The Effect of Parents' Fear of COVID-19 and Some Variables on Their Childhood Vaccination Attitudes According to the Health Belief Model: A Cross-Sectional Study

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ABSTRACT

Objective: The study sought to explore the relationship of parents' fear of COVID-19 and some variables with childhood vaccination attitudes according to the Health Belief Model during the COVID-19 pandemic.

Methods: This research employed a descriptive – correlation design, with 263 participants consisting of parents with children aged 0-6 included in the study. An online survey was used to collect data.

Results: The mean COVID-19 fear score of the participants was 19.71±6.46. As the COVID-19 fear score of the participants increased, their perceived benefit (β=.12; p=.03) and health motivation (β=.14; p=.02) scores also increased.

Conclusion: Parents' COVID-19 fear level increased, their perceived benefit and health motivation attitudes improved. Parents should be provided with education and counselling by health professionals to develop a positive attitude towards childhood vaccinations.

Keywords: Childhood, fear of COVID-19, health belief model, parents, vaccination.

1. INTRODUCTION

Childhood vaccines are important in terms of significantly reducing morbidity and mortality caused by many infectious diseases and protecting public health (1). Nevertheless, the COVID-19 pandemic that emerged in late 2019 has disrupted routine immunization programs (2, 3). The World Health Organization (WHO) and the UNICEF have documented significant disruptions in routine immunization programs, affecting nearly 80 million children in at least 68 countries (2). Interruption in childhood vaccinations could result in epidemics of preventable infectious diseases (3, 4).

It is stated that the reasons for the interruption in immunization programs include factors such as fears of parents, lockdown measures, a shift in healthcare personnel's priorities towards COVID-19, and logistical challenges in vaccine distribution. Furthermore, parents' concerns about potentially exposing their children to COVID-19 during routine check-ups and the subsequent decline in vaccination rates are also cited as contributing factors (5). Providing and maintaining routine childhood vaccinations play an important role in preventing outbreaks of vaccine-preventable diseases amid the pandemic (6).

Pandemic negatively affects the lifestyle, social life, close relationships and income levels of individuals, and the risk of a pandemic can cause fear in people (7). Fear of COVID-19 emerges with anxiety as the pandemic causes many uncertainties in the lives of individuals (8). The COVID-19 infection was encountered for the first time and the disease caused extraordinary situations, which are the reasons for fear. The whole world has been affected psychologically due to the fact that the disease has threatened human life and there have been unknown aspects of the disease (9). It is stated that the fear arising as a result of the pandemic has caused a change in the negative perspective towards vaccines (9).

One study revealed that parents' social security status, education level and professional characteristics are effective

in their attitudes towards vaccination, and individuals with high education level and those who are knowledgeable about vaccinations are more sensitive about mandatory vaccinations (10). Another study reports that the mother's educational attainment is positively correlated with her vaccine-related knowledge level (11). It is stated that parents make the vaccination decision for their children according to the protection, effectiveness and reliability of the vaccine (12).

Existing literature suggests that parents have placed greater emphasis on childhood vaccination amid the COVID-19 pandemic, with the majority expressing a desire for their children to receive vaccines (6) 84.1% of parents stated that they find vaccination necessary, and 95% had their children vaccinated regularly (13, 14). Aygün and Tortop (15) reported that parents with children under the age of five have a high level of hesitation towards vaccines and their negative attitudes are due to their religious beliefs and lack of knowledge. The prevalence of uncertainty about routine childhood vaccines was reported as 6.1% in a study (16). Parents' attitudes and behaviors towards vaccination have a direct and significant impact on the decision to vaccinate their children (17).

No studies were found in the literature that evaluated parents' approaches to vaccination o based on the COVID-19 fear and Health Belief Model during the pandemic. Thus, this research was conducted with the objective of identifying the relationship of parents' fear of COVID-19 and some variables with their childhood vaccination attitudes during the pandemic according to the Health Belief Model.

