Pediatricians’ perspectives on COVID-19 and HPV vaccine hesitancy

Grace W. Ryan, Mary Beth Miotto, Cynthia McReynolds, Stephenie C. Lemon, Lori Pbert & Michelle Trivedi

To cite this article: Grace W. Ryan, Mary Beth Miotto, Cynthia McReynolds, Stephenie C. Lemon, Lori Pbert & Michelle Trivedi (2023) Pediatricians’ perspectives on COVID-19 and HPV vaccine hesitancy, Human Vaccines & Immunotherapeutics, 19:2, 2225388, DOI: 10.1080/21645515.2023.2225388

To link to this article: https://doi.org/10.1080/21645515.2023.2225388
Vaccine hesitancy is a growing global concern, and the World Health Organization has identified it as one of the top ten threats to global health.\(^1\) Research shows an increase in parental vaccine hesitancy in the United States following the COVID–19 pandemic,\(^2\) threatening to leave millions of children susceptible to infectious diseases that will cause unnecessary morbidity and mortality. This is especially concerning for vaccines that are not typically required for school-entry, such as the vaccines for COVID–19 and human papillomavirus (HPV). Currently, rates for both vaccines remain suboptimal for pediatric populations. Only 32% of 5–11 year olds and 62% of 12–17 year olds have completed the primary COVID–19 series\(^3\) and only 62% of 13–17-year olds are up to date on HPV vaccination.\(^4\) Recent estimates for vaccine hesitancy have found that upwards of 20% of parents have some level of hesitancy for the HPV vaccine\(^5\) and over one-third of parents of children between ages 5 and 17 have reported that they definitely will not vaccinate their children for COVID–19.\(^6\) Additionally, both vaccines face similar political and social scrutiny driven in large part by disinformation and misinformation on social media.\(^7\) In this age of increasing vaccine hesitancy, pediatricians have sought effective strategies to improve communication with parents and promote vaccine confidence. One strategy is to share personal experiences of vaccination and self-disclosure of their own or their child’s vaccination status.\(^8\)–\(^10\) Pediatricians are particularly well positioned to address vaccine hesitancy and are effective vaccine promotion messengers for parents,\(^11\) with many studies highlighting that pediatricians are reported as the most trusted sources of information for both COVID–19\(^12\) and HPV vaccination.\(^13\) However, there has been little research to assess pediatricians’ uptake of the COVID–19 vaccine, for either themselves or their children, and current information on challenges to recommending these two vaccines that face similar scrutiny. As such, we sought to understand pediatricians’ current experiences with COVID–19 and HPV vaccination, as well as concerns parents commonly cite during clinical encounters regarding both vaccines.

We conducted a cross-sectional online survey of pediatricians in Massachusetts between July and September, 2022. To develop this formative survey we included questions in the following domains: (1) COVID–19 vaccination status for self and child, (2) current practices for COVID–19 vaccine delivery and COVID–19/HPV vaccine recommendation, (3) perceptions of common reasons cited by parents hesitant about COVID–19 and HPV vaccination, and (4) demographics. We focused our survey questions on topics not previously explored in the literature. For example, given the extensive literature on pediatricians’ hesitations and intentions around HPV vaccination,\(^14\)–\(^16\) we did not ask about this. We limited our survey to 17 questions (including demographics) with the goal of mitigating documented barriers to physician response that
include lack of time and length of survey\textsuperscript{17} and the purpose of generating preliminary data to inform future research. We adapted questions related to current practices in vaccine recommendation and perceptions of parental hesitancy from previously published survey research on HPV vaccination.\textsuperscript{18} Drafts of the survey were circulated to the project team for feedback and the final draft was sent to a co-investigator who is a practicing pediatrician in Central, Massachusetts for review. We used a one-question screener at the beginning of the survey to determine eligibility based on the following criteria: being over the age of 18, ability to complete the survey in English, and being a pediatrician practicing in a primary care setting. A fully copy of the survey can be found in Appendix A. We partnered with the Massachusetts Chapter of the American Academy of Pediatrics for recruitment. The recruitment e-mail was sent to the chapter’s mailing list which is generated at the national level and cannot be disaggregated by type of provider (i.e. primary care vs. specialist) therefore we are unable to generate a true response rate. Recruitment e-mails were sent in July, 2022 (n = 1,412) and August, 2022 (n = 1,461); due to changes in subscription for the chapter’s mailing list there were additional participants invited in the second round of recruitment. It is likely that the vast majority of participants who received the first e-mail also receive the second e-mail. Participants were able to complete the survey until September, 2022, at which time the link to the online survey was disabled. Participants completed the survey via REDCap and were eligible to receive a $10 e-gift card for their participation. This study was approved by the University of Massachusetts Chan Medical School Institutional Review Board. For all survey items we calculated frequencies and descriptive statistics. We used Fisher’s exact test to assess differences between participants who reported having a child between the ages 5–17 and those who did not currently have a child in that age range.

