Comparison of Opinions And Attitudes of Parents with Vaccine Refusal Before And During The Covid-19 Pandemic

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ABSTRACT

Aim: This study aimed to compare parents' opinions and attitudes who refused vaccination at birth before and during the COVID-19 pandemic.

Methods/design: This comparative-descriptive-design study was conducted with 20 parents (Group1) who refused to receive the first dose of Hepatitis B vaccine before the first COVID-19 case in Turkey and 24 parents (Group2) who refused that vaccine after the onset of the pandemic. It was observed that 95% of the parents in Group1 and 87.5% of Group2 did not change their ideas about childhood vaccines after the pandemic, and there was no significant difference between the groups. Parents in both groups did not want to get vaccinated children against COVID-19. Examining the reasons why parents do not vaccinate their children; It was observed that the number of parents who thought "I do not believe it protects from the disease", "I do not think it is necessary" and "I believe that different diseases caused by vaccines develop" were higher in the pandemic group compared to the pre-pandemic group. When the views on the effects of vaccines on children's health are examined; It was found that the parents who refused the vaccine during the pandemic reported a statistically significant opinion of "They get communicable diseases" compared to the parents who refused before the pandemic.

Conclusion: The reasons for parents to refuse childhood vaccines during the COVID-19 pandemic are similar to those of parents who refused before the pandemic, and parents' attitudes towards childhood vaccines have not changed to a large extent.

Keywords: vaccine refusal; vaccine hesitancy; parents; COVID-19; pandemic; children

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Covid-19 Pandemisi Öncesinde ve Sırasında Aşı Reddinde Bulunan Ebeveynlerin Görüş Ve Tutumlarının Karşılaştırılması

ÖZET

Amaç: Bu çalışma, COVID-19 pandemisi öncesinde ve sırasında doğumda aşı reddinde bulunan ebeveynlerin görüş ve tutumlarını karşılaştırmayı amaçlamıştır.

Yöntem ve Bulgular: Bu karşılaştırmalı-tanımlayıcı tasarımda yapılan çalışmaya, Türkiye'deki ilk COVID-19 vakasından önce ilk doz Hepatit B aşısını yaptırmayı reddeden 20 ebeveyn (Grup1) ve pandemi başlangıcından sonra aşılamayı reddeden 24 ebeveyn (Grup2) dahil edilmiştir. Pandemi sonrası Grup1'deki ebeveynlerin %95'inin ve Grup2'dekilerin %87,5'inin çocukluk çağı aşıları konusundaki fikirlerini değiştirmediği ve gruplar arasında anlamlı bir fark olmadığı görüldü. Her iki gruptaki ebeveynler çocuklarına COVID-19 aşısı yaptırmak istemedi. Ebeveynlerin çocuklarına aşı yaptırmama nedenleri incelendiğinde Grup2'de "Hastalıktan koruduğuna inanmıyorum", "Gerekli olduğunu düşünmüyorum" ve "Aşıların neden olduğu farklı hastalıkların geliştiğine inanıyorum" diyen ebeveyn sayısının daha fazla olduğu görüldü. Ebeveynlerin aşıların çocuk sağlığına etkilerine ilişkin görüşleri incelendiğinde, pandemi sırasında aşıyı reddeden ebeveynlerin, pandemi öncesinde reddeden ebeveynlere kıyasla "bulaşıcı hastalıklara yakalanıyorlar" düşüncesinin anlamlı derecede yüksek olduğu belirlendi.

Sonuç: COVID-19 pandemisi sırasında ebeveynlerin çocukluk çağı aşılarını reddetme nedenleri, pandemi öncesinde reddeden ebeveynlerle benzerdir ve ebeveynlerin çocukluk çağı aşılarına yönelik tutumları büyük ölçüde değişmemiştir.

