

## THE EFFECT OF PARENTS' TRUST IN SOCIAL MEDIA NEWS ON VACCINE REJECTION IN THE COVID-19 PROCESS

### COVID-19 SÜRECİNDE EBEVEYNLERİN SOSYAL MEDYA HABERLERİNE GÜVENLERİNİN AŞI REDDİNE OLAN ETKİSİ

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#### ABSTRACT

**Objective:** In the study, it was aimed to examine the effect of parents' trust in social media news on vaccine rejection during the COVID-19 process.

**Materials and Methods:** 403 volunteer parents with children under 13 years of age, who could be reached via social media, participated in the study. Questionnaire, Scale of Vaccine Hesitancy (SVH), Social Media Confirmation/Confidence Scale (SMT/CS) were used to collect the data. Ethics committee approval was obtained from the Non-Invasive Ethics Committee of a university. Informed consent was obtained from the individuals who volunteered for the study.

**Results:** There was no significant difference in terms of gender in both scales. As the age increases, the SMC/CS confirmation sub-dimension score increases significantly ( $p<0.05$ ). In individuals with a high education level, SVH and its sub-dimensions (except for the vaccine benefit and protective value and anti-vaccine sub-dimension) and the mean score of the SMC/CS confirmed sub-dimension were found to be increased and there was a statistical significance between the groups ( $p<0.05$ ). It was found that parents who had COVID-19 and did not take their children to vaccination during the pandemic had a significantly higher anti-SVH sub-dimension score ( $p<0.05$ ). The mean score of SVH total and sub-dimension (except for the benefit of the vaccine) of those who refused childhood vaccinations was found to be significantly higher. In the study, it was determined that as the time spent on social media increased, the mean score of vaccine rejection (except for the vaccine benefit sub-dimension) and sub-dimensions increased, and a significant relationship was found between the groups in the sub-dimension of vaccine hesitation ( $p<0.05$ ). Likewise, as the time allocated to social media increased, it was found that there was a significant increase in scores in the total and sub-dimensions of SMC/CS (except for the confirmation sub-dimension) ( $p<0.05$ ). The mean SMC/CS total and confirmation sub-dimension scores of those with low income status were significantly lower than those with equal or higher income ( $p<0.05$ ). The mean score of the SMC/CS confirmation sub-dimension of those who had COVID-19 and the total and confirmed sub-dimension of the SMC/CS of those with chronic diseases were significantly higher ( $p<0.05$ ). The relationship between SVH and SMC/CS scores is moderately positive.

**Conclusion:** It has been determined that there is a relationship between social media and vaccine rejection in parents' vaccination rejection during the COVID-19 process

**Keywords:** COVID-19, Social media, Vaccine Hesitancy.

#### ÖZET

**Amaç:** Çalışmada COVID-19 sürecinde ebeveynlerin sosyal medya haberlerine güvenlerinin aşı reddine olan etkisini incelemek amaçlandı.

**Materyal ve Metot:** Çalışmaya 13 yaş altı çocuğu olan sosyal medya arayıcılığıyla ulaşılabilen gönüllü 403 ebeveyn katılmıştır. Verilerin toplanmasında, soru formu, sahiplerinden izni alınan Aşı Karşıtı Ölçeği (AKÖ), Sosyal Medya Teyit/Güven Ölçeği (SMT/GÖ) kullanılmıştır. Etik kurul onayı, bir üniversitenin Girişimsel Olmayan Etik Kurulundan alınmıştır. Çalışmaya gönüllü bireylerden bilgilendirilmiş onam alınmıştır.

**Bulgular:** Cinsiyet açısından iki ölçekte anlamlı fark bulunmamıştır. Yaş arttıkça SMT/GÖ teyit alt boyut puanı anlamlı bir artış göstermektedir ( $p<0.05$ ). Eğitim seviyesi yüksek olan bireylerde AKÖ ile alt boyutları (aşı yararı ve koruyucu değeri ile aşı karşıtı alt boyutu dışında) ile SGMT/GÖ'nün teyit alt boyutu puan ortalamasının arttığı ve gruplar arasında istatistiksel bir anlamlılık olduğu belirlenmiştir ( $p<0.05$ ). COVID-19 geçiren ve pandemide çocuklarını aşıya götürmeyen ebeveynlerin AKÖ karşıtlığı alt boyut puanı anlamlı düzeyde fazla olduğu bulunmuştur ( $p<0.05$ ). Çocukluk çağı aşılarını reddedenlerin AKÖ toplam ve alt boyut (aşı yarar dışında) puan ortalamaları anlamlı düzeyde fazla bulunmuştur. Sosyal medyaya ayrılan süre arttıkça AKÖ'nün aşı tereddütü ile SMT/GÖ'nün (teyit alt boyut dışında) gruplar arası bir anlamlılık bulunmamıştır. Gelir durumu az olanların, eşit ve fazla olanlara göre SGMT/GÖ toplam ve teyit alt boyutu puan ortalaması anlamlı derecede azdır ( $p<0.05$ ). COVID-19 geçirenlerin SGMT/GÖ teyit alt boyutu, kronik hastalığı olanların SGMT/GÖ toplam ve teyit alt boyutu puan ortalaması anlamlı derecede fazla bulunmuştur ( $p<0.05$ ). AKÖ ile SMT/GÖ puanları arasındaki ilişki orta düzeyli pozitif yöndedir.

**Sonuç:** COVID-19 sürecinde ebeveynlerin aşı reddinde, sosyal medya ile aşı reddi arasında ilişki olduğu belirlenmiştir.

**Anahtar kelimeler:** Aşı Reddi, COVID-19, Sosyal Medya.

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## INTRODUCTION

Vaccines are a tool used in cost-effective public health interventions to reduce disease burdens and deaths in society, to control infectious diseases and to eradicate diseases (Majid and Ahmad, 2020; Erdogan, et al. 2021). Not only individual immunity is provided by vaccination, but also efforts are made to ensure social immunity. The presence of unvaccinated individuals in society will cause a dangerous situation in terms of mortality and morbidity due to the spread of infectious diseases (Özdemir-Unal 2019).

In our country, the national vaccination calendar is applied free of charge to every child by the Ministry of Health (Yigit, et al. 2020). Although vaccines are free in Turkey, vaccine rejection increased 125-fold between 2012 and 2019. Among the reasons for vaccine refusal; the vaccine substance's fear of disease, religious causes and fear of infertility, social media and the influence of the environment (Yalçın, et al. 2020). Hesitation about vaccination and anti-vaccination consequences can create outbreaks (Azap, 2018). In line with the principles of public health opinion; by prioritizing protection and providing applications such as pregnancy and prenatal care and vaccination services in accordance with the principle of team service with the cooperation of midwives, nurses and physicians (Büyüksöy, 2019).

In today's information age, anyone with access to the internet can publish their thoughts and opinions to support or counter expert knowledge of health-related issues. This is how social media can influence people to learn about health issues and make right or wrong decisions (UNICEF, 2013).

The most important factor in parents' fears and concerns about vaccinations for their children has been the sharing of misinformation in the immediate vicinity or on social media, and the online rhetoric of anti-vaccination groups (Grape, et al. 2019). In one study; it was stated that 28% of parents were hesitant to vaccinate their children (15.5%) and that the internet was effective in making this decision (Gokce, et al. 2020).

The upward trend in the idea of vaccine rejection negatively affects social immunization. This has led to anti-vaccination and the need to focus on families who refuse vaccinations. The decision to apply vaccines, many of which are administered in infancy and childhood, is in the hands of the state and parents. In our country, parents are the final decision makers who decide whether to give the vaccine to their children. Therefore, how the idea of vaccine rejection develops in parents is the subject of research. The study aimed to examine the impact of parents' reliance on social media news on vaccine refusal during covid-19. This study is intended to refer to intervention plans and policies to be developed in the field of community immunity and public health in the future.

## MATERIALS AND METHODS

In the study, the data were collected through an online survey between January and April 2021. The study was conducted with 403 parents who used smartphones, had babies/children of vaccination age, and accepted the Volunteers Information and Consent Form.

### Data Collection

The data was collected through an online survey from parents who met the criteria for inclusion in the study. Data collection forms were transferred to an application program (google form) and parents were asked to fill out the Volunteers Information and Consent Form after the approval. The data was collected using the parental identifying features, Scale of Vaccine Hesitancy (SVH) and Social Media Confirmation/Confidence Scale (SMT/AS)

**Scale of Vaccine Hesitancy (SVH):** The scale developed by Kilincarslan and his colleagues in 2020 consists of 21 questions and 4 sub-dimensions (Vaccine benefit and protective value, Anti-Vaccine, Solutions not to be vaccinated and legitimization of vaccine hesitation). The first 5 substances of the scale were inversely rated as they consisted of expressions in favor of the vaccine. The Cronbach Alpha reliability coefficient is calculated as 0.905. Items of the scale are 1-5 using a 5-type Likert scale (1-I strongly disagree.... 5- I strongly agree) scored. The scale is scored between 21 and 105. As the score increases, the anti-vaccination/hesitation increases (Kilincarslar et al. 2020).

**Social Media Confirmation/Confidence Scale (SMC/CS):** It was created by Çömlekçi and Başol in 2019. The scale consists of a total of 10 items evaluated in social media confirmation/trust. The scale is of type 5 Likert, and the substances of the scale are 1= Never; 2= Rarely; 3= Sometimes; 4= Often; 5= Always considered. As the score increases, social media confirmation/trust increases. There are 3

sub-dimensions: Confirmation (Article 1, 2 and 3), Trust in Corporate Social Media Posts (CSMP) (Article 4, 5 and 6), and Trust in Individual Social Media Posts (article 7, 8, 9 and 10) (Çömlekçi and Başol, 2019).

In the study, the Helsinki Declaration was complied with and prior to the research, ethics committee approval from a university's Non-Interventional Ethics Committee (07.01.2021; number of meetings 2021/) was obtained

**Type, Place and Time of Research:** The descriptive type of research was applied to parents with babies/children (those with children under 13 years of age) at vaccination age by creating an online questionnaire.

**Criteria for Inclusion in the Study:** To be using a smartphone, to have a baby/child at the age of vaccination, to have accepted the Volunteers Information and Consent Form.

**Exclusion Criteria from Research:** To be using a smartphone, to have a baby/child at the age of vaccination, to have accepted the Volunteers Information and Consent Form.

## RESULTS

74.4% of the participants were women; 34% have three or more children; 72.5% live in the province; 45.2% are university graduates; 52.6% did not work; It was determined that 40.7% of the income was less than the expense. In addition, 85.9% of the participants did not have any chronic diseases; It was determined that 81.6% did not have a continuously used drug and 57.6% were in good overall health (Table 1).

**Table 1.** Distribution of Participants' Characteristics Related to Sociodemographic and General Health Status (n:403)

Variables	n (number)	% (percent)
<b>Gender</b>		
Woman	300	74.4
Male	103	25.6
<b>Number of children</b>		
1	136	33.7
2	130	32.3
3 and above	137	34.0
<b>Where it happened</b>		
Village/town/district	111	27.5
Province	292	72.5
<b>Learning status</b>		
Primary	131	32.5
(I) High school	90	22.3
University and above	182	45.2
<b>Working status</b>		
Working	191	47.4
Not working	212	52.6
<b>Income status</b>		
Income less than expense	164	40.7
Income equals expense	175	43.4
Income is more than expense	64	15.9
<b>Chronic disease condition</b>		
Have.	57	14.1
No	346	85.9
<b>The drug he's been taking all the time</b>		
Yes	74	18.4
No	329	81.6
<b>General health status</b>		
Good	161	40.0
Normal	232	57.6
Bad	10	2.4

%; (percent)

87.8% of participants were concerned about COVID-19; 51.1% were vaccinated against COVID-19; 41.4% stated that the situation that negatively affected getting the COVID-19 vaccine was a lack of knowledge. 6.5% of parents have incomplete vaccinations in their children 73.7% did not have a special vaccination for their children (route and chickenpox-born before 2013). 10.9% do not have a child's vaccination card; 6.0% of parents did not vaccinate their child during the pandemic. It was found that 19.1% had negative thinking about vaccines around them and 64% of the participants did not know about vaccines and 38.7% of those who had information about the vaccine (n=142) had access to information on social media (Table 2).

**Table 2.** Distribution of Participants' Knowledge of the Covid-19 Process

Variables	n	%
<b>Concern about covid-19</b>		
Yes	354	87.8
No	49	12.2
<b>Getting a COVID-19 vaccination</b>		
Yes	206	51.1
No	197	48.9
<b>Negatively affects getting vaccinated against COVID-19</b>		
Paid	48	11.9
Lack of information	167	41.4
Fear, insecurity	107	26.6
Impact of the environment	25	6.2
Social Media	56	13.9
<b>Missing vaccination status in the child</b>		
Yes	26	6.5
No	377	93.5
<b>Getting a special vaccine</b>		
Yes	106	26.3
No	297	73.7
<b>Vaccination card status</b>		
Yes	359	89.1
No	44	10.9
<b>The child's vaccination in the pandemic</b>		
<b>getting a case for it</b>		
Yes	187	46.4
No	24	6.0
He did not run into me.	192	47.6
<b>Negative thinker about vaccines in the environment.</b>		
Yes	77	19.1
No	326	80.9
<b>Information about the vaccine</b>		
Yes	142	35.2
No	261	64.8
<b>Learn about vaccine (n=142)</b>		
Health professional	40	28.2
Immediate surroundings	32	22.5
Social Media	55	38.7
Newspapers, magazines, books, radio, television	15	10.6

%; (percent)

As shown in Table 3, it was determined that the average score of the Scale of Vaccine Hesitancy (SVH) and its sub-dimensions did not change according to gender and age ( $p>0.05$ ). It was determined that the sub-dimensions of the SVH (except for the vaccine benefit and protective value and the anti-vaccine sub-dimension) and the confirmation sub-dimension of increased the average score and there

was a statistical significance between the groups ( $p < 0.05$ ). When the parents' covid-19 status and vaccination of their children in the pandemic were examined, only a significant difference was found between groups in the average anti-vaccination score, which is the lower dimension of the SVH ( $p < 0.05$ ). When looking at the mandatory or non-compulsory status of childhood vaccines, a significant difference was found between the SVH and its sub-dimensions (other than the vaccine benefit) ( $p < 0.05$ ). As the time spent on social media increases in the study, the average score of vaccine rejection (except for the subdivision of vaccine benefits) and subdivisions increases. It was found that there was a significant relationship between groups in the lower dimension of vaccine hesitation ( $p < 0.05$ ).

**Table 3.** Evaluation of The Relationship of The Variables of The Participants with The Anti-Vaccine Scale

Variables	Vaccine rejection X± SD	Vaccine benefits X± SD	Opposite Vaccines X± SD	Solutions to avoid vaccination X± SD	Vaccine Hesitation X± SD
<b>Gender</b>					
Woman	49.98± 15.20	11.47± 5.74	17.56± 6.68	11.28± 5.22	9.72± 4.99
Male	51.79± 15.94	10.57± 5.90	18.99± 6.40	11.88± 5.64	10.42± 5.74
	p= 0.304	p= 0.174	p= 0.060	p= 0.328	p= 0.238
<b>Education Status</b>					
Primary	48.80± 15.32	11.73± 5.70	17.30± 6.41	10.66± 5.00	9.08± 4.73
(I) High school	48.50± 12.55	11.07± 6.03	17.65± 6.51	10.61± 4.42	9.55± 4.88
University	52.63± 16.50	10.96± 5.73	18.52± 6.83	12.42± 5.82	10.68± 5.57
	p< 0.037* (1- 1 2 3)	p= 0.481	p= 0.249	p< 0.004* (1- 1 2 3)	p< 0.020* (1- 3)
<b>Age</b>					
18- 20	47.78± 18.13	10.50± 4.18	17.64± 6.60	12.57± 5.31	11.50± 5.40
21- 30	50.47± 14.55	10.90± 6.18	17.67± 7.10	11.96± 5.14	10.12± 5.07
31- 40	51.13± 17.34	9.92± 6.04	17.86± 6.90	12.58± 6.20	10.83± 5.83
41- 65	48.75± 14.30	10.48± 6.06	17.57± 6.72	10.78± 5.31	10.05± 5.29
	p= 0.635	p= 0.586	p= 0.990	p= 0.105	p= 0.516
<b>Concern about covid-19</b>					
Yes	49.08± 16.81	11.977± 7.24	16.62± 7.36	11.24± 5.82	9.47± 5.21
No	51.34± 14.36	11.27± 5.79	18.05± 6.81	11.77± 5.28	10.18± 5.17
	p= 0.150	p= 0.287	p< 0.047*	p= 0.342	p= 0.176
<b>The Case of Vaccinating Children in the Pandemic</b>					
Yes <sup>1</sup>	49.17± 14.97	12.18± 6.32	7.09± 7.08	11.31± 5.36	8.88± 4.52
No <sup>2</sup>	55.25± 20.92	11.37± 6.11	21.29± 7.54	12.95± 6.88	10.62± 5.27
Child vaccinations did not coincide with the pandemic process <sup>3</sup>	51.08± 14.94	12.17± 5.53	17.89± 6.33	11.37± 5.08	9.55± 4.73
	p= 0.139	p= 0.813	p=0.008 (1,2; 2,3)**	p= 0.354	p= 0.139
<b>Childhood Vaccinations Requirement Status</b>					
Yes	49.90± 14.63	12.25± 5.87	17.44± 6.37	11.13± 5.09	9.11± 4.60
No	54.88± 20.27	10.84± 5.83	19.61± 8.28	13.88± 6.54	10.90± 5.04
	p< 0.043*	p= 0.133	p< 0.040*	p= 0.001**	p< 0.016*
<b>Allocated time Social Media</b>					
0- 1 <sup>1</sup>	49.31± 14.36	10.53± 5.20	19.06± 6.54	10.79± 4.85	9.02± 4.09
2- 3 <sup>2</sup>	50.41± 16.11	10.50± 5.15	19.09± 6.77	11.59± 5.56	9.32± 4.96
4 and above <sup>3</sup>	53.37± 15.22	9.98± 5.05	20.00± 6.77	12.48± 5.52	10.01± 5.84
	p= 0.238	p= 0.764	p= 0.627	p= 0.104	p=0,038 (1-3)*

\*p<0.05, \*\*p<0.01, Test: Paired Samples T-test, One Way ANOVA

As the level of education increases, the average individual social media subdivision score decreases significantly in individuals, and the subdivision score increases ( $p < 0.05$ ). According to the test results, there was a significant difference between elementary and high school and college groups for the confirmation factor from SMC/CS sub-dimensions. The average confirmed subdivision score was found in parents between 31-40 ( $13 \pm 5 \pm 19$ ) and 41-65 ( $11.62 \pm 5.19$ ) years ( $p < 0.05$ ). In our study, we can say that people under the age of 20 are less likely to confirm information than other age groups. There was no significant difference between the participants' gender and continuous drug use ( $p > 0.05$ ). The SMC/CS confirmed subdivision average score of participants with low-income status and not working is lower than the other two groups and the difference in points is significant ( $p < 0.05$ ). When covid-19 passing conditions are examined, the average confirmed subdivision score is higher and significant in individuals who are COVID-19 positive ( $p < 0.05$ ). Evaluation of parents according to chronic disease; significant differences were found between the groups. Accordingly, the average rate of confirmation of individuals with chronic diseases from SMC/CS and sub-dimensions is significantly higher than that of other groups ( $p < 0.05$ ). As the time spent on social media increased, the social media confidence/confirmation scale and the subdivision score average (excluding the subdivision of confirmation) increased in proportion to the time spent on social media, and the intergroup relationship was found to be significant ( $p < 0.05$ ).

**Table 4.** Evaluation of the Relationship of Socio-Demographic Characteristics of Participants with Social Media Confirmation/Trust Scale

Variables	SMC/CS X± SD	Enterprise CSMP X± SD	Individual CSMP X± SD	Confirmed X± SD
<b>Gender</b>				
Woman	27.63± 7.65	7.69± 2.78	7.43± 3.53	12.45± 5.10
Male	28.21± 7.69	7.87± 3.18	8.08± 4.06	12.27± 5.25
	p= 0.508	p= 0.585	p= 0.115	p= 0.754
<b>Education Status</b>				
Primary	26.64± 7.41	7.97± 3.15	8.24± 4.11	10.48± 4.82
(I) High school	28.27± 7.32	8.20± 3.10	7.28± 3.30	12.78± 4.58
University	28.29± 7.95	7.69± 2.63	6.93± 2.91	13.66± 5.18
	p= 0.133	p= 0.376	<b>p&lt; 0.004</b> (1-3)*	<b>p&lt; 0.000</b> (1-2; 1-3)**
<b>Age</b>				
18- 20	26.00± 8.65	6.85± 3.10	9.42± 5.44	9.14± 4.40
21- 30	27.92± 8.26	7.80± 3.17	7.65± 3.60	12.55± 5.13
31- 40	28.24± 7.19	8.01± 2.67	7.16± 3.41	13.08± 5.19
41- 65	26.97± 7.35	7.34± 2.74	8.06± 3.86	11.62± 5.19
	p= 0.497	p= 0.209	p= 0.068	<b>p&lt; 0.015*</b>
<b>Income status</b>				
Few	25.89± 7.44	7.78± 3.14	8.00± 3.98	10.18± 4.57
Equivalent	28.80± 7.73	7.99± 2.89	7.85± 3.64	12.90± 4.98
Much	29.65± 7.10	7.93± 2.38	7.85± 3.58	13.85± 5.16
	<b>p=0,000 (1- 2; 1-3)**</b>	p= 0.792	p= 0.933	<b>p=0,000 (1- 2; 1-3)**</b>
<b>Concern about covid-19</b>				
Yes	28.11± 8.17	7.62± 3.22	7.28± 3.42	13.28± 5.52
No	27.52± 7.31	7.61± 2.67	7.62± 3.80	12.23± 5.01
	p= 0.449	p= 0.962	p= 0.366	<b>p&lt; 0.048*</b>
<b>Chronic disease condition</b>				
Have.	29.84± 8.37	7.80± 2.93	7.96± 3.25	14.01± 5.04
No	27.41± 7.55	7.58± 2.89	7.41± 3.72	12.42± 5.24
	<b>p&lt; 0.026*</b>	p= 0.600	p= 0.295	<b>p&lt; 0.033*</b>
<b>Constant drug use</b>				
Yes	27.91± 8.51	7.47± 3.02	7.14± 3.02	13.24± 5.15
No	27.71± 7.47	7.65± 2.87	7.57± 3.79	12.52± 5.25
	p= 0.838	p= 0.629	p= 0.370	p= 0.282
<b>Time Allocated to</b>				

Social Media				
0/1 time (202)	27.01± 7.74	7.41± 2.86	7.39± 3.69	12.26± 5.14
2/3 time (145)	27.87± 7.50	7.82± 2.79	7.09± 3.43	12.83± 5.15
4 and above hours (56)	30.22± 7.33	8.94± 3.42	8.58± 3.88	12.60± 5.20
	<b>p=0,018</b> (1-3)*	<b>p=0,002</b> (1-3; 1-3)*	<b>p=0,030</b> (1-3)*	p= 0.594

\*p<0.05, \*\*p<0.01, Test: Paired Samples T-test, One Way ANOVA, Social Media Confirmation/Trust Scale: SMT/GO

When the correlation between the two scales is examined in Table 5, it has been obtained that there is a positively significant relationship between SMC/CS and SVH (except for the benefit subdivision). The correlation between social media confirmation/confidence scale and scale of vaccine hesitancy is moderate (.379) and significant (p<0.05). As social media confirmation/confidence increases, so does scale of vaccine hesitancy sentiment (Table 5).

**Table 5. Regression Between the Social Media Confirmation/Confidence Scale and The Total and Sub-Dimensions of The Scale of Vaccine Hesitancy**

	Vaccine rejection r/p	Utility r/p	Against r/p	Not to be solution (r/p)	Hesitation legitimation r/p
SMT/GO	r = .379** p= 0,000	-0.007 p= 0.013	r = 407** p= 0.000	r = 294** p= 0.000	r = 337** p= 0.000

\* p< 0,01 (Pearson, Two- tailed Test)

## DISCUSSION

In the study, 74.4% of the participants were female and 25.6% were male. Aygün and Tortop's work is similar to our work (Aygün-Tortop, 2020). The majority of respondents are 45.2% university graduates. Our results are consistent with studies showing that vaccine hesitation is higher in individuals with high levels of education in our country and around the world. (Özceylan, et al. 2020; Gust, et al. 2004; Wei, et al. 2009; Bocquier, et al. 2018; Hasar, et al. 2021). This result is thought to be due to the fact that people with high levels of education have easier access to information shared through social media (Kilic-İspir, 2020).

Concerns about vaccines are experienced not only in our country but also in countries all over the world. Who refers to vaccine refusal as one of the ten threats to global health. In a published report, The 194 WHO member countries reported vaccine hesitations, with 182 cases in 2014 and 180 cases in 2016. In Turkey, the number of cases related to vaccine refusal is increasing. In Turkey; There were 183 cases in 2011, 980 cases in 2013, 5,400 in 2015, 12,000 in 2016 and 23,000 in 2017 (Gür, 2019; Valiant, et al. 2020). Vaccination is a very important tool in the formation of immunity in a society. However, the decrease in the vaccination rate of the society, the increase in vaccine rejection, which is a public health problem, can lead to decreased immunization in the society and the emergence of outbreaks (Yigit, et al. 2020).

87.8% of participants were concerned about pandemic; 51.1% were vaccinated against COVID-19; 41.4% stated that the situation that negatively affected getting the COVID-19 vaccine was a lack of knowledge. 6.5% of parents have incomplete vaccinations in their children; 73.7% did not have a special vaccination for their children (route and chickenpox-born before 2013), 10.9% do not have a child's vaccination card; 6.0% of parents did not vaccinate their child during the pandemic. It was found that 19.1% had negative thinking about vaccines around them and 64% of the participants did not know about vaccines and 38.7% of those who had information about the vaccine (n=142) had access to information on social media (Table 2).

According to the Turkish Population and Health Survey (TNSA2013), the rate of full vaccination in infants and children up to 15 months is 74%, and the proportion of those who have never been vaccinated is 3%. According to TNSA (2018) data, 2% of 12-23 month old children and 3% of 24-35 month old children are not vaccinated. The full vaccination rate of children between the months of 12 and 23 months was reported as 67%. Immunization rates in the United States and Europe in 2018 are 90%, compared to 70-80% in Afghanistan, Nigeria, Pakistan and India. Immunization rates decreased by 2-4% in Europe between 2012 and 2016. In our country, the immunization rate decreased from 98% in 2016 to 96% in 2017. In one study; 6.17% of those who have never been

vaccinated in their lifetime (Özceylan, et al. 2020), another study found that 7.7% of parents refuse to get vaccinated (Hazir, 2018). These studies support our work.

In our study, it was determined that 64% of the participants did not know about vaccines. In a similar study, it was found that one of the reasons for vaccine refusal of participants was that 79% of the participants were not informed about the vaccine (Yakşı, 2020). Nakshi's work is similar to our work. When we look at the sources of access to information of parents who received information about the vaccine in our study (n=42); It was determined that 38.7% accessed information from social media, 28.2% from health professionals, 22.5% from the immediate surroundings and 10.6% from newspapers, magazines, radio and television. In a study on vaccine refusal, 70.0% of parents stated that they received information from family physicians, 65.4% from social media and 38.5% from the immediate environment (Ilter, 2020). In the study carried out by Hazir (2018), it has been determined that the majority of parents' sources of information are health professionals, while other sources of information are the Internet and the immediate environment (Hazir, 2018). During the pandemic process in which our study was carried out, it is thought that social media is the source of information, as there are restrictions and therefore health institutions cannot be used much.

As the time spent on Parents social media increases in the study, the average score of vaccine rejection (except for the subdivision of vaccine benefits) and subdivisions increases. It was found that there was a significant relationship between groups in the lower dimension of vaccine hesitation ( $p<0.05$ ). As the time spent on social media increased, the social media confidence/confirmation scale and the subdivision score average (excluding the subdivision of confirmation) increased in proportion to the time spent on social media, and the intergroup relationship was found to be significant ( $p<0.05$ ). While the increase in vaccine rejection was previously very small, opinions about anti-vaccination sentiment emerged on social media as a result of the win of the case of "parental consent for vaccine rejection". Therefore, it has been emphasized that there has been a rapid increase in the number of cases of vaccine rejection due to the influence of social media (Gür, 2019:). Especially on social media, negative news about vaccines increases parents' refusal of vaccines (Hazir, 2018). In the study conducted by Ilter (2020); 65.4% of parents were found to be effective in rejecting the vaccine (Ilter, 2020). In another study, 1000,000 people were killed 25% of the effect of social media on parents' vaccine rejection (Özceylan, 2020), and another study found that 24% of participants' idea of vaccine refusal was information obtained from the internet (Yigit, et al. 2020).

Participants When looking at the mandatory or non-compulsory status of childhood vaccines, a significant difference was found between the ECT and its sub-dimensions (other than the vaccine benefit) ( $p<0.05$ ). Parents have stated that they want childhood vaccinations not to be mandatory, but to be done on demand. It can be said that the recent news about vaccines on social media, radio and television has had an impact. In the study conducted by Polat and his friends (2017); parents with high levels of education stated that vaccinations should be mandatory, and parents with low levels of education should not be mandatory (Polat, et al. 2017).

When the correlation between the two scales is examined In our study, SMT/GÖ and AKÖ and sub-dimensions It has been obtained that there is a positively significant relationship between SMT/GÖ and BCU (except for the benefit subdivision). The correlation between Social Media and Anti-Vaccination is moderate (.379) and significant ( $p<0.05$ ). As social media confidence increases, so does anti-vaccination sentiment. There is a wide range of vaccine rejections and individuals' refusal of vaccination; distrust of vaccines, religious beliefs, safety concerns and social media posts can be effective (Burki, 2019).

Internet use, which is an indispensable part of our daily life, is spreading rapidly all over the world and in Turkey. As in many areas, people use the internet to learn about health (Cetin, 2018:44). In one study, it was determined that 43% of health-related information from the internet is researched very often and 43% is frequently researched online (Yigit, et al. 2020). Internet usage according to Turkish Statistical Institute (2020) data; 79.0% among 16-74 year olds; In 2019, this rate was 75'3%.

## CONCLUSION

In the study, it was determined that SVH and its sub-dimensions (except for the vaccine benefit and protective value and anti-vaccine sub-dimension) and the mean score of the confirmation sub-dimension of SMT/CS increased in individuals with a high education level, and there was a statistical significance between the groups ( $p<0.05$ ). While low socioeconomic level and education level were



often cited as the reason for anti-vaccination in the previous years, this situation has started to be an increasing trend among individuals with high socioeconomic status living in developed countries (Eskiocak and Carangoz, 2019; Smith, 2017; Üzümlü et al., 2019). While the number of families who do not want to have their children vaccinated in our country was 183 in 