Willingness and attitudes of parents of children under the age of 12 about the COVID- 19 vaccine in Taif city

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Abstract

Background: Coronavirus disease 2019 (COVID19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARSCoV2), is currently a global pandemic with the highest number of people affected in the modern era; only a small proportion of children have been infected with COVID-19. Most of them were asymptomatic or only had mild symptoms. Both direct and indirect advantages will result from an effective and a safe COVID-19 vaccination. Vaccine hesitancy is a potential threat to global public health. Parental attitudes to-wards the vaccines play a key role in the success of the herd immunity for COVID-19. This study aimed to evaluate the parents' willingness and attitudes about the COVID- 19 vaccine in Taif city in K.S.A.

Methods: A cross-sectional study was conducted on a representative sample of 384 parents. The data collection tool was an online questionnaire that consisted of sociodemographic data of parents and children, and questions for assessment of parents' willingness to vaccinate their children with the COVID-19 vaccine. All data were entered and analyzed by using SPSS program version 22. The committee is accredited by the National Committee for Bioethics with No. (HAO-02-T-105) and the proposal fulfills the requirements of Taif Uni-versity and accordingly ethical approval was granted.

Results: The analysis included responses from 579 participants where 54.4% were males, 76.9% belonged to 30-60 years, 72.5% had a university education, 57.9% were working in the non-health-care sector, and 49.6% had monthly income >10000 SAR. It was reported 92.4% had received two doses of COVID-19 vaccines.

The analysis showed that Pfizer BioNTech was the most commonly taken COVID-19 vaccine for the first dose (70.5%), second dose (75.6%), and third dose (72.7%) [Figure 1]. There were 7 (1.2%) participants who had not yet received a single dose COVID-19 vaccine, and out of them, only two were planning to re-ceive the vaccine in the near future, whereas only two didn't want to receive it.

Conclusion: This study showed poor acceptance of COVID-19 vaccine for children among parents. The choice of wheth-er or not to vaccinate a child should be made by the child's parents. Individual benefits of protection against COVID-19 must be weighed against the population merits of pandemic control in regard to administering vaccines in children and analyzing their efficacy and advantages in terms of minimizing the risk of severe COVID-19.

Keywords:
Infections, COVID-19, vaccine, parents, willingness, attitudes, Taif city.

Introduction

Coronavirus disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARSCoV2), is currently a global pandemic with the highest number of people affected in the modern era [1]. There have been over 198 million confirmed cases of coronavirus (COVID-19), and more than 4.2 million deaths have been reported globally since the start of the COVID-19 pandemic to 2nd of August 2021 [2]. The pandemic is not only causing a considerable mortality and morbidity rate, it also has a remarkable impact on the economy and the health care system [1].

At the beginning of the COVID-19 era, only a small proportion of children had been infected with COVID-19. Most of them were asymptomatic or only had mild symptoms [3]. The condition has altered, as evidenced by an increasing number of case reports and case series involving severe clinical symptoms in children. Even if only a tiny percentage of children suffer serious illnesses, they can still infect others. As a result, a COVID-19 vaccination that is both safe and effective will have both direct and indirect benefits [3]. The symptoms of COVID19 in children overlap with a variety of other pediatric viral infections. Most often, children have a mild flu-like condition that can develop into a life-threatening acute respiratory distress syndrome, fulminant pneumonia, and multiple organ failure[4]. As of 28 July 2021, a total of 3,839,816,037 vaccine doses had been administered [2]. By June 2021, The Ministry of Health (MOH) in Saudi Arabia has announced that Pfizer vaccine will be given to children in the age group of 12-18 years [5].

Vaccine acceptance represents the general public's overall impression of disease risk, vaccine attitudes, and demand, which is crucial for immunization programs to achieve high vaccination coverage rates[6]. Vaccine hesitancy is defined as the delay in acceptance, reluctance, or refusal of vaccination despite the availability of vaccination services [7]. Parents' willingness and views about the COVID-19 vaccination were assessed in a study published in Turkey in 2021. It revealed that 36.3 percent of parents were willing to have their children receive the vaccine, while 59.9 percent were willing to take it themselves [3]. From March 26 to May 31, 2020, an international survey was conducted to assess caregiver willingness to vaccinate their children against COVID-19 in six countries and found that when a vaccine for COVID-19 becomes available, 65 percent of caregivers say they plan to vaccinate their children [8]. Also in 2020, research conducted in China showed that 72.6% of Chinese parents accept vaccinating their children against Covid-19 which shows a positive attitude towards the vaccination [9]. The public's health and the fight against the pandemic requires knowledge about the status of COVID-19 vaccine acceptance. As a result, the goal of this study was to assess parents' attitudes towards COVID-19 vaccines, to determine the prevalence of vaccine rejection among parents, and to explain the reasons for vaccine rejection and the factors that influence it as there is an insignificant number of studies related to our topic especially in Saudi Arabia.

