sampling. The lead author initially approached mothers affiliated with a parent advisory group associated with a midwestern pediatric medical department via email and invited them to participate. Participants were told the study purpose was to understand their HPV vaccination decisional processes to guide and empower other mothers to vaccinate their children. The study protocol was reviewed by the University of South Florida's (USF) IRB and granted exempt status (pro00041072). The requirement for informed consent was waived. Exempt status and the waiver of informed consent were awarded solely by the USF IRB under qualification for social science research that presents no more than minimal risk.

## Data collection

A semi-structured questionnaire interview guide was developed specifically for this study. It included open-ended questions to elicit discussion about mothers' decisions about children's HPV and was developed by the research team, which was comprised of researchers in the fields of adolescent health psychology, health communication and epidemiology. The guide was developed to address the influence of the societal level construct of the media and the health belief constructs of barriers and cues to action to: 1) assess the media as a determinant of decision-making at the time of a provider recommendation and 2) assess mothers' recommended strategies to cue improved provider recommendations for HPV vaccination within the context of media influences on health seeking and beliefs. The guide was subsequently pilot tested with mothers during preliminary interviews and revised in an iterative manner. The interview began with general questions about mothers' experiences with the HPV vaccine. Mothers were then asked to recall what they remembered of their experiences and challenges when considering the provider's recommendation for HPV vaccination and to relay how those experiences shaped what they believe could improve the patient/provider experience with the recommendation. The guide also included probing questions for the follow-up collection of more detailed and informative responses. Interviews were conducted over the telephone from September, 2019 to February, 2020 and lasted approximately 30 minutes each. Participants received a \$25 gift card to compensate them for the time and effort required for their participation. (See Appendix A for interview questions).

## Data analysis

Interviews were audio-recorded and transcribed verbatim, and thematic content analysis using an established qualitative approach was applied to identify themes and patterns within the data [19, 20]. Multiple readings of the interview transcripts were conducted and the research team (KW, HO, GZ) subsequently discussed the transcripts. The team then developed initial impressions of the data followed by the identification of emergent themes. Based on discussions and questions in the interview guide, the lead author (KW) developed a codebook that was used to code the interviews. The coded transcripts were then discussed in an iterative manner to ensure all agreed on the meaning of the codes. Emergent

patterns and themes were identified and reviewed to confirm that they accurately described the topics under study. Interviews and discussion of transcript content continued until the interviews produced no new information or insights and theoretical saturation occurred.

## Results

### Sample

Thirty mothers were recruited (See Table 1). They were ages 36–58 years and 19 identified as White, 10 as Black or African American and 1 as Pacific Islander. Mothers had between 1 and 5 children, with half having 2 children. Forty-seven percent ( $n = 37$ ) of children were females and 53% ( $n = 42$ ) males.

Table 1  
Demographics

Demographics	N(30) (%)
<b>Age</b>	
29–39	2 (6.67%)
40–49	18 (60.00%)
50–59	10 (33.33%)
<b>Race</b>	
White	19 (63.33%)
Black	10 (33.33%)
Pacific Island	1 (3.34%)
<b>Number of Children</b>	
1	3 (10.00%)
2	15 (50.00%)
3	7 (23.33%)
4–6	5 (16.67%)
<b>Sex of Children</b>	
Female	37 (46.84%)
Male	42 (53.16%)

# Model of media influence on provider HPV recommendation

After examining mothers' vaccination experiences, the research team developed a model for explaining the influence of media on parental responses to the provider's HPV vaccination recommendation.

Figure 1: *Model of media influence on provider HPV recommendation* provides an overview of the model. A detailed description of model components shows that although all participants ultimately agreed to HPV vaccination for their children, they talked about feelings of hesitancy when faced with providers' HPV vaccination recommendations. Mothers indicated that their hesitancy was driven by prior exposure to negative media messages. The negative messages were recollected at the time of provider recommendation due to the quantity, and often contradictory nature of, HPV vaccine information seen both passively and actively. The three primary themes of negative media messages recalled were those related to safety/adverse side effects, protection/efficacy, and sexual stigma. Information acquired about the topics from the media produced confusion. Mothers' inability to differentiate between accurate and inaccurate information led them to have doubts about the benefits of vaccination and fears about side effects and sexual stigma, resulting in ongoing hesitancy, even in the context of deciding to vaccinate. A breakdown of model components and exemplary quotes are presented in Table 2.

