

# Parents' views on pediatric COVID-19 vaccine in Saudi Arabia

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## ABSTRACT

**Background:** To end the COVID-19 pandemic, we need to reach herd immunity. A successful pediatric COVID-19 immunization program is the only way to achieve this goal. The objective of this study was to determine the views of parents in Saudi Arabia on the COVID-19 vaccine in children. **Materials and Methods:** This cross-sectional study took place within the Family Medicine Pediatric clinics at the King Faisal Specialist Hospital and Research Center (KFSH and RC). All parents of patients of Family Medicine Pediatric Clinics at KFSH and RC, Riyadh, were invited to participate in this study between January 2022 and June 2022. A culturally sensitive and specially designed questionnaire was administered using an interview-based model. **Results:** Safety concerns were the primary reason for vaccine hesitancy among parents, with 29.7% of parents expressing concerns about side effects and 25.1% not knowing where to get reliable information about vaccines. Negative information and lack of perceived need were also important factors, with 17.1% and 18.3% of parents citing these reasons, respectively. Poor knowledge about vaccines was a significant predictor of parental vaccine hesitancy. Mothers had more concerns about the efficacy and safety of vaccines than fathers. **Conclusion:** Our study demonstrated a negative attitude toward the pediatric COVID-19 vaccine among parents in Saudi Arabia. A higher level of awareness about the vaccine was significantly associated with planning on having the vaccine. There is a need for effective awareness programs for better pediatric COVID-19 vaccine-related education to increase the acceptance of the vaccine among parents in Saudi Arabia.

**Keywords:** COVID-19, parent, Saudi Arabia, vaccine, view

## Introduction

The COVID-19 pandemic caused by SARS-CoV-2 has left an unprecedented impact on public health, economies, and everyday life worldwide. According to the World Health Organization (WHO) data, as of September 2023, globally there

have been approximately 7 million deaths due to confirmed COVID-19 infection.<sup>[1]</sup> The incidence of severe diseases in children is approximately 5%.<sup>[2]</sup> Overall, over 17,400 deaths have occurred in children and adolescents under 20 years of age.<sup>[2]</sup> The indirect impacts on children are enormous, ranging from loss of caregivers to social isolation, onset or worsening of mental illnesses, and educational setbacks.<sup>[3]</sup>

Vaccines are the most powerful tools available to combat the spread of the disease.<sup>[4]</sup> In Saudi Arabia, four COVID-19 vaccines have been approved for use: AstraZeneca Oxford, Moderna, Pfizer, and Johnson and Johnson.<sup>[5]</sup> COVID-19 vaccination in children is instrumental in limiting the spread of the disease

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because children are important reservoirs and transmitters of the virus. Vaccinating children is essential to achieve the desired level of herd immunity.<sup>[5]</sup>

Despite documented vaccine safety and efficacy to reduce mortality and serious disease, there is ongoing vaccine hesitancy among the public around the globe. All the vaccination efforts can be thwarted and negatively impacted by vaccine hesitancy. The WHO has defined vaccine hesitancy as a delay in the acceptance or refusal of vaccines despite the availability of vaccine services.<sup>[6]</sup> Based on one multinational study, the vaccine hesitancy rate among parents to vaccinate their children was noted to be 64.5%.<sup>[7]</sup>

Our study was conducted in a hospital setting within the Department of Family Medicine. It includes parents with varied educational backgrounds and diverse geographic regions and would be a representative national sample of the population in Saudi Arabia. It is unique in that this study was conducted after full authorization was granted by the FDA for the use of COVID-19 vaccines in children.

The primary objective of this study was to determine the views of parents in Saudi Arabia on COVID-19 vaccines in children and compare them to routine recommended childhood vaccines. The secondary objective was to identify the reasons for refusal or hesitancy among the parents in Saudi Arabia. Understanding parental views on pediatric COVID-19 vaccinations will provide valuable insight to healthcare providers and policymakers to develop targeted interventions in the future.

## Materials and Methods

All parents who came to the Family Medicine Department, King Faisal Specialist Hospital and Research Center (KFSH and RC) were invited to participate in this study from January 2022 to June 2022, according to the eligibility criteria. The criterion for inclusion was being parents of children who can receive the COVID-19 vaccine. The exclusion criteria were being parents of children who cannot receive the COVID-19 vaccine for medical reasons. A totally anonymous, culturally sensitive, and specially designed questionnaire was administered using an interview-based model. The questionnaire included questions that will assess parents' attitude about immunization in general, awareness of COVID-19 infection, acceptance, beliefs, and attitude toward the COVID-19 vaccine. The questionnaire also included the sociodemographic data and the reasons for rejection or acceptance of the pediatric COVID-19 vaccine.