Methodology

This is an observational cross-sectional study conducted in Taif, Makkah region. Makkah region is located in the western part of Saudi Arabia. The ethical approval was accredited by the National Committee for Bioethics with No. (HAO-02-T-105). The study duration was from (Oct 2021 – June 2022). The study's population consisted of parents of children who were aged less than 12 years old in Taif city, Saudi Arabia. All parents in Taif city were invited to participate in the study through filling in an online questionnaire. The sample size was 384 estimated by sample size calculator, with 95% Confidence level and 5% margin of error. The instrument used was an electronic questionnaire in English translated to Arabic, which included questions about COVID-19 vaccination and parents' willingness to receive the vaccine for themselves and their children. This tool was developed after reviewing relevant studies conducted in Saudi Arabia and elsewhere. The questionnaire was divided into three main sections: the first section was for parents' demographic data, the second section consisted of questions about demographic data of the children, and the third section consisted of questions about parents' willingness to receive the vaccine. Data was entered by using Microsoft Office Excel software program (2016), and statistically analyzed by using the Social Science Software Statistical Package (SPSS), version 20 (IBM SPSS, Statistics for windows version 20.0 Armonk, NY: IBM Corp.)

Results

The analysis included responses from 579 participants where 54.4% were males, 76.9% were 30-60 years, 72.5% had a university education, 57.9% were working in the non-healthcare sector, and 49.6% had monthly income >10000 SAR [Table 1]. It was reported by 148 participants (25.6%) that they had tested positive for COVID-19, and 92.4% had received two doses of COVID-19 vaccines [Table 2]. The analysis showed that Pfizer BioNTech was the most commonly taken COVID-19 vaccine for the first dose (70.5%), second dose (75.6%), and third dose (72.7%) [Figure 1]. There were 7 (1.2%) participants who had not yet received a single dose COVID-19 vaccine, and out of them, only two were planning to receive the vaccine in the near future, whereas only two didn't want to receive it [Table 2].

In our analysis, we found that 468 (80.8%) were parents and out of whom 85.7% had children less than 12 years old. It was reported by 12.0% of the parents that their child had tested COVID-19 positive, and 81.8% had taken all the routine vaccines under the National Expanded Program on Immunization. It was found that only 31.9% of the parents wanted their child to receive the COVID-19 vaccine, and about 54.1% feared that their child might be infected with COVID-19. The most common reason that they don't want to vaccinate their child was 'fear of vaccination failure due to COVID-19 mutations' (33.3%), followed by fear about vaccination side effects (30.8%), and limited data on a new vaccine's safety in children (17.2%) [Figure 2].

Nearly three-quarters of parents (73.3%) agreed that they would advise other people to take COVID-19 vaccines, and more than half of the parents (54.1%) worried that their child may get infected with COVID-19 in the near future. About 34.7% of the parents definitely believed that COVID- 19 vaccine would end the pandemic soon, whereas 18.2% didn't think so. It was found that 54.6% of the parents believed that everyone should be vaccinated for herd immunity against COVID-19. It was reported by 33.7% of the parents that they daily/always' consulted information about the COVID-19 vaccine on social media in the previous month, whereas 23.4% did it once a month or rarely [Table 3].

When we evaluated the relationship of the willingness of the parents to give the COVID-19 vaccine to their children under 12 years of age and their baseline characteristics, there were no statistically significant differences observed in willingness to give vaccine between educational levels of the parents (p=0.638). Parents working in health sectors were comparatively more willing to vaccinate their children than others, but no statistically significant differences were observed (p=0.593). Family income didn't show any statistically significant relationship with willingness to vaccinate the child (p=0.370). It was found that parents who didn't have a history of COVID-19 were comparatively more willing to vaccinate their children than those parents who were infected (p=0.005). Also, it was found that parents who had two or three doses were more willing to vaccinate their child than others who took one dose or had not received the vaccine yet (p=0.005). Parents who feared that their child would get infected with COVID-19 were the ones who were comparatively more willing to vaccinate their child against the virus (p<0.001). [Table 4].