Anahtar Kelimeler: aşı reddi, aşı tereddüdü, ebeveynler, COVID-19, pandemic, çocuk

INTRODUCTION

Vaccination is one of the most successful public health interventions. It is the cornerstone of preventing infectious diseases (Neumann-Böhme et al., 2020). Despite all the advances in vaccines and vaccinations, individuals in the community must receive routinely recommended vaccinations to maintain population immunity, prevent the emergence of vaccine-preventable diseases, and ensure the introduction of new vaccines (Callender, 2016). Individual immunity is provided through vaccination. While vaccination protects individuals from disease, vaccination of a society as a whole creates social immunity. Thus, as the number of vaccinated people in a society increases, the likelihood that unvaccinated individuals will encounter disease factors decreases, and accordingly, the incidence of disease in that society decreases (Dubé et al., 2015; Fine et al., 2011). The continued rise in vaccine-preventable diseases has caused the World Health Organization (WHO) to name vaccine indecision as one of the top ten threats to global health in 2019 (World Health Organization, 2019).

Fears and myths about vaccines have persisted throughout history due to religious, political, etc. reasons (Hussain et al., 2018). Widespread vaccination began in the early 18th century after Edward Jenner proposed the concept of vaccines, and vaccination became mandatory in Great Britain due to the vaccination campaign of 1840-1853. That same year, the anti-vaccination movement began with the formation of the Anti-Vaccination League in London. Following these campaigns, mandatory vaccination laws were repealed and mandatory vaccinations were abolished (Gür, 2019; Hussain et al., 2018). Concern and opposition to vaccines have grown unabated over the past 20 years.

For this reason, in 2012, WHO established a group called the Vaccine Hesitancy Working Group to study vaccine rejection (World Health Organization, 2014). According to the report prepared by WHO and UNICEF, as a result of the work of this group, “vaccine hesitancy” and “vaccine refusal” are defined as separate concepts. Vaccine hesitation is a delay in accepting or rejecting the vaccine despite vaccine accessibility being possible for one or more vaccines. Vaccination refusal is the situation of not vaccinating by refusing all vaccines (Larson et al., 2015). Both vaccine refusal and vaccine hesitancy are significant challenges that threaten the success of the WHO Global Vaccine Action Plan (GVAP), as more and more parents delay vaccination or refuse one, several, or all vaccines for their children (Dubé et al., 2018).

In 2018, the immunization coverage rate in Europe and America was generally 90%, while it was 70-80% in Afghanistan, Nigeria, Pakistan and India. In some states in Europe and the US, vaccination rates fell by 2-4% between 2012 and 2016. According to 2017 data, vaccination coverage against diphtheria, tetanus and pertussis was 92% in Europe and 91% in the United States (World Health Organization, 2020). Vaccination rates in Turkey fell from 98% in 2016 to 96% in 2017 (Gür, 2019; Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü, 2019).

As a result of effective immunization programs, the incidence of vaccine-preventable diseases such as measles, chickenpox, and hepatitis A has declined, so fear of these diseases has been replaced by fear

of vaccination (Amanna & Slifka, 2005). Vaccination hesitancy has been around since time immemorial, posing a serious threat to global health and contributing to the resurgence of infectious diseases such as measles and pertussis (Benecke & DeYoung, 2019; Borba et al., 2015; Phadke et al., 2016; Wong et al., 2020). Studies on the acceptance of COVID-19 vaccines have reported that the frequency of COVID-19 vaccines increases as the fear of the disease increases in society (Detoc et al., 2020; Yigit et al., 2021). However, the effect of the current COVID-19 pandemic on vaccine hesitancy and rejection is unknown. Increased social awareness of the acceptance of COVID-19 vaccines (Reiter et al., 2020; Yılmazbas et al., 2020) may have impact parents' opinions and attitudes regarding refusing childhood vaccines. This study aimed to compare the opinions and attitudes of parents who refused vaccination at birth before and during the COVID-19 pandemic. It is thought that studies to be carried out in the pandemic period on vaccine hesitancy and vaccine rejections in childhood immunizations will yield more positive results.