A total of 144 people initiated the survey, 115 reported meeting eligibility requirements and of those, 109 participants completed the survey.

Sample characteristics

Most participants reported that they worked at a pediatric outpatient clinic (76.1%). The remaining participants worked at academic medical centers (11.0%), community health centers (7.3%), or family/internal medicine clinics (4.6%). Nearly all had an MD (92.7%), and a few had a DO (4.6%), MPH (2.7%), MPP (0.9%), PhD (0.9%), or NP (0.9%). Most participants identified as female (71.6%). The majority identified as white (78.9%), followed by Asian (18.3%), Black/African American (4.7%), or Hispanic/Latinx (2.8%).

Vaccination status for self and child

Almost all participants reported that when the COVID–19 vaccine became available they received the vaccine right away (97.2%) and the remainder reported that they did wait but are currently vaccinated. Of those with a child aged 5–11 (26.6%), all but one reported that they vaccinated their child as soon as they were eligible and of those with a child aged 12–17 (21.1%), all reported that they got that child vaccinated as soon as possible.

Current vaccination practices and perceptions of parental hesitancy

Over half (51.4%) of participants reported they were currently offering COVID–19 vaccines at all visits. Most providers reported that they always recommend the COVID–19 vaccines (79.8%) and HPV vaccines (90.8%) to all eligible patients. Participants without children aged 5–17 reported feeling more confident in their ability to respond to parental hesitancy for each vaccine compared with those with children in this age group. For COVID–19 vaccination, 54.0% of participants without children ages 5 to 17 strongly agreed that they were confident in their ability to address COVID–19 vaccine hesitancy compared to only 29.6% of participants with children (p = .01). A similar pattern was observed for HPV vaccination with 59.1% of participants with children strongly agreeing they were confident in addressing parental hesitancy for HPV vaccination, and 82.8% of participants without children strongly agreeing (p = .01) (Table 1) Overall, 11% of pediatricians reported higher levels of HPV vaccine hesitancy among parents compared to prior to the COVID–19 pandemic. Finally, similar patterns in perceived reasons for parental hesitancy were observed for both COVID–19 and HPV vaccination. For both HPV vaccination and COVID–19 vaccination, pediatricians reported that parents’ primary reason for hesitation was related to concerns about long term side effects. For COVID–19 vaccination, the next most selected reason for parental hesitancy was a belief that the disease is not severe for children (68.8%) and for HPV vaccination the next most selected response was general vaccine hesitancy (39.4%) (Figure 1).

Our results showed high degrees of acceptance of the COVID–19 vaccine among pediatricians in Massachusetts, evidenced by high rates of vaccination not only for themselves but also for their own children and provide further details on pediatricians’ experiences with parental vaccine hesitancy. Nationally, survey data shows that 96% of all physicians are fully vaccinated against COVID–19,\textsuperscript{19} however to our knowledge, there is no systematic data exploring COVID–19 vaccination rates for pediatricians’ children. This important finding of provider acceptance of COVID–19 vaccination for their own children can be shared by pediatricians with their patients and families as a strategy to encourage vaccination and demonstrate pediatricians’ trust in the available vaccines. Pediatricians are already doing this with HPV vaccination\textsuperscript{8,20} and prior research has found that sharing this type of personal information can be a powerful motivator to combat resistance.\textsuperscript{8,21} Moreover, our findings about similarities between HPV and COVID–19 vaccine hesitancy shed light on opportunities for improvement in vaccine promotion.

