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Immunization Status, Frequency and Symptoms of COVID-19 in 12-18 Aged Children

On İki-On Sekiz Yaş Grubu Çocuklarda COVID-19 Aşısı ile Aşılanma Durumu, COVID-19 Hastalığı Sıklığı ve Belirti-Bulguları

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Abstract

Objective: Children in the 12-18 years age group are among the risky groups that can be affected by COVID-19 disease. Vaccination continues to protect against COVID-19 infection and prevent the spread of the virus. Despite this, some children suffer from Coronavirus disease. Therefore, it is also essential to know what they went through while they were sick. This study was conducted to determine the vaccination status of children between the ages of 12-18 years with the COVID-19 vaccine, the frequency of children with coronavirus disease, and symptoms in children with the disease.

Material and Methods: This study is a descriptive and cross-sectional study. This study was conducted in the province of Zonguldak, located in the Western Black Sea Region of Türkiye. Data were collected from parents of children studying in primary, secondary, and high schools. Five-hundred and fifteen parents participated in the study. The COVID-19 Information Form created via Google Forms was applied online to the parents in data collection. Statistical Package for Social Sciences (SPSS) 25.0 package program was used to analyze the data.

Results: It was determined that 44.6% of the children were vaccinated against COVID-19. It was determined that 68.8% of the children did not have COVID-19 disease. Among the reasons why children did not get vaccinated against COVID-19 were that 23.7% of their peers were not vaccinated, 41.3% did not trust the vaccine, 11.5% had a history of allergy, and 11.8% had Coronavirus disease. It was determined that the most common symptoms experienced in children when they contracted COVID-19 were headache, widespread pain, fever, cough, nasal congestion, loss of smell and taste, and diarrhea, respectively.

Öz

Giriş: On iki-on sekiz yaş grubu çocuklar, COVID-19 hastalığından etkilenebilecek riskli gruplardandır. COVID-19 enfeksiyonundan korunmak ve virüsün yayılımını önlemek için aşılama devam etmektedir. Buna rağmen Koronavirüs hastalığı geçiren çocuklar vardır. Bu çalışma, on iki-on sekiz yaş arasındaki çocukların COVID-19 aşısı ile aşılanma durumları, Koronavirüs hastalığı geçiren çocukların sıklığının belirlenmesi, hastalığı geçiren çocuklardaki belirti ve bulguların tespit edilmesi amacıyla yapılmıştır.

Gereç ve Yöntemler: Bu çalışma tanımlayıcı ve kesitsel tipte bir çalışmadır. Türkiye'nin Batı Karadeniz bölgesinde bulunan Zonguldak ilinde yapılmıştır. Veriler ilkokul, ortaokul ve liselerde öğrenim gören çocukların ebeveynlerinden toplanmıştır. Araştırmaya 515 ebeveyn katılmıştır. Veri toplamada Google Forms aracılığıyla oluşturulan COVID-19 Bilgi Formu ebeveynlere online olarak uygulanmıştır. Verilerin analizinde Statistical Package for Social Sciences (SPSS) 25.0 paket program kullanılmıştır.

Bulgular: Çocukların %44.6'sının COVID-19 aşısı olduğu belirlenmiştir. Çocukların %68.8'inin COVID-19 hastalığı geçirmediği belirlenmiştir. Çocuğun %23.7'sinin akranları-yaşıtları aşılanmadığı için, %41.3'ünün güvenmediği için, %11.5'inin alerji nedeniyle, %11.8'inin Koronavirüs hastalığı geçirdiği için COVID-19 aşısı olmadığı tespit edilmiştir. Çocukların COVID-19 hastalığı geçirirken yaşadığı en sık belirtiler sırasıyla baş ağrısı, genel ağrı, ateş, öksürük, burun tıkanıklığı, koku-tat kaybı ve ishal olduğu tespit edilmiştir.

