Decision-Making about COVID-19 Vaccines among Health Care Workers and Their Adolescent Children

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Abstract

Health care workers promote COVID-19 vaccination for adolescent patients, and as parents, may influence their own children to get vaccinated. We conducted virtual, semi-structured qualitative interviews with vaccinated health care workers and their adolescent children to explore their decision-making process for COVID-19 vaccination. In total, 21 health care workers (physicians, nurses, and medical staff) and their adolescent children ($N = 17$) participated in interviews. The following three themes described parent-adolescent decision-making for COVID-19 vaccination: (1) family anticipation and hesitation about COVID-19 vaccine approval; (2) parents' or adolescents' choice: the decision maker for adolescent COVID-19 vaccination; and (3) leveraging one's vaccination status to encourage others to get vaccinated. Nurses encouraged adolescent autonomy in decisions for COVID-19 vaccination while physicians viewed vaccination as the parent's decision. Health care workers and their adolescent children used role-modeling to motivate unvaccinated peers and may model their decision-making process for adolescent COVID-19 vaccination with their own children to support their patients' and parents' vaccine decisions.

Keywords

COVID-19 vaccination, vaccine behaviors, family decision-making, adolescent health, immunizations

The coronavirus disease 2019 (COVID-19) pandemic has negatively impacted adolescents aged 12-17 years. During the surge in the Omicron variant in winter 2021 and 2022, 5.9 per 100,000 adolescents in the United States (US) were hospitalized with COVID-19.[1] Although morbidity and mortality rates are lower in adolescents than in adults, COVID-19 was among the top 10 leading causes of death in adolescents in 2021.[2] Not only has the pandemic negatively impacted the physical health of adolescents, but it has also disrupted school and extracurricular activities. This change in peer interactions could have a detrimental effect on adolescents' psychosocial well-being.[3] Vaccination can significantly decrease the risk of severe COVID-19 disease, hospitalization, and death.[4] The Pfizer-BioNTech COVID-19 vaccine became eligible in the US for people ≥16 years old in December of 2020, and for 12-15-year-olds in May 2021.[5] As of January 2022, 61% of parents reported that their adolescent had received at least one dose of the vaccine.[6]

COVID-19 Vaccine Decision-Making among Adolescents

Although adolescent COVID-19 vaccination levels continue to rise, there are multiple reasons why adolescents remain unvaccinated and why adolescent COVID-19 vaccination lags behind adult COVID-19 vaccination. Some adolescents and parents view COVID-19 as milder in adolescents, leading to a perception of less urgency and less risk of contracting severe illness.[7] Parents also reported concern for

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their adolescents' safety regarding vaccine side effects, although adverse events are extremely rare.[4,7,8] In January 2022, 23% of parents reported that their adolescent would not get the COVID-19 vaccine, and another study found that parental decisions whether to vaccinate their child or not remained unchanged over a 10-month period.[6,7]

In the US, parents have a constitutionally protected right to provide for the well-being of adolescents under the age of 18 years (legal definition of a minor)[9] and to make health care decisions on the adolescent's behalf, except for when parental decisions risk harm to the adolescent.[10] However in some US states, adolescents can make medical decisions and self-consent for treatment as young as age 12 depending on the type of services being offered,[3,11] such as for sexually transmitted infections, substance use, and mental health.[12] Some state-level policies give adolescents the ability to receive vaccines without parent or legal guardian consent, which may increase vaccination levels.[13,14] However, self-consent laws vary by state and do not exist in all states. Currently, four states in the US allow for adolescent self-consent for human papillomavirus (HPV) vaccination[15] and have seen increases in vaccine initiation rates.[16]