This study was approved by the Research Ethics Committee of KFSH and RC (RAC# 2211157). A study-specific verbal informed consent was obtained from each participant before enrollment in the study. The institutional review board (IRB) exempted this study from written consent for less than minimal risk. The participants' consent was documented according to the IRB guidelines.

The questionnaire was distributed by the treating physicians in the Family Medicine Pediatric Clinics of KFSH and RC, Riyadh, Saudi Arabia. The participants answered coded questions. Anonymity and confidentiality were maintained. The study included 305 participants of varying ages and levels of education.

## Statistical analysis

The sample size was estimated to be 300 by using a 95% confidence interval (CI) and a 5% margin of error. All data were analyzed using the IBM SPSS Statistics for Windows, Version 23.0. Descriptive statistics for the continuous variables were reported as mean  $\pm$  standard deviation, while categorical variables were summarized in frequency and percentage.

The level of significance for all variables was set at 0.05 with 95% CI. Participants were divided into groups based on different demographic variables (age, gender, nationality, employee status, education, and social status). The Chi-square and Fisher's exact test were performed to examine the demographic differences between the participants who accepted the pediatric COVID-19 vaccine and those who had hesitancy about the pediatric COVID-19 vaccine.

## Results

A total of 305 people responded to the survey. Most respondents were female ( $n = 194$ , 63.6%), married ( $n = 290$ , 95.1%), mother ( $n = 194$ , 63.6%), and had bachelor's degree ( $n = 192$ , 64%). Most respondents were between the ages of 31 and 40 years ( $n = 163$ , 53.4%). More than half of respondents (178 of 305, 58.5%) had a total annual household income between US\$16,000 and US\$64,000. In Table 1, we show the characteristics of our survey participants. Furthermore, 86.6% were Saudi, and 13.4% were non-Saudi.

Safety concerns emerged as the primary reason for hesitancy, with nearly 30% of hesitant parents worried about side effects and overall vaccine safety. This highlights a potential knowledge gap. Interestingly, most parents (70% according to a separate finding) trust their doctors, suggesting that open communication with healthcare providers could be key to addressing these safety concerns. Another critical finding is the struggle for reliable information. A quarter of hesitant parents felt lost, unsure where to find trustworthy sources. This underscores the need for clear accessible communication from health authorities to combat misinformation and build trust. Interestingly, nearly 18% of hesitant parents questioned the necessity of vaccination for their children. This could be due to a lack of understanding about COVID-19's severity in children or the benefit of herd immunity. Educational campaigns could play a vital role in addressing the concern. The impact of misinformation is undeniable. Nearly 17% of hesitant parents based their doubts on negative information about the vaccine. This emphasizes the importance of proactively countering misleading narratives-backed data. There is a 15% hesitancy related to needle phobia. Table 2 demonstrates the reasons for parents' hesitancy toward COVID-19 vaccines.

**Table 1: Demographic information**

Variable	Frequency	Percentage
Relationship to child:		
Mother	194	63.6%
Father	110	36.1%
Other	1	0.3%
Age (years):		
20–30	50	16.4%
31–40	163	53.4%
41–50	84	27.5%
>50	8	2.6%
Gender:		
Male	111	36.4%
Female	194	63.6%
Nationality:		
Saudi	264	86.6%
Non-Saudi	41	13.4%
Level of Education:		
Primary Education	3	1.0%
Intermediate Education	5	1.7%
Secondary Education	34	11.3%
Higher Education (Bachelor)	192	64.0%
Postgraduate Education (Master-Doctoral)	66	22.0%
Social status:		
Married	290	95.1%
Divorced	11	3.6%
Widowed	4	1.3%
Household income per month:		
Less than 5,000 riyals	33	11.6%
5,000–10,000 riyals	86	30.2%
15,000–20,000 riyals	92	32.3%
More than 20,000 riyals	74	26.0%