Research Questions

1. What are the childhood vaccination attitudes of parents based on COVID-19 and the Health Belief Model?

2. Do childhood vaccination attitudes of parents differ according to the fear of COVID-19 and the Health Belief Model?

3. What is the relationship of parents' fear of COVID-19 and some variables with their childhood vaccination attitudes according to the Health Belief Model?

2. METHODS

2.1. Study Design

The research was structured as a descriptive – correlational study and followed the guidelines outlined in the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (18).

2.2. Study Setting and Participants

The research involved parents with children aged 0-6 years in Turkey. The inclusion criteria encompassed the following conditions: (a) having children between the ages of 0-6,

(b) expressing willingness to participate in the study, and (c) possessing proficiency in speaking and understanding Turkish. Exclusion criteria were defined as follows: (a) having a physical or mental disability that would prevent the use of mobile phones and computers, and (b) withdrawing from the study at any stage.

2.3. Study Population and Sample Size

The participants were parents with children aged 0-6 living in different cities of Turkey. To establish the study's sample size, a power analysis was performed employing the G-power 3.1.9.7 software. Utilizing the mean scores and standard deviation (16.05±2.95) of the Public Attitude Toward Vaccination Scale-Health Belief Model sub-dimension, as reported in Kaydirak et al. (19), a minimum sample size of 263 was computed with a power of 95%, a significance level of 0.05, and an effect size of 0.2. The sample was reached using snowball sampling, which is one of the nonprobability sampling selection methods (20).

2.4. Measures

The online survey comprised the Parent Information Form, the COVID-19 Fear Scale, and the Public Attitude Toward Vaccination Scale-Health Belief Model.

2.4.1. Parent Information Form

The form was prepared by the researchers in line with the literature (19, 21) and encompasses 15 questions to explore the parental and child-related characteristics (age, educational background, employment status, economic status, place of residence, the number of children in the family, and age, gender, and chronic disease status of the child) and childhood vaccination characteristics (having the child vaccinated before the pandemic, having sufficient knowledge about vaccines, believing that vaccines are useful and beneficial, changing the decision to have vaccines during the pandemic, having the child vaccinated during the pandemic).

2.4.2. The COVID-19 Fear Scale

The scale was developed by Ahorsu et al. (22), underwent Turkish validation and reliability assessment made by Satici et al. (23). This scale comprises 7 items, each rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) and single factor. The scores on the scale can vary between 7 and 35, where a higher score indicates a higher level of COVID-19 fear. In the Turkish validation and reliability study, the scale demonstrated a Cronbach's alpha coefficient of .85 (23). In the present study, the Cronbach's alpha was determined to be .88.

2.4.3. The Public Attitude Toward Vaccination Scale-Health Belief Model (PAVS-HBM)

The scale was formulated by Kocoglu-Tanyer et al. (21) with the objective of gauging society's stance towards vaccination through the lens of the Health Belief Model. The scale comprises 26 items, each rated on a five-point Likert scale, from 1= strongly disagree to 5= strongly agree, and encompasses five sub-dimensions: perceived susceptibility, perceived severity, perceived benefit, perceived barriers, and health motivation. The scale does not yield a total score; the perceived susceptibility and perceived severity sub-dimensions encompass four factors each (scoring between a minimum of 4 and a maximum of 20 points), while the perceived benefit and health motivation sub-dimensions comprise five factors each (ranging from a minimum of 5 to a maximum of 25 points). The perceived barriers sub-dimension involves eight factors, with scores ranging from a minimum of 8 to a maximum of 40 points. In this context, a lower score in the perceived barriers sub-dimension reflects a positive attitude, whereas higher scores in the other sub-dimensions indicate a positive attitude as well. The Cronbach's alpha coefficient for the scale was reported as .89 (21). In the present study, the Cronbach's alpha was determined to be .77.

2.5. Data Collection

Data were gathered between April and August 2021 using the online survey link generated by the researchers via a web-based platform (http://www.surveey.com/survey/). The online survey was sent to either the mother or father via an e-mail, or a message was sent through social media. Following their consent to partake in the study, participants were requested to finalize the survey. Additionally, they were encouraged to share the online survey link with other parents within their acquaintance.

