

Covid-19 Vaccine Acceptance Among Parents: Are They Willing to Vaccinate Their Children?

Ebeveynlerin Covid-19 Aşı Kabulü: Çocuklarını Aşılatmaya İstekliler mi?

Ali GÜNGÖR¹  Aytaç GÖKTUĞ¹  Betül ÖZTÜRK¹  Muhammed Mustafa GÜNEYLIOĞLU¹ 

Raziye Merve YARADILMIŞ¹  İlknur BODUR¹  Aysun TEKELİ¹ 

Can Demir KARACAN¹  Nilden TUYGUN¹ 

ÖZ

Amaç: Bu çalışmanın amacı, ebeveynlerin çocuklarına COVID-19 aşısı yaptırma isteklerini ve bu kararı etkileyen faktörleri değerlendirmektir.

Araçlar ve Yöntem: Bu çalışma prospektif, kesitsel ve tanımlayıcı bir anket çalışması olarak yapılmıştır. Ebeveynlerle COVID-19 aşısı ile ilgili sorulardan oluşan bir anket yapılmıştır.

Bulgular: Çalışmaya 180'i (%30.4) erkek, toplam 592 ebeveyn dahil edildi ve ortalama yaş 34.14±7.42 yıldı. Çocuklarını aşılatmaya istekli 257 (%43.4) ebeveyn vardı. Anne babanın eğitim düzeyinin yüksek olması (p=0.022), ailenin aylık gelirinin yüksek olması (p=0.006) ve erkek cinsiyet (p=0.002) çocuklarına aşı yaptırma isteklerinin yüksek olması ile ilişkilendirildi. İki yüz yirmi iki ebeveyn aşının yerli veya yabancı kaynaklı olmasına göre kararlarının değişebileceğini, bu ebeveynlerden 215'i (%96.85) ise yerli aşıları tercih edeceğini belirtmişti. Aşı yaptırma konusundaki tereddüt veya reddetme nedenleri arasında en sık sebepler: olası yan etkilerden korkma ve aşının yabancı kaynaklı olmasıydı.

Sonuç: Ebeveynlerin çocuklarına COVID-19 aşısı yaptırma konusundaki tereddütleri veya reddetme durumları yüksektir. Halk sağlığı yetkilileri aşının önemi konusunda halkı bilgilendirmeli ve yerli aşı üretimi teşvik edilmelidir.

Anahtar Kelimeler: aşı kararsızlığı; aşı reddi; pandemi

ABSTRACT

Purpose: The aim of this study was to evaluate the willingness of parents to allow their children to receive a COVID-19 vaccine and the factors affecting the decision.

Materials and Methods: This study was conducted as a prospective, cross-sectional and descriptive survey study. A survey consisting of questions about the COVID-19 vaccination was conducted with parents.

Results: The study included 592 parents, 180 (30.4%) male, and the mean age was 34.14±7.42 years. There were 257 (43.4%) parents would vaccinate their children. A high level of education of parents (p=0.022), a high monthly income of the family (p=0.006), and male gender (p=0.002) were associated with high willingness to vaccinate their children. Two hundred twenty two parents stated that their decision may change depending on whether the vaccine is of domestic or foreign origin, and 215 (96.85%) of them stated that they would prefer domestic vaccines. The most frequent reasons for vaccine hesitancy or refusal to their children were: fear of possible side effects and it being a foreign vaccine.

Conclusion: The hesitancy or refusal of parents to vaccinate their children with the COVID-19 vaccine is high. Public health authorities should inform the public about the importance of vaccination and domestic vaccine production should be encouraged.

Keywords: pandemic; vaccine refusal; vaccine hesitancy

Received: 31.05.2022; Accepted: 17.02.2023

¹ Department of Pediatric Emergency Medicine, Dr. Sami Ulus Maternity and Child Health and Diseases Training and Research Hospital, Ankara, Türkiye.

Corresponding Author: Ali Güngör, Department of Pediatric Emergency Medicine, Dr. Sami Ulus Maternity and Child Health and Diseases Training and Research Hospital, Ankara, Türkiye. e-mail: gungoral19@gmail.com

How to cite: Güngör A, Gökтуğ A, Öztürk B, Güneylioğlu MM, Yaradılmış RM, Bodur İ, Tekeli A, Karacan CD, Tuygun N. Covid-19 vaccine acceptance among parents: are they willing to vaccinate their children?. Ahi Evran Med J. 2023;7(2):225-230. DOI: 10.46332/aemj.1124018