First, work is needed to improve pediatricians’ ability to address vaccine hesitancy by having more confidence in their ability to make vaccine recommendations. While nearly all participants reported that they always recommend the HPV vaccine, they do not always recommend the COVID–19 vaccine. This could be because they do not have the ability to offer the COVID–19 vaccine in their own clinics. In our sample, 10% of participants reported that they did not offer it in their clinic. Thus, ensuring the COVID–19 vaccine is available in all
Table 1. Current practices and attitudes toward COVID−19 and HPV vaccine hesitancy conversations (n = 109).

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
<th>Have at least one child 5 to 17 (n = 44)</th>
<th>Have no children 5 to 17 (n = 65)</th>
<th>Fisher’s exact p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current COVID−19 vaccination practices (Missing n = 2)</td>
<td>No, but we plan to in the future</td>
<td>4 (9.3)</td>
<td>5 (7.8)</td>
<td>.89</td>
</tr>
<tr>
<td></td>
<td>Yes, but only at certain times</td>
<td>13 (32.6)</td>
<td>25 (39.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes, but only at well-child visits</td>
<td>1 (2.3)</td>
<td>2 (3.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes-at all visits</td>
<td>24 (55.8)</td>
<td>32 (50.0)</td>
<td></td>
</tr>
<tr>
<td>How often do you recommend the COVID−19 vaccine to eligible pediatric patients? (Missing n = 1)</td>
<td>Always</td>
<td>36 (81.8)</td>
<td>51 (79.7)</td>
<td>.57</td>
</tr>
<tr>
<td></td>
<td>Most of the time</td>
<td>6 (13.6)</td>
<td>12 (18.8)</td>
<td></td>
</tr>
<tr>
<td>How often do you recommend the HPV vaccine to eligible patients? (Missing n = 2)</td>
<td>Always</td>
<td>40 (90.9)</td>
<td>59 (92.2)</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Most of the time</td>
<td>4 (9.1)</td>
<td>4 (7.8)</td>
<td></td>
</tr>
<tr>
<td>I am confident that I can respond to parental hesitancy about COVID−19 vaccination for children between ages 5 and 17. (Missing n = 2)</td>
<td>Strongly agree</td>
<td>13 (29.6)</td>
<td>34 (54.0)</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Somewhat agree</td>
<td>28 (63.6)</td>
<td>27 (42.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neither agree nor disagree</td>
<td>1 (2.27)</td>
<td>1 (1.6)</td>
<td></td>
</tr>
<tr>
<td>I am confident that I can respond to parental hesitancy about HPV for children between ages 9 and 17 (Missing n = 1)</td>
<td>Strongly agree</td>
<td>26 (59.1)</td>
<td>53 (82.8)</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Somewhat agree</td>
<td>15 (34.1)</td>
<td>11 (17.2)</td>
<td></td>
</tr>
<tr>
<td>Since the start of the pandemic, what have you observed in terms of vaccine hesitancy (Missing n = 2)</td>
<td>More hesitant</td>
<td>5 (11.6)</td>
<td>7 (10.9)</td>
<td>.81</td>
</tr>
<tr>
<td></td>
<td>Similar</td>
<td>30 (69.7)</td>
<td>48 (75.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less</td>
<td>8 (18.6)</td>
<td>9 (14.1)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Percentage of pediatrician reporting reasons for parental COVID−19 and HPV vaccine hesitancy (n = 109).

Pediatric practices may increase pediatricians’ frequency of recommendation. In addition, future research should explore best practices for streamlining training on vaccine hesitancy and vaccine recommendations. For example, presumptive provider recommendations (i.e. “Your child is due for these vaccines, we can do them in clinic today”) are a known strategy to increase both COVID−19 and HPV vaccination, thus trainings could focus on how to use this strategy to address overall vaccine hesitancy and increase uptake of both of these vaccines. Interestingly, when comparing pediatricians who have and do not have a child between ages 5−17, pediatricians without school-aged children were more confident in discussing both HPV and COVID−19 vaccines with parents. We hypothesize that this could be because pediatricians with children may be able to relate more with vaccine-hesitant parents, having had to make this decision themselves and potentially personally felt some level of ambivalence; however future work is needed to fully explore this finding. This finding also raises the question of what other personal characteristics could be impacting how pediatricians engage
with parents around vaccine hesitancy so that they may be effectively addressed.