2.6. Statistical Analysis

The data were analyzed using IBM SPSS Statistics Version 22. To assess the data's adherence to a normal distribution, the Kolmogorov-Smirnov test, skewness, and kurtosis values were examined. Descriptive statistics were employed to summarize variables related to sociodemographic details and vaccination characteristics. For evaluating the internal consistency of the scales, Cronbach's alpha analysis was applied. Descriptive statistics included the use of numbers, percentages, means, standard deviations, and minimum-maximum values. To compare variables associated with parental childhood vaccination attributes and the sub-dimension mean scores of the Fear of COVID-19 Scale and the Public Attitude Toward Vaccination Scale-Health Belief Model, an independent sample t-test was conducted.

A multiple linear regression analysis was performed using the stepwise method to assess the impact of variables (comprising parents' childhood vaccination characteristics and fear of COVID-19) on parents' childhood vaccination attitudes in accordance with the Health Belief Model. For all dichotomous variables, a dummy variable recoding was applied (e.g., 0 or 1). The outcomes of the analyzed model were reported as B (95%CI), standard error (SE), estimated β, the adjusted R2, F-test, and p-value for each variable. Statistical significance was considered at the p<.05 level.

2.7. Ethical Consideration

This research followed the ethical guidelines in the Declaration of Helsinki. Ethical approval (IRB: 2021/34) was obtained from the Selçuk University where the researchers are affiliated. Additionally, prior to commencing the study, approval was granted by the Ministry of Health Services General Directorate Scientific Research Platform (MoH: 2021-03-11T17_16_52). An informed consent document, which elucidated the study's objectives, was attached to the initial page of the online survey. Participants were granted permission to complete the questionnaire once their consent had been provided.

3. RESULTS

3.1. Sample Characteristics

The study sample consisted of 263 parents and the characteristics of the participants are given in Table 1. The mean age of the parents is 32.44±5.94 years, and the mean age of the children is 35.40±22.53 months. 93.2% of the participants were mothers, 61.6% were university graduates, 57.0% were unemployed, 60.1% had income equal to their expenses, 76.8% were living in the city, and 51.0% had one child (Table 1).

The mean COVID-19 fear score of the parents was found to be 19.71±6.46. The PAVS-HBM scale sub-dimension mean scores of the parents were as follows: perceived susceptibility 17.16±2.69, perceived severity 16.43±3.04, perceived benefit 20.78±3.45, perceived barriers 16.33±6.35, and health motivation 21.54±2.98 (Table 2).

The distribution of the mean score on the COVID-19 Fear Scale and the mean scores for the sub-dimensions of the PAVS-HBM Scale, based on parents' childhood vaccination characteristics, is presented in Table 3. As indicated in the table, 95.1% of the participants believe in the benefit of childhood vaccines, 74.9% have sufficient knowledge about childhood vaccines, 98.1% had their child vaccinated before COVID-19, 97.3% did not change their decision to have childhood vaccinations during the pandemic, and 82.9% reported that they wanted to have childhood vaccinations in the pandemic (Table 3).

The analysis revealed a statistically significant difference between the COVID-19 Fear Scale mean scores of parents who believe that childhood vaccines are beneficial compared to those who do not (p=.012). However, no statistically significant distinction was discerned in relation to other variables associated with childhood vaccination (p=.492,

p=.653, p=.904, p=.217, respectively). A statistically significant difference was observed among parents who believe in the benefits of childhood vaccines, possess adequate knowledge about vaccines, and desire childhood vaccination during the COVID-19 pandemic in relation to their PAVS-HBM Scale sub-dimension mean scores (p<.001). Significant differences were noted in the mean scores of the parents who had childhood vaccinations before COVID-19 compared to those who did not, specifically in the perceived severity and health motivation sub-dimensions (p=.035, p<.001, respectively). However, the differences between the mean scores for perceived susceptibility, perceived benefit, and perceived barriers sub-dimensions were not statistically significant (p=.257, p=.311, p=.084, respectively) (Table 3).

