

Parental Vaccine Hesitancy in a COVID-19 World: A Qualitative Study of Midwestern Parents' Decisions Regarding COVID-19 Vaccination for Their Children

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ABSTRACT

Introduction. With the launch of the SARS-CoV-2 (COVID-19) vaccines, a new cohort of people exists who do not consider themselves to be completely vaccine-hesitant, but are specifically COVID-19 vaccine hesitant (CVH). There is a need to learn from CVH parents, to ensure their concerns are addressed, and allow them to comfortably vaccinate their children against the COVID-19 virus.

Methods. Surveys were used to identify CVH parents. Using semi-structured interviews, we assessed the attitudes of CVH parents toward COVID-19 vaccination in children. An inductive coding method was used to analyze transcripts and develop themes.

Results. Fourteen parents were interviewed. Seven (50%) had received the COVID-19 vaccine even though they had doubts. Six reported that education about mRNA vaccine production was helpful in deciding to get vaccinated. Parents were reluctant regarding pediatric vaccination due to lack of long-term studies and concerns about adverse impact on childhood development. Personal physicians were the most trusted source of information and direct conversations with them were the most influential, as opposed to public health leaders like the U.S. Centers for Disease Control and Prevention and the National Institutes of Health.

Conclusions. Our findings suggested that physicians are among the most trusted sources of information regarding the COVID-19 vaccine for CVH parents. Rather than use broad public health messaging and advertising to increase rates of vaccination, further investigation into training health professionals on how to counsel CVH patients effectively may be a higher impact area of opportunity to improve vaccine response rates. *Kans J Med* 2023;16:194-199

INTRODUCTION

Vaccine hesitancy has been a topic of discussion between physicians and the public since the creation of the smallpox vaccine by Edward Jenner.¹ Over the years, there have been many different reasons for parental hesitation regarding vaccination including doubts surrounding the necessity, efficacy, and potential adverse effects of them.^{1,2} With the onset of the SARS-CoV-2 (COVID-19) pandemic and the expeditious roll-out of vaccines, a new cohort has emerged. These individuals do not consider themselves to be vaccine-hesitant in general, but are COVID-19 vaccine hesitant (CVH). This cohort is crucial to learn from amidst current underwhelming vaccination rates among approved pediatric populations.³

Prior parental attitudes toward other vaccines are not predictive

of parental acceptance or hesitance toward the COVID-19 vaccine.⁴ Many CVH parents have been compliant with other vaccines in the past. For example, only 66% of parents who had their children vaccinated with the influenza vaccine for the last two years self-reported themselves as “very likely” to vaccinate their children against COVID-19.⁵ This may be because the COVID-19 vaccines have brought many aspects of vaccination development, testing, deployment, and novel technologies into the spotlight. Highly technical and nuanced subjects like the merits of mRNA versus adenovirus vectors are common household discussions, and, more than ever before, parents must take more into consideration when making vaccine-related decisions for their children.

Three survey-based studies identifying root causes for COVID-19 vaccine hesitancy in the United States have been conducted.⁵⁻⁷ One reported that less than 50% of 1,745 parents would vaccinate their child against COVID-19.⁵ To the best of our knowledge, there have been no published qualitative studies that specifically focus on Midwestern parents' COVID-19 vaccine hesitancy. This study will be the first to look at perceptions and hesitancies surrounding COVID-19 vaccinations among a Midwestern parent population, using qualitative methods. The primary objective aimed to identifying educational strategies and interventions that will facilitate adherence to COVID-19 vaccination recommendations and improve vaccine response rates, while allaying specific parental fears and concerns.

METHODS

This study was reviewed by the University of Kansas Medical Center Institutional Review Board prior to commencement of all study activities.

Recruitment of Subjects. Inclusion criteria included adult subjects who were parents of children <18 years of age. Participants were recruited via invitations through social media posts from the accounts of the Department of Otolaryngology and the research team. Subjects also were able to refer others for participation. Within these invitations was a link to an eligibility survey which decided if the participant met inclusion criteria. The survey was used to decide if the parent was considered a CVH parent. There were no financial incentives given to participants. If parents met inclusion criteria and were deemed CVH parents after taking the eligibility survey, they were contacted to set up an interview either in-person or over Zoom[®]. Participants signed digital copies of consent forms prior to proceeding with the interview. Following consent, each participant completed a demographic survey. A four-month window was allotted for data collection during the summer and fall of 2021. All moderators for the interviews (S.B., J.M., K.G.) had medical and clinical research experience.