Table 2  
Model Components and Exemplary Quotes

<b>Hesitancy</b>	<p><i>I was hesitant at first, I hadn't thought about it yet. (Our) provider gave us the background, but I hadn't had time to think about it.</i> (40–49 age range)</p> <p><i>"I still have reservations about my (younger) daughter. I need to do more follow up, to look at the stats—what is the data showing now? Does it make a difference (the vaccine) for kids getting the shots? I want the data. My daughter goes to the doctor today. I am going to be pressured again."</i> (50–59 age range)</p> <p><i>"(Younger) daughter actually goes to doctor today. I think I will make a decision before she transitions to college. I don't think I will do it today."</i> (50–59 age range)</p>
<b>Media as Antecedent to Hesitancy</b>	<p><i>"My provider recommended it. I took some time to think about it; I read up on it on my own. I always feel there is some information they don't have insight to on commercials; I wanted the medical background. I had to come back for another appointment to have them vaccinated."</i> (29–39 age range)</p> <p><i>"There wasn't a lot of research done then (about 4 years ago). He recommended it that year, and I just wasn't ready for it yet. Of course, I had gone on the Internet and read there were some side effects."</i> (50–59 age range)</p> <p><i>"Before vaccinating my 14-year-old, I asked providers I worked with as friends. Providers said they absolutely would vaccinate. I also read information online."</i> (40–49 age range)</p>
<b>Media as Source of Confusion and Fear</b>	<p><i>He recommended it that year, and I just wasn't ready for it yet. Of course, I had gone on internet and read there were some things not favorable yet, so I asked if pediatrician would do for his kids. He said if his kids were that age he would. I said I had next year to decide</i> (50–59 age range)</p> <p><i>"I did have reservations, HPV hasn't been out that long. You hear pros and cons. ..you always hear worst case scenario on news/media."</i> (40–49 age range)</p> <p><i>(HPV vaccination) A little different. We talked to pediatrician and looked up stuff alone... We waited until 12 or 13. Our kids are really active; read stories may or may not be true."</i> (50–59 age range)</p> <p><i>"Sometimes (saw) posts that are a little anti. It is hard. When it comes to vaccines, it (HPV) is different than other health."</i> (40–49 age range)</p>
<b>Side Effects</b>	

## Hesitancy

*"There are so many advertisements you don't know which ones are beneficial. How long has it been around. What are the long-term effects? What it does? What is it supposed to do? Are there negative contraindications?" (29–39 age range)*

*"...there were parents I was reading and hearing about, saying that their kids had a reaction to the shot. That was alarming to me." (50–59 age range)*

*"What are long term effects of it? There is too much unknown. Knowledge is power for this. If I knew more about this—not from a pharmaceutical company, then I would be more apt (to get it for child)." (50–59 age range)*

*"The fear of the unknown. The advertisement to me (that I remember) is the one with the kid away from school, has fever and can't make go away. Whether they (media) are making attention, fear is out there. How safe it is was my main concern. It was definitely new with the oldest." (50–59 age range)*

*"I only did it (accepted vaccination) because I know and trust my physician so much and he could counter the negative messages about side effects I had seen and read" (40–49 age range)*

## Protection

*"There is so much information... Need the statistics –what is the data showing now? Does it (vaccination) make a difference for the kids getting shots? I wanted the data." (50–59 age range)*

*"It's hard to know what information to believe...Correct information is needed for fearful adults. It's kind of like the flu shot, it (HPV) isn't going to keep you from getting it but it helps." (50–59 age range)*

*"I felt it (HPV vaccine)...from what I had read and knew at time was more of a protection for others. I feel it is not as much for him as his future spouse or other." (40–49 age range)*

*"It is media promotion. I think I would have been more secure without that promotion. The commercials – they flooded the networks". (50–59 age range)*

## Sexual Stigma

*"From what I have read, I think it is sexually active." (40–49 age range)*

*"Even if you are leaning about wanting to do the right thing, the (sexual) stigma is there (on social media). (50–59 age range)*

