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Did COVID-19 Pandemic Changed Parents' Approach to Vaccination?

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ABSTRACT

Objective: Vaccine hesitancy is driven by many factors and varies across time. People with vaccine hesitancy may change their decision in the case of COVID-19 pandemic. Our study aimed to evaluate parents' pandemic related perceived stress levels and its effects on vaccine hesitation, also their willingness towards the COVID-19 vaccine.

Materials and Methods: This cross-sectional study was practiced with an open-access online survey program through social networks. Parents aged between 18 and 49 years, who had at least one child and agreed to participate in this study constituted the population (n=440). The questionnaire consisted of 14 questions about socio-demographic characteristics of parents, their attitudes and behaviors about childhood vaccines and the Perceived Stress Scale (PSS).

Results: Four hundred forty parents participated in this study, 377 (85.7%) of them stated that they thought positively towards the vaccines, 55 (12.5%) were hesitant. After the pandemic, 22 (40.0%) of 55 participants who had hesitations stated that now they believe vaccines are necessary. Of all participants, 43.4% stated they would definitely, 30.5% would probably have the COVID-19 vaccine administered. Participants who had high-stress levels perceived more vaccine hesitation.

Conclusion: Pandemia may change people's opinions about vaccine hesitancy. Even if an effective vaccine is developed in case of a pandemic, people need to be told correctly, to create a demand for vaccination.

Keywords: Vaccine hesitancy, COVID-19, pandemic, stress.

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INTRODUCTION

Vaccine hesitancy is a public health issue and is defined as a delay in acceptance or refusal of vaccination, despite the availability of vaccination services (1). Vaccine hesitancy is a complex situation that varies across time, place and vaccines. While a large part of the population accepts vaccination, a small percentage does not. This small group has a heterogeneous structure in itself, while some are completely against all vaccines, some are against some vaccines and some have hesitation in this regard. People with vaccine hesitancy have concerns about safety, the need and efficacy of vaccines (2). Vaccine hesitancy threats herd immunity by leading to underimmunization (3) Underimmunization increases the risk for outbreaks of vaccine-preventable diseases (4).

With successful immunization programs people did not experience vaccine-preventable diseases and they questioned the necessity of vaccines (2). Vaccine complacency is a determinant of vaccine hesitancy and exists when there is no risk of vaccine-preventable disease and vaccination seems to be non-mandatory. At this point, immunization programme success causes complacency because the disease which vaccine prevents is not seen in society anymore (5).

On January 2020, SARS-CoV-2 was identified as the causative virus of coronavirus disease (COVID-19) named by WHO in February 2020. With the COVID-19 infection, nearly all countries worldwide begin to experience a pandemic with this newly discovered virus, which does not have a certain treatment. People with underlying health problems and who are older are likely to experience severe illness (6). There is an urgent need for a COVID-19 vaccine to save lives and also economies. Companies are working on COVID-19 vaccines, but most likely, it will take months to years to develop an effective vaccine.

When there is no infection threat, it is easy to become reluctant to vaccination. Considering people with vaccine hesitancy may change their decision in the case of a pandemic, and it is necessary to reveal their view. It is also a matter of curiosity, what percentage of people will be willing to have this vaccine if a vaccine will be found.

This study aims to assess parents' pandemic related perceived stress level and its effects on attitudes towards vaccination. The second aim is to investigate if people are willing to have the COVID-19 vaccine or not.

MATERIALS and METHODS

Study Design and Participants

Parents from Turkey constituted the population of this cross-sectional descriptive study. The inclusion criteria were determined as follows: being a volunteer, having at least one child and being between the ages of 18–49. In the calculations made with the Minitab 18 program using the results of a similar study conducted in our country, it was determined that at least 242 people should be included in the study with a 5% type I error and 80% power (7).