**Table 2: Reasons for parents' hesitancy toward COVID-19 vaccines**

Reason of hesitancy	Frequency	Percentage
I don't think it is needed	32	18.3%
I don't know where to get vaccination	9	5.1%
I don't know where to get reliable information	44	25.1%
I heard or read negative media	30	17.1%
I do not think the vaccine is safe/concerns about side effects	52	29.7%
I don't think the vaccine is effective	21	12.0%
Fear of needle	27	15.4%

Many parents lack the key knowledge about vaccines. For instance, 27% believe children receive more vaccinations than necessary, and 33% are unsure. In addition, 30% favor natural immunity through illness over vaccination, with 29% undecided. Similarly, 40% prefer a reduced number of vaccines administered at once, and another 40% are unsure, as shown in Figure 1. However, there is a positive news. Figure 2 shows that 70% of parents trust vaccine information from their healthcare providers. Furthermore, 85% agree they can openly discuss vaccination concerns with their child doctors.

An association is found between the gender of parents and concerns about the efficacy and safety of vaccines. Mothers have more concerns than fathers about both the efficacy and safety of the vaccine. When it comes to efficacy, 44.5% of mothers are concerned versus 28.5% of fathers. When it comes to safety, 66% of mothers are concerned versus 48.7% of fathers. Fathers are more concerned about the number of shots that children are receiving in each immunization visit, with 40.7% of fathers versus 38.3% of mothers.

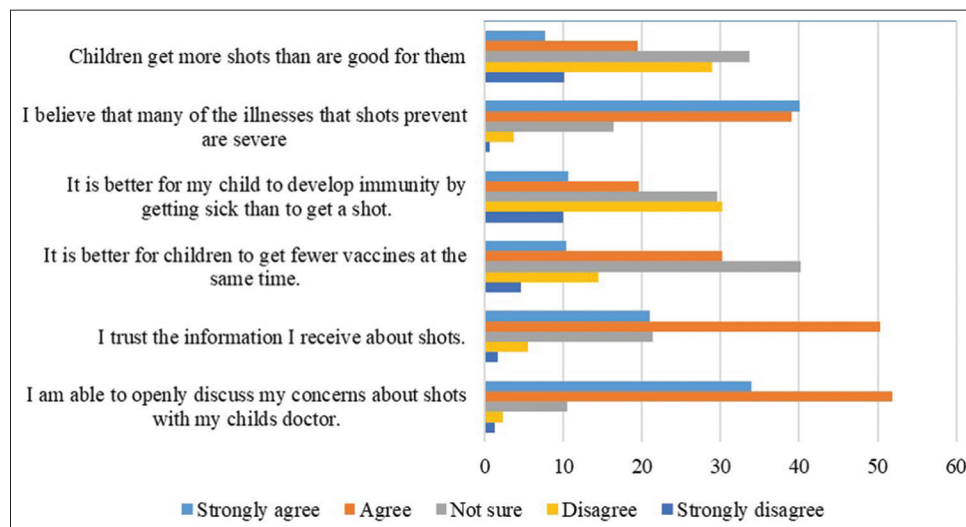
## Discussion

The COVID-19 pandemic started in 2019. It affected the whole world, causing a lot of mortality and morbidity.<sup>[8]</sup> WHO has made many efforts to fight the disease. The most successful intervention has been the development of the COVID-19 vaccine for both adult and pediatric patients.<sup>[9]</sup> The FDA has approved COVID-19 vaccines for children as young as 6 months of age, and Saudi Arabia has been administering the vaccine to children since its approval.<sup>[5,6]</sup> As expected with every new vaccine, vaccine hesitancy has been an issue in the Kingdom, especially in the pediatric age group.<sup>[7]</sup>

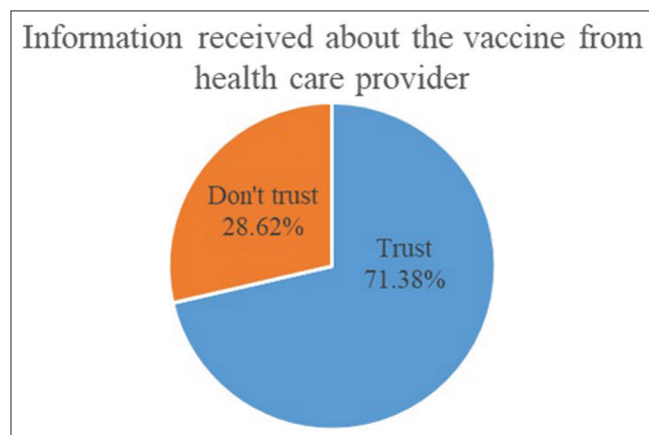
The pandemic has had a great impact on children in the kingdom. The Saudi Ministry of Health made a huge effort to vaccinate most of the population to stop the spread of the disease, as the rest of the world, convincing parents to vaccinate their children was not easy.<sup>[6]</sup> In this study, we explored the factors that affected the parents' decision when it comes to deciding whether to vaccinate their children or not.

