



Parents' Opinions About Having Their Children Vaccinated Against COVID-19

Ebeveynlerin Çocuklarına COVID-19 Aşısı Yaptırma Konusundaki Görüşleri

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Abstract

Objective: Children can develop immunological reactions weeks after being infected by COVID-19. These reactions increase children's rates of mortality and morbidity due to COVID-19. Therefore, vaccination may be an important way to reduce the delayed effects of COVID-19 infection in children. Vaccinating children against COVID-19 will also contribute to controlling the pandemic and the global economy's recovery. Parents are responsible for deciding whether or not their children receive vaccinations against COVID-19. This study aimed to determine parents' opinions about having their children vaccinated against COVID-19.

Material and Methods: This cross-sectional study was conducted with 423 parents with children under 18 years old. The data were collected using an "Information Form for Parents and Children," and a web-based questionnaire. The questionnaire was developed by the researchers based on the literature. It has questions about parents' willingness to have their children vaccinated against COVID-19 and their experiences with the vaccines included on Turkey's National Vaccination Schedule.

Results: Of the parents, 27.7% wanted to get their children vaccinated against COVID-19. Of the children, 15.1% had been infected by COVID-19. The parents with older children (11-15 year-olds and 16-18 year-olds) wanted to have them vaccinated against COVID-19 at a higher rate than the parents of children who were under 5 years old ($p=0.003$). The parents cited distrust, negative effects on children and being unnecessary as their reasons for not wanting to have their children vaccinated against COVID-19.

Conclusion: Transparency is important in the vaccine development process and vaccine safety tests. Public health authorities should address incorrect information in a timely manner. This will help to manage parents' perceptions of and behaviors concerning the vaccination of their children against COVID-19.

Keywords: COVID-19 vaccines, vaccination, parents, children

Öz

Giriş: Çocuklarda COVID-19 enfeksiyonundan haftalar sonra immüno-lojik reaksiyonlar ortaya çıkabilmektedir. Bu reaksiyonlar çocuklarda COVID-19'a bağlı mortalite ve morbidite oranlarını artırmaktadır. Bu nedenle çocuklarda COVID-19 enfeksiyonunun geç dönem etkilerinin azaltılması için aşılamaya çalışmaları önemli olabilir. Ek olarak çocukları COVID-19'a karşı aşılamak, salgının kontrolüne ve küresel ekonominin iyileşmesine katkıda bulunacaktır. Çocuklar için, ebeveynler çocuklarının aşısı konusunda karar vericisi konumundadır. Bu çalışmada ebeveynlerin çocuklarına COVID-19 aşısı yaptırma konusundaki görüşlerini belirlemeyi amaçladık.

Gereç ve Yöntemler: Bu kesitsel araştırma 0-18 yaş grubu çocuğu olan 423 ebeveyn ile gerçekleştirildi. Veriler "Ebeveyn ve Çocuğu Tanıtıcı Bilgi Formu" ve araştırmacılar tarafından literatüre dayalı oluşturulan ebeveynlerin çocuklarına COVID-19 aşısı yaptırma yönelik istek durumları ve Ulusal Aşı Takvimi'ndeki aşılarla ilişkin deneyimlerinin sorgulandığı web tabanlı bir anket formu kullanıldı.

Bulgular: Ebeveynlerin %27.7'si çocuğuna COVID-19 aşısı yaptırmayı istiyordu. Çocukların %15.1'i COVID-19 enfeksiyonu geçirmişti. Büyük yaşta (16-18 yaşındakiler ile 0-5 yaşındakiler kıyaslandığında), 11-15 yaşındakiler ile 0-5 yaşındakiler kıyaslandığında) çocuğu olan ebeveynler daha yüksek oranda çocuklarına COVID-19 aşısı yaptırmak istiyordu ($p=0.003$). Ailelerin çocuklarına COVID-19 aşısı yaptırmama nedenleri "güvensizlik", "çocuklar üzerindeki olumsuz etkiler" ve "gereksinim duymama" temaları altında toplandı.

Sonuç: Aşı geliştirme süreci ve aşı güvenlik testleri hakkında iletişimde şeffaflık önemlidir. Halk sağlığı yetkilileri de yanlış bilgileri zamanında ele almalıdır. Bu şekilde ebeveynlerin çocuklarının COVID-19 aşılmasıyla ilgili algılamaları ve davranışları kontrol edilebilecektir.