*"There's so much you read online. I was probably one of those initial ones who quickly attached it to sexual. And thought that (sex) wasn't going to come now. We have to deal with that sexual stereotype that kids aren't going to be sexually active now. (50–59 age range)*

# Hesitancy

Mothers reported having their children vaccinated by their family pediatrician, at what was typically a well-child visit. All but 5 reported hesitancy upon provider recommendation, with 14 specifically mentioning a decision to delay vaccination. These mothers described hesitancy that ranged from mild, brief questioning to great internal conflict. Many described that they wanted to, and should follow their physician's recommendation as usual, but also felt that the HPV recommendation differed from other vaccine recommendations. As one mother of a pre-teen daughter recalled of her initial reaction to the HPV vaccine recommendation and decision to delay, *"My provider had discussed the vaccine (at well visit). I didn't want to get it at that time. My pediatrician got very heated with me, said 'you are by your decision going to allow your daughter to have cervical cancer'. I said 'she's only 11. We will keep having that conversation"* (40–49 age range).

## Media as antecedent to hesitancy

Mothers' narratives of hesitancy at the time of provider recommendation often revealed the media as an antecedent to hesitancy. Upon initial recommendation, most mothers said they had at least heard of the HPV vaccine but recalled negative messages in the media that they had read, seen or heard that contributed to hesitancy or factored into their decision to delay. One mother described her reaction to the HPV vaccination recommendation this way: *"I took some time to think about it (HPV vaccination recommendation); I read up on it on my own. I always feel there is some information they don't have insight to on commercials. I wanted the medical background. I had to come back for another appointment to have them vaccinated"* (29–39 age range).

Narratives revealed three main reasons that negative media messages served as antecedents to hesitancy. First, mothers reported the presence of ubiquitous amounts of HPV vaccination information in the media. The media were typically referred to broadly, as well as specifically (e.g., television commercials and social media). Second, media-based information was often contradictory both within and among media channels. Third, many mothers reported that they had actively sought HPV information online prior to the provider HPV vaccine recommendation, which increased exposure to contradictory information. The exposure, both passive and active, to vast amounts of contradictory HPV information heightened emotions of confusion and fear, discussed next.

## Media as source of confusion and fear surrounding safety, efficacy/protection and sexual stigma

Safety/side effects. Mothers' narratives of confusion and fear were foremost related to safety concerns associated with possible adverse side effects from vaccination, which they described as widespread, especially on social media. The harms mothers spoke of were varied, ranging from paralysis to Autism to general, vague claims of fevers, aches and pains. Most mothers stated they recognized that these claims of harm had no scientific basis, yet some still talked about postings from friends on Facebook that told of a child who became paralyzed or who immediately ran a fever and became sick following vaccination. These stories led some mothers to wonder whether HPV vaccine may be harmful, especially if a child already has a health condition. Mothers were also aware of some social media posts from anti-vaccine

groups as well as health-related websites and print and broadcast advertisements encouraging vaccination. Other than paralysis, most mothers dismissed extreme claims from anti-vaccine groups. However, a few mothers questioned commercials advocating HPV vaccination because they originated from a pharmaceutical company and “big business”. As a result, these mothers remained quite concerned about adverse effects.

**Protection/Efficacy.** Mothers’ stories of their experiences with provider HPV vaccine recommendations also commonly revealed confusion about the protective benefits of the vaccine. Some mothers recalled the influence of HPV vaccine commercials, in particular, as having a negative effect on their willingness to believe that the vaccine is effective. Some mothers spoke of distrust of the pharmaceutical-funded commercials they had seen, believing that pharmaceutical companies have an “agenda to push”. For instance, one mother stated, *“It is media promotion. I think I would have been more secure without that promotion. The commercials – they flooded the networks”* (50–59 age range). A mother differentiated that commercials are not the same as other media and should not be trusted. Although commercials were the media most often mentioned in regard to efficacy confusion, mothers’ attention to negative media claims about the lack of data supporting long-term efficacy of a “relatively new vaccine”, which were gathered from multiple channels, had a couple of mothers wondering whether the HPV vaccine protects from any disease. A few mothers had only read about protection from a sexually transmitted infection (STI) and were not aware of its cancer protective benefits at the time of recommendation, and a couple of other mothers were unsure of why the vaccine was “suddenly” needed now.