Data Collection

The study participants were selected by the voluntary response sampling method. Volunteers were reached through various social networks. An open-access online SurveyMonkey survey program (SurveyMonkey Inc. 2018, San Mateo, CA, USA) was used to create and manage our anonymous survey. The survey link was delivered to parents through social networks (WhatsApp, Facebook, Twitter, Linkedin). Response collection time interval was determined between 15–25 May 2020. The questionnaire consisted of 14 questions, including the socio-demographic characteristics of parents and their attitudes and behaviors about childhood vaccines and the Perceived Stress Scale (PSS). Considering the memory factor, the parents were asked about the vaccination status of the youngest child. According to the data obtained, it was evaluated as full vaccinated, full vaccinated +special vaccines, incompletely vaccinated, unvaccinated. As the evaluation criterion, within the scope of the expanded immunization program of the Ministry of Health, free vaccines in the childhood vaccination schedule were given as "full vaccinated" children who had their vaccinations on time and fully, additionally children who received full vaccinated and also other paid vaccines were given as "full vaccinated + special vaccines", children who received some of the vaccines in the vaccination schedule were accepted as "incompletely vaccinated", children who were never vaccinated were accepted as unvaccinated.

Perceived Stress Scale was developed by Cohen, Kamarck and Mermelstein (1983) (8). Consisting of 14 items in total, (PSS) is designed to measure how stressful some situations in a person's life are perceived. The participants evaluate each item on a 5-point Likert scale ranging from "Never (0)" to "Very often (4)". Scale scores range from 0 to 56, and there is no cut-off value. A higher score indicates the excessive perception of stress. The scale was adapted to Turkish by Eskin et al. (9).

Data Analysis

SPSS 22.0 package program was used for statistical analysis of the data. The results were expressed using the mean±standard deviation, median (smallest value-largest value) and number (%) depending on whether the data were parametric or not. Kolmogorov Smirnov test was used to evaluate the suitability of quantitative data for normal distribution. Since the data did not show normal distribution, the Mann-Whitney U test was used for binary groups and the Kruskal Wallis Variance Analysis test was used for more than two groups. Quantitative data were compared using the chi-square test. Statistical significance level was accepted as $p<0.05$ in all tests.

Table 1. Distribution of some sociodemographic characteristics of parents

Variables	n	%
Age (year) (mean±SD)	39.1±6.4	
Gender		
Male	130	29.5
Female	310	70.5
Education		
Primary education	14	3.2
High school	61	13.9
University	365	82.9
Marital status		
Single	10	2.3
Married	406	92.3
Divorced	24	5.5
Working status		
Working	331	75.2
Not working	109	24.8
Economic situation of the family according to own statements		
Very good	24	5.5
Good	242	54.8
Moderate	161	36.7
Bad	13	3.0
Number of children		
1	199	45.2
2	208	47.3
3 and more	33	7.5
The age of the youngest child		
0–2 years	106	24.1
3–5 years	121	27.5
6 years and more	213	48.4
Vaccination status of the youngest child		
Full vaccinated	184	41.9
Full vaccinated + special vaccines	251	57.0
Incompletely vaccinated	5	1.1

SD: Standard deviation

RESULTS

There were 440 parents whose youngest child was at least one year old and who voluntarily participated in this study. The median age of the participants was 38 years (min: 23–max: 48) and 70.5% were women. Of all participants, 92.3% were high school graduates, 92.3% were married, 75.2% were working in an income-generating job. According to their own statements, 54.8% of the families' economic status was good, 36.6% of them was moderate. 45.2% of the parents had one child, 47.3% had two (mean:1.6±0.6) children. The frequency of those having youngest children under two years old was 24.1%; having the youngest child between three to five years old was 27.5%.