Table 1: Sociodemographic details of the participants

		N	%
Gender	Female	264	45.6
	Male	315	54.4
Age	<30 years	111	19.2
	30-60 years	445	76.9
	>60 years	23	4.0
Educational level	Illiterate	1	.2
	Primary School	6	1.0
	Secondary School	82	14.2
	High School	18	3.1
	Diploma	52	9.0
	University	420	72.5
Employment	Unemployed	209	36.1
	Healthcare sector	35	6.0
	Non-healthcare sector	335	57.9
Average family income per month	<5000 SAR	145	25.0
	5000-10000 SAR	147	25.4
	>10000 SAR	287	49.6

Table 2 History of COVID- 19 diagnosis

		Frequency	Percent
Diagnosed with COVID-19	Yes	148	25.6
	No	431	74.4
Number of COVID-19 Vaccine doses received	1 dose	15	2.6
	2 doses	535	92.4
	3 doses	22	3.8
	Did not receive	7	1.2
Planning to take COVID-19 in future (n=7)	Yes	2	28.6
	Maybe	3	42.9
	No	2	28.6

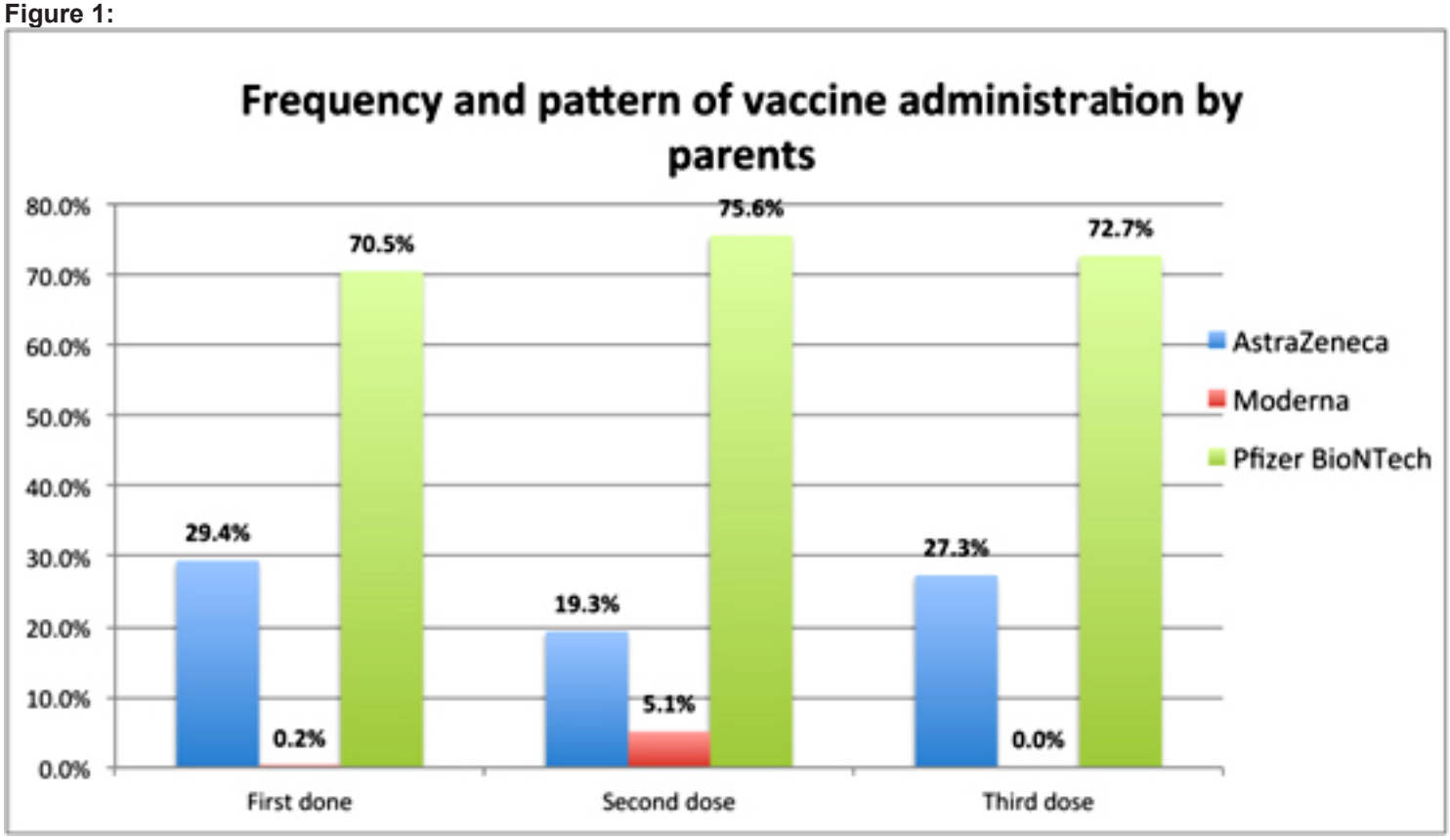
Table 3: Parents' attitude and perceptions about COVID-19 vaccine			
		N	%
Have children	No	111	19.2
	Yes	468	80.8
Number of children	1 child	72	15.4
	2-3 children	174	37.2
	4-6 children	185	39.5
	>=7 children	37	7.9
Have a child under 12 years old	No	67	14.3
	Yes	401	85.7