The Role of Health Care Workers in Adolescent COVID-19 Vaccination

Health care workers play a key role in parental attitudes and acceptance of adolescent vaccines,[17] which may have implications for adolescent COVID-19 vaccination. Parents are more likely to obtain other adolescent vaccines for their children (e.g., tetanus, diphtheria, pertussis [Tdap], meningococcal, and HPV) when they receive a recommendation from their child's health care provider.[17,18] Health care workers—who are parents themselves, vaccinated, and had their children vaccinated—may serve as role models to parents and adolescents deciding whether to receive COVID-19 vaccination.[19] Other studies noted high COVID-19 vaccine acceptance among health care workers and found that they were more likely to recommend vaccinations to family, friends, and patients.[20,21] Health care workers may also initiate and moderate discussions about vaccine decision-making with adolescents and their parents, especially in cases of parent-adolescent disagreement about a vaccination decision. Nurses are accustomed to engaging in communication and education about vaccines with parents and adolescents, which can allow nurses to identify parents' vaccine concerns and address their concerns about vaccine decision-making.[22]

Although health care workers are likely to encounter disagreement or concerns within their families during parent-adolescent vaccine decision-making,[23] little is known about how health care worker parents view COVID-19 vaccine decision-making and how those who are parents themselves make decisions about COVID-19 vaccination for their own adolescents. There is extensive literature on COVID-19 vaccine hesitancy and declination among parents[24,25] but there are few studies about positive drivers of COVID-19 vaccination. Positive deviance is an approach to health behavior science that explores individuals who demonstrate exceptional performance to promote positive health behaviors or health outcomes.[26] Applying a positive deviance framework to understanding parent-adolescent vaccine decision-making may illuminate interventions for health care providers to promote adolescent COVID-vaccination.

Purpose

The purpose of this study was to explore how vaccinated health care workers approach decision-making for COVID-19 vaccination with their adolescent children. We applied a positive deviance framework to understand how health care worker parents, who are overwhelmingly in favor of vaccines, view parent-adolescent vaccine decision-making and inform whether positive vaccine education should be targeted to parents, adolescents, or both in clinical settings.

Methods

Design

We conducted a qualitative descriptive study using individual, semi-structured interviews with health care workers (physicians, nurses, and medical staff) and their adolescent children from November 2021 to December 2021. Our interview questions were informed by the Determinants of Vaccine Hesitancy Matrix, which delineates factors influencing the decision to accept, delay, or reject a vaccine based on contextual, individual, and group factors.[27] This framework borrows from the "3 Cs" model for vaccine acceptance by factoring confidence, complacency, and convenience into the vaccine model.[28] During this time in the pandemic, the US was overcoming the summer 2021 surge in COVID-19 cases from the Delta variant and taking precautions to prevent another surge in cases from the emerging Omicron variant in winter 2021.[29] The study was approved by the Institutional Review Board at Kaiser Permanente Southern California (KPSC) (#12746).

Sample and Setting

The sample comprised of physicians, nurses, and medical staff who were practicing at KPSC and their adolescent children, ages 12 to 17 years. KPSC is an integrated health system with approximately 4.8 million members from seven Southern California counties. KPSC operates 14 hospitals and over 200 clinics.[30] Participants were purposively recruited for interviews through a survey about COVID-19 vaccination in health care worker families.[31] Survey respondents had the option to designate interest in a follow-up

qualitative interview if respondents indicated in the survey that (a) they were themselves vaccinated, and (b) they had an adolescent child who was vaccinated. Using a positive deviance approach, we selected vaccinated health care workers and adolescents because they could provide insight on positive drivers for COVID-19 vaccination.[32] Participants were deemed vaccinated if they received at least one dose of COVID-19 vaccine.

A total of 78 health care workers indicated interest in an interview. These individuals were contacted by email or phone to schedule parent and adolescent interviews. In total, 13 did not respond to outreach attempts or declined interviews and 26 parents declined to allow their adolescent to participate in the study. In the end, a total of 38 interviews were completed (21 parents and 17 adolescents). All participants gave verbal informed consent; parents consented for their child's research participation and adolescents gave assent for participation in research. Adolescent participants were offered a $30 gift card and parents received a gift (valuing up to $50) as a small incentive for study participation.