Moreover, while statistically significant differences were observed in the mean scores of perceived susceptibility, perceived benefit, perceived barriers, and health motivation for parents who maintained their decision to have childhood vaccinations during the COVID-19 pandemic versus those who altered their decision (p=.010, p=.009, p=.004, p=.016), no statistically significant difference was found in the mean perceived severity score (p=.164) (Table 3).

3.2. Determinants Affecting Parents' Childhood Vaccination Attitudes according to The Health Belief Model

The results of the multiple regression analysis are presented in Table 4. In the examined model, the statistical values for the variance inflation factors (VIF) were within an acceptable range (VIF 1-1.08), indicating the absence of multicollinearity issues in the dataset.

The results indicated that the regression models developed had a significant impact on the mean scores of the sub-dimensions ($F_{(3, 262)}$=28.30, p<.001; $F_{(3, 262)}$=18.97, p<.001; $F_{(4, 262)}$=19.17, p<.001; $F_{(4, 262)}$= 21.02, p<.001; $F_{(3, 262)}$= 32.28, p<.001). The variables integrated into the model accounted for 24% of the variance in the perceived susceptibility, 17% in the perceived severity, 22% in the perceived benefit, 23% in the health motivation, and 26% in the perceived barriers sub-dimension.

According to the model, believing that childhood vaccines are beneficial, having sufficient knowledge about vaccines, and wanting to get routine childhood vaccination during the pandemic are the significant predictors variables. A one-point increase in these predictors variables increases the perceived susceptibility, severity, benefit and health motivation scores, while decreasing the perceived barriers score. Additionally, the increase in the COVID-19 fear score stands out as a significant determinant, contributing to the enhancement of perceived benefit (β=.12; p=.03) and health motivation (β=.14; p=.02) (Table 4).

Table 1. Characteristics of the sample (N= 263).

Characteristics	n	%	Mean	SD
Age of parents, years			32.44	5.94
Parents				
Mother	245	93.2		
Father	18	6.8		
Education level				
Elementary-secondary school	42	16.0		
High school	59	22.4		
Bachelor's degree	162	61.6		
Employment status				
Yes	113	43.0		
No	150	57.0		
Perceived income status				
Income<expenses	48	18.3		
Income = expenses	158	60.1		
Income>high	57	21.7		
Place of residence				
City	202	76.8		
County	50	19.0		
Village	11	4.2		
Number of children				
One	134	51.0		
Two and more	129	49.0		
Age of children, months			35.4	22.53
Sex of children				
Female	130	49.4		
Male	133	50.6		
Chronic diseases in the children				
Yes	21	8.0		
No	242	92.0		

SD, Standard deviation

Table 2. The mean COVID-19 fear score and the mean PAVS-HBM subscale scores of the parents.

	n (%)	Mean (SD)	Min-Max
Fear of COVID-19	263 (100)	19.71 (6.46)	7.0-35
PAVS-HBM	263 (100)		
Perceived Susceptibility		17.16 (2.69)	9.0-20
Perceived Severity		16.43 (3.04)	8.0-20
Perceived Benefit		20.78 (3.45)	5.0-25
Perceived Barriers		16.33 (6.35)	8.0-40
Health Motivation		21.54 (2.98)	11.0-25

PAVS-HBM, Public Attitude Toward Vaccination Scale – Health Belief Model; COVID-19, coronavirus disease 2019; SD, standard deviation

Table 3. COVID-19 fear and PAVS-HBM mean scores according to parents' childhood vaccine characteristics.