Sonuç: Çocukların yarısına yakını COVID-19 aşısıyla aşılanmışken ebeveynlerin COVID-19 aşısı ile aşılanma durumlarının oldukça yüksek olduğu belirlenmiştir. Çocukların aşılanmama nedeni olarak aşıya karşı

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Conclusion: While almost half of the children were vaccinated with the COVID-19 vaccine, it was determined that the parents' vaccination status with the COVID-19 vaccine was relatively high. Children are not vaccinated because of a high mistrust rate against vaccination. Despite not being vaccinated, most children have not had Coronavirus disease either.

Keywords: COVID-19, immunization distrust, vaccination, children

Amaç: Çocukların yarıya yakınının COVID-19 aşısı ile aşılandığı, ebeveynlerin COVID-19 aşısı ile aşılanma durumunun nispeten yüksek olduğu belirlenmiştir. Çocukların aşılanmama oranının yüksek olmasının nedeni aşılanmaya karşı güvensizlik oranının yüksek olmasıdır. Aşılanmamış olmasına rağmen çocukların çoğunda Koronavirüs hastalığı da görülmemiştir.

Anahtar Kelimeler: COVID-19, aşıya karşı güvensizlik, aşılanma, çocuklar

Introduction

On December 31, 2019, the World Health Organization (WHO) China country office reported cases of pneumonia of unknown etiology in the city of Wuhan, China. Then, on January 7, 2020, a new COVID-19 disease that had not been detected in humans was recognized. This virus was named SARS-CoV-2 because of its similarity to SARS-CoV. With the increasing number of countries reporting death cases in the future, WHO declared a pandemic on March 11, 2020 (1,2).

COVID-19 is transmitted mainly through droplets. In addition, transmission occurs after sick individuals come in contact with the droplets they emit through coughing and sneezing with other people's hands. The incubation period of the virus lasts 2-14 days (3). The symptoms and clinical and laboratory findings of COVID-19 infection have been shown to differ between children and adults (4). While these signs and symptoms are most common in adults between the ages of 49-59 years, and they are rarely seen in children under 15 years of age. Fever, fatigue, cough, and shortness of breath are among the most common symptoms in adults in the studies, and in children, upper respiratory tract infection and fever have been found in children with a positive COVID-19 test and a family infection (5,6). In children under one year of age, vomiting should not be ignored regarding COVID-19 symptoms (7). Compared to infected adults, it is seen that clinical symptoms in children are milder than in adults (6). In a study by Yayla et al. in Türkiye, 93 children and 81 adults were evaluated. According to this, it was determined that 63.5% of the children and 50% of the parents were asymptomatic (8).

Children constitute one of the risky groups that may be affected by COVID-19 disease (9). For this reason, drug treatments and vaccinations continue to protect the children from COVID-19 infection and prevent the spread of the virus (10). According to WHO and clinical trials on COVID-19 vaccines, countries now recommend that they consider vaccinating healthy children and adolescents from the age of five as part of their national immunization strategy. It also recommends vaccinating children aged 12 and over. However, children aged five years and older with another severe illness at risk of COVID-19 recommend reduced-dose vaccination (11,12). CDC recommends COVID-19 vaccines for everyone aged 6 months and older, and boosters for everyone aged five years and older if eligible (13). Although children aged five and above can be vaccinated against COVID-19, vaccination rates in children are lower than in adults. The reasons for this include socioeconomic factors, personal beliefs, the effect of social media, and concerns about vaccines' safety and side effects (14).

From this point of view, knowing the status of children (adolescents) aged 12-18 years in Türkiye with the COVID-19 vaccine and the frequency of having COVID-19 disease will contribute to the public health literature. In addition, it will also be helpful for health policy development and measures to be taken by health administrations.

The Aim of This Study

This study was conducted to determine the frequency of vaccination of children aged between 12 and 18 years with the COVID-19 vaccine, their status of having COVID-19 disease, revealing the signs and symptoms of COVID-19 disease, and the reasons for not being vaccinated in children who were not vaccinated.