Interview Guide and Procedures

Trained members of the investigative team (MM, public health; KC, nursing and public health) conducted semi-structured, virtual interviews with each study participant. Both interviewers were female and had prior experience with qualitative research, including conducting interviews with children. All interviews were individual and confidential; parents and adolescents were scheduled separately for interviews and asked questions individually, not as a dyad. The interviews lasted approximately 20 to 30 minutes and took place on Microsoft Teams, a secure phone/video conference platform.[33] Participants were asked questions about family COVID-19 experiences, perceptions, and beliefs about COVID-19 vaccines, their COVID-19 decision-making process, and recommendations for talking to other adolescents/parents about the COVID-19 vaccine who might be hesitant. We also asked about age and self-identified gender. All interviews were recorded and transcribed. We continued interviews until we determined that data saturation was reached; that is, no new codes or concepts were arising from interviews.[34]

Data Analysis

Thematic analysis was used to organize interview text into themes and subthemes.[35,36] We first reviewed interview transcripts for data familiarization. Then, transcripts were coded inductively, using process coding to center the actions, perspectives, and beliefs of participants.[35,36] One coder performed coding and codes were reviewed with all study team members who had conducted interviews to ensure that they reflected interview contents. Transcripts of parents and adolescents were coded separately. Following initial coding, codes were then organized into themes and subthemes of similar findings. We used an iterative, inductive process to group similar codes into thematic clusters. For this study, there were three overall themes related to parent-adolescent vaccine decision-making.

The initial coding was performed by one author with a PhD and background in qualitative research methods (KC); then reviewed and validated with the rest of the authorship team in two coding meetings. Based on the code review and validation, codes were added and modified until all authors reached consensus that codes adequately represented the data. The same process of review/validation was repeated to derive themes and subthemes of the findings.

Table 1. Parent and Adolescent Participant Characteristics.

Parent Characteristics ($N = 21$)	*n* (%)
Health care provider type	
Physician	10 (47.6)
Nurse	9 (42.9)
APP	1 (4.8)
Radiologic technologist	1 (4.8)
Gender	
Male	1 (4.8)
Female	20 (95.2)
Adolescent characteristics ($N = 17$)	
Gender	
Male	10 (58.8)
Female	7 (41.2)

Abbreviations: APP, advanced practice practitioner (e.g., physician assistant, nurse practitioner).

Results

Sample

A total of 38 interviews were conducted. In total, 21 of these interviews were with parents, including one father and 20 mothers and 10 physicians, 9 nurses, 1 advanced practice practitioner, and 1 clinical support staff member. Adolescents ranged in age from 12 to 17 years and included 10 boys and 7 girls (Table 1). The following three themes described parent-adolescent decision-making for adolescent COVID-19 vaccination: (1) Family anticipation and hesitation about the approval of COVID-19 vaccines for adolescents; (2) parents' choice or adolescents' choice: The decision maker for adolescent COVID-19 vaccination; and (3) leveraging one's own vaccination status to encourage others to get vaccinated. Respective subthemes are presented with each relevant theme in Table 2.

Table 2. Themes and Subthemes.