Research questions

- Does the COVID-19 pandemic impact parents' opinions and attitudes regarding refusing childhood vaccines?
- Is there a significant difference between parents' opinions and attitudes who refused childhood vaccines before and during the pandemic?
- What are the opinions and attitudes of parents who refused childhood vaccines about getting COVID-19 vaccination for their children?

METHODS

The research in comparative descriptive design was executed in a hospital in Istanbul, Turkey between June 24 and December 24, 2020. The study population composed of 58 parents who refused to get their children the first Hep B vaccine dose at birth between December 12, 2017, and December 24, 2020. The study sample consisted of parents who could be reached from the contact information registered in the hospital, without communication barriers, who spoke the local language, and who accepted to participate in the study without selecting the sample. Nine parents whose contact information could not be reached and five parents who refused to attend to study were excluded. The study was conducted with 20 parents (Group 1) who refused to receive the first dose of Hepatitis B vaccine before March 11, 2020, the date of the first COVID-19 case in the country, and 24 parents (Group 2) who refused that vaccine after the onset of the pandemic.

The data were collected through a questionnaire prepared by the researchers in line with the literature. This questionnaire consists of a total of 24 questions, including sociodemographic data such as the age of the mother and father, educational status, occupation, the vaccination status of the child, age and gender of the child, and, why the parent was not vaccinated to the child, and whether there was a change in his ideas about vaccination after the COVID-19 pandemic.

During the data collection phase, the parents' contact information who refused to receive the hepatitis B vaccine, the first vaccine for children, was obtained from the hospital archives. Due to the COVID-19 pandemic, parents were contacted by phone and informed about the study. Parents who consented to participate in the study were asked to answer questions on the data collection form, and if the requested person was unavailable, the interview would be rescheduled for a later date.

Statistical Analysis

The program IBM SPSS Statistics 22 (IBM SPSS) was used for statistical analysis. Data were analyzed by number, percentage, mean, standard deviation, and chi-square test. Statistical significance level $p<.05$ was used to analyze the research data.

Ethical Issues

Ethics committee approval (24.06.2020/136) and permission of institution were obtained from Ethical Committe of Zeynep Kamil Women and Children Diseases Training and Research Hospital, where the study was executed. In the study conducted by telephone interview, the Informed Consent Form was read to the participants by the researchers, the purpose of the study was explained, and the parents who accepted to attend in the study were included.

FINDING

In Table 1, it was determined that the parents who refused vaccination before and during the pandemic had similar characteristics in terms of demographic characteristics and getting information about childhood immunizations. There was no statistically significant difference between the groups ($p>.05$).

Table 1. Distribution and comparison of demographic characteristics of the groups (n=44)

Demographic Characteristics	**Group 1 (n=20)**		**Group 2 (n=24)**		**Test & p**
Age	**Mean ± SD** †		**Mean ± SD** †		
Mother	28,15 ± 4,24		29,25 ± 5,84		t= -.701 p= .487
Father	32,90 ± 5,83		32,91 ± 5,99		t= -.009 p= .993
	n	%	n	%	
Educational Status					
Mother					
Primary/Middle school	7	35	6	25	$\chi2$ = 3.128 p = .573*
High school	7	35	11	45,8	
Under/Postgraduate	6	30	7	29,2	
Total	20	100	24	100	
Father					
Primary/Middle school	6	30	7	29,2	$\chi2$ = .125 p = 1.000*
High school	6	30	8	33,3	
Under/Postgraduate	8	40	9	37,5	
Total	20	100	24	100	