Materials and Methods

Type of Study

It is a descriptive and cross-sectional study.

Population and Sample

The research was conducted in Zonguldak, Türkiye, between January and June 2022. The universe of the study consisted of the parents of the students studying in primary, secondary, and high schools located in the city center of Zonguldak (n= 5816). The sample was calculated with the formula used to calculate the sample size for a general population (https://www.surveysystem.com/sscalc.htm). According to this, it was revealed that a minimum of 380 parents were sufficient. Therefore, more parents were reached for the study, and the parents of 515 students were included. The inclusion criteria of this study were being a parent with a child between the ages of 12-18 and being able to read, speak and understand Turkish (1,2).

Data Collection Tools

COVID-19 Information Form: This form, which the researchers prepared by researching literature information, consists of these two parts. In the first part, there are 10 questions to determine the sociodemographic information of children and their status of being vaccinated against COVID-19 and having COVID-19. In the second part, there are 10 questions to assess the sociodemographic data of the parents and their level of being immunized against COVID-19 and having COVID-19.

Implementation of the Research and Data Collection

In the collection of research data, information was obtained from the parents. For data collection, a Survey Form was prepared via Google Forms (Google LLC, Menlo Park, CA, USA). Before filling out the questionnaire, the parents participating in the study were asked to approve the informed consent form. Then, parents who accepted the survey answered the questionnaire. The average time to fill out this online questionnaire is 10-15 minutes.

Data Analysis

Data analysis was done with SPSS 25.0 package program. Data evaluation used numbers and percentages from descriptive statistical methods.

Ethical Aspect of Research

Written permission was obtained from the Human Research Ethics Committee of Zonguldak Bülent Ecevit University (Protocol No: 30.11.2021/387) and from the schools where the data were collected. On the first page of the online electronic form, an informed consent letter was presented to the parents, explaining the purpose of the research, informing them about the confidentiality of the data, and including the subjects that participated in the study voluntarily. Parents who gave consent to this were included in the study.

Results

Of the participants, 41.1% (n= 212) were males, 32.2% (n= 166) had a mother's education at the high school level, 31.1% (n= 160) had a father's education at the high school level. It was determined that the mothers of 93.2% (n= 480) were working, the fathers of 85.7% (n= 441) were working, and the income-expense status of 57.7% (n= 297) was equal (Table 1).

When the vaccination status of family members with the COVID-19 vaccine was examined, it was determined that 90.9% of mothers (n= 468), 87.6% of fathers (n= 451) and 44.6% of children (n= 230) were vaccinated with COVID-19 vaccine. Of the reasons why the child was not immunized against COVID-19, 23.7% (n= 122) was that their peers were not vaccinated, 41.3% (n= 211) did not trust the vaccine, 11.5% (n= 61) were not vaccinated because of allergy and 11.8% (n= 59) of them had COVID-19 disease. It was determined that 68.8% (n= 354) of the children did not have COVID-19 disease (Table 2).

The symptoms experienced by children while suffering from Coronavirus were as follows: 11.2% (n= 39) fever, 10.0% (n= 35) nasal congestion, 7.1% (n= 25) diarrhea, 7.7% (n= 27) loss of smell and taste, 10.0% (n= 35) cough, 29.4% (n= 103) headache, 13.2% (n= 46) general pain. On the other hand, 11.4% (n= 40) of the children showed no symptoms. While having COVID-19 disease, 20.6% (n= 34) of the drugs used are antipyretic, 20.0% (n= 33) are antibiotics, 20.6% (n= 34) painkillers, 16.4% (n= 27) vitamins, and 22.4% (n= 37) did not use medication (Table 3).