Theme 1: Family Anticipation and Hesitation about the Approval of COVID-19 Vaccines for Adolescents	
Subtheme	Relevant Quotes
Enthusiasm to return to a sense of "normalcy"	"I hate needles and getting shots, but I was really excited to go get my vaccine because I knew it meant we were one step closer to getting back to normal."—*Adolescent female of a physician parent*
	"[He sees the vaccine as a] ticket to freedom."—*Nurse parent of adolescent male*
COVID-19 vaccine safety concerns for adolescents	"I think everyone is a little hesitant with kids just since they're young and developing and not knowing the long-term effects."—*Physician parent*
Theme 2: Parents' choice or adolescents' choice: The decision maker for adolescent COVID-19 vaccination	
Subtheme	Relevant quotes
The parent decides	"Vaccines in our family are always a parental decision."—*Physician parent*
	"I didn't want to take it, but then I changed my mind cause so many people were taking it. Even if I didn't want to get it, they would still make me get it."—*Adolescent male of a physician parent*
The adolescent decides	"I wanted to educate him and have it be his decision of what goes in his body, ultimately, and feel good about that decision."—*Nurse parent*
	"I would probably put it at 100% my own decision, because I never really felt pressured by my parents that I absolutely had to."—*Adolescent female of nurse parent*
Sharing the decision	"I had his 100% buy in but there was never any 'Hey honey, do you want this?' It was, 'We're going to do this.'"—*Physician parent*
	"It was like 50% my mom's decision and 50% my decision, because my mom wants to know how I feel about it too, and I wanted it and she wanted me to get it."—*Adolescent male of nurse parent*
Theme 3: Leveraging one's own vaccination status to encourage others to get vaccinated	
Subtheme	Relevant quotes
Combining storytelling and scientific evidence to address vaccine concerns	"Trust the advice of medical professionals because they know more than you do."—*Adolescent female of nurse parent*
	"Sometimes I tell my patients, 'Hey, you know what I? I believe in this myself. This is something that I've done, my family has done. It's not something where I'm telling you to go do and I don't believe that it's safe."—*Physician parent*

Family Anticipation and Hesitation about COVID-19 Vaccine Approval for Adolescents

Families described both excited and hesitant anticipation as they awaited eventual adolescent vaccine approval. Because all parents were vaccinated relatively early as health care workers, the wait for adolescent vaccine approval was especially pronounced.

Enthusiasm to return to a sense of "normalcy." Parents and adolescents were enthused for the COVID-19 vaccine because receiving vaccination meant adolescents were protected from COVID-19 and brought forth feelings that life was taking a step toward "going back to normal." Participants also felt that they were being part of something important to society. An adolescent male whose mother was a nurse stated, "I felt excited because I was gonna be one of the first 12-year-olds to get the vaccine and, you're part of something like brand new and important." Parents, too, expressed enthusiasm for their adolescents to be vaccinated. A physician said, "We've been talking to her about it all along and we were as a family really looking forward to when it became approved for her age group." Another nurse described "counting down the days" to adolescent vaccine approval so that their family could travel.

The actual receipt of the COVID-19 vaccine was seen as a "joyous occasion," in the words of one physician, and was described by almost all parents as a "relief." Parents described their adolescents' pride in vaccination and their own pride, relief, and greater sense of protection as a result of having their adolescent vaccinated. A physician father stated, "Knowing we're vaccinated, we do feel that sense of protection that we can be out in the community and feel comfortable without significant risk of getting COVID." These comments reflected vaccine confidence on the part of parents and adolescents.

COVID-19 vaccine safety concerns for adolescents. Although all individuals who participated in interviews were vaccinated, some parents described initial hesitation about the COVID-19 vaccine for their adolescent. Parent concerns were primarily related to issues around gender and adolescent development. Multiple parents of male adolescents were concerned about the small risk for vaccine-associated

myocarditis. A female physician noted, "With the risk of myocarditis and boys, especially in that age, I was a little bit concerned. My younger son, he got his first shot but I'm delaying his second dose until school break just so I can watch him more." A nurse expressed developmental concerns for her daughter, comparing her perspective on vaccination for her adolescent daughter to her adolescent son. For her 17-year-old son, she stated, "He'll be fine. . .it felt like he's closer to being an adult than not." However, she was more hesitant to get her 13-year-old daughter vaccinated, wondering, "She's in puberty, is this anyway gonna affect her development in any way, shape, or form?" One nurse described initially planning not to get her daughter vaccinated because of concerns about long-term developmental effects, but then described changing her mind after seeing widespread adolescent vaccination and considering the severity of the pandemic:

> All my daughter's friends and everybody on our street got vaccinated right away. I was like, "What am I doing?" I was an idiot. Like I'm here, the one complaining about everything and I'm in the [hospital]. And yet I'm the only one that's not going to get their kid actually vaccinated? So I made the appointment.

Adolescents themselves did not share these concerns; the only hesitation expressed by multiple adolescents was a dislike of needles and nervousness that the injection might be painful.