Table 1. continued

Profession					
Mother					
Civil servant	-	-	1	4,2	χ^2 = 3.271 p = .197*
Housewife	17	85	16	66,6	
Other	3	15	7	29,2	
Total	20	100	24	100	
Father					
Civil servant	3	15	1	4,2	χ^2 = 1.945 p = .613*
Employee	5	25	8	33,3	
Self-employment	6	30	6	25	
Other	6	30	9	37,5	
Total	20	100	24	100	
Income Rate					
Low	3	15	2	8,3	χ^2 = 1.799 p = .482*
Middle	16	80	22	91,7	
High school	1	5	-	-	
Total	20	100	24	100	
Health Insurance					
Yes	20	100	21	87,5	χ^2 = 2.683 p = .239*
No	0	0	3	12,5	
Total	20	100	24	100	
Total children					
1	6	30	6	25	χ^2 = 2.242 p = .571*
2	9	45	14	58,3	
3 or more	5	25	4	16,7	
Total	20	100	24	100	
Unvaccinated family member					
Yes	13	65	14	58,3	χ^2 = .205 p = .651
No	7	35	10	41,7	
Total	20	100	24	100	
Obtaining prenatal information					
Yes	19	95	22	91,6	χ^2 = .191 p = 1.000
No	1	5	2	8,4	
Total	20	100	24	100	
Obtaining postnatal information					
Yes	17	94,4	22	91,6	χ^2 = .120 p = 1.000
No	1	6,6	2	8,4	
Total	18	100	24	100	

*†= Standart deviation, **t**= Independent samples t-test, **χ2**= Pearson's chi-square test,* Fisher's exact test*

In Table 2, when the reasons for not vaccinating their children are examined, it has been seen that the number of parents who thought "I don't believe it protects them from the diseases", "I don't think it is necessary", and "I believe that different vaccine-related diseases develop" was higher in the pandemic group than in the pre-pandemic group, and this increase was statistically significant (p<.05).

Table 2. Distribution of parents' reasons for not vaccinating their children of the groups (n=44)

Reason for not getting vaccinated to children	**Group 1 (n=20)**	**Group 2 (n=24)**	Test & p
The child has a disease that prevents vaccination	1 (%5)	1 (%4,1)	$\chi2$ = .017 p = 1.000*
The child is too young	3 (%15)	3 (%12,5)	$\chi2$ = .459* p = .684
Does not protect from disease	1 (%5)	9 (%37,5)	$\chi2$ = 4.400 p = .036
Not required	0 (%0)	9 (%37,5)	$\chi2$ = 9.429* p = .002
Has too many side effects	3 (%15)	11 (45,8)	$\chi2$ = 2.876 p = .090
Neutering the child	0 (%0)	4 (%16,6)	$\chi2$ = 3.667* p = .114
Different vaccine-induced diseases can develop	4 (%20)	12 (%50)	$\chi2$ = 4.243 p = .039
It does not give confidence as it is produced abroad	2 (%10)	7 (%29,1)	$\chi2$ = .489 p = .484
News/social media influences parents' decisions	1 (%5)	4 (%16,6)	$\chi2$ = 2.322* p = .198
It contains harmful substances	16 (%80)	16 (%66,6)	$\chi2$ = 1.956 p = .162
Thinking that vaccine campaigns are commercial advertisements of companies	0 (%0)	4 (%16,6)	$\chi2$ = 3.667* p = .114
Religious reasons	2 (%10)	3 (%12,5)	$\chi2$ = .068* p = .1000

*$\chi2$= Pearson's chi-square test, * Fisher's Exact Test*

In Table 3, the views of parents who refused to be vaccinated before and during the pandemic regarding the risks to the child's health by not being vaccinated were examined. It was observed that the parents who refused the vaccine during the pandemic gave a statistically significant opinion that "They get communicable diseases" compared to the parents who refused before the pandemic.