Age of children under 12 years (n=401)	<=2 years	45	11.2
	3-5 years	65	16.2
	6-10 years	218	54.4
	11-12 years	73	18.2
Gender of the child under 12 years (n=401)	Female	181	45.1
	Male	220	54.9
Child tested positive for the coronavirus	Yes	48	12.0
	No	353	88.0
Child suffers from chronic condition	Yes	31	7.7
	No	370	92.3
Child has all the routine vaccines under the National Expanded Program on Immunization	Yes	328	81.8
	No	73	18.2
Want the child to receive the coronavirus vaccine	Yes	128	31.9
	No	176	43.9
	Maybe	97	24.2
Would advise others to receive the COVID- 19 vaccine	Yes	294	73.3
	No	107	26.7
Worried that your child may catch or contract COVID- 19	Yes	217	54.1
	No	184	45.9
Believe that the COVID-19 vaccine will end the pandemic soon	Yes	139	34.7
	No	73	18.2
	Maybe	189	47.1
Believe that everyone should be vaccinated for herd immunity against COVID-19	Yes	219	54.6
	No	76	19.0
	Maybe	106	26.4
Frequency of encountering information about the COVID- 19 vaccine on social media in the previous month.	Always (daily)	135	33.7
	Sometimes (weekly)	172	42.9
	Rarely (once a month)	94	23.4