Anahtar Kelimeler: COVID-19 aşıları, aşılamaya, ebeveynler, çocuklar

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Introduction

The SARS-CoV-2 virus emerged in Wuhan, China, and quickly spread throughout the world, causing severe acute respiratory syndrome and pneumonia (1,2). The World Health Organization (WHO) has declared the Novel Coronavirus Disease (COVID-19) (which emerged in late 2019 and is caused by SARS-CoV-2) a pandemic after it spread almost everywhere in the world, infecting and killing thousands of people (3). The first COVID-19 case in Turkey was seen on March 10, 2020, and the number of cases has increased gradually (4).

In a study conducted in Korea, only 75 (1%) of over 7700 patients were younger than 9 years of age, and 405 (5%) were aged 10-19 years (5). The age group most affected by COVID-19 is reported to be over the age of 5, followed by the group under the age of 1, and the severe presentation of the disease is observed in the group under the age of 1 (6). COVID-19 in children is now common in all age groups (7).

Compared to adult patients, pediatric patients have milder clinical symptoms such as fever, headache, dizziness, nausea, and vomiting (8). Most children recover within a few weeks after the onset of the symptoms and have an uneventful course of the disease (9,10). Some children may experience multi-system inflammatory syndrome (MIS-C) following the Novel Coronavirus (SARS-CoV-2) infection. MIS-C is considered to be an immunological response as it occurs weeks after SARS-CoV-2 infection. A patient with SARS-CoV-2 contact and a positive PCR (polymerase chain reaction), antigen or antibody test experiences fever, elevated inflammatory markers, and involvement of at least two systems (heart, lung, kidney, skin, hematological, gastrointestinal, and neurological). If the disease is not diagnosed and treated early, it can be life-threatening (13). As a result, COVID-19 infection now poses a serious health risk to children.

These reactions increase children's rates of mortality and morbidity due to COVID-19. Therefore, vaccination may be an important way to reduce the delayed effects of COVID-19 infection in children. Vaccinating children against COVID-19 will also contribute to controlling the pandemic and the global economy's recovery. Parents are responsible for deciding whether or not their children receive vaccinations against COVID-19 (16). This study aimed to determine parents' opinions about having their children vaccinated against COVID-19. The research questions determined for this purpose are as follows:

- What percentage of parents want to have their children vaccinated against COVID-19?
- Based on the characteristics of the children (age, chronic disease, regular medication use, COVID-19 infection), is there a difference in the rate of parents' willingness to have their children vaccinated against COVID-19?

- Based on the characteristics of the parents (level of education, family income, number of children in the family), is there a difference in the rate of willingness to have their children vaccinated against COVID-19?
- Is there a difference in the rate of parents who are willing to have their children vaccinated against COVID-19 based on the vaccination history of the children (having special vaccinations within and outside the National Vaccination Schedule and experiencing side effects after vaccination)?

Materials and Methods

This cross-sectional study was conducted with 423 parents with children under 18 years of age. The Ethics Committee on Human Research at our university granted permission to conduct the study (dated December 30, 2020, number 1011). The data were collected using an "Information Form for Parents and Children," and a web-based questionnaire. The questionnaire was developed by the researchers based on the literature. It had 16 close-ended and 2 open-ended questions about parents' willingness to have their children vaccinated against COVID-19 and their experiences with the vaccines included in the National Vaccination Schedule. The landing page of the web-based questionnaire asked the parents for their informed consent; the questionnaire was then presented to those who gave consent. Parents were informed on the consent page that they were free to participate or not participate in the research and that they could withdraw from the research at any time, thus the condition of informed consent was fulfilled as an ethical principle. The principle of respect for human dignity was taken into consideration, as was the principle of confidentiality.

Data were evaluated using IBM SPSS Statistics. As descriptive analyzes showed normal distribution, mean \pm standard deviations (minimum-maximum) were used in the representation of the variables. The chi-square test was used to determine the relationship between demographics of parents and children, as well as parents' vaccine experience and willingness to vaccinate their children against COVID-19. The Fisher Exact post hoc test was used to determine where significant differences originated. The statistical significance level was set at 0.05. Responses to open-ended questions were analyzed using the thematic analysis method.