Table 3. Comparison of parents' views on the effects of not getting vaccinated in terms of child health according to the groups (n=44)

Risks of not getting vaccinated	**Group 1 (n=20)**	**Group 2 (n=24)**	**Test & p**
The child catches infectious diseases	7 (%35)	16 (%66,6)	$\chi2$ = 4.385 p = .036
The child get over the illness severely	7 (%35)	9 (%37,5)	$\chi2$ = .029 p = .864
The child gets sick but it's okay	1 (%5)	1 (4,1)	$\chi2$ = .017 p = 1.000*
There is no risk to the child	10 (%50)	7 (29,1)	$\chi2$ = 1.997 p = .158
The child's immunity becomes stronger	5 (%25)	2 (8,3)	$\chi2$ = 2.265 p = .217*

*$\chi2$= Pearson's chi-square test, * Fisher's Exact Test*

In Table 4, the attitudes of parents who refused vaccination before and during the pandemic having their children vaccinated against Covid-19 were compared, and no significance was found between the attitudes of "I want to get the vaccine to my child", "I don't want to get the vaccine to my child" and "I am undecided" and the reasons for these attitudes (p>.05).

Table 4. Comparison of parents' attitudes in groups towards getting their children vaccinated against COVID-19 (n=44)

Parents' attitudes	Group 1 (n=20)	Group 2 (n=24)	Test & p
I want to get the vaccine to my child…	1 (%5)	2 (%8,3)	$\chi2 = .191$ p = 1.000*
If there is domestic vaccine	1 (%5)	2 (%8,3)	$\chi2 = .191$ p = 1.000*
For public health	1 (%5)	0 (%0)	$\chi2 = 1.228$ p = .455*
I don't want to get the vaccine to my child, because …	15 (%75)	17 (%70,8)	$\chi2 = .364$ p = .546
It contains harmful substances (heavy metals, mercury, salt spirit, etc.)	12 (%60)	9 (%37,5)	$\chi2 = 2.214$ p = .137
I don't believe it protects them from the diseases	3 (%15)	9 (%37,5)	$\chi2 = 2.784$ p = .095
My child is too young	1 (%5)	0 (%0)	$\chi2 = 1.228$ p = .455*
It has side effects (allergy, infertility)	2 (%10)	5 (%20,8)	$\chi2 = .957$ p = .428*
It does not give confidence as it is produced abroad	0 (%0)	4 (%16,6)	$\chi2 = 3.667$ p = .114*
News/social media influences my decisions	0 (%0)	2 (%8,3)	$\chi2 = 1.746$ p = .493*
I think vaccine campaigns are commercial advertisements of companies	0 (%0)	2 (%8,3)	$\chi2 = 1.746$ p = .493*
I think that the ingredients in it are incompatible with my religious belief	0 (%0)	3 (%12,5)	$\chi2 = 2.683$ p = .239*
I am undecided, because…	4 (%20)	5 (%20,8)	$\chi2 = .005$ p = 1.000*
It contains harmful substances	0 (%0)	3 (%12,5)	$\chi2 = 2.683$ p = .239*
It does not give confidence as it is produced abroad	3 (%15)	2 (%8,3)	$\chi2 = .481$ p = .646*
It has side effects	0 (%0)	1 (%4,1)	$\chi2 = .853$ p = 1.000*

*$\chi2$= Pearson's chi-square test, * Fisher's Exact Test*

In Table 5, the effect of the pandemic on the ideas of parents who refused vaccination was evaluated. 100% of the parents in Group 1 and 91.6% of the parents in Group 2 reported that their ideas about childhood immunizations did not change during the pandemic, and there was no significant difference between the groups (p>.05). Among the reasons for those who did not change their minds, it was found that the opinion of "Because it contains harmful substances (heavy metals, mercury, salt spirit, etc.)" was statistically significantly higher in Group 1 (p<.05).