Table 2. Parents' attitudes towards vaccines (n=440)

Variables	n	%
How was your attitude towards childhood vaccines?		
I was thinking positively against vaccines.	377	85.7
I was distant from vaccines, I was hesitant.	55	12.5
I was against vaccination; I thought vaccination was not necessary.	0	0.0
I have no idea.	8	1.8
Has the COVID-19 outbreak changed your view of vaccines?		
I was thinking positively against vaccines, I still think so.	377	85.7
Before I had hesitations about the necessity of vaccines; I still have hesitations.	28	6.4
I was hesitant about the necessity of vaccinations before, now I believe that vaccines are necessary.	22	5.0
I was hesitant about the necessity of vaccinations before, I'm undecided now.	5	1.1
I have no idea.	8	1.8
I was thinking positively against vaccines; I am not positive now.	0	0
If a vaccine is reported to be effective against COVID-19, would you consider getting it to your children?		
I definitely do.	191	43.4
I'll probably get it.	134	30.5
Undecided	108	24.5
I definitely don't.	7	1.6

When we asked the parents about the vaccination status of their youngest child, 41.9% of them stated they had all the vaccinations in the General Immunization Program, 57.0% stated that they had all the vaccinations in the program and also other special vaccines which are paid. There was no one who was completely unvaccinated (Table 1).

The median age of the five parents who stated that they were incompletely vaccinated was 38 (min: 34–max:50) years, two were high school and three were university graduates. Three of them were married, and three were working in an income-generating job. The youngest child of the three was six years old and above, while two were under two years old, four of them had two children each.

When families were asked where they obtained information about vaccines, 96.1% of them stated that they obtained information from health workers, 11.8% from friends and relatives, 11.1% from social media (Facebook, Instagram, twitter and various blogs), 6.4% TV, media organs, such as newspapers and magazines and 3.9% from other sources. Multiple choices were marked.

When we asked the parents about their general attitudes towards childhood vaccinations, 377 (85.7%) of them stated that they thought positively towards the vaccines, 55 (12.5%) were hesitant about vaccines.

Considering how the COVID-19 pandemic has changed parents view about childhood vaccinations, of the 55 the parents who were previously hesitant about vaccines, 28 (50.9%) were still hesitant after the pandemic, 22 (40.0%) of them stated that now they believe vaccines were necessary, 5 (9.1%) were uncertain.

None of the participants or their family members experienced COVID-19 infection. Answering the question "If a vaccine is reported to be effective against COVID-19, would you consider getting it to your children?'', 43.4% of parents stated they would definitely have it done, 30.5% would probably, 1.6% of them would never do it. Parents' attitudes towards vaccines are presented in Table 2.

Two of the five parents who were incompletely vaccinated stated they would definitely do the vaccine; one would probably administer the COVID-19 vaccine to their child, while two stated they would not administer the COVID-19 vaccine. However, of the seven people who stated that they would not administer the COVID-19 vaccine, the children of three were fully vaccinated and two were full vaccinated + special vaccines.

The mean PSS scores of the parents during the COVID-19 outbreak were calculated as 26.3±6.4 (min: 5–Max: 49). There was no statistically significant difference between PSS scores and socio-demographic characteristics; gender, education, marital, economic status or number of children ($p>0.05$). When the PSS scores were evaluated, according to changes in parents' attitudes towards vaccination after the COVID-19 epidemic, the PSS scores were the highest among those who hesitated before and who were now undecided (30.4±6.0) and parents who hesitated before and now believed that vaccines were required (27.4±5.5). However, there was no statistically significant difference between the groups ($p>0.05$) (Table 3).

The participants who declared that "they would definitely have" the COVID-19 vaccine had the highest PSS score (27.9±6.2), parents who said "they would definitely not have" it had the lowest (21.0±4.6). However, there was no significant difference between the groups ($p>0.05$) (Table 3).

DISCUSSION

Although there are many studies about vaccine hesitancy, we could not find one evaluating the change of people's opinions in case of

Table 3. Distribution of the PSS scores of parents during the COVID-19 outbreak according to their attitudes towards vaccination