Eligibility Survey. There were two components of the eligibility survey. One component was made of four items created by the research team to determine if a respondent was CVH. Within these four items, a parent was deemed CVH if any of their responses showed a degree of hesitancy. This component corresponds with items 3-6 on the

eligibility survey (Appendix; available only online at journals.ku.edu/kjm).

The second component of the eligibility survey was the 15-item, previously validated, Parent Attitudes about Childhood Vaccines (PACV) tool.⁸ This component was utilized to demonstrate a parent's degree of hesitancy toward vaccines in general. If a parent scored a $\geq 50/100$ on the PACV, they were considered hesitant toward vaccines in general. A 50/100 was chosen as the cutoff because the original author of the PACV determined that the most predictive score that a parents' child would be under-immunized was $\geq 50/100$.⁹

Our goal was to identify a population that was hesitant toward the COVID-19 vaccine while not being hesitant toward vaccines in general. So, if a parent scored $\geq 50/100$ on the PACV, they were ineligible for the interview. Parental COVID-19 vaccine status was not a component of inclusion criteria because key insights could come from those who received the vaccine amidst doubt.

Semi-Structured Interview. A semi-structured 15-question interview was conducted for each of the participants (Table 1). The questions were designed to explore the behavior, knowledge, and overall attitudes of CVH parents regarding the COVID-19 vaccine.¹⁰ Interviews lasted between 20-30 minutes.

Study survey and demographic data were collected and managed using REDCap® (Research Electronic Data Capture). REDCap® is a secure, web-based software platform designed to support data capture for research studies, providing an interface for validated data capture.^{11,12}

Data Analysis. Each interview recording was de-identified and transcribed word-for word using Trint (London, UK) software and verified for accuracy by at least two of the team members. An inductive coding method was used to derive themes from the data. Members from the team individually coded each transcript to determine themes and sub-themes in each of the interviews. A preliminary codebook was developed and revised in iterative rounds until consensus was reached among all team members regarding salient themes and subthemes. Content saturation occurred when no new information or perspectives were mentioned after 14 interviews. After review of these transcripts, no new themes were detected, and thematic saturation was determined to have occurred as well. The decision was made to stop data collection, as it was determined that the content validity requirements had been met.¹³

Table 1. Semi-structured interview questions.

1. In regards to your family's healthcare and health guidelines, who are people or groups that you trust the most? Why?
Probes: Your family doctor, CDC, President of the United States, Dr. Fauci
2. If you were to research information on any general vaccine, where are places you would look?
2b. Follow up: How do you decide information is reliable about vaccines and health information?
3. What has influenced your opinions on vaccines in general up to this point?
Probes: Personal experience, news and media, medical professionals, family friends, talk a little bit about why you're against the addition
4. What information is needed for you to feel a vaccine is safe?
4b. Follow up: Do you feel you have different standards for the COVID vaccines?
Probe: Health leaders saying so? Friends' children get it? Time on the market?
5. Do you think for some people vaccination is necessary, while for others it's not? Why or why not?
6. What information is needed for you to feel a vaccine is necessary?
Probe: Does it need to be a super deadly disease? Super infectious?
7. Have you ever actively sought getting a vaccine yourself or have you always waited for your doctor to suggest one?
8. How has the coronavirus pandemic itself, impacted your view of vaccines in general, if at all?
Probes: more positive/negative view of them since the onset of the pandemic, plans for getting the vaccine for children
8b. Follow up: Has anyone near you gotten the coronavirus? If so, has this affected your views towards the vaccines or the urgency for it?
9. How do you feel information about public health, like vaccines, should be communicated?
Probes: different social media, news, billboards, more frequent communication, more clear communication, using multiple different outlets of media for communication
9b. Follow up: What types of media or ways of communication by health professionals, do you feel would help parents feel more confident in the message they are being sent?
10. What are reasons in the past why you allowed your child to get vaccinated?
11. Do you know anyone who has gotten a serious side effect from a vaccine?
11b. Follow up: If yes, what was the side effect, was it from a COVID vaccine or a different one?
12. Do you have any specific concerns regarding the COVID vaccine?
Probes: side effects (short or long term), effectiveness, personal belief, cost, research to quick, side effects, efficacy
12b. Follow up: If they say side effects - what side effects in particular?
13. If participant signals hesitancy towards a specific COVID-19 vaccine, ask this question regarding the vaccine they indicated.
Question:
You noted that you were only hesitant toward the [Specific vaccine brand name] vaccine on the survey, what lead to that hesitancy?
13b. Follow up: Where did you hear that information?
13c. Follow up: What would it take to overcome that concern and receive that particular vaccine, if anything?
13d. Follow up: If the CDC said it was safe and effective for your child's age group?
14. If participant signals hesitancy towards the COVID-19 vaccines for children under 12 years old, ask this question.
"On the survey, you noted to be hesitant towards the COVID vaccine for under 12 years old, even if the CDC said it was safe and effective. How does age of the child factor into your decision for getting a COVID vaccine or not?"
15. Do you know their school's policy for this upcoming year regarding COVID vaccines? If so, are you satisfied with it?
Probes: masks, vaccines, negative test required, no sick symptoms