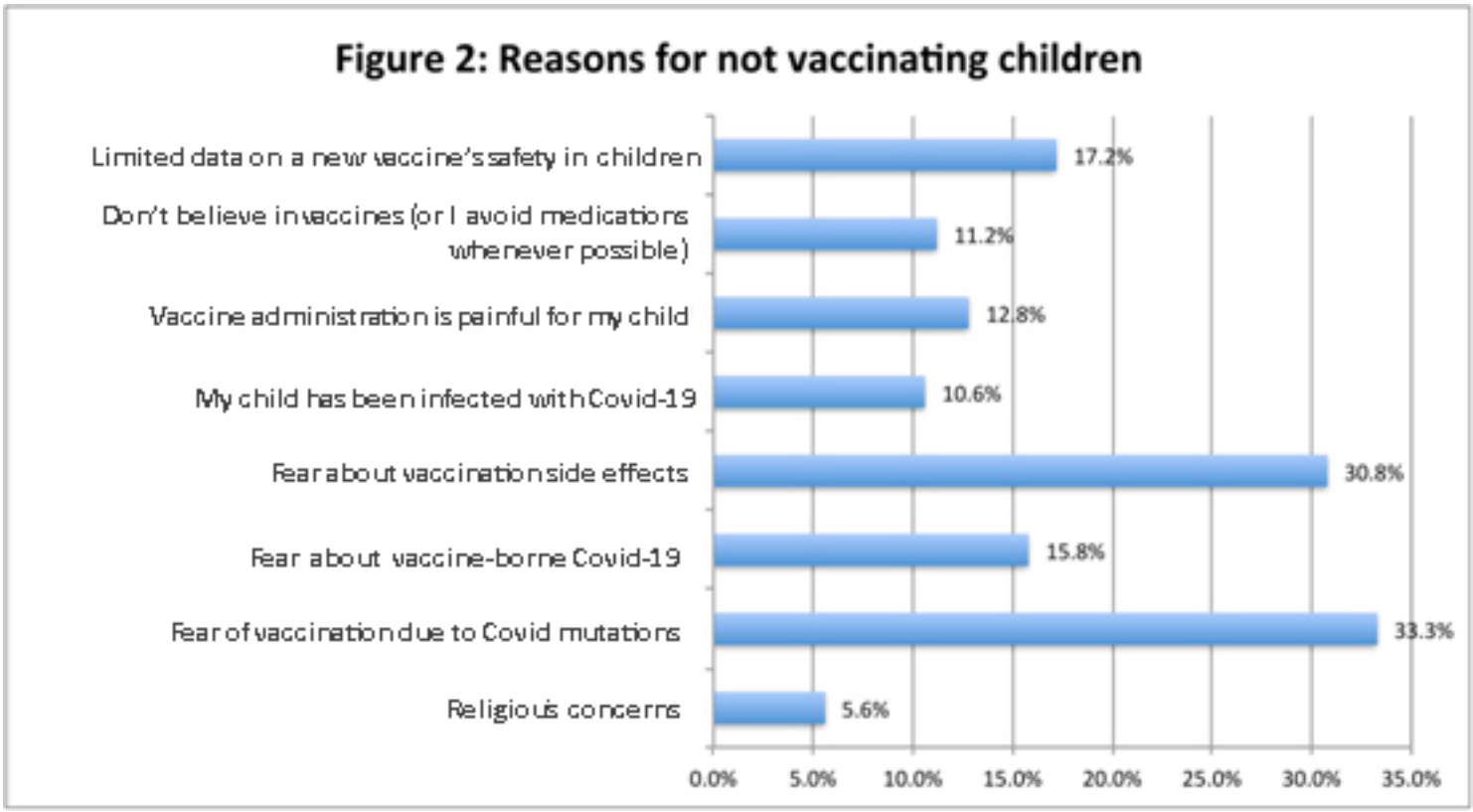
Table 4: Willingness to give COVID-19 vaccination to children under age 12 and parents' characteristics (n=401)					
		Willingness to vaccinate child			P value
		Yes	No	Maybe	
Educational level	Primary School	1 (50%)	1 (50%)	0 (0%)	0.638
	Secondary School	13 (27.1%)	22 (45.8%)	13 (27.1%)	
	High School	1 (10%)	4 (40%)	5 (50%)	
	Diploma	12 (34.3%)	16(45.7%)	7 (20%)	
	University	101 (33%)	133 (43.5%)	72 (23.5%)	
Employment sector	Unemployed	35 (28.9%)	30 (24.8%)	56 (46.3%)	0.593
	Healthcare sector	11 (45.8%)	4 (16.7%)	9 (37.5%)	
	Non-healthcare sector	82 (32%)	63 (24.6%)	111 (43.4%)	
Family income /month	<5000 SAR	24 (30.4%)	20 (25.3%)	35 (44.3%)	0.370
	5000-10000 SAR	27 (26%)	31 (29.8%)	46 (44.2%)	
	>10000 SAR	77 (35.3%)	46 (21.1%)	95 (43.6%)	
History of COVID- 19 diagnosis	Yes	24 (22.4%)	61 (57%)	22 (20.6%)	0.005
	No	104 (35.4%)	115 (39.1%)	75 (25.5%)	
Vaccine doses received	1 dose	2 (16.7%)	8 (66.7%)	2 (16.7%)	0.005
	2 doses	116 (31.4%)	164 (44.4%)	89 (24.1%)	
	3 doses	10 (66.7%)	0 (0%)	5 (33.3%)	
	Not received any dose	0 (0%)	4 (80%)	1 (20%)	
Fear child may get infected with COVID-19	Yes	80 (36.9%)	72 (33.2%)	65 (30.0%)	<0.001
	No	48 (26.1%)	104 (56.5%)	32 (17.4%)	