Table 5. Comparison of the impact of the COVID-19 pandemic on parents' opinions on childhood vaccines in groups (n=44)

	Group 1 (n=20)	Group 2 (n=24)	Test & p
Changes in parents' opinions			
Yes	0 (%0)	2 (%8,3)	$\chi2 = 1.746$ p = .493*
No	20 (%100)	22 (%891,6)	$\chi2 = .743$ p = .614*
Reasons for parents whose opinions do not change			
It contains harmful substances (heavy metals, mercury, salt spirit, etc.)	13 (%65)	8 (%33,3)	$\chi2 = 4.385$ **p = .036**
It doesn't protects from diseases	3 (%15)	8 (%33,3)	$\chi2 = 1.956$ p = .162
The child is too young	1 (%5)	2 (%8,3)	$\chi2 = .191$ p = 1.000*
It has side effects (allergy, infertility)	4 (%20)	10 (%41,6)	$\chi2 = 2.361$ p = .124
It does not give confidence as it is produced abroad	2 (%10)	6 (%25)	$\chi2 = 1.650$ p = .259*
News/social media influences decisions	0 (%0)	3 (%12,5)	$\chi2 = 2.683$ p = .239*
Religious reasons	0 (%0)	2 (%8,3)	$\chi2 = 1.746$ p = .493*
Developmentally and mentally harmful	1 (%5)	0 (%0)	$\chi2 = 1.228$ p = .455*

*$\chi2$= Pearson's chi-square test, * Fisher's Exact Test*

DISCUSSION

Complex reasons behind vaccine hesitancy can be revealed by analyzing environmental factors, agent-related factors, and host-related factors (Gowda & Dempsey, 2013; Kumar et al., 2016). Public health policies, social factors and the effects of the media constitute environmental factors.(Arede et al., 2019; Daley et al., 2018; Dubé et al., 2015). Agent-related factors (vaccine and disease) include perceived susceptibility to disease as well as the differential apprehension of vaccine safety and efficacy (Dubé et al., 2015; Larson et al., 2011; Salmon et al., 2015). Host-related factors relate to knowledge, previous experience, education, and income levels (Kumar et al., 2016; Olson et al., 2020). Vaccine rejection and hesitation rates are increasing every year worldwide and in Turkey (Gür, 2019; World Health Organization, 2019). However, the impact of the current COVID-19 pandemic on hesitancy and rejection of childhood vaccines is unknown. This study compared the opinions and attitudes of parents who refused vaccination before and during the COVID-19 pandemic. It was determined that parents who refused vaccination at birth before and during the COVID-19 pandemic were similar in terms of sociodemographic characteristics (Table 1). This result is valuable in revealing the effect of the pandemic process on the opinions and attitudes of parents about vaccine hesitancy and refusal in our study groups, which differ only in terms of the timing of vaccine refusal.

When the reasons for refusal of childhood vaccines by parents who refused vaccines at birth before and during the COVID-19 pandemic were compared, the thoughts of "I do not believe it protects from disease", "I do not think it is necessary" and "I believe that different vaccine-related diseases develop" were significantly higher in parents who refused during the pandemic (Table 2). COVID-19 may be the most effective way to control the pandemic. However, the speed with which the vaccine was formulated, tested, produced, and distributed has aroused widespread public skepticism (Wang et al., 2020).

Reported side effects, allergic reactions, and the novelty of using mRNA in relation to the safety and efficacy of vaccination against COVID-19 have raised doubts about the vaccine (Marquez et al., 2021). In this study, hesitations about COVID-19 vaccines may have caused the high rate of rejection of childhood vaccines for similar reasons during the pandemic.