RESULTS

Half of participants overcame hesitations and received the COVID-19 vaccine. These parents are considered COVID Vaccine Hesitant-Received Vaccine (CVH-RV) parents. Those who did not receive the vaccine by the interview date are considered COVID Vaccine Hesitant-No Vaccine (CVH-NV) parents (Table 2).

Table 2. Participant characteristics.

	n = 14	n (%)
Gender		
Female	10	71.4
Male	4	28.6
Race/ethnicity		
White	12	85.7
Annual household income range		
\$100,000 or greater	10	71.4
Living demographics		
Suburban	11	78.6
Other	3	21.4
COVID-19 vaccine status		
Received the vaccine (CVH-RV*)	7	50
Did not receive the vaccine (CVH-NV*)	7	50

*COVID Vaccine Hesitant-Received Vaccine; COVID Vaccine Hesitant-No Vaccine

Four main themes emerged from the interviews: (1) Learning Enhances Trust; (2) Need for Long-Term Studies and Effects on Children; (3) Lack of Perceived Need Among CVH-NV Parents; (4) Personal Health Professionals are the Most Trusted. Specific sub-themes were identified among CVH-RV and CVH-NV parents as well.

Theme 1 - Learning Enhances Trust. Six of seven CVH-RV parents reported gaining trust in the COVID-19 vaccine after learning about the process of production mRNA technology for COVID-19 vaccines. For example, community events where local scientists explained the safety of mRNA vaccines were impactful. Participant 1 reflected, “I think just being made aware of [mRNA technology] and aware of those things are helpful”.

After learning about the mRNA production process, some parents reported increased confidence in vaccinations for children, with the specific age of children no longer playing a large factor. For example, Participant 2 responded, “I don’t think [age matters], because only the smallest amount of that [mRNA] fragment goes into your body”.

Theme 2 - Need for Long-Term Studies and Effects on Children. When considering the relative newness of the vaccine and giving it to a child, many parents voiced strong hesitations. Both CVH-NV and CVH-RV parents cited the timeframe from vaccine trials to vaccine approval as a barrier for receiving the vaccine. “It’s just the fact that it’s so new and we don’t know if there could be some long-term, weird side effects that could affect kids growing up” (Participant 3) was a common sentiment heard from multiple parents. Parents often desired a longer follow-up period to assess for adverse outcomes in adults: “It has to be given to adults now and then wait between 5 and 10 years before they give it to children” (Participant 4).

Parents (36%) noted hesitancy after hearing of myocarditis

occurring in children post-vaccination or potential fertility issues in females. Other parents simply were not sure how a COVID-19 vaccine would affect children in terms of their development.

Theme 3 - Lack of Perceived Need Among CVH-NV Parents.

Through conversations with CVH-NV parents, it was evident there was a lack of perceived need in receiving the vaccine. Some cited it was not a necessity for their family with “how healthy” (Participant 4) they are. Others stated they did not have a strong perceived need because they had “already had the virus” (Participant 7). Due to already contracting the virus, 42.8% of CVH-NV parents felt the vaccine was not going to benefit them.

Even though CVH-NV parents know people who have died of COVID-19 infections, they did not report this increasing their urgency to receive the COVID-19 vaccine.

“The way that I try to look at it is that life and death are going to happen anyways, you know, it’s just like if you like, some people die from the flu. Some people die from falling down the stairs. You know, some people die falling asleep... so it really hasn’t changed my viewpoint of how life is happening.” (Participant 3)

“When you look at the list of side effects of [vaccines], 99.9% of them are worse than the things that you’re taking to treat. So, if it’s not 100%, then I don’t want to take it.” (Participant 4)

Theme 4 - Personal Health Professionals are the Most Trusted.

Every participant noted their personal physician, pediatrician, or family friend who is a doctor to be the most trusted individual regarding vaccines and healthcare guidance for their family.