Variables	PSS scores (Mean±SD)	p
Has the COVID-19 outbreak changed your view of vaccination?		
I was thinking positively against vaccines, I still think so.	26.3±6.4	
I was hesitant about the necessity of vaccines, I still have hesitations.	25.2±6.9	
I was hesitant about the necessity of vaccinations before; now I believe that vaccines are necessary.	27.4±5.5	0.43
I was hesitant about the necessity of vaccinations before; now I'm undecided.	30.4±6.0	
No idea.	25.5±5.5	
If a vaccine is reported to be effective against COVID-19, would you consider getting it to your children?		
I definitely do.	27.9±6.2	
I'll probably get it.	26.6±6.7	0.07
Undecided.	25.8±6.2	
I definitely don't.	21.0±4.6	

PSS: Perceived Stress Scale

a pandemic. This study shows that some of the parents with vaccine hesitancy may change their point of view in a positive way in a pandemic situation. However, even in such an infectious agent attack, the number of people who are eager to get the COVID-19 vaccine without hesitation was not as expected. Those who said I would definitely get this vaccine had higher stress levels.

Of all participants, 12.5% had vaccine hesitancy, and there was no one being against vaccinations. However, the majority of these families had their children vaccinated despite their hesitation. This may suggest that even if they have some doubts, they trust in the government and health care professionals and follow the recommendations, as shown in previous studies (10, 11).

The belief of 22 (40.0%) of 55 participants who were previously hesitant has changed; they stated that now they believe vaccines are necessary. Vaccine hesitancy is a dynamic situation, and it may change over time and circumstances (12–14). Our outcome is notable because it shows that when an infectious agent and a pandemic arises, people need vaccination, and their opinions about vaccines may change. Moreover, this pandemic may be an opportunity to communicate with individuals who have vaccine hesitancy.

When we asked the willingness to have the COVID-19 vaccine, 43.4% of parents stated they would definitely have it administered, 30.5% would probably get it. The rest was undecided and reluctant. Although 85.7% of the participants declared that they thought positive against the vaccines, the percentage of people who would want to have this newly released vaccine to their children was less. In previous studies, it was seen that newer vaccines lead to more hesitancy. In these studies, the reason for hesitancy with new vaccines was shown to be the fear of possible unknown side effects (15–17). This could partly explain the low proportion of this vaccine demand. In addition, since our study was conducted at the beginning of the pandemic, none of the participants experienced COVID-19 infection in their family. If they had experienced this infection in or around them, it might be thought that their stress levels might be higher, and the demand for vaccination may also be different.

When we evaluated the relationship between the stress levels and the change in parents' attitudes about vaccination after the pandemic, two groups had the highest scores. The first group was those who had vaccine hesitations before and are undecided now; the second group was those who had hesitations before and now believe that vaccines are required. According to these results, the stress levels perceived by those with vaccine hesitancy are higher than those without hesitation against vaccines. Those who have high-stress levels perceive more vaccine hesitation; it may be necessary to handle this stress to reach these individuals.

The participants who declared that "they would definitely have the COVID-19 vaccine" had the highest PSS score those who said "they would definitely not have it" had the lowest. It seems that those who have high-stress levels because of COVID-19 are more willing to be vaccinated. Those who survive this pandemic with a lower stress level do not want to be vaccinated, this situation did not cause much stress to them and they do not demand vaccine.

Limitations of this Study

There are some limitations of our study. Firstly, since the data were obtained through the optional web-based survey method, not face-to-face interviews, the possibility of electoral bias cannot be excluded. By the nature of cross-sectional studies, the measurement of both the exposure explored and the result examined at the same time, and this is another limitation.

CONCLUSION

In conclusion, in a pandemic, some of the individuals' opinions about vaccine hesitancy may change in a positive way. However, people will not get a newly developed vaccine without hesitation, even if there is a threat of untreated infection. This sample shows us that to implement vaccine demand in a pandemic; the vaccine will need to be described correctly. Our study suggests that people with high-stress levels perceive more vaccine hesitation. This finding is worth additional investigations as it may imply the psychological state of people with vaccine hesitancy.

Ethics Committee Approval: This study was conducted in conformity with the principles of the Decleration of Helsinki and approved by the Ethics Committee of Ondokuz Mayıs University Clinical Research Ethics Committee (date: 12.05.2020, number: OMUKAEK 2020/300).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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