	Fear of COVID-19	Perceived Susceptibility	Perceived Severity	Perceived Benefit	Perceived Barriers	Health Motivation
n (%)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Believing that childhood vaccinations are useful						
Yes	250 (95.1)	19.94 (6.46)	17.37 (2.54)	16.62 (2.98)	21.03 (3.33)	15.86 (6.1)	21.72 (2.93)
No	13 (4.9)	15.31 (4.85)	13 (2.27)	12.85 (1.86)	16 (1.91)	25.38 (4.05)	18.08 (1.85)
t		2.543	6.082	4.523	5.401	-5.561	4.443
p		**.012**	**<.001**	**<.001**	**<.001**	**<.001**	**<.001**
Having sufficient knowledge about childhood vaccines						
Yes	197 (74.9)	19.55 (6.24)	17.62 (2.55)	16.86 (2.98)	21.37 (3.29)	15.12 (6)	22.05 (2.85)
No	66 (25.1)	20.18 (7.14)	15.77 (2.67)	15.18 (2.91)	19.05 (3.33)	19.95 (6.02)	20.03 (2.9)
t		-0.688	5.037	3.980	4.939	-5.657	4.967
p		.492	**<.001**	**<.001**	**<.001**	**<.001**	**<.001**
Having childhood vaccinations before the COVID-19 pandemic						
Yes	258 (98.1)	19.68 (6.44)	17.18 (2.71)	16.49 (3.02)	20.79 (3.48)	16.24 (6.32)	21.57 (3.01)
No	5 (1.9)	21 (8.46)	15.8 (1.48)	13.6 (3.05)	20.2 (1.1)	21.2 (6.83)	20.2 (0.45)
t		-0.451	1.137	2.119	1.110	-1.736	4.998
p		.653	.257	**.035**	.311	.084	**<.001**
Change in decision to have childhood vaccinations in the COVID-19 pandemic						
Yes	7 (2.7)	20 (8.02)	14.57 (3.15)	14.86 (2.97)	17.43 (3.87)	23.14 (6.49)	18.86 (3.08)
No	256 (97.3)	19.7 (6.44)	17.23 (2.65)	16.48 (3.04)	20.88 (3.4)	16.15 (6.26)	21.62 (2.96)
t		0.121	-2.600	-1.395	-2.640	2.915	-2.435
p		.904	**.010**	.164	**.009**	**.004**	**.016**
Wanting to have childhood vaccinations in the COVID-19 pandemic						
I will	218 (82.9)	19.93 (6.49)	17.58 (2.55)	16.89 (2.87)	21.28 (3.37)	15.22 (5.83)	22.06 (2.83)
I will not/ I am undecided	45 (17.1)	18.62 (6.31)	15.11 (2.47)	14.22 (2.9)	18.36 (2.75)	21.73 (6.06)	19.04 (2.45)
t		1.238	5.946	5.673	5.468	-6.778	6.655
p		.217	**<.001**	**<.001**	**<.001**	**<.001**	**<.001**

n= 263; SD, Standard deviation; t, Independent sample t test
*p<.05

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Table 4. Determinants of parents' childhood vaccination attitudes.

Variables	Susceptibility				Severity				Benefit				Health Motivation				Barriers			
	B	SE	β	p	B	SE	β	p	B	SE	β	p	B	SE	β	p	B	SE	β	p
Believing that childhood vaccinations are useful (Yes)	3.30	0.69	0.27	<.001	2.68	0.81	0.19	.01	3.39	0.91	0.21	<.001	2.02	0.78	0.15	.01	-6.59	1.60	-0.23	<.001
Having sufficient knowledge about childhood vaccines (Yes)	1.27	0.34	0.21	<.001	1.12	0.41	0.16	.01	1.74	0.45	0.22	<.001	1.53	0.38	0.22	<.001	-3.49	0.80	-0.24	<.001
Wanting to have childhood vaccinations in the COVID-19 pandemic (Yes)	1.90	0.39	0.27	<.001	2.20	0.47	0.27	<.001	2.19	0.51	0.24	<.001	2.45	0.44	0.31	<.001	-5.22	0.91	-0.31	<.001
Fear of COVID-19									0.07	0.03	0.12	.03	0.06	0.03	0.14	.02				
R	0.50				0.42				0.48				0.50				0.52			
Adj. R2	0.24				0.17				0.22				0.23				0.26			
F and p value	28.301		<.001		18.966		<.001		19.171		<.001		21.016		<.001		32.281		<.001	

n= 263; ***p<.001, **p<.01, *p<.05. Abbreviations: B, Regression coefficient; SE, Standard error of regression coefficient; β, Standard regression coefficient; CI, Confidence interval; Adj. R^2, Adjusted predicted value. Note. Multiple linear regression analysis performed with the Stepwise Method