**Cost to benefit ratio.** Mothers’ discussions indicated that many weighed the uncertainty of the vaccine’s protective effect along with reports of adverse effects. The ubiquity of conflicting reports about differing adverse effects resulted in an internal struggle to “overcome fear” to follow providers’ recommendations. In sum, the number of adverse claims and weight of their importance overpowered the processing of positive protection benefits. One mother described the struggle this way: *“You read about many more harms that can happen (by vaccinating) than good. Who doesn’t want to help protect their children? It’s more about fear”* (40–49 age range). Mothers of sons and daughters were equally likely to delay, with a couple of mothers stating their concern with injecting a “foreign substance” without confidence of its protective impact. A couple of these mothers of sons delayed vaccination to discuss with their sons and allowed their sons to decide on vaccination.

**Sexual stigma.** Mothers’ stories of their experience with provider HPV recommendation also uncovered confusion and fears related to the sexual stigma of the vaccine. Facebook, in particular, was a site that mothers commonly recalled reading and following conversations about HPV being a sexually transmitted virus. Some conversations framed the HPV vaccine as one needed for sexually transmitted cancers that included strong opinions from friends that equated HPV vaccination with encouragement of sexual activity. The quantity of exposure to conversations about sexual outcomes was a source of hesitancy for some mothers both because they did not want to attach stigma to their child or to themselves, as a “bad” mother for permitting the vaccine. One mother described it this way: *“I just didn’t want this to be like my*

*support of him having to jump out and have sex. I was concerned that is this giving him the green light to say yeah” (40–49 age range).*

## Provider HPV vaccine recommendation suggestions

Mothers suggested a range of provider HPV vaccine communication content and delivery strategies to increase vaccine confidence associated with safety, efficacy and social stigma.

### Content of discussions

Vaccine safety. To assure mothers of vaccine safety, mothers recommended that providers emphasize the statistics surrounding the safety of the vaccine, including how many people have been vaccinated, the year it became available, the studies that support minimal side effects, and the type of testing the vaccine underwent before recommendation.

Protection/efficacy. Mothers suggested physicians communicate HPV vaccine efficacy and need by telling how many people acquire HPV, the types of cancers the vaccine protects, reasoning behind the perceived rise in need for the vaccine, and studies of long-term efficacy. Mothers suggested the strategies not just for increasing knowledge but for proof of the vaccine’s need.

Sexual content and lack thereof. To combat the stigma, mothers suggested that providers present the HPV vaccine in one of two framing contexts, either: 1) language that does not address the sexual transmission of HPV or the protection from an STI at all, but only as a protection from cancer or 2) directly, but sensitively, communicating HPV as a sexually transmitted virus alongside an approach that assures your child is not at “fault” but is being protected a) when your child is older or b) from a future partner, for which the parent and child have no control over his/her sexual history. Both approaches, while different, aimed to de-emphasize or deflect communication that associates sexual activity with the child.

Protection. Nearly all mothers suggested that physicians should emphasize that the HPV vaccine does protect from cancer. Due to lack of trust in commercials backed by pharmaceutical companies, some mothers suggested providers communicate their own HPV pro-vaccination behavior and support for it in their children or grandchildren to validate belief in the vaccine’s need. Some mothers also recommended that providers emphasize that the vaccine provides long-term cancer protective benefits, given confusion over some reports read in the media claiming long-term benefits are not known.

### Techniques

Timing. The confluence of stories found primarily on social media led mothers to suggest that providers introduce the topic of HPV vaccination as anticipatory guidance, prior to the intended date for which the adolescent is targeted to receive it. The most common time frame was one year in advance; others recommended discussion at age 8 or 9.

Counteract adverse side effect messages. To combat fear and confusion of side effects, mothers suggested that providers be prepared with verbal and written messages, primarily in the form of

brochures, that counteract the inaccurate, negative messages about adverse side effects reported in the media, especially those related to autism, paralysis and general, vague side effects that proliferate online. Mothers largely felt that information combats fear, and the more information given, and the more time to digest it and reflect on it, the more likely a mother will have confidence in a decision to vaccinate.