INTRODUCTION

Affecting the whole world, the novel coronavirus disease (COVID-19) was declared a pandemic on March 11, 2020 by the World Health Organization. While appropriate treatment protocols are being developed, vaccination studies are ongoing. There are vaccines phase 3 clinical trials have been completed and a rapid community vaccination has begun in many countries.¹⁻³ The end of the pandemic may be due to the effective vaccination of a large part of the society, including children.³⁻⁵

People's decisions and willingness to vaccinate may vary. Vaccine hesitancy or refusal has been an increasingly important public health problem all over the world in recent years.^{6,7} Currently, studies that evaluate people's willingness against a COVID-19 vaccine are underway, but little is known about parents' acceptance of the COVID-19 vaccine their children.^{8,9} It has been determined that there are many socioeconomic and cultural factors that affect vaccination refusal or hesitancy. Parents' main reasons for vaccine refusal or hesitancy were cited as a lack of trust in healthcare professionals and vaccine companies, fear of complications from the vaccine, the thought that there are harmful chemicals in the vaccine, news about the harm of vaccines from social media and the internet, and insufficient knowledge about infectious diseases.¹⁰⁻¹²

The aim of this study was to evaluate the willingness of parents to allow their children to receive a COVID-19 vaccine and the factors affecting the decision.

MATERIALS and METHODS

Study Design

This study was conducted as a cross-sectional and descriptive survey study in a tertiary pediatric hospital in Ankara, Turkey between January 25 and February 10, 2021. Parents who brought their children to the pediatric emergency department were asked to answer questions in a questionnaire on a completely voluntary basis. Participants were guaranteed that participation was voluntary, that refusal would have no effect on them, the survey would not collect personal contact information or identification, and the data would be kept strictly confidential and only be used for

research purposes. The questionnaire was conducted by a pediatric emergency physician face-to-face, with the doctor and the participant wearing a face mask, following social distancing rules.

Questionnaire Features and Study Protocol

Parents' gender, age, educational status, chronic disease history, number of children, and age of the child brought to the examination were recorded. Parental age was divided into three groups as 18-30 years, 31-40 years, and 41 years and above. Parents' educational status were divided into four groups: illiterate, primary school graduate, high school graduate, and having received a university/master degree. The monthly income of the family was divided into three groups as low, mild, and high income (according to the minimum wage). Participants were asked about the state of concern that their child currently has COVID-19 disease (not worried, worried, very worried). Participants were asked if they or their immediate relatives had had COVID-19 previously.

The main questions were: "If a vaccine against the coronavirus becomes available for you, would you get vaccinated?" (yes/ not sure/ no) and "If a vaccine against the coronavirus becomes available for your child, would you vaccinate your child?" (yes/ not sure/ no). If the answer from parents were "not sure" or "no," the reasons for this decide were probed (by giving options and asking open-ended questions). Parents whose answer is 'no or not sure' about their child's vaccination; a further question asked: "Does the vaccine's country of origin (domestic / foreign) affect your decision?". It was recorded whether the parents had gotten the routine vaccinations in the national vaccination calendar for their children.

It was attempted to determine the relationships between the participants' acceptance to receive the COVID-19 vaccine for their children and their gender, age, educational status, monthly income of their family, child's and parents' chronic disease history, the level of concern about their child getting COVID-19, their and their immediate relative's history of getting COVID-19.

Approval for this study was obtained from the Clinical Research Ethics Committee of SBU Ankara Dr Sami Ulus

Gynecology and Childhood Health and Diseases Training and Research Hospital (21/01/2021 dated and E21/01-84 numbered).

Statistical Analysis

Statistical analyses were conducted with SPSS 19.0 (IBM Corp., Armonk, NY, USA). For descriptive statistics, categorical variables are expressed as number (n) and percentage (%), and continuous variables are expressed as mean (\pm) standard deviation. The relationship between the acceptance to vaccinate their child and other parameters was evaluated with χ^2 tests. The value of $p < 0.05$ was accepted as statistically significant.

RESULTS

The study included 592 parents, 180 (30.4%) male and 412 (69.6%) female, with a mean age of 34.14 ± 7.42 years. The mean age of the men was 36.52 ± 6.69 years, while women were aged 33.11 ± 7.49 years. The mean age of the children brought in for an examination was 56.91 ± 55.3 months, and 105 (17.7%) of the 592 children had chronic diseases.

Table 1. The sociodemographic characteristics of the parents' and their answers.