4. DISCUSSION

The primary aim of this study was to offer insights into parents' perspectives regarding their concerns about COVID-19 and their attitudes towards childhood vaccination during the pandemic in Turkey when the COVID-19 cases reached their peak. The study was undertaken to assess the impact of parents' COVID-19 fears and various factors on their attitudes toward childhood vaccination, utilizing the Health Belief Model, during the COVID-19 pandemic. The findings showed that when parents' COVID-19 fear level increased, their perceived benefit and health motivation attitudes improved. The results also indicated that parents' enhanced belief in the advantages of childhood vaccines, their adequate knowledge about vaccines, and their willingness to have their children vaccinated during the COVID-19 pandemic are significant predictors associated with increased perceived susceptibility, perceived severity, perceived benefit, and health motivation attitudes. These factors are also linked to a decrease in the perceived barriers attitude.

The majority of the participants in the study participants belonged to the medium socioeconomic status category and had a high level of education. It was observed that their fear levels regarding COVID-19 were notably increased. This observation aligns with the results reported by Bakioğlu et al. (24). Moreover, Baghdadi et al. (4) reported that parents commonly harbor concerns about the risk of exposing themselves or their children to COVID-19 during routine check-ups for healthy children. In addition, it is thought that the increase in parents' fear levels may be attributable to the high mortality rates due to COVID-19 infection and the uncertainty about the long-term effects of COVID-19 on social life and health.

The vaccination attitudes subscale mean scores of the parents showed similarity with the study of Kaydirak et al. (19). In the study, the increase in the scores of parents who believe that childhood vaccines are beneficial, who have sufficient knowledge about vaccines and who want to have childhood vaccines during the COVID-19 pandemic increased the perceived susceptibility, perceived severity, perceived benefit and health motivation attitude scores of the parents. Concurrently, it led to a reduction in the perceived barriers attitude score. The study found that 17.1% of the parents did not consider or were undecided about having childhood vaccinations. Recent findings suggest that the global execution of vaccination programs has been hindered by the COVID-19 pandemic (2, 3, 25). Bell et al. (6) reported that parents are afraid of contracting COVID-19 or they do

not want their children to contract COVID-19 due to the risk of encountering people while going to the health center for vaccination. It can be thought that this situation has affected childhood vaccination practices.

This study showed that the increase in parents' COVID-19 fear levels is a significant predictor that increases the perceived benefit and health motivation attitude. Increasing COVID-19 fear level led to an increase in the perceived benefit score. This indicated an enhancement in parents' awareness regarding the advantages of the recommended health protective measures for themselves and their children, resulting in a favorable attitude (21). As the level of COVID-19 fear increases, parents attach more importance to their own and their child's health, and as a result, they can develop a more attentive and positive attitude towards taking the necessary precautions. From this perspective, the heightened level of COVID-19 fear can be regarded as a protective factor and may be considered an anticipated response.

5. CONCLUSION

The study indicates that parents have high COVID-19 fear levels and increased fear levels improve perceived benefit and health motivation attitudes based on the Health Belief Model. Furthermore, an increase in the scores of parents who hold the belief in the benefits of childhood vaccines, possess adequate knowledge about vaccines, and express the willingness to have their children vaccinated during the COVID-19 pandemic leads to an enhancement in their attitudes based on the Health Belief Model. This includes an increase in perceived susceptibility, perceived severity, perceived benefit, and health motivation attitudes, while decreasing the perceived barriers attitude. This shows the positive attitude of the parents towards childhood vaccines. Parents should be provided with education and counselling by health professionals to develop a positive attitude towards childhood vaccinations. Other factors (concerns about vaccination safety) that may cause hesitancy towards childhood vaccines should be investigated.