Framing. Because there is so much perceived fear about possible adverse side effects, both short- and long-term, some mothers suggested that physicians talk about the HPV vaccine in terms of the benefits of cancer prevention, rather than fear messaging that non-vaccination could leave the child vulnerable to cancer.

Mode of Communication. Mothers suggested both active and passive strategies for alleviating HPV vaccination fear and confusion. Strategies of direct one-on-one interpersonal communication were deemed necessary to all, but many mothers relayed that physicians should have written information available in the form of pamphlets that tell of HPV logistics, efficacy/protection and safety, including counteracting messages of adverse side effects. A few mothers commented that they had never seen any information about HPV in their physicians' offices, and thus they suggested physicians have posters with messages such as "ask me about HPV vaccination" to promote awareness and mothers' self-confidence for initiating discussions. One mother suggested that a non-partial intermediary or liaison be available so that mothers could discuss the vaccination with an objective party after provider recommendation. Two mothers suggested that providers provide a list of resources for reading more about HPV vaccines, and one mother suggested providers refer parents to a call center, or set one up, to allow for additional questions to be answered.

## Discussion

This study presents a conceptual model demonstrating the process of the media's influence on parental hesitancy in the context of a provider's HPV vaccine recommendation. The work highlights how mothers' passive and active media use prior to the provider visit interfere with important HPV vaccination decisions about topics of safety, efficacy and sexual stigma. HPV-vaccine-accepting, but hesitant mothers' voices were used to understand this complex relationship and to elicit recommendations of strategies for provider communication content and delivery that might strengthen provider HPV vaccine recommendation acceptance.

Individuals commonly encounter a huge amount of conflicting health information online, which can lead to a great deal of confusion [21]. The information often includes two or more propositions that contradict one another (e.g., vaccination is helpful; vaccination is harmful), which makes it difficult for mothers to choose the best options for their children's health [22]. The dilemma of which message to believe leads to unnecessary anxiety and fear [23]. This fear subsequently can lead to negative attitudes and behaviors toward a particular health issue [23]. Fear appeal models such as the extended parallel process model (EPPM) posit that negative health behaviors (e.g. vaccine hesitancy or delay) are more likely to occur when individuals face a threatening message (cancer) but do not perceive the response efficacy (e.g. the

message that vaccination reduces the cancer) to be strong or clear [24, 25]. These study results indicated that mothers had difficulty perceiving the strength of the vaccine's protective action over the quantity of negative or conflicting fear messages, leading to hesitancy and delay. Other studies have also found that contradictory information about vaccines has led parents to question the safety of childhood vaccination and contributed to the problem of vaccine hesitancy [26, 27]. These results and others indicate that providers must clearly and strongly communicate to parents the protective cancer saving benefits for their child to outweigh processing of negative fear messages.

Results also demonstrate why managing conflicting HPV vaccination information is a challenging but important task for both parents, who are faced with deciphering information, and providers who must increasingly explain and counter such information. The mothers in this sample suggested strategies for HPV vaccine recommendation communication that may help providers deliver recommendations that facilitate confident acceptance. As these mothers suggested, providers may have to be ready with messages that counteract adverse vaccination claims found in the media to reduce misperceptions that cause fear. However, many of the recommended strategies for improving the context and delivery of provider HPV vaccine recommendation, in specific those related to the timing, framing and delivery of personal vaccine belief and behavior, are somewhat at odds with the presumptive recommendation approach, which is the consensus preferred communication strategy [28]. While abandoning the presumptive recommendation approach is not suggested, results indicate that providers consider enhancing the approach by ensuring that parents do not feel bullied into vaccination and by including upcoming HPV vaccination as part of the anticipatory guidance process.

## **Limitations**

While the qualitative study design allowed for in-depth examination of the topic, there are limitations. Although a sample size of 30 interviews was adequate for this qualitative study, it limits the generalizability of findings, which may not apply to different groups of mothers. The mothers included in this study were educated and appeared to have a strong need for information, which may not be true of other groups of parents. Additionally, while qualitative research allowed for exploration of human attitudes and behavior surrounding the subject, media causation of hesitancy cannot be claimed. Quantitative approaches are recommended to examine the predictive nature of media information on HPV vaccination hesitancy.

## **Conclusions**

Results indicate educated mothers are going online to search for HPV vaccination information and are engaged and active contributors to their own HPV decision making. Given that media information about the HPV vaccine can be inaccurate and anxiety-producing, providers need to understand how media consumption may influence the way mothers experience, and respond to, an HPV vaccine recommendation. Providers should be prepared to address parental fears and misunderstandings regarding safety, protection and sexual stigma. A provider's recommendation style and technique must

also include preparation to counteract negative media messages in order to reduce HPV vaccination delays and hesitations.

## List Of Abbreviations

human papillomavirus (HPV)

## Declarations

### *Ethics Approval and Consent*

The study received human subjects approval from the University of South Florida's IRB as exempt status. (pro00041072). As exempt, the requirement for informed consent was waived by the University of South Florida (USF) IRB. Exempt status and the waiver of informed consent were awarded solely by the USF IRB under qualification for social science research that presents no more than minimal risk.

### *Consent for Publication*

The authors confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

### *Availability of Data and Materials*

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

### *Competing Interests*

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: GZ has received honoraria from Sanofi Pasteur for his work on the Adolescent Immunization Initiative and travel support and consultant fees from Merck & Co., Inc.

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### *Author's Contributions*

KW: Conceptualization, Investigation; Methodology, Data Analysis, Writing; Funding Acquisition; HW: Investigation, Writing- editing, Visualization; GZ: Conceptualization, Visualization, Writing -Original draft preparation, Reviewing and Editing

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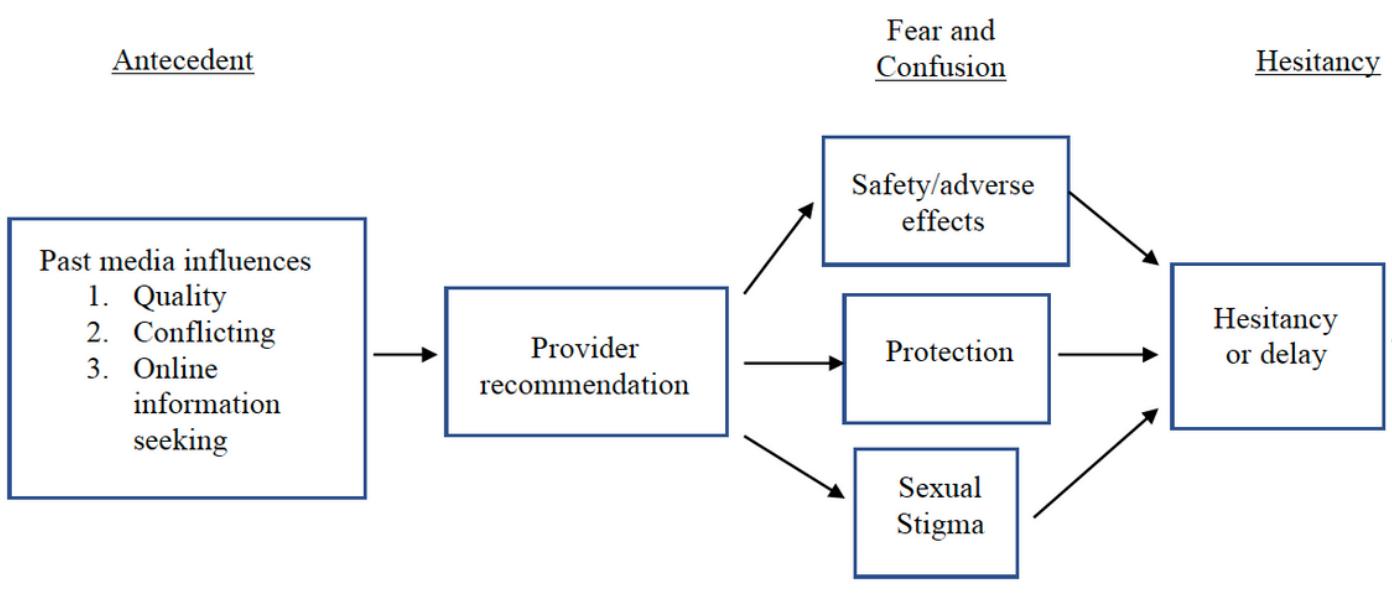
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## Figures



**Figure 1**

Model of media influence on provider HPV recommendation

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