Table 1. Descriptive characteristics of the family (n= 515)

Variable		n (%)
Parent's sex	Male	212 (41.1)
	Female	283 (58.9)
How many children does the family have?	1 Child	83 (16.0)
	2 Children	261 (50.7)
	3 Children or more	171 (33.3)
Mother's education	Primary school	135 (26.2)
	Secondary school	83 (16.0)
	High school	166 (32.2)
	University	131 (25.6)
Father's education	Primary school	112 (21.7)
	Secondary school	110 (21.4)
	High school	160 (31.1)
	University	133 (25.8)
Mother's working status	Working	480 (93.2)
	Not working	35 (6.8)
Father's working status	Working	441 (85.7)
	Not working	74 (14.3)
Family income status	Income less than expenses Income equal to expenses Income more than expenses	113 (22.3) 297 (57.7) 105 (20.3)
Total		**515 (100)**

Table 2. Vaccination status of the family with the COVID-19 vaccine (n= 515)

Variables		n (%)
Vaccination status of the mothers with the COVID-19 vaccine	Yes	468 (90.9)
	No	47 (9.1)
Vaccination status of the fathers with the COVID-19 vaccine	Yes	451 (87.6)
	No	64 (12.4)
Immunization status of the children with the COVID-19 vaccine	Yes	230 (44.7)
	No	285 (55.3)
Reasons why children were not vaccinated with the COVID-19 vaccine*	Peers not vaccinated	122 (23.7)
	Distrust of the vaccine	211 (41.3)
	Allergy	61 (11.5)
	Passing the disease	59 (11.8)
The status of children with COVID-19 disease	Yes	161 (31.2)
	No	354 (68.8)
*Calculation was made on children who were vaccinated.		

Table 3. Symptoms experienced and the types of drugs used by children with COVID-19 disease

Variables		n (%)
Symptoms experienced while the child suffered from COVID-19 disease*	Fever	39 (7.5)
	Nasal congestion	35 (6.7)
	Diarrhea	25 (5.0)
	Loss of smell and taste	27 (5.4)
	Cough	35 (6.7)
	Headache	103 (19.9)
	General pain	46 (9.0)
	No symptoms	40 (7.7)
Types of medicines used while the child had COVID-19 disease*	Antipyretic	34 (6.6)
	Antibiotic	33 (6.2)
	Painkillers	34 (6.6)
	Vitamins	27 (5.4)
	Didn't use	37 (7.1)
*More than one answer is given.		

Discussion

This study was carried out in Zonguldak province, located in the Western Black Sea Region of Türkiye, to determine the vaccination status of children aged 12-18 years with the COVID-19 vaccine, to determine the frequency of children with Coronavirus disease, and to determine the signs and symptoms in children who had the disease.

COVID-19 disease appears to be less susceptible to infection in children and adolescents. There is little information and data on symptoms of COVID-19 in pediatric populations (14). Symptoms differ between adults and children. In line with the literature, clinical signs in children were found to be mild (8,15).

In this study, when the distribution of COVID-19 characteristics of children was examined, it was found that 29.4% had a headache, 11.2% had a fever, 11.4% had no symptoms, and 10.0% had a cough. In the study of Borch et al. (2021), it was stated that the most common symptoms in children were headache, cough, fever, and mild symptoms (16). In the study of Mantovani et al. (2021), it was reported that 79% of children with COVID-19 disease had mild symptoms, 47% of the symptoms were fever, followed by cough at a rate of 37% (15). In the study of Qiu et al. (2020), it was determined that 47% of the children showed mild symptoms, 36% had a fever, and 19% had a cough (1). In Türkiye, in the study of Kılınç et al. (2021), in which the clinical features of children with a diagnosis of COVID-19 who applied to the pediatric emergency service were examined, it was stated that the most common symptoms were fever at a rate of 53.3%, cough with a rate of 36.7% and headache at a rate of 13.3% (17). Therefore, when the studies are examined, the literature results are thought to be similar to our study findings.