The study presents certain limitations. To begin with, the web-based nature of the research may potentially hinder the generalizability of the results to the entire population. Moreover, a limitation is that the sample is primarily comprised of mothers and individuals with university degrees. Additionally, the data collection tools rely on self-report, which might introduce social desirability bias. At the same time, the generalization of all childhood vaccines in the data collection tool is another limitation of the study. Finally, this study with a cross-sectional design may prevent establishing a cause-effect relationship. It may be recommended to conduct a prospective longitudinal study.

REFERENCES

[1] Mergler MJ, Omer SB, Pan WK, Navar-Boggan AM, Orenstein W, Marcuse EK, Taylor J, DeHart MP, Carter TC, Damico A. Association of vaccine-related attitudes and beliefs between parents and health care providers. Vaccine 2013; 31:4591-4595. DOI: 10.1016/j.vaccine.2013.07.039

[2] World Health Organization. At least 80 million children under one at risk of diseases such as diphtheria, measles and polio as COVID-19 disrupts routine vaccination efforts warn GAVI, WHO, and UNICEF. In: 2020.

[3] McDonald HI, Tessier E, White JM, Woodruff M, Knowles C, Bates C, Parry J, Walker JL, Scott JA, Smeeth L, Yarwood J, Ramsay M, Edelstein M. Early impact of the coronavirus disease (COVID-19) pandemic and physical distancing measures on routine childhood vaccinations in England, January to April 2020. Euro Surveill 2020; 25. DOI: 10.2807/1560-7917. ES.2020.25.19.2000848

[4] Baghdadi LR, Younis A, Al Suwaidan HI, Hassounah MM, Al Khalifah R. Impact of the COVID-19 pandemic lockdown on routine childhood immunization: A Saudi Nationwide Cross-Sectional Study. Frontiers in pediatrics 2021; 9. DOI: 10.3389/fped.2021.692877

[5] Dinleyici EC, Borrow R, Safadi MAP, van Damme P, Munoz FM. Vaccines and routine immunization strategies during the COVID-19 pandemic. Human vaccines & immunotherapeutics 2021; 17:400-407. DOI: 10.1080/21645.515.2020.1804776

[6] Bell S, Clarke R, Paterson P, Mounier-Jack S. Parents' and guardians' views and experiences of accessing routine childhood vaccinations during the coronavirus (COVID-19) pandemic: A mixed methods study in England. PloS One 2020; 15:e0244049. DOI: 10.1371/journal.pone.0244049

[7] Hatun O, Dicle AN, Demirci İ. Koronavirüs salgınının psikolojik yansımaları ve salgınla başa çıkma. Electronic Turkish Studies 2020; 15. DOI: 10.7827/TurkishStudies.44364 (Turkish)

[8] Kasapoğlu F. Examining the relationship between fear of COVID-19 and spiritual well-being. Spiritual Psychology and Counseling 2020; 5:341-354. DOI: 10.37898/spc.2020.5.3.121

[9] Doğan MM, Düzel B. Covid-19 özelinde korku-kaygı düzeyleri. Electronic Turkish Studies 2020; 15. DOI: 10.7827/TurkishStudies.44678 (Turkish)

[10] Polat Y, Tatlı S, Yavuzekinci M, Öztürk M, İpekçi NN, Yurdagül G, Süzülmüş S. Okul öncesi eğitime devam eden çocukların ailelerinin çocukluk çağı aşıları hakkındaki görüşleri. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi 2017; 6:131-137. (Turkish)

[11] İşler Dalgıç A, Esenay FI, Kurugöl Z, Koturoğlu G. Annelerin aşılar konusundaki bilgi ve davranışları. Ege Pediatri Bülteni 2007; 14:1-6. (Turkish)

[12] Çıklar S, Güner P. Annelerin çocukluk çağı aşıları hakkındaki bilgi, davranış ve tutumları ve aşı reddi nedenleri: Nitel ve nicel bir araştırma. Ankara Medical Journal 2020; 20:180-195. DOI: 10.5505/amj.2020.80148 (Turkish)