Parents' or Adolescents' Choice: The Decision Maker for Adolescent COVID-19 Vaccination

Families' decision-making for adolescent vaccination ranged from parent-driven decisions, to adolescent-driven decisions, to shared decision-making among parents and adolescents. Although there was little to no conflict among parents and adolescents in the decision-making process for COVID-19 vaccination, determining who made the decisions for adolescent COVID-19 vaccination varied among physicians and nurse parents.

The parent decides. In general, physicians we interviewed viewed vaccination as a parent decision, describing their adolescent's COVID-19 vaccination as "100% our [health care worker parents'] decision." Although these parents saw the decision as their own, they also noted that their adolescents were agreeable to these decisions even when adolescents had concerns about receiving the COVID-19 vaccine (e.g., pain), reflecting complacency with decisions made by parents. Parents also expressed concerns in their adolescent child's competency to make the right decision for vaccination. One physician stated, "The question is, when does the kid have the intellectual wherewithal to make an informed decision? I mean, there are a lot of adults who don't have the wherewithal to make an informed decision." Adolescent children of physician parents also saw the decision as being made by their parents. One adolescent male expressed, "My dad was probably gonna make me do it. He talked me through it and I'd like agreed with him. They were gonna make me do it anyway."

The adolescent decides. The nurses we interviewed wanted their adolescents to have a sense of autonomy over their health and make their own decision about the COVID-19 vaccine, seeing the decision to get vaccinated as their adolescent's decision. One nurse stated,

> They were the ones that were pushing for [the vaccine] and really asking for it. . .I don't want to force people to do what they don't want to do. I want you to come to it on your own because it's important that you have that agency.

Another nurse reflected on vaccines in general, stating,

> As a family, we've always been one of those where it's your body, it's your choice. So even when [it] came to other vaccines like HPV. . .we were always like, at this point you're old enough to be part of the conversation on how and when you're going to get these vaccines.

The daughter of a nurse also said, "I would probably put it at 100% my own decision, because I never really felt pressured by my parents that I absolutely had to." This view was not expressed by any physicians or children of physicians in the sample.

Sharing the decision. Some parents and adolescents saw COVID-19 vaccination as a shared decision. This perception was more often endorsed by adolescents, while parents felt that the "shared" decision meant that their adolescents wanted the vaccine, but ultimately saw the decision as their own, not their adolescent children. A nurse who saw the decision as shared said, "They 100% wanted it and I wanted it 100%. So pretty much we were all on the same page. There was never like, 'Oh you don't want it, but I'm deciding that you are getting it.'" An adolescent male whose mother was a nurse said, "It was like 50% my mom's decision and 50% my decision, because my mom wants to know how I feel about it too, and I wanted it and she wanted me to get it."

Leveraging One's Vaccination Status to Encourage Others to Get Vaccinated

Parents and adolescents leveraged their own vaccination status to talk and motivate patients, other parents, and peers about the importance of receiving COVID-19 vaccination.

Combining storytelling and scientific evidence to address vaccine concerns. Parents and adolescents shared their "personal story" about their vaccine experience with others. Adolescents often described their COVID-19 vaccine experience as being "just like another flu shot," and prepared peers to

anticipate expected side effects after vaccination (e.g., pain). Adolescents also expressed the benefits of getting vaccinated and emphasized the importance of relying on accurate information. An adolescent female whose mother was a physician reflected on a friend who was afraid to get the vaccine because of misinformation, stating, "I don't listen to any rumors [about the COVID-19 vaccine]. I come from almost an entire family of doctors, so I know that it's not true." Although most adolescents already had experiences of talking to their friends about the vaccine, one adolescent male whose mother was a physician said, "I wouldn't try to force anyone to get the vaccine. I know it's safe but don't want anyone to be uncomfortable about doing something they don't want."