Results

The mean age of the parents was 38.18 ± 6.93 (24-48) and the mean age of their children was 10.05 ± 5.24 (0-18 years). 50.8% of the children were male and 49.2% were female. 8.7% of the children had a chronic illness and 5.9% used medication regularly. 40.0% of the parents had a university degree. The majority of the parents (%50.1) had two children. The parents' willingness to vaccinate their children against COVID-19 varied

according to their child's age ($p=0.003$). The parents of 16-18 year-olds and 11-15 year-olds wanted to have their children vaccinated against COVID-19 at a higher rate than the parents of 0-5 year-olds (39.5% and 18.8%, $p<0.001$; 26.1% and 18.8%, $p=0.027$). There was no difference in the willingness of parents to have their children vaccinated against COVID-19 based on the presence of chronic disease and regular medication use, parents' level of education, family income level, and the number of children in the family ($p>0.05$) (Table 1).

27.7% of parents were willing to have their children vaccinated against COVID-19. 15.1% of the children had been infected with COVID-19. 95.0% of parents had their children receive vaccinations from the National Vaccination Schedule, while 26.2% had their children receive special vaccinations not included in the National Vaccination Schedule. The rate

of children who experienced any discomfort after vaccination was 2.8%. Parents who had their children receive special vaccines outside of the National Vaccination Schedule were more willing to have their children vaccinated against COVID-19 than those who did not ($p=0.02$). There was no difference in parents' willingness to have their children vaccinated against COVID-19 based on their children's previous COVID-19 infection, vaccination according to the National Vaccination Schedule, or any post-vaccination discomfort ($p>0.05$) (Table 2).

Table 3 presents the results of a thematic analysis of the responses given by parents to an open-ended question about the reasons for not wanting to have their children vaccinated against COVID-19. As a result of the analysis, three main themes were determined. Themes were distrust, negative effects on children, and being unnecessary (Table 3).

Table 1. Differences in parents' desire to have their children vaccinated against COVID-19 based on the characteristics of the child (n= 423)

Characteristics	Mean \pm SD	Min-Max	Parents willing to have their children vaccinated against COVID-19		Test value
			n	%	
Child's age (years)	10.05 \pm 5.24	0-18			
Parent's age	38.18 \pm 6.93	24-48			
Child's age (years)					
0-5 ^{ab}	96	22.7	18	18.8	X²= 13.741 p= 0.003
6-10	119	28.1	19	22.6	
11-15 ^a	124	29.3	31	26.1	
16-18 ^b	84	19.9	49	39.5	
Gender of the child					
Female	208	49.2	63	53.8	X ² = 1.413 p= 0.277
Male	215	50.8	54	46.2	
Presence of chronic disease in the child					
Yes	37	8.7	14	12.0	X ² = 2.099 p= 0.177
No	386	91.3	103	88.0	
Regular medication use					
Yes	25	5.9	8	6.8	X ² = 0.250 p= 0.647
No	398	94.1	109	93.2	
Parents' level of education					
Primary school	67	15.8	22	18.8	X ² = 4.760 p= 0.190
High school	110	26.0	25	21.4	
University	169	40.0	43	36.8	
Postgraduate	77	18.2	27	23.1	
Number of children in the family					
1	123	29.1	31	26.5	X ² = 1.360 p= 0.507
2	212	50.1	64	54.7	
3 or more	88	20.8	22	18.8	

X²: Chi-square test *Difference: Fisher's exact test, ^aAs a result of further analysis, the rate of parents willing to have their children vaccinated against COVID-19 was higher among parents with children aged 11-15 years compared to those with 0-5 years of age (26.1% vs. 18.8%, $p=0.027$), ^bAs a result of further analysis, the rate of parents willing to have their children vaccinated against COVID-19 was higher among parents with children aged 16-18 years compared to those with 0-5 years of age (39.5% vs. 18.8%, $p<0.001$).

Table 2. Differences in parents' desire to have their children vaccinated against COVID-19 based on their vaccination status

Vaccination Status of Children	n	%	Parents willing to have their children vaccinated against COVID-19		X ²
			n	%	
Willingness to have the child vaccinated against COVID-19					
Yes	117	27.7			
No	306	72.3			
History of COVID-19 infection in the child					
Yes	64	15.1	14	12.8	X ² = 2.756
No	359	84.9	102	87.2	p= 0.219
Has the child been vaccinated in line with the National Vaccination Schedule?					
Yes	402	95.0	115	98.3	X ² = 4.398
No	21	5.0	2	1.7	p= 0.106
Has the child received any of the vaccines outside of the National Vaccination Schedule?					
Yes	111	26.2	42	35.9	X²= 7.842
No	312	73.7	75	61.5	p= 0.020*
Post-vaccination discomfort					
Yes	12	2.8	5	4.3	X ² = 3.083
No	411	97.2	107	91.5	p= 0.214

X²= Chi-Square test, *p< 0.05.