4.1 Vaccine-Hesitancies are Mitigated Through Conversations with Health Professionals. Of note, 85% of CVH-RV parents cited at least one conversation with someone in the healthcare field, whether that be a doctor, nurse, or scientist as a key role in easing hesitations they had toward the COVID-19 vaccine. CVH-NV parents, although still citing their local physicians as their most trusted source for vaccine information, did not report having conversations specifically about the COVID-19 vaccines with healthcare providers when forming their opinion toward the vaccines.

Even though search engines and news stations were trusted by very few as a reliable source of vaccine information, they were reported as one of the first places parents would research information. Participant 4 noted that by searching Google, they can see what the pro-vaccine opinion and the “extremely opposite” opinion are saying about vaccines. By doing this, they were able to make a more “educated decision” that falls between “both ends of the spectrum”. This same participant later reported that their personal doctor was still more trusted than search engines.

“When I say doctors, I do mean doctors in general -even people that don’t treat me and my family. But I mostly trust my own personal doctor. Because of the way that she treats and deals with us, she actually takes the time to listen and talk things through instead of just saying here, you have to do it.” (Participant 4)

Regardless of current vaccine status, parents trusted their family doctor above all things, including the CDC, WHO, and Dr. Fauci. The only specific argument given by government organizations was in explaining the process of mRNA vaccine technology. Simple reassurance from a trusted source, like a local physician, was a large driving factor in improving trust. When comparing government organizations and local physicians, due to the personal connection between the doctor and patient, recommendations from local physicians carried more weight. For example, Participant 8 said, “I think that at the end of the day, people make decisions based on the people they trust, or they know personally”.

4.2 Mass advertising and Large Health Organizations Have Less Influence. Parents were unsure of the effectiveness of mass advertising, such as posters, billboards, and radio/television broadcasts, for promoting COVID-19 vaccine uptake. Participant 8 questioned the effectiveness of mass media advertising saying it “lacks a personal touch” and that “it doesn’t give a chance for people to ask any questions”. Formal recommendations made by government organizations were met with more skepticism.

“I think at the beginning of the pandemic, I listened to everything the CDC [and Dr. Fauci] said until there were contradictory things that they were doing. So, then I had to do my research elsewhere.”
(Participant 4)

DISCUSSION

As the age-range of eligible recipients of the COVID-19 vaccine expands, it is critical to understand parental attitudes toward the COVID-19 vaccine. Through semi-structured interviews with COVID-19 Vaccine-Hesitant (CVH) parents, four main themes emerged. Of particular relevance during the pandemic, these results emphasized the need to leverage physicians and other providers as trusted front-line sources of information. For example, 85% of CVH-RV parents overcame their hesitations and ultimately became vaccinated due to conversations with their physician. Therefore, physicians and healthcare professionals must be equipped to use evidence-based counseling for vaccine-hesitant parents.¹⁴

CVH parents, regardless of vaccine status, unanimously cited their local primary care provider as their most trusted source for vaccine information. This is in line with previous literature among parents hesitant to other vaccines.¹⁵⁻¹⁷ Of note, our findings showed that 85% of CVH-RV parents reported a conversation with a healthcare provider regarding mRNA vaccine technology as key in gaining trust in the vaccine. On the other hand, some of these parents considered the CDC, WHO, and Dr. Fauci less trustworthy due to their perception that these organizations might not follow their own recommendations or share contradictory guidelines. Even though perception and approval of governmental organizations varied widely among the population, local physicians were the most trusted among CVH parents.

Surprisingly, mass advertising campaigns and large health organizations were cited by parents as having low efficacy in overcoming vaccine

hesitancy. This was in contrast to prior literature which has shown that use of mass media to influence populations to receive even “controversial” vaccines, such as influenza and HPV, is able to produce noteworthy changes in behavior.^{18,19} Therefore, this phenomenon may reflect the relationship between organizational presence on social media and public doubts regarding vaccine safety, which may be influenced by foreign disinformation campaigns that contribute to declining vaccination coverage.²⁰ This “foreign disinformation” hypothesis is further bolstered by a recent study suggesting a negative association between trust in social media and vaccine acceptance among white respondents.²¹