Among parents, topics of discussion included sharing their family vaccination status, relying on scientific evidence, and discussing the risk/benefit tradeoff of COVID-19 vaccines for adolescents when interacting with both patients and other parents. A physician shared, "I tell them, 'I have several patients who got very sick, hospitalized and some of them who died of COVID. I haven't had a single patient who got very sick or even hospitalized because of the vaccine.'" Other physicians and nurses described "talk[ing] about the science" and "trying to help them [patients] understand what the science says about the safety of vaccinations or the benefits of getting it." A physician father stated,

> I actually have a very frank discussion with them about the pros and the cons, and there are not that many cons at the moment. When you tell them how they're gonna miss like half of school or they're in competitive sports, that gets across to them much faster.

Discussion

This study explored health care worker parents' and their adolescent children's perceptions about COVID-19 vaccines and decision-making for adolescent COVID-19 vaccination as this group may reflect positive deviance around early vaccination and allow for identification of positive drivers of vaccination. To the best of our knowledge, this is one of the first studies to examine decision-making for adolescent COVID-19 vaccination among health care workers for their own children. We found that parents initially expressed hesitation about vaccinating their adolescent children, but both parents and adolescents had sufficient confidence in COVID-19 vaccines for adolescents to ultimately choose vaccination. Decision-making for adolescent COVID-19 vaccination ranged from parent-driven and adolescent-driven to sharing the decision for vaccination and varied among physician and nurse parents. Nonetheless once vaccinated, both parents and adolescents utilized their vaccination status to encourage others to get vaccinated. Our study findings elicit the dynamics of the decision-making process for adolescent COVID-19 vaccination among health care worker parents and their adolescent children. Study findings may have implications for developing interventions around family decision-making for adolescent vaccination and fostering adolescents to have autonomy in making decisions for their own health.

The anticipation for COVID-19 vaccines for adolescents brought forth enthusiasm to return to "normal." However, despite being vaccinated health care workers, parents in this study expressed concerns about COVID-19 vaccine safety and long-term effects of vaccination in adolescents. Concerns about vaccine side effects and vaccine safety for children have been reported by parents in other studies and have decreased parents' willingness to have their child vaccinated.[24,37] However, parents who had confidence in vaccines and routinely vaccinated their children had increased intentions to vaccinate their children against COVID-19.[38] In our study, the perceived benefits of vaccination and anticipation for COVID-19 vaccines for adolescents may have outweighed parents' concerns about vaccine side effects and safety.

Additionally, parents in our study were vaccinated health care workers and may have higher confidence in COVID-19 vaccines for adolescents than the general population, allowing for identification of positive drivers of vaccine acceptance from "positive deviants" in regards to vaccination.[26,32] Health care workers play a major role in motivating parents for childhood vaccination, including tailoring vaccine messaging for specific populations, providing patient education, dispelling misinformation, and delivering vaccines.[19] Our study's focus on vaccinated health care workers provided unique insight into how parents, who may be the strongest proponents of vaccines, navigate vaccine decisions for their own children.

Adolescent involvement in the decision-making for COVID-19 vaccination varied among physicians and nurses. Physician participants explicitly reported making the decision for vaccination for their adolescents, while nurses participants emphasized the importance of promoting adolescent autonomy and shared decision-making for vaccination. One study reported adolescent participation in the decision-making process for other vaccines, such as HPV, varied from autonomous decisions by adolescents to parents believing adolescents are not competent enough to make health-related decisions.[39] It is often debated whether adolescents are competent to self-consent for medical treatment since during adolescence, major developmental changes occur such as the ability to process benefits and risks, self-regulation of impulse control, and consideration for peers' input on decision-making.[40] However, several studies have shown that adolescents as young as age 12 are in fact willing and competent to make individual decisions for their health when environmental factors such as peer pressure are minimized and they receive support from parents to facilitate decision-making.[40,41] Thus, it is essential that adolescents have parental support for vaccine decisions.[11,40]