Variables	n (%)
Parents' gender	
male	180 (30.4)
female	412 (69.6)
Parents' age	
18 - 30 years	208 (35.1)
31 - 40 years	275 (46.5)
≥ 41 years	109 (18.4)
Education level	
illiterate	13 (2.2)
primary school graduates	206 (34.8)
highschool graduates	199 (33.6)
university-master graduates	174 (29.4)
Parents' chronic illness (yes)	92 (15.5)
Child's Chronic illness (yes)	105 (17.7)
Monthly income level	
low	151 (25.5)
middle	396 (66.9)
high	45 (7.6)
Worry about your child currently having COVID-19	
not worried	301 (58.8)
worried	201 (34)
very worried	90 (15.2)

Of the parents, 186 (31.4%) had only one child, 174 (29.4%) were university and graduate school graduates, 92

(15.5%) had a chronic disease, and 151 (25.5%) had a low monthly income. While 113 of the parents (19.1%) had had COVID-19, there were 273 (46.1%) that had an immediate relative who had had COVID-19. Sociodemographic characteristics of the parents' and their answers are shown in Table 1.

To the question: "If a vaccine became available for you, would you get vaccinated?" 324 (54.7%) of the parents answered yes, 120 (20.3%) answered no, and 148 (25%) answered not sure. To the question: "If a vaccine becomes available for your child, would you get your child vaccinated?" 257 of the participants (43.4%) said yes, 158 (26.7%) no, and 177 (29.9%) not sure (Table 2). Of the 324 parents who were willing to vaccinate themselves, 255 (78.7%) of them would vaccinate their child, 45 (13.9%) of them were not sure, and 24 (7.4%) of them would not vaccinate their child. Three hundred thirty five participants were answer about vaccinate their children 'not sure or no'; 222 (66.3%) of them stated that their decisions may change depending on whether the vaccine is domestic or foreign. While 215 (96.85%) participants preferred domestic vaccines, 7 (3.15%) participants stated that they would prefer foreign vaccines (except Chinese-originating).

Table 2. Parents' willingness to get a COVID-19 vaccine.

If a vaccine becomes available for you, would you get vaccinated?			
Parents	Yes n (%)	No n (%)	Not sure n (%)
Father	115 (63.9)	34 (18.9)	31 (17.2)
Mother	209 (50.7)	86 (20.9)	117 (28.4)
Total	324 (54.7)	120 (20.3)	148 (25.0)
If a vaccine becomes available for your child, would you get vaccinated your child?			
Father	95 (52.8)	48 (26.7)	37 (20.6)
Mother	162 (39.3)	110 (26.7)	140 (34.0)
Total	257 (43.4)	158 (26.7)	177 (29.9)

When the factors affecting the willingness of parents to get vaccinated were evaluated, it was observed that fathers were more willing than mothers to get their children vaccinated for COVID-19. While 95 (52.8%) of the fathers stated that they would vaccinate their children for COVID-19, 162 (39.3%) of the mothers stated that they would vaccinate their children ($p=0.002$). While 54.6% of parents with a 'university-master graduate' will have their child vaccinated, this rate is 41.7% for 'high school graduate', 36.4% for 'primary school graduate' and 30.8% for 'illiterate'. Parents with a high level of education were more

willing to vaccinate their children ($p=0.022$). While 35.1% of parents with a 'low monthly income' will have their children vaccinated, 43.9% of the 'middle income' and 66.7% of the 'high monthly income' would have their children vaccinated. ($p=0.006$). There was no significant difference between other factors and parents' vaccine acceptance of their children.

While 584 (98.6%) of the parents had had the routine vaccines administered to their children, 8 (1.4%) stated that

Table 3. The reasons parents would refuse or hesitate to vaccinate their children against COVID-19.

Reason*	n (%)
Fear of side effects	223 (37.7)
Because it is a foreign vaccine	160 (27.0)
Not knowing the exact effectiveness of the vaccine	148 (25.0)
The vaccine contains components harmful to the human body	135 (22.8)
COVID-19 is mild in children and is not an illness to fear	67 (11.3)
Because I have had COVID-19	20 (3.3)
Religious reasons	9 (1.5)
Because it is a domestic vaccine	4 (0.7)
Before the government officials vaccinated, I will not get vaccinated	2 (0.3)
They will play with our genes with the vaccine	2 (0.3)
My child has a chronic illness, I do not want them to be vaccinated	1 (0.2)
My child is still breastfeeding	1 (0.2)

* Some participants gave more than one answer

DISCUSSION

Since COVID-19 began affecting the whole world, vaccination studies have accelerated. Recently, studies have been carried out to evaluate people's decisions to vaccinate in the event of a proven COVID-19 vaccine. Vaccination acceptance rates vary between countries. The acceptance rate was reported to be 80% among participants in a study in England, 80% in Denmark, 86.1-91.3% in China, 64.7% in Saudi Arabia, and 58.9-62% in France.¹³⁻¹⁵ In our study, 324 (54.7%) participants stated that they would receive the vaccine, 120 (20.3%) stated that they would not, and 148 (25%) were not sure. The relatively low rate of vaccine acceptance compared to other studies may be due to the difference in times the studies were conducted, the difference in the sustainability of the health services during the pandemic period, the variations in the main question asked (e.g., yes or no, yes/no/not sure), and the capacity of countries to produce their own vaccines.