Finally, several important findings arose with implications for messaging to support pediatricians in their efforts to communicate with vaccine-hesitant parents. While there seems to be low levels of parental concern about the effectiveness of the COVID–19 and HPV vaccines, there are higher levels of concern about the short and long-term side effects for both vaccines. Given that pediatricians have limited time with parents, focusing these discussions on what matters most to parents could be most effective. Identifying the similarities between these vaccines lends support to the idea that vaccine conversations could be approached in combination (i.e., not on a vaccine-by-vaccine basis). Moreover, for both vaccines, pediatricians reported that some resistance may be due not to resistance to that specific vaccine, but to general vaccine hesitancy. This coupled with the fact that over 11% of pediatricians reported that they have experienced a rise in HPV vaccine hesitancy since the beginning of the COVID–19 pandemic is concerning and indicates that more effort needs focus on increasing parental vaccine confidence. These findings are echoed in a recent study finding that overall vaccine confidence has declined since the beginning of the COVID–19 pandemic. Further research to inform message content and to tailor messaging to be culturally and linguistically appropriate will be needed moving forward.

There are several limitations to acknowledge. The survey was conducted in a single state, with a relatively small sample size, primarily consisting of non-Hispanic white participants which limits generalizability of our findings. While we cannot generate a true response rate given our inability to disaggregate the mailing list for the recruitment e-mails, our final participation numbers suggest that it was low. The cross-sectional nature of this study also limits our ability to explore causal inference. It is important to acknowledge that we did not ask about several factors that may have been relevant, for example, we did not inquire about hesitancy for other vaccines, or number of years pediatricians had been practicing. However, our goal was to generate preliminary data to inform future investigation and therefore we restricted our survey to few questions to encourage participation from a group that would have had limited time to respond. Furthermore, Massachusetts tends to have high vaccination rates, thus the experience of these pediatricians is likely not representative of pediatricians everywhere. Despite these limitations, we feel this work has important implications and lays groundwork for future research. For example, following up on this survey approach with qualitative research could help us to better understand the differences between pediatricians who reported having children compared to those who did not and their comfort level with discussing vaccine hesitancy.

Conclusions

Our study demonstrates that 97% of pediatricians received the vaccine themselves and nearly 100% vaccinated their children against COVID–19. Given that pediatricians are trusted messengers for vaccine promotion and prior research has consistently identified the powerful impact of their recommendation on parents’ choice to vaccinate their children, this data can be powerful when disseminated by pediatricians to their patients. Moreover, pediatricians may be able to address vaccine hesitancy by sharing with patients their own stories about how they themselves received the vaccine and about vaccinating their children, if they feel comfortable. Future research should further focus on identifying strategies to build overall vaccine confidence, exploring similarities in reasons for hesitancy for other vaccines, and find ways to streamline these efforts to support pediatricians.

Abbreviations

HPV Human papillomavirus

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The work was supported by the National Cancer Institute [grant number T32 CA172009].

ORCID

Grace W. Ryan http://orcid.org/0000-0002-0354-2644

References


Appendix A

Pediatric HPV and COVID-19 Vaccination Survey

Eligibility question:
To be eligible to participate in this study, you need to be, over the age of 18, able to respond to this survey in English, and be a primary care pediatrician practicing in a primary care (non-specialty) setting. If you fit all three of these criteria, respond yes. If you do not fit all three of these criteria, respond no.

Yes
No
*If no, participant will be directed to a page saying: "You are not eligible for this study. Thank you for your time!"*
*If yes, participant will proceed with survey*

We are interested in hearing about your experiences with two adolescent vaccines: HPV and COVID-19. These two vaccines have faced significant public scrutiny and resistance and we are interested in learning more about your perspectives as pediatricians to help us develop programs to encourage vaccination.

First, we have a few questions about you and your children's (if applicable) vaccination behavior.

1. When you became eligible for the COVID-19 vaccine please choose the response that best corresponds to your behavior:
   (a) Got vaccinated as soon as possible
   (b) Waited to get vaccinated, but are now vaccinated
   (c) Are still waiting to get vaccinated
   (d) Do not plan to get vaccinated

2. Do you have a child between ages 5 and 11?
   (a) Yes
   (b) No
   
   If yes, answer the following question. Note: if you have multiple children between ages 5 and 11 answer this question about your oldest child in that age range.