Discussion

In a public health crisis, such as COVID-19, increasing vaccination rates against infectious diseases is of critical importance to reduce healthcare utilization and protect at-risk populations. This study aimed to determine parents' opinions about having their children vaccinated against COVID-19. 27.7% of the parents were willing to have their child vaccinated against COVID-19, and 15.1% of the children had been infected with COVID-19. In a study conducted in China, 70% of parents were willing to have their children vaccinated against COVID-19. In the same study, parents were open to vaccinating their children because they believed that children in primary and high school were unable to protect themselves or social distance (16).

72.3% of parents in the study were not willing to have their child vaccinated against COVID-19. In a study conducted in Italy, the vast majority (60.4%) of parents/guardians were inclined to have their children vaccinated against COVID-19, while 29.6% were still considering the option and 9.9% were hesitant (17). In a study conducted in England, 48.2% of parents/guardians responded "I will definitely have my child vaccinated" while 40.9% said "I am not sure, but inclined to say yes" to having their child vaccinated against COVID-19 (18). In a study conducted in six different countries (US, Canada, Japan, Spain, Switzerland, and Israel), the rate of parents willing to have their child vaccinated against COVID-19 was 65% (19). It was

found that the parents in this study were more hesitant about vaccination compared to other studies.

Parents cited "rumors in the media about the development and administration of vaccines," "inconsistent statements from health and government authorities," and "the mild course of COVID-19 in children" as reasons for not wanting to have their children vaccinated against COVID-19. The reasons for parents' hesitations about the COVID-19 vaccines were children having a lower risk, the safety and efficacy of the vaccines, vaccines being new and rapidly developed, parents with a lower level of education, distrust of information on the web/social media, and vaccination policies (17,18). Parents' willingness to vaccinate their children is decreasing as they become more exposed to negative and inconsistent information about the COVID-19 vaccine (16,20). The reasons why parents were hesitant or reluctant to vaccinate their children in this study were similar to those found in other studies.

The parents with older children (16-18 vs 0-5 year-olds and 11-15 vs 0-5 year-olds) wanted to have them vaccinated against COVID-19 at a higher rate than the parents of children who were under 5 years old (p= 0.003). Similarly, in a study conducted in Italy, the highest rate of hesitation in having children vaccinated against COVID-19 was seen in parents with children aged 6-10 years (17), and in a study conducted in England, parents with children aged 14 and under (18). The parents' attitudes toward COVID-19 vaccination appeared to be influenced by their children's age. Parents with older child-

Table 3. Themes and expressions derived from parents' opinions about the COVID-19 vaccine

Themes	Sub-themes	Description of the theme	Parents' statements
Distrust	The uncertainty of its content	Almost all of the parents who stated that they would not have their children vaccinated even if the COVID-19 vaccine was available for their children, said that they were opposed to the vaccine because they did not trust it. Parents' statements centered around the uncertainty of the vaccine's content, doubts about its protection, and concerns about vaccine studies.	"I don't trust the active ingredient in it." „I'm not sure if it's reliable as I don't know the ingredients of the vaccine."
	Doubts about its protection		"The vaccine is insufficient in preventing viral diseases and contagiousness. It depends on the mutation. Misinformation undermines trust in the vaccine." "I don't know the degree of its efficacy."
	Incomplete vaccination studies		"I am nervous because Phase III has not been completed yet" "I don't think I'll vaccinate my child because the vaccine was developed in a short time before all phases were completed." "I think the phases were skipped very quickly." "I am not an anti-vaxxer, but I think the vaccination process is not well-managed."
Adverse effects on children	Side Effects	Almost half of the parents who stated that they would not have their children vaccinated even if the COVID-19 vaccine was available for their children reported that they were worried about their children getting sick due to the side effects of the vaccine. In addition, parents whose children had chronic illnesses reported that they may experience problems with the underlying disease and the drugs that are routinely used.	"It is a pathogen with unknown symptoms, and I would not have my child get an unreliable and jarring vaccine without seeing its side effects, and I would not recommend it to anyone." "I am afraid that the side effects of the vaccine in the long term are not known and I do not plan to give it to my child."
	Presence of chronic disease in the child		"I don't want my child to have it because my child has an allergic condition and I do not know whether it will be harmful or not." "My child is using steroids, I don't know how the two would interact."
Unnecessary	Mild symptoms of the disease in children	Almost half of the parents who stated that they would not have their children vaccinated even if the COVID-19 vaccine was available for children, said that their children were not in the risk group and they would survive the disease with mild symptoms.	"Children have a mild course of the disease, therefore I would not give my child a vaccine that I did not know about." "I don't think it affects children severely." "The younger ones have different immunity and they are more resistant so I don't see the need for it." "The mortality in children is very low, they survive it like the flu."
	Uncertainty of the effect of the vaccine on children		"There are not enough studies on children yet." "The effects on children have not yet been demonstrated in studies."
	Children being young		"If adults get vaccinated, there is no need for children to get it. I don't think it's right to give it to children before even seeing the results in adults." "I don't think I would get my child vaccinated because my child is not in the risk group."