In this study, hesitancy about the COVID-19 vaccine for similar reasons may have contributed to the high rejection rates of childhood vaccines during the pandemic. The rapid global spread of COVID-19, its morbidity and mortality, and lack of effective treatments have fueled fear of the disease. Vaccine rejection rates decrease as fear of contracting COVID-19 increases, study reports (Detoc et al., 2020; Yigit et al., 2021). In a study (Özdemir & Kadıoğlu, 2020), in which parents' attitudes and behaviors towards childhood vaccines were examined, 42.2% of parents stated that children who are not vaccinated would catch contagious diseases more quickly. Similarly, in this study, 35% of the parents who refused before the pandemic and 66% of the parents who refused during the pandemic stated that the children who were not vaccinated would get contagious diseases. It was determined that the thought that children who were not vaccinated would catch infectious diseases was significantly higher in parents who refused during the pandemic (Table 3). Despite this, when examining the opinions of parents who refused vaccination before and during the pandemic about getting their children vaccinated against COVID-19, acceptance rates were low in both groups (5% and 8.3%, respectively) (Table 4). In studies, the rates of parents not accepting a possible COVID-19 vaccine for their children range from 39.2% to 57% (Goldman et al., 2020; Marquez et al., 2021). In another study conducted in Turkey, the acceptance rate of getting a COVID-19 vaccine for their children was reported as 29.4% for a domestic vaccine and 13.7% for an international vaccine (Yigit et al., 2021).

The studies have shown that children are susceptible to SARS-CoV-2 infection but are less likely than adults to become seriously ill (Ahmed et al., 2020; Cheung et al., 2020). One study (Marquez et al., 2021) reported that only 44.8% of parents agreed that their child would be infected with the virus, and 31.6% thought they might be hospitalized with COVID-19. The belief that children won't get sick may have influenced parents' attitudes toward the COVID-19 vaccine. Additionally, in April 2020, a new syndrome called multisystem inflammatory syndrome in children (MIS-C) was described as being associated with COVID-19 in children. MIS-C is thought to be an immunological reaction; SARS-CoV-2 contact is characterized by fever, high inflammatory indicators, and at least

two systems in a patient with PCR, antigen, or antibody positivity. Signs and symptoms depend on which body areas are affected (Nakra et al., 2020). The parents' responses to having their children vaccinated against COVID-19 were evaluated at the beginning of the pandemic process, and it may have caused the parents' attitudes towards the COVID-19 vaccine to change after MIS-C syndrome became known among the public.

It was found that 95% of parents who refused childhood vaccines before the pandemic and 87.5% of the parents who refused during the pandemic did not change their ideas about childhood vaccines after the pandemic, and there was no significant difference between the groups (Table 5). The most common reasons why they did not change their minds were that they thought the content of the vaccines was harmful (65%) and that the vaccines would have side effects (41.6%). Similarly, a study (Salmon et al., 2009) reported that the most common reason parents refuse vaccination was that the vaccine would cause harm (57%). In addition, parents who refused vaccination were more likely to refer to other sources (other than health professionals). Due to the different COVID-19 vaccines and the negative media coverage about vaccination during the pandemic process, parents who are hesitant to vaccinate their children and/or refuse vaccinations may not have experienced significant changes in their ideas about childhood vaccines.

LIMITATIONS

The study's generalizability is limited because it was conducted with parents who refused vaccination in a single center, and the number of participants was small. Due to the pandemic, data were collected via phone. Therefore, the inability to reach parents whose contact information has changed is one of the study's limitations.

CONCLUSION

This study determined that the reasons for parents' rejection of childhood vaccines during the COVID-19 pandemic were similar to those of the parents who refused before the pandemic, and parents' attitudes towards childhood immunizations did not change to a large extent. Parents' ideas may change due to misinformation circulating in the media or public during the pandemic process, where new developments regarding the disease and its treatment are experienced every day. However, due to the fact that there is still insufficient and conclusive evidence for the vaccination of COVID-19 in childhood, parents' possible answers were obtained. It is recommended to conduct studies with larger samples on the effects of the COVID-19 pandemic on the causes of childhood vaccine hesitancy and vaccine refusal during the period when vaccination rates against COVID-19 disease increase in Turkey and worldwide.

Conflict of Interests

There is no conflict of interest between the authors.

Author Contributions

N.K.: Study conception, study design, data analysis, interpretation, drafting of the article

T.K.T: Study conception, study design, data collection

M.A.: Study conception, study design, interpretation, drafting of the article

N.B.K.: Data collection

F.H.: Data collection

S.Y.: Study conception, study design, critical revision of the article

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