   When your child between ages 5 and 11 became eligible for COVID-19 vaccination, please choose the response which best corresponds to your behavior:
   (a) Got them vaccinated as soon as possible
   (b) Waited to get them vaccinated but are vaccinated now
   (c) Still waiting to get them vaccinated
   (d) Do not plan to get them vaccinated

3. Do you have a child between ages 12 and 17?
   (a) Yes
   (b) No
   
   If yes, please answer the following question. Note: if you have multiple children between ages 12 and 17 answer this question about your oldest child in that age range.

   When your child between ages 12 and 17 became eligible for COVID-19 vaccination, please choose the response which best corresponds to your behavior:
   (a) Got them vaccinated as soon as possible
   (b) Waited to get them vaccinated and have done so
   (c) Are still waiting to get them vaccinated
   (d) Do not plan to get them vaccinated

The next questions ask about your practice, your recommendation behavior, and beliefs about vaccines.

4. Are you currently vaccinating pediatric patients against COVID-19 in your clinic? (Note: If you work at more than one clinic, please answer these questions about the clinic where you spend the majority of your time)
   (a) Yes, at all visits
   (b) Yes, but only at well-child visits
   (b) Yes, but only at certain times (i.e., organized vaccine clinics)
   (c) No, but we plan to in the future
   (d) No, and we have no plans to in the future

5. How often do you recommend the COVID-19 vaccine to eligible pediatric patients (ages 5 to 17)?
   (a) Always
   (b) Most of the time
   (c) Some of the time
   (d) None of the time

6. How often do you recommend the HPV vaccine to eligible adolescent patients (ages 9 to 13)
   (a) Always
   (b) Most of the time
   (c) Some of the time
   (d) None of the time

7. To what extent do you agree/disagree with the following statement: I am confident that I can respond to parental hesitancy about COVID-19 vaccination for children between ages 5 and 17.
   (a) Strongly disagree
(b) Somewhat disagree
(c) Neither agree nor disagree
(d) Somewhat agree
(e) Strongly agree

8. To what extent do you agree/disagree with the following statement: I am confident that I can respond to parental hesitancy about HPV vaccination for adolescents between ages 9 and 17.

(a) Strongly disagree
(b) Somewhat disagree
(c) Neither agree nor disagree
(d) Somewhat agree
(e) Strongly agree

The next questions ask about parental hesitancy or resistance to both HPV and COVID-19 vaccinations.

9. What are the top reasons that parents give for being hesitant or resistant to get their child the COVID-19 vaccine? Please check all that apply.

(a) Concerns about short term side effects
(b) Belief that COVID-19 is not severe for children
(c) Belief that COVID-19 vaccine is not effective for children
(d) Concerns about long-term side effects
(e) Concerns about efficacy
(f) General vaccine resistance (not specific to COVID-19)
(g) Other:

10. What are the top reasons parents give for being hesitant or resistant to get their child the HPV vaccine? Please check all that apply.

(a) Concerns about short term side effects
(b) Belief that HPV infection is not severe
(c) Belief that the HPV vaccine is not effective
(d) Concerns about long-term side effects
(e) Concerns about efficacy
(f) General vaccine resistance (not specific to HPV)
(g) Other:

11. Since the start of the pandemic (March 2020), what have you observed in terms of vaccine hesitancy towards the HPV vaccine:

(a) More hesitancy
(b) Similar amounts of hesitancy
(c) Less hesitancy

Finally, we have a few questions about you and the primary clinic that you work at.

12. What is the zip code of your primary place of work? (Note: If you practice in more than one location, include the zip code for the clinic where you spend the majority of your time)

13. Which best describes your primary place practice? (Note: If you practice in more than one location, respond for the clinic where you spend the majority of your time) Check all that apply.

(a) Pediatric outpatient clinic
(b) Family medicine/Internal medicine clinic
(c) Rural health clinic
(d) Federally qualified health center/community health center
(e) Academic medical practice
(f) Other:

14. Which of the following credentials do you hold (Check all that apply).

(a) MD
(b) DO
(c) PhD
(d) NP
(e) PA
(f) Other:

15. What is your gender?

(a) Male
(b) Female
(c) Other:
(d) Prefer not to say

16. How would you describe yourself? (check all that apply)

(a) American Indian/Alaska Native
(b) Asian
(c) Black or African American
(d) Native Hawaiian or Pacific Islander
(e) White

17. Are you of Hispanic, Latino, or Spanish origin?

(a) Yes
(b) No