Another study found that parents who considered their adolescent child's desire to receive COVID-19 vaccination

in the decision-making process for vaccination were more likely to have their adolescents vaccinated.[42] In our study, adolescents appeared to value their parents making the decision for vaccination for them, while others valued their parents considering their input on COVID-19 vaccination. Although our study participants reported no conflict in the decisions for COVID-19 vaccination, receiving parental support and reassurance about the importance of vaccination made adolescents more willing to get vaccinated for other adolescent vaccines.[39] This finding underscores the importance of ensuring that adolescents are included and informed about decisions that affect their health. Future research is needed to explore whether discordance plays a role in adolescent COVID-19 vaccination among health care worker parents and their adolescents. Additional research is also needed to examine differences in intentions and decision-making for adolescent COVID-19 vaccination among unvaccinated health care workers or parents who chose to not vaccinate their children against COVID-19. Future interventions are also needed to promote shared decision-making for adolescent health among adolescents and their parents. Lastly, further training for health care providers and clinic staff is also needed to improve vaccine communication and other adolescent health-related topics with adolescents and parents during clinic visits where decisions are being made.

Health care worker parents used storytelling about their personal vaccine experiences and caring for patients with COVID-19 to address parents' vaccine concerns and motivate others to get vaccinated. Other studies have found that provider recommendation can significantly increase uptake for other adolescent vaccines.[43] Discussing personal experiences about the decision-making for COVID-19 vaccination among their own families may foster a more approachable way for health care providers and clinic staff to discuss COVID-19 vaccination with their patients. Adolescents also engaged in peer communication using storytelling about their vaccine experiences among their peers to motivate other adolescents to get vaccinated. Discussion about vaccine side effects, such as anticipated pain after vaccination, has been reported in another study with other adolescent vaccines.[39] Peer discussions about COVID-19 vaccination should be leveraged for promoting COVID-19 information among adolescents. Although social media has been a source of COVID-19 misinformation,[44] popular platforms such as TikTok and YouTube could be used as an opportunity to combat misinformation and reach adolescents with accurate vaccine information. Health care professionals may use these platforms to creatively provide age-appropriate and personalized COVID-19 information to adolescents and younger children.

This study has several limitations. First, participants were recruited from one health care system in one geographic location. Therefore, generalizability of the study findings is limited to the participants in this study and do not reflect the perceptions and decision-making for COVID-19 vaccination among families and adolescents in other locations. Second, our sample consisted of health care workers who were already vaccinated, had medical knowledge, and had clinical expertise with COVID-19 vaccines. This limits our ability to understand decision-making factors for families with lower levels of education and nonmedical backgrounds, and to identify differences in decision-making for adolescent COVID-19 vaccination among unvaccinated health care worker parents and adolescents. Similarly, cultural factors that contribute to health care worker parents' decisions could not be ascertained because racial and ethnic data were not collected from the participants, thereby limiting the generalizability of our study findings. Third, health care worker parents may have also influenced adolescents' perceptions and decisions for COVID-19 vaccination. Lastly, study interviews were conducted as information surrounding COVID-19 (e.g., emerging variants) and the vaccines were rapidly changing and may have influenced participants' beliefs, attitudes, and anticipation for COVID-19 vaccine approval for adolescents. Despite these limitations, our study findings provide unique insight into decision-making for adolescent COVID-19 vaccination among health care workers and their children.

Conclusion

Among vaccinated health care workers and their adolescent children, decision-making about COVID-19 vaccines occurred on a spectrum from parent-driven to adolescent-driven decisions to a decision shared among parents and adolescents. Nurse parents emphasized the importance of adolescent autonomy in making decisions for adolescent health, while physician parents viewed vaccination decisions as a parent decision in which case their children had a more complacent, passive role in receiving a vaccine. Variations in the decision-making process among parents and adolescents may be encountered during pediatric clinic visits. Our study findings suggest that pediatric clinicians should be prepared to understand and address these differences during conversations with patients about vaccination and assess barriers to vaccine confidence. Health care worker parents and their adolescent children used role-modeling to motivate vaccination among unvaccinated peers. Our study shows that clinicians may leverage their own vaccination status and decision-making process to model an approach to overcoming COVID-19 vaccine hesitancy or other vaccine concerns.

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