ren are more hesitant to have their children vaccinated against COVID-19.

In the study, the child's chronic illness or regular medication had no effect on the parents' opinion about vaccinating their child against COVID-19. The literature on this topic contains a variety of viewpoints. It is emphasized that parents of

children with chronic diseases do not want their children to be vaccinated against COVID-19. The reason for this is that live vaccines may be contraindicated in children with chronic diseases diagnosed with cancer and taking immunosuppressive drugs (19). However, it is also highlighted that vaccinating at-risk groups such as children with chronic diseases is important in order to protect them and reduce their healthcare utilization

(21). Due to these different views in the literature, it is believed in this study that the child's chronic illness or regular medication use does not make a difference in the parents' opinion about having their children vaccinated against COVID-19.

In the study, parents' level of education did not make a difference in their opinion about having their children vaccinated for COVID-19. Parents with a high level of education are stated to be more willing to vaccinate their children because they are less affected by false information about the COVID-19 vaccine on social media/the internet (17,19). The reason for the disparity in findings in this study is thought to be related to ongoing disease research, uncertainty, the rapid development of COVID-19 vaccines, and rumors about vaccines, which raise questions about vaccination in the minds of parents.

In the study, there was no difference in the willingness of parents to have their children vaccinated against COVID-19 based on whether their children received other vaccines in the National Vaccination Schedule ($p > 0.05$). Parents who had their children receive special vaccines in the National Vaccination Schedule were more willing to have their children vaccinated against COVID-19 than those who did not ($p = 0.02$). Parents find it vitally important to routinely vaccinate their children during the pandemic. However, it was discovered that the relationship between the importance attributed to routine/special vaccines and parents' willingness to have their children vaccinated against COVID-19 was not investigated (18). The relationship between COVID-19 vaccination and influenza vaccination is noteworthy. It has been reported that parents who recently vaccinated their children against influenza were more willing to vaccinate them against COVID-19 (19). When vaccination is optional (as with special vaccines), parents are less likely to have their children receive these vaccines. This also affects their willingness to vaccinate their children against COVID-19 (19,22,23). Based on this finding, we can assume that parents who vaccinated their children with the special vaccines on the National Vaccination Schedule are more likely to have their children vaccinated against COVID-19, as their interest in and knowledge about vaccines may be greater than those who did not.

Conclusion

In conclusion, parents' acceptance of the COVID-19 vaccine for children under the age of 18 was low. Factors influencing parents' willingness to have their children vaccinated against COVID-19 were distrust, negative effects on children, and being unnecessary. Building trust in the COVID-19 vaccine is critical, as confidence in the vaccine is strongly associated with the willingness to get vaccinated. Transparency is important in the vaccine development process and vaccine safety tests. Public health authorities should address incorrect information in a timely manner. Future research should determine parents' level of knowledge about the COVID-19 vaccine, and activities

to improve their knowledge should be planned. This will help to manage parents' perceptions of and behaviors concerning the vaccination of their children against COVID-19.

Ethics Committee Approval: This study approval was obtained from Zonguldak Bülent Ecevit University Faculty of Medicine Human Research Ethics Committee (Decision no: 2014/08-13, Date: 29.05.2014).

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