The percentage of parents with willingness to have their children vaccinated also differ in studies. In a study conducted in China, 72.6% of parents stated that they would have their children vaccinated for COVID-19, while in a multinational study involving six countries (the United

States, Canada, Israel, Japan, Spain, and Switzerland) 65.2% of parents stated that they would have their children vaccinated.^{16,17} In our study, 257 (43.4%) parents stated that they would vaccinate their children, 158 (26.7%) stated that they would not, and 177 (29.9%) were undecided. Of these differences between countries, it was thought that it depends on the socioeconomic and cultural characteristics of the countries and the impact of health services during the pandemic period.

they did not have routine vaccinations for their children. The most frequent reasons parents stated that they would refuse or hesitate to vaccinate their child against COVID-19 were: fear of possible side effects ($n=223$), because it is a foreign vaccine ($n=160$), not knowing the exact effectiveness of the vaccine ($n=148$), and the vaccine contains components harmful to the human body ($n=135$). Reasons parents would refuse or hesitate to vaccinate against COVID-19 vaccine are shown in Table 3.

There are many factors that affect parents' vaccination decision. Studies have shown that many factors, such as the education level of the parents, the monthly income of the family, the age and gender of the parents, and whether the child has a chronic disease affects the vaccination decision.^{11,16-18} In a multinational study, a greater willingness was found to be associated with an older age of the parents, concern that the child currently has COVID-19, and the father completing the questionnaire.¹⁷ In a study conducted in China, no significant relationship was found between parental gender, education level, parental age, monthly income, and vaccination of their child.¹⁶ In our study, a high level of parental education, a high monthly income of the family, and the father completing the questionnaire were associated with significantly higher vaccine acceptance. Differences in results may be due to differences in the

number of participants, gender distribution, and socio-economic status.

Another important factor in the decision to vaccinate is the country of origin of the vaccine. Studies have found that the rate of accepting domestically-produced vaccines is higher.¹³ Yiğit et al.¹⁹ reported that 62.6% of parents were willing to have a domestic vaccine, while only 33.9% were willing to have a foreign vaccine. In our study, 335 participants were asked about vaccinate their children 'not sure or no'; 222 (66.3%) of them stated that their decisions may change depending on whether the vaccine is domestic or foreign. While 215 (96.85%) participants preferred domestic vaccines, 7 (3.15%) participants stated that they would prefer foreign vaccines (except Chinese-originating). Accordingly, we hypothesize that domestic vaccine production will significantly increase vaccine acceptance.

Parents may have different reasons for vaccine refusal or hesitancy. Although reasons differ between countries, the most common reasons are: fear of side effects, safety, effectiveness, and thinking there are harmful substances in the vaccine.^{13,17-20} In our study, the most frequent reasons were: fear of possible side effects, because it is a foreign vaccine, and not knowing the precise effectiveness of the vaccine. Our results were generally compatible with the literature: since there is no domestic COVID-19 vaccine available from our country at the phase 3 clinical trial stage, the opposition to foreign vaccines was high.

Our study had some limitations. These included single center data, a limited number of participants, and being conducted in only one city in our country. However, we think that this study will contribute to the literature as it reflects the Turkish parents' decision to get their children vaccinated against COVID-19.

In conclusion, 54.7% of the parents were willing to be vaccinated, while 43.4% were willing to vaccinate their children. Knowing the reasons for vaccine refusal or hesitancy is extremely important in terms of ensuring herd immunity and ending the pandemic. Public health authorities should inform the public about the importance of vaccination and domestic vaccine production should be encouraged.

Conflict of Interest

The authors declare that there is not any conflict of interest regarding the publication of this manuscript.

Acknowledgement

The authors gratefully acknowledge Scribendi (www.scribendi.com) for English language editing.

Ethics Committee Permission

Approval for this study was obtained from the Clinical Research Ethics Committee of SBU Ankara Dr Sami Ulus Gynecology and Childhood Health and Diseases Training and Research Hospital (21/01/2021 dated and E21/01-84 numbered).

Authors' Contributions

Concept/Design: AG, AG, CDK, NT, RMY. Data Collection and/or Processing: AG, AG, BÖ, MMG, İB, AT. Data analysis and interpretation: AG, BÖ, İB, RMY, CDK. Literature Search: AG, RMY, NT, CDK, BÖ, İB. Drafting manuscript: AG, MMG, NT. Critical revision of manuscript: AG, AG, MMG, NT.

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