[13] Üzüm Ö, Eliaçık K, Örsdemir HH, Öncel EK. Ebeveynlerin aşı yaklaşımlarını etkileyen faktörler: Bir eğitim araştırma hastanesine ilişkin değerlendirme. Çocuk Enfeksiyon Dergisi 2019; 13:144-149. DOI: 10.5578/ced.68398 (Turkish)

[14] Odabaş N, Ayyıldız T. Anne babaların çocukluk dönemi aşılarına yönelik bilgi ve uygulamalarının değerlendirilmesi. Batı Karadeniz Tıp Dergisi 2020; 4:7-11. DOI: 10.29058/mjwbs.2020.1.2 (Turkish)

[15] Aygün E, Tortop HS. Ebeveynlerin aşı tereddüt düzeylerinin ve karşıtlık nedenlerinin incelenmesi. Güncel Pediatri 2020; 18:300-316. DOI: 10.32941/pediatri.841404. (Turkish)

[16] Kempe A, Saville AW, Albertin C, Zimet G, Breck A, Helmkamp L, Vangala S, Dickinson LM, Rand C, Humiston S. Parental hesitancy about routine childhood and influenza vaccinations: A national survey. Pediatrics 2020; 146. DOI: 10.1542/peds.2019-3852

[17] Al-lela QB, Bahari MB, Al-Qazaz HK, Salih MR, Jamshed SQ, Elkalmi RM. Are parents' knowledge and practice regarding immunization related to pediatrics' immunization compliance? A mixed method study. BMC Pediatrics 2014; 14:1-7. DOI: 10.1186/1471-2431-14-20

[18] Von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, Strobe Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for reporting observational studies. International Journal of Surgery 2014; 12:1495-1499. DOI: 10.1016/j.ijsu.2014.07.013

[19] Kaydirak MM, Gumusay M, Gulec Y, Sahin NH. Parental opinions and approaches about childhood vaccinations: are anti-vaccination approaches and indecisiveness parental rights? Journal of Community Health Nursing 2020; 37:222-232. DOI: 10.1080/07370.016.2020.1809860

[20] Parker C, Scott S, Geddes A. Snowball sampling. Atkinson P, Delamont S, Cernat A, Sakshaug JW, Williams RA, editors. SAGE Research Methods Foundations; 2019. DOI: 10.4135/978.152.6421036831710

[21] Kocoglu-Tanyer D, Dengiz KS, Sacikara Z. Development and psychometric properties of the public attitude towards vaccination scale–Health belief model. Journal of Advanced Nursing 2020; 76:1458-1468. DOI: doi.org/10.1111/jan.14349

[22] Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The fear of COVID-19 scale: development and initial validation. International Journal of Mental Health and Addiction 2022;20:1537-1545. DOI: 10.1007/s11469.020.00270-8

[23] Satici B, Gocet-Tekin E, Deniz ME, Satici SA. Adaptation of the fear of COVID-19 scale: Its association with psychological distress and life satisfaction in Turkey. International Journal of Mental Health and Addiction 2021; 19:1980-1988. DOI: 10.1007/s11469.020.00294-0

[24] Bakioğlu F, Korkmaz O, Ercan H. Fear of COVID-19 and positivity: Mediating role of intolerance of uncertainty, depression, anxiety, and stress. International Journal of Mental Health and Addiction 2021; 19:2369-2382. DOI: 10.1007/s11469.020.00331-y

[25] Santoli JM, Lindley MC, DeSilva MB, Kharbanda EO, Daley MF, Galloway L, Gee J, Glover M, Herring B, Kang Y, Lucas P, Noblit C, Tropper J, Vogt T, Weintraub E. Effects of the COVID-19 pandemic on routine pediatric vaccine ordering and administration-United States, 2020. Morbidity and Mortality Weekly Report 2020; 69:591-593. DOI: 10.15585/mmwr.mm6919e2