Interestingly, physicians have expressed frustration, vis-à-vis lack of preparedness in engaging conversations surrounding vaccine-hesitancy, often citing a lack of formal training.^{22,23} The effectiveness of different counseling strategies for vaccine-hesitant parents have been analyzed in the past.^{14,22} As progress continues to be made in finding the best evidence-based strategy for counseling, our findings showed that physicians already have the potential to be effective in conversation with their patients regardless of which method they choose. Thus, rather than investing in mass advertisements to promote vaccine uptake, health systems should consider investing time and resources in formal training. If physicians are given the formal training to feel confident in these difficult conversations with CVH parents, this will allow them to utilize one of their most effective tools: their already-established trust. Further, having formal training will provide tactful approaches of engaging conversation and mitigate erosion of patient confidence. Efforts through organizations such as Project Extension for Community Healthcare Outcomes (Project ECHO) have also shown promise as a potential avenue in acquiring this training.²⁴ Project ECHO is a collaborative model of medical education and care management that allows primary care physicians to manage complex patients vis-à-vis subspecialty teams that are reachable through telehealth programs.²⁵ This system allows experts within the fields of immunology or virology to educate clinicians and patients alike, aiming to improve vaccination rates and increase access to immunization services.

Another area of hesitation was a concern for long term side-effects in children and a desire for more long-term research. This was a similar hesitancy noted by parents when the HPV vaccine was released.²⁶ Fortunately, the CDC continues to report increases in HPV vaccine uptake as it becomes more established.²⁷ Therefore, although pediatric COVID-19 vaccine uptake was more nuanced, it was reassuring to know hesitancy can be overcome as more data were compiled. CVH parents additionally cited safety concerns for children because they were still in their developmental stages of life. For example, one participant was concerned because her non-communicative infant would not be able to let her know if a complication arose. These concerns reiterated similar findings from quantitative studies assessing reasons for COVID-19 vaccine-hesitancy.^{6,7,28,29} These findings showed that physicians and scientists must continue to be persistent in gathering research to dispel parental doubts regarding vaccines bearing effect on the development of children. Parental confidence was built on data, and reassuring data will drive uptake.

To our knowledge, this is the first qualitative study assessing

COVID-19 vaccine hesitancies among Midwestern parents. Data collection took place prior to any government mandates that required the general population to receive the vaccine. It was possible new hesitations formed among CVH parents due to vaccine mandates.

This study was limited by a small sample size composed primarily of white-identifying individuals. Therefore, generalizability to wider, more diverse populations is an important concern. However, our data exhibited significance in light of 2020 U.S. Census data.³⁰ The census found that many Midwestern states, such as Kansas and Iowa, consisted of primarily white-identifying populations, accounting for 75.6% and 85.9% of the total state populations, respectively. Moreover, published data suggested that in selected samples of white and black populations, each of whom had experienced a similar level of vaccine hesitancy at baseline, black populations may develop intention to receive vaccinations more readily than their white counterparts.³¹ There may be a specific cultural component that may be targeted for improved vaccine uptake among populations. Moving forward, the authors acknowledged the significance in acting to dismantle healthcare disparities across diverse populations. Further studies aimed at investigating multifaceted root causes of vaccine hesitancy should be conducted to develop inclusive and comprehensive strategies that can be generalized more widely to diverse populations beyond the Midwestern United States.

Selection bias was a possibility with utilization of a survey-based eligibility method; however, with the use of a prior validated survey for the process, our team was confident that the sample accurately represented our target population. Another limitation was the U.S. Food and Drug Administration fully approving the Pfizer® vaccine after the interviews were conducted. Perhaps some would have had different opinions after the full approval, and it is worth exploring.

CONCLUSIONS

This study highlighted further understanding into the decision-making process of a new cohort of parents with the onset of the COVID-19 pandemic and rollout of vaccines. With new variants of COVID-19 surfacing and hospital admissions increasing among younger populations,^{32,33} there was an urgency for parents' concerns to be addressed. Even though it is a novel vaccine, parents shared many hesitancies they have shown in the past with prior vaccines. This cohort was in a unique position because these parents generally have not been contrary to medical recommendations in the past. Our findings showed that parents could overcome COVID-19 vaccine hesitancies through learning about the vaccine from trustworthy sources, such as local physicians. Therefore, more investigation needs to be completed across more diverse populations to explore whether healthcare professionals would benefit from additional training in effectively engaging in conversations with CVH parents over COVID-19 vaccine hesitancies. This training could emphasize tactful and empathetic communication to avoid erosion of parental confidence, which must be an important consideration since frustration among CVH parents was prevalent. Conducting future studies that focus on this group of parents, especially among more heterogeneous populations, is crucial as vaccine policies and guidelines continue to evolve.

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