The COVID-19 vaccine is approved for children aged 6 months through 12 years old. Common side effects include pain, swelling, and redness at the injection site. Less common side effects can include fatigue, muscle aches, and swollen lymph nodes.<sup>[10]</sup> Benefits of vaccines include preventing serious illness and offering added protection. It is the safest way to avoid hospitalization and deaths.<sup>[11]</sup> As of April 2023, more than 68 million doses have been administered in Saudi Arabia. Approximately 74% of the population has received at least one dose of the vaccine. Almost 70% of adults have been vaccinated, which is a higher percentage than vaccinated children are.<sup>[1]</sup> Reasons for vaccine hesitancy among individuals include safety and efficacy concerns. Self-protection and government mandates are the main reasons for taking the vaccine in the Kingdom during the pandemic.<sup>[6]</sup>

International studies have shown a high level of hesitancy toward the COVID-19 vaccine. A study conducted in Kuwait found that the hesitancy rate was 55%.<sup>[12]</sup> Similarly, a study conducted in the United States identified safety concerns as one of the main reasons for hesitancy.<sup>[13]</sup> Another study from the United Kingdom also found similar results.<sup>[14,15]</sup> Both studies revealed that hesitant parents were more likely to be younger and from lower socioeconomic class groups.<sup>[13,15]</sup>



**Figure 1:** Parental knowledge and beliefs towards vaccination practices



**Figure 2:** Information received about the vaccine from health care provider

To increase vaccine uptake, it is important to consider strategies that can be used to achieve this. Some proven successful strategies include using a reminder system, offering incentives such as cash or vouchers, providing information about the benefits of the vaccine, using social media to promote the vaccine, and delivering vaccines to people's homes.<sup>[16]</sup>

This study explored the factors influencing parental decisions regarding COVID-19 vaccination for their children in Saudi Arabia. Despite the well-established safety and efficacy of the vaccine, hesitancy remains a challenge, hindering optimal vaccination coverage. A key finding is the disconnect between parental trust in healthcare providers and their knowledge about vaccines. While most parents (70%) trust their doctors, concerns about safety and lack of reliable information emerge as significant barriers to vaccination.<sup>[6,7]</sup> This highlights the need for targeted interventions to address these specific anxieties and ensure parents access to credible sources of information. Parents often cite safety concerns as a primary reason for hesitancy.<sup>[17]</sup> Healthcare providers can play a vital role by providing science-based information about the vaccines' rigorous

testing and safety profile. In addition, combating misinformation circulating on social media is essential. Collaborating with trusted community figures and leveraging social media platforms to disseminate accurate information can be highly effective. The study also identifies necessity for vaccination particularly among parents whose children experienced mild COVID-19 cases.<sup>[17]</sup> Educational campaigns emphasizing the benefits of herd immunity and the potential for serious complications, even in mild cases, can be instrumental in overcoming this.

A positive takeaway is the strong positive impact of information from the Saudi Ministry of Health on vaccine acceptance.<sup>[6]</sup> This underscores the effectiveness of local government efforts in promoting vaccination. Building on this success, the Ministry of Health can further strengthen its communication strategies by tailoring messages to address specific parental concerns and leveraging trusted community voices.

The limitations of the study include that the study focused on pediatric COVID-19 vaccine hesitancy; thus, the results may not be applicable to adult populations or other vaccines. The reliance on self-reported data from survey responses may introduce response bias.

## Conclusion

Our study clearly demonstrated a negative attitude toward the pediatric COVID-19 vaccine among the study participants. The higher level of awareness about the COVID-19 vaccine was significantly associated with planning on having the vaccine while reasons for hesitancy were a significant factor for participants not planning to vaccinate their children against COVID-19 infection.

Family physicians and primary care pediatricians can use the findings of this study in their efforts to increase the acceptance of the COVID-19 vaccine in their practice. For example, the

uptake of the COVID-19 vaccine can be improved by improving awareness of the vaccine.

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## Conflicts of interest

There are no conflicts of interest.

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