Table 5: Does your child suffer from any chronic diseases?

Valid	Frequency	Percent
asthma	4	1.0
diabetes	3	.7
Down's syndrome	1	.2
heart diseases	3	.7
Immunological diseases	2	.5
lung diseases	2	.5
obesity	7	1.7
others	10	2.5
Total	402	100.0

Figure 1:





Discussion

Vaccination against COVID-19 is critical in stopping the pandemic, while cognitive, emotional, and social factors determine public acceptance of such vaccination campaigns. Vaccination campaigns were initiated shortly after the Saudi Food and Drug Authority (SFDA) authorized the first COVID-19 Vaccine for distribution on December 10, 2020. Saudi Arabia's Ministry of Health (MOH) has streamlined vaccination registration using a government-run website portal. When a COVID-19 vaccine is approved for pediatric populations, parents' willingness to vaccinate their children will be vital for safeguarding pediatric populations, their communities, and homes against the infection [10,11]. Our study findings showed that 92.4% of the parents received at least two doses of COVID-19 vaccines, but only 31.9% of them wanted to vaccinate their child with the same vaccine, which shows a low level of parental acceptance to vaccinate their child. Our findings are similar to a nationwide survey conducted in Poland where 44% of the parents wanted to vaccinate their child with the COVID-19 Vaccine [12]. Another survey conducted in the USA reported that about 61.9% of the parents had plans to vaccinate their children [13]. Studies show that there are great variation in willingness to give COVID-19 vaccines to children from country to country [9,14,15]. These discrepancies can be attributed to a variety of factors, including cultural and religious contexts, public trust in authority, and degree of adaption to governmental recommendations.

The safety and efficacy of the COVID-19 vaccination in adults does not imply that it will have the same results in children. Although the onset of symptoms of acute respiratory illness was observed in adults following vaccination, most COVID-19 cases were mild and asymptomatic, and parents were not aware of the infection because children get ill quite often, more than adults (such as with common colds), resulting in an underestimated infection rate and an overestimation of vaccine efficacy in children after vaccination. Increased vaccination coverage among children may also reduce adult infections and help prevent community spread, as has been shown with other diseases [16]. Reducing the risk of infection in children and prevention of COVID-19 transmission will also assist children by allowing them to resume routine activities, such as school and other services and programs, that were restricted during the epidemic [17]. Furthermore, children less than 12 years of age are in a critical phase of growth and development, and thus caution should be exercised when evaluating the vaccine's long-term impact on children's development. Safety should be the primary consideration before the COVID-19 Vaccine is made available to younger children, even if vaccination is necessary to achieve herd immunity and decrease the severity of COVID-19. Post-marketing surveillance of vaccination safety should be conducted and maintained for a longer duration in children due to their specific immunogenicity profile and developmental stage.

In our study, more than half of the parents feared that their child would get infected with COVID-19 in the future, and these parents were more willing to vaccinate their child against the infection compared to others. Numerous studies have shown that a parent's willingness to get vaccinated is influenced by their perception of the risk of contracting an infection [18-20]. It has also been shown that those who have greater trust in the health care system are more likely to use preventive health care measures like vaccinations [21,22]. In our study, fear of vaccination side effects and fear of failure

of virus mutation due to vaccine administration were the most common reasons among parents not to give vaccines to their children. Parental anxieties regarding vaccine safety and benefits should be better understood in order to better educate and enhance strategies for reaching out to these groups.

Our study has several limitations, the most obvious of which is that it is cross-sectional, which means that the findings may not represent parents' attitudes toward the COVID-19 vaccination across Saudi Arabia. Second, rather than conducting a direct face-to-face interview, the responses to the study were recorded utilizing a web-based self-administered survey. This may result in a possible bias in the way their responses are reported. Another significant limitation of the study is the use of a convenience sampling approach, which may not accurately represent the real demographics of the study participants. As a first-of-its-kind investigation that included a representative sample size from across the county, we are confident in our results. After the pandemic is finished, we'll look into a variety of other topics, such as vaccine promotion techniques, vaccine safety, vaccine referral/recommendations, and vaccine cost, as well as the primary motivations for and barriers to vaccination against COVID-19.

Conclusion

Vaccinating children against COVID-19 has sparked a lot of discussion among parents and experts alike. This study showed poor acceptance of COVID-19 vaccine for children among parents. The choice of whether or not to vaccinate a child should be made by the child's parents. Individual benefits of protection against COVID-19 must be weighed against the population merits of pandemic control. Administering vaccines in children and analyzing their efficacy and advantages in terms of minimizing the risk of severe COVID-19 and subsequent consequences is a critical issue that has to be monitored on a regular basis.

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