Vaccination has begun to spread among children and adolescents and is considered the most promising approach to end the global epidemic of Coronavirus disease (18). In this study, when the family's COVID-19 vaccination status was examined, it was determined that 90.9% of mothers, 87.6% of fathers and 44.7% of children were vaccinated with the COVID-19 vaccine. Of the children, 55.3% were not vaccinated. For the reasons why children were not immunized against COVID-19, it was determined that 41.3% did not trust the vaccines, 23.7% were not vaccinated because their peers were not vaccinated, and 11.5% were not vaccinated due to allergies. In the study of Scharf et al. (2021), it was found that 68.3% of children had the disease, 19% were vaccinated, 7% did not want to be vaccinated, 15% were unsure of being vaccinated, and children under 16 years of age had a high incidence of COVID-19 vaccines have been reported to be hesitant (18). In the study by Nguyen et al. (2021), it was reported that among the reasons for not wanting to have their children vaccinated against COVID-19, 60% feared side effects, and 40% had a mistrust of the vaccine (19). In a study by Erem et al. (2021) in Türkiye, it was reported that 76.5% of parents who did not want their children to be vaccinated feared the vaccine's side effects (20). In the study by Ruiz et al. (2022), 61.4% of parents hesitated to have their children vaccinated, the rate of parents who did not vaccinate themselves was 24.5%, and 78.8% of parents who did not vaccinate did not want to have their children vaccinated. It is stated that 56.5% of the reasons for not getting vaccinated is being insecure about the vaccine (21). When the literature is examined, there is a similarity between the findings of our study and mistrust against the vaccine is among the most important reasons.

Although a few drugs have been approved for the use of medications in children with COVID-19 (for example, monoclonal antibodies), since there are not enough data in terms of safety and efficacy compared to adults, when studies in the world and Türkiye are examined, supportive treatments are sufficient in many cases in children (22,23). When the

drugs used by children with COVID-19 disease were examined in this study, it was observed that 7.1% did not use drugs, 6.6% used antipyretics, and 6.6% used painkillers. Therefore, it has been determined that these drugs are generally used to eliminate the symptoms of the disease. A systematic review by Panda et al. (2021) stated that 21% of children used particular drugs for COVID-19 disease, 17% used corticosteroids, 17.5% used intravenous immune globulin (IVIG) and 67% used aspirin (24). The study by Capponi et al. (2022) states that 60% of children with COVID-19 disease do not use drugs, and children who use drugs mostly use antipyretics (25). In the study of Kılınç et al. (2021) in Türkiye, it is seen that children have this disease without medication and as outpatients, and it is milder in children than adults (17). When the studies and literature are examined, it is thought that the results are similar to the findings of this study. It is foreseen that the drugs used may differ depending on the moderate and severe disease of the children, and since there is no definitive treatment for COVID-19 disease, it is predicted that vaccination will protect against the disease.

Conclusion

While nearly half of the children were vaccinated with the COVID-19 vaccine, it was determined that the parents' vaccination status with the COVID-19 vaccine was relatively high. Children are not vaccinated because of a high mistrust rate against vaccination. Despite not being vaccinated, most children did not have COVID-19 disease. The symptoms experienced by children with COVID-19 disease were determined as fever, nasal congestion, diarrhea, loss of smell-taste, cough, headache and general widespread pain. The drugs used by children with COVID-19 were found to be antipyretic, antibiotics, painkillers and vitamins.

Recommendations

It is recommended to vaccinate children with vaccines approved by WHO, to organize awareness programs and educational activities for parents to increase the vaccination rate, to prepare public service announcements and to present them to the public, and to get help from pediatric nurses and public health nurses in these matters.

Ethics Committe Approval: The approval for this study was obtained from Zonguldak Bülent Ecevit University Human Research Ethics Committee (Decision no: 2014/08-13, Date: 29.05.2014).

Informed Consent: Patient consent was obtained.

Peer-review: Externally peer-reviewed.

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