

Communication and US-Somali Immigrant Human Papillomavirus (HPV) Vaccine Decision-Making

Phokeng M. Dailey¹ · Janice L. Krieger²

Published online: 19 December 2015
© American Association for Cancer Education 2015

Abstract The current study uses a multiple goal theoretical perspective to explore how Somali immigrant families living in Ohio, USA, make decisions regarding whether to vaccinate their children against human papillomavirus (HPV)—a leading cause of cervical cancer. A focus was placed on the communication goals of parents in HPV vaccine discussions with their child and health care provider. Semi-structured interviews were audiotaped, transcribed, and analyzed using a grounded theory approach. Key themes are the implications of the vaccine for early sexual activity, confusion between HPV and HIV (human immunodeficiency virus), the perception that the HPV vaccine is unnecessary, uncertainty about the vaccine's efficacy and side effects, avoidance of parent-child communication about the vaccine, and a preference for framing the vaccine as a health promotion behavior. Framing the threat of HPV in the context of initiation of sexual activity, uncertainty regarding vaccine efficacy, and anticipated regret account for the inconsistency in HPV vaccine uptake among Somali parents. Clinicians should consider talking about HPV as a distal versus an immediate threat and HPV vaccine uptake as a health-promotion behavior rather than a sexually transmitted infection prevention behavior.

Keywords HPV vaccine · Communication · Decision-making · Somali immigrant · Culture · Language

✉ Phokeng M. Dailey
dailey.174@osu.edu

¹ School of Communication, The Ohio State University, 3041 Derby Hall, 154 North Oval Mall, Columbus, OH 43210, USA

² STEM Translational Communication Research Program, Department of Advertising, College of Journalism and Communications, University of Florida, Gainesville, FL, USA

Human papillomavirus (HPV) is the most common sexually transmitted infection in the USA and the leading cause of cervical cancer [1]. Vaccines that prevent HPV have the potential to significantly reduce the incidence of cervical and other anogenital cancers. In the USA, cervical cancer mortality rates among foreign-born women continue to increase despite a decrease in overall cervical cancer mortality rates [2]. English language use, acculturation, and years spent in the USA, as opposed to ethnicity per se, appear to be the key determinants of cervical cancer screening among minority immigrant women [2]. Immigrant women also face legal, economic, linguistic, and cultural barriers in their efforts to navigate the US health system [3]. Compared with other African immigrant groups, Somalis are less likely to be insured or have a regular source of health care, have lower rates of English fluency, have lower socioeconomic status, and have lower cervical cancer screening rates [4].

Given the systemic barriers to cervical screening among Somali women, the HPV vaccine may be particularly beneficial within this population. However, developing interventions to promote vaccination is stymied by a lack of research on how Somali parents communicate with their children—the recipients of the vaccine—about the HPV vaccine. The typical vaccine decision is characterized by trust in the overall health system or provider and a belief that vaccinations are “just something you do” [5]. Consequently, clinicians may assume that vaccination is an obvious choice and engage in limited information sharing with parents during a consultation.

Language and Culture in Healthcare

There are numerous barriers to effective communication in health care contexts. Language and/or dialect is a source of communication difficulty resulting in less patient compliance

and/or satisfaction and increased misunderstandings during patient-provider exchanges [6]. Clinicians tend to dedicate less time to those they perceive to be less educated or intelligent and display less affect toward ethnic minority patients than white patients [7]. Ethnic minority patients, in turn, are less verbally expressive or less assertive than white patients [7].

The cultural beliefs of any given group may be indirectly or directly linked to the acceptance of health messages and whether members of that particular group choose to adopt certain behaviors [8]. Somalis are a relatively recent immigrant group with strong ties to their country of origin and culture. They experience disparities via multiple pathways, which may include cultural beliefs, language barriers, and mistrust of medical providers [9]. Previous studies have shown that dissatisfaction with health care interactions contributes to decisions to delay medical decisions and seeking care in the future among Somali women [10, 11]. Acceptance of HPV vaccine interventions may be strengthened through the use of messages that are congruent with Somali cultural values [12, 13].

Conceptual Framework

Communication is central to HPV vaccine decision-making, whether between health professionals and patients, or parents and children. A multiple goal theoretical perspective, which stresses the importance of an individual's goals and the communication strategies used to achieve those goals, is a useful framework for examining HPV vaccine discussions. People enact multiple goals concurrently in communication, including competing goals [14]. Individuals also subjectively interpret the goals of others in conversations [14]. For example, if a daughter mentions to a parent that she would like to receive the HPV vaccine, the parent might assume she is sexually active.

The parent-child dyad is also important to understanding HPV vaccine acceptance and uptake [15]. Because adolescents typically look to their parents as primary decision-makers regarding health care matters, the ability of parents to communicate about the vaccine and the nature of those discussions should influence the likelihood of uptake. In most cases, parents must provide consent if the child is still a minor and as such they are a potential source of both emotional and instrumental support [15]. A recent study showed that some mothers express a desire to involve their daughters in the HPV vaccine decision process through discussion [16]. However, a major barrier to such open discussions is fear that adolescents will interpret support for vaccination as approval for engaging in sexual activity [17]. Parent-child communication regarding adolescent protective sexual health is an important component of parental consideration of HPV immunization, as parents who are willing to discuss sex, sexually transmitted infections,

HPV, and cervical cancer are more likely to support vaccination [18]. For parents to feel prepared to engage in discussions about sexual health or HPV-related cancers, it is important that they feel adequately informed about the vaccine. Some parents may prefer to engage in less direct conversations that frame the vaccine as a cervical cancer preventive measure, while others may prefer to place the vaccine in the context of overall sexual health decisions [15].

The current study examines how communication preferences determine how Somali immigrant parents engage in HPV vaccine discussions with their health care providers and children. We also determine whether those discussions are consistent with how their family typically discusses health decisions. Somali culture is closely intertwined with religious beliefs, and we expect that, similar to previous studies, cultural values will strongly influence the HPV vaccine decision [19–21]. Specifically, the objective of this study is to understand how Somali families, members of the largest African-immigrant population in the USA, engage in discussions about the HPV vaccine with their clinician and child and consequently make the decision regarding HPV vaccine uptake.

Methods

Participants

Self-identified Somali parents or guardians of children aged 9–17 who lived in the greater Columbus, Ohio area were recruited for this IRB approved study. Parents or guardians were targeted, rather than patients, because legal minors need parental consent prior to receiving the HPV vaccine. Participation was voluntary, and the researcher traveled to the participants' venue of choice to conduct the interviews.

The final sample included 19 female parents and one female guardian. Ages of participants ranged from 23 to 47 ($M=36.4$, $SD=5.7$), and ages of children ranged from 8 to 13 ($M=10.7$, $SD=1.5$). All participants identified as black/African, subscribed to Islam, and considered themselves active in the practice of their religion. The number of years spent in the USA ranged from 3 to 17 ($M=11.9$, $SD=3.9$), 65 % ($n=13$) of the parents did not speak or were partially fluent in English, and 35 % were fluent in English. Fifty percent ($n=10$) of the participants reported annual incomes of less than \$10,000, 30 % ($n=4$) reported incomes between \$10,000 and \$19,999, 15 % ($n=3$) were between \$20,000 and \$29,999, and one reported income between \$30,000 and \$39,999. Seventy-five percent ($n=15$) of the participants reported being covered by a government health insurance plan, and 20 % ($n=4$) had no health insurance at some point during the last 12 months. The highest level of school completed among participants was high school completion (12th grade) and the lowest was elementary school (5th grade).

Recruitment

Initial recruitment was done by way of flyers and recruitment letters in a local immigration office. Participants could complete the bottom portion of a recruitment letter to request more information about the study and mail it to the project manager in a postage-paid reply envelope or return it to the immigration attorney's office. A non-participant, Somali community member helped identify potential recruitment issues prior to the distribution of recruitment materials. One of the main recruitment issues she identified was linked to the topic of study. She indicated that Somali women have been the object of studies that have often engaged them with preconceived notions about the reproductive and sexual health issues they face. She recommended that particular attention be paid to the language in the recruitment documents and explicitly communicate the study goals.

Fifteen percent ($n=3$) of the participants responded to the recruitment letter. The translator recommended the fourth and fifth participants in this study. A key informant (Interviewee #5) emerged as a result of the initial recruitment process. After the fifth interview, recruitment took place through snowball sampling, in which the participant recommended the study to other Somali parents she knew. Sixty-five percent ($n=13$) of the interviews were conducted in a small shop in a Somali-owned shopping plaza, and this also generated interest in the study. Twenty percent ($n=4$) of the interviews were conducted in the homes of the participants. One potential participant initially agreed to participate, but refused on the day she was scheduled to be interviewed.

Data Collection and Analysis

The study used a semi-structured interview format, which included a post-interview survey. The purpose of the interview, as explained to the participants, was to understand how culture influenced vaccine decision-making. Some interview questions were adapted from previous studies done with Somali women [22], and some questions were revised based on emerging data as well as interviewee input. Two practice interviews were conducted with two mothers prior to the beginning of this study. Information gleaned from those interviews was used to add questions to the semi-structured guide and to re-structure several questions that were confusing to the interviewees during the formative research stage. A professional interpreter was used for non-English speaking participants and for those who preferred to speak in their primary language. The interviews lasted approximately 60 min. Several participants chose to be interviewed in venues where family or friends were present. All participant names have been changed to maintain confidentiality.

All 20 interviews were audiotaped, transcribed, and analyzed using a grounded theory approach. Following the

interview, participants completed a survey, administered orally by the researcher, asking about gender, marital status, race/ethnicity, religion, income level, education, employment status, and health insurance status. Each interview was listened to from the beginning to end prior to transcription. Once the initial reading of each interview was completed, the interview was transcribed. Coding of the first interview was done immediately after it was completed to inform both the process and types of probes used in subsequent interviews. Subsequent interviews were also open-coded immediately after transcription. Post-transcription, each interview was read from the beginning to end, and then data in each interview was broken into manageable pieces. Open-coding was used to explore for the ideas contained within each interview. After grouping units into categories, interview transcripts were analyzed for units that could be grouped under previous categories, and those that could not were assigned to new categories. After open coding and conceptual labels were placed on each interview, the interviews were compared to determine whether there were common ideas across the board and related concepts within the interviews. The interviews were then compared to identify common ideas and related concepts. The following section describes the results of this study. Names of participants have been changed to maintain anonymity.

Results

Language, Culture, and Decision-Making

Three main themes emerged. The first pertained to parents' worry that vaccination signaled to their child consent for early sexual activity. The second was parents' confusion about the difference between HPV and HIV. The third theme was the perception that the HPV vaccine was not a necessary vaccine.

First, several participants ($n=4$; 20 %) recalled the vaccine as the "sex vaccine." Others described the vaccine as the one for "the bad girls" or "women who are promiscuous or engage in some sort of wild sexual behavior." The majority of participants ($n=17$; 85 %) expressed concerns that children would interpret the vaccine as parental approval of sexual activity outside of marriage and/or of promiscuity. Several parents described the vaccine as normalizing early sexual activity. One participant said, "I don't want her to think she's protected and—I'm giving her the idea that it's easy for her to do this—sex for a young girl." All participants used the word "culture" to explain the moral implications of vaccinating an adolescent child against a sexually transmitted infection. There was a general belief that the concept of sexual activity outside of marriage was a "western" cultural value and one that was likely driving the push to administer an STI vaccination. A mother who declined the vaccine indicated that she understood why the doctor was recommending the vaccine: "This

is something that is normal for them [Americans] to get this thing or for their kids to be active like that at that age.”

A second theme that emerged was unfamiliarity with HPV and/or the severity of HPV infection. A mother who declined the vaccine indicated that she was initially confused about the difference between HPV and HIV and still was not fully grounded in how they differed in terms of transmission: “Maybe the doctor was saying we can protect from HPV with a medicine. Maybe it’s different—maybe it’s same thing, this HPV and HIV. It’s still something we are preventing with the good behavior.” Another participant who confused HPV with HIV indicated that she would advise her daughter of other ways she could contract HPV: “I will tell her other ways you can get this. I’ll tell her you can get this from needles.”

Parents had positive attitudes toward vaccines for what they considered to be severe infections that their children could easily contract (i.e., measles, polio, and hepatitis). Mothers described seasonal vaccinations, such as the flu vaccine, as unnecessary, and that they could decline without fear of seriously compromising the health of the child. One participant categorized the flu and HPV vaccine as similarly unnecessary, “I’m not doing the vaccine for a thing that...to be honest it’s like the flu...And my daughter don’t have to get it [HPV]. She can make a good decision for health and not get it.” Parents were especially wary of multiple-dose vaccines, particularly regarding seasonal vaccines that they considered optional. “From what I heard,” said one mother, “it’s a seasonal vaccine [flu]. And every time you give it...he’ll get used to it...So the more you give the more the child gets immune to it and it won’t help anything.” Participants reported being immunized for the same disease multiple times due to refugee status and migration, as this woman said: “I heard that a lot of the moms—they giving the MMR to the moms when they get here—the double immunization because a lot of refugees, when they come they don’t have papers. So they gonna make you start all over with the immunization.” Mothers also connected the MMR vaccine (necessary) and HPV vaccine to a perceived threat of autism as a result of vaccination: “My cousin was given this HPV. He’s—now he’s not talking. He goes to school but is not normal in the healthy way.”

Parent-Clinician Communication

Two main themes emerged regarding the communication goals of Somali parents in the context of HPV vaccine discussions with their child’s clinician: the vaccine’s efficacy and its side effects. With regard to vaccine efficacy, 60 % ($n=12$) of the participants recalled being offered the HPV vaccine but only half of those (30 %) reported having a conversation with their child’s clinician about the vaccine. The six described conversations that did not explicitly address vaccine efficacy concerns, which could be significant given that parents also reported that if the HPV vaccine was safe and efficacious, they

would be open to giving it to their child. In general, parents were cautious about the HPV vaccine, stating they needed to weigh the risks and benefits before making a decision. The question of whether the HPV vaccine promotes health was mentioned repeatedly during the interviews. Three of the participants asked the interviewer to explain how the vaccine contributes to health and wanted to know whether she would recommend the vaccine.

All participants reported some concern about potential short- and long-term side effects, but also that physician recommendation would likely influence their decision to vaccinate their children. One mother said, “At that time, when the doctor explains it, and if it doesn’t cause any problems to my daughter, then I will tell her to take the shot.” Another mother, Hodman, said, “If I make an appointment and show up there and the doctor says this is what your daughter is needing—this is something that is good for her then yes, this is something I would consider. If he says this is something that is for the health then of course I’m going to be considering this. But I’m not sure yet.” Several participants said that they would need to do additional research about side effects prior to making a decision. They cited online information and advice from others who had vaccinated their children as potential sources to reduce uncertainty. As one mother said, “I will find and search—is it in the computer? I’m gonna look on internet. I will do that to see if it’s safe.”

Parent-Child Communication

Two main themes emerged regarding communication goals of Somali parents with their children. The first was parents’ strategic avoidance of the issue, and the second was a desire to frame the vaccine as a health promotion behavior. Strategic avoidance describes the finding that the majority of participants (80 %) had not engaged in any discussions with their children about the HPV vaccine. This group did not believe their children were old enough to be integrally involved in decisions regarding their health, but they did foresee having discussions at a more developmentally appropriate time. Discussion of the HPV vaccine would be appropriate when the parents were ready to begin discussing sexual health with their children. The Somali cultural belief that sexual activity should only take place within the context of marriage was cited as the primary reason for avoiding discussion of the vaccine and uptake. Aniso, the mother of a 10-year-old girl, stated, “I don’t wanna tell about that one. She’s too young for that. When they older—yah I will tell her,” and Ilhaan stated, “No, I won’t tell my daughter. First of all she’s a kid. Second, she will now get the idea that my mom was giving me the immunization for the—something in terms of sexual outcome. I don’t want her to get the idea of that’s what I was doing.” Only two parents indicated that they would feel comfortable discussing the vaccine with their children. These were parents

who also expressed that they had already had discussions with their children about sex and/or making sexually healthy choices.

When parents did consider speaking to their children about the vaccine, they overwhelmingly said that they would frame the vaccine as a health promoting behavior—citing the benefits of being vaccinated against diseases that can be spread from person-to-person—rather than as an STI preventive measure. This health communication promotion approach mirrored the way they would typically approach a health conversation with their child. One mother, who was still unsure whether she would consent to vaccination of her 10-year-old daughter, said, “I’m going to tell her this is like other immunizations that will help with preventing disease. I don’t have to talk about the other stuff. It’s not necessary when she’s so young... I want to focus on the good health.” Another mother who planned to have her son vaccinated in the future said she would emphasize the long-term health benefits and draw on Islam’s stance on health. She indicated that she would emphasize that exposure to sexually transmitted infection can occur within a marriage: “I’m going to tell him this is for health.—this shot is something that will prevent you from getting any infection from your wife if she is sick. But only for when you’re married.”

Discussion

This study demonstrates some of the challenges and opportunities in increasing uptake of the HPV vaccine among immigrant Somali populations. All participants indicated that they were primarily responsible for making health decisions for children in their households, which underscores the importance of targeting HPV decision-making interventions to mothers. As the results revealed, a major barrier to vaccination among parents was the worry that their children would interpret their endorsement of the HPV vaccine as license for early sexual activity. Somali parents were likely to avoid discussions if they thought vaccination uptake promoted sexual activity, but less so if they thought vaccination promoted health. In addition, lack of information about the side effects of the vaccine and uncertainty about the vaccine’s efficacy were also barriers. Parents preferred to decline the vaccine in favor of waiting for additional information about the vaccine’s ability to promote health and its associated side effects. This delayed decision-making is consistent with the omission bias literature, which indicates that individuals will feel more responsible for outcomes associated with action than those associated with inaction [23].

The present study also delineates how Somali cultural values influence parent-child HPV vaccine communication and decision-making. A Somali cultural norm is that sexual activity should occur solely within the context of marriage, and this value informs ways in which parents are willing to

engage in discussion about the vaccine with their children. Participating parents generally held favorable views about vaccines their children had previously received; however, this view did not necessarily extend to the HPV vaccine. The HPV literature has continued to document concerns about sexual disinhibition among teenage girls as a result of vaccine uptake without clear evidence to support the belief that vaccination might give adolescents a false sense of protection, nor any to substantiate that parental refusal of the vaccination is necessarily linked to a similar concern [24]. Even when parents indicate that they are considering future HPV vaccination, they avoid discussions with their children about sexual health. Similarly, parents in this study subscribed to the belief that their children would interpret discussion of an STI vaccine as acceptance of sexual activity outside of marriage.

The results also demonstrate how a particular communication preference may determine how parents frame HPV vaccine discussions with their children. Somali parents were likely to make the error of omission if they thought vaccination uptake promoted sexual activity, but not as likely if they thought vaccination promoted health. Parents who preferred to avoid discussions about sexual health with their adolescent children also preferred to place the HPV vaccine in the context of a discussion of general health promotion, rather than STI prevention. Clinicians might therefore increase uptake in this population by emphasizing the link between HPV and cervical cancer rather than vaccination as a means of preventing sexually transmitted infection.

Limitations

As with all research, this study has several limitations which should be noted. Although the initial goal was to interview both male and female participants, the final sample was composed of only female parents. The possibility that other themes may have emerged had male parents been interviewed cannot be ruled out. However, mothers are the primary caregivers and health decision-makers for children within the Somali community, which likely influences the nature of parent-child communication about the vaccine. In addition, several of the interviews were conducted in the presence of other female family members and/or friends. The presence of others may have precluded some participants from freely expressing their beliefs if they suspected they were unpopular or did not align with the norms and values of traditional Somali culture. On the other hand, this small group dynamic may have helped minimize the role of the researcher, and consequently response bias. The informal groups are also a reflection of how many respondents indicated they make decisions—within a collective. The sample population was also relatively homogenous (Somali immigrant, female, low-income, and lower levels of education) and as such, the results are not generalizable. However, the qualitative paradigm does not

seek to produce findings that are generalizable. The qualitative approach aims to understand the social world from the perspective of the respondents.

Conclusions

Clinicians are still largely the primary influencers of vaccine uptake. Parents in this study reported limited knowledge about the vaccine, its efficacy, and any short- or long-term side effects, and a clinician recommending the vaccine will likely be considered the most credible source of information. Somalis tend to appreciate oral communication above all other forms. In-person discussion will be particularly important with a population that is not highly fluent in English but is often expected to read about the vaccine independently. It will be equally important to frame the conversation carefully. A clinician who frames the threat of HPV in the context of initiation of sexual activity is likely to deter parents from consenting. In contrast, framing the HPV vaccine as a method of promoting future health would likely resonate more. Contrary to those who would argue that health messages should be framed as more imminent health threats [25], the results here suggest that clinicians should consider talking about the threat of HPV as a more distant threat (within the context of marriage, in this case) versus an immediate one with members of this population.

Compliance with Ethical Standards This is an IRB-approved study.

References

1. Division of STD Prevention. Prevention of genital HPV infection and sequelae: report of an external consultants' meeting [Internet]. Atlanta, GA: Centers for Disease Control and Prevention. 1999. Available from: <http://www.cdc.gov/std/hpv/HPVSupplement99.pdf>
2. Seeff LC, McKenna MT (2003) Cervical cancer mortality among foreign-born women living in the United States, 1985 to 1996. *Cancer Detect Prev* 27(3):203–208
3. Gany F, de Bocanegra TH (1996) Overcoming barriers to improving the health of immigrant women. *J Am Med Wom Assoc* 51(4): 155–160
4. Johnson CE, Ali SA, Shipp MP-L (2009) Building community-based participatory research partnerships with a Somali refugee community. *Am J Prev Med* 37(6 Suppl 1):S230–S236
5. Austvoll-Dahlgren A, Helseth S (2010) What informs parents' decision-making about childhood vaccinations? *J Adv Nurs* 66(11):2421–2430
6. Laveist TA, Nuru-Jeter A (2002) Is doctor-patient race concordance associated with greater satisfaction with care? *J Health Soc Behav* 43(3):296–306
7. Schouten BC, Meeuwesen L (2006) Cultural differences in medical communication: a review of the literature. *Patient Educ Couns* 64(1–3):21–34
8. Kreuter MW, McClure SM (2004) The role of culture in health communication. *Annu Rev Public Health* 25(1):439–455
9. Carroll J, Epstein R, Fiscella K, Gipson T, Volpe E, Jean-Pierre P (2007) Caring for Somali women: implications for clinician-patient communication. *Patient Educ Couns* 66(3):337–345
10. Pavlish CL, Noor S, Brandt J (2010) Somali immigrant women and the American health care system: discordant beliefs, divergent expectations, and silent worries. *Soc Sci Med* 71(2):353–361
11. Hill N, Hunt E, Hyrkas K (2011) Somali immigrant women's health care experiences and beliefs regarding pregnancy and birth in the United States. *J Transcult Nurs* 23(1):72–81
12. Hecht ML, Krieger JL (2006) The principle of cultural grounding in school-based substance abuse prevention: the drug resistance strategies project. *J Lang Soc Psychol* 25(3):301–319
13. Kreuter MW, Lukwago SN, Bucholtz DC, Clark EM, Sanders-Thompson V (2003) Achieving cultural appropriateness in health promotion programs: targeted and tailored approaches. *Health Educ Behav* 30(2):133–146
14. Caughlin JP (2010) A multiple goals theory of personal relationships: conceptual integration and program overview. *J Soc Pers Relatsh* 27(6):824–848
15. Krieger JL, Kam JA, Katz ML, Roberto AJ (2011) Does mother know best? An actor-partner model of college-age women's human papillomavirus vaccination behavior. *Hum Commun Res* 37(1): 107–124
16. Dempsey AF, Abraham LM, Dalton V, Ruffin M (2009) Understanding the reasons why mothers do or do not have their adolescent daughters vaccinated against human papillomavirus. *Ann Epidemiol* 19(8):531–538
17. Brewer NT, Fazekas KI (2007) Predictors of HPV vaccine acceptability: a theory-informed, systematic review. *Prev Med* 45(2–3): 107–114
18. Gamble HL, Klosky JL, Parra GR, Randolph ME (2009) Factors influencing familial decision-making regarding human papillomavirus vaccination. *J Pediatr Psychol* 35(7):704–715
19. Gainforth HL, Cao W, Latimer-Cheung AE (2012) Determinants of human papillomavirus (HPV) vaccination intent among three Canadian target groups. *J Cancer Educ* 27(4):717–724
20. Montgomery MP, Dune T, Shetty PK, Shetty AK (2015) Knowledge and acceptability of human papillomavirus vaccination and cervical cancer screening among women in Karnataka. *Indian J Cancer Educ* 30(1):130–137
21. Taylor VM, Burke N, Do H, Liu Q, Yasui Y, Bastani R (2012) HPV vaccination uptake among Cambodian mothers. *J Cancer Educ* 27(1):145–148
22. Carroll J, Epstein R, Fiscella K, Volpe E, Diaz K, Omar S (2007) Knowledge and beliefs about health promotion and preventive health care among Somali women in the United States. *Health Care Women Int* 28(4):360–380
23. Asch DA, Baron J, Hershey JC, Kunreuther H, Mezaros J, Ritov I et al (1994) Omission bias and pertussis vaccination. *Med Dec Making* 14(2):118–123
24. Bednarczyk RA, Davis R, Ault K, Orenstein W, Omer SB (2012) Sexual activity-related outcomes after human papillomavirus vaccination of 11- to 12-year-olds. *Pediatrics* 130(5):798–805
25. Chandran S, Menon G (2004) When a day means more than a year: effects of temporal framing on judgments of health risk. *J Consum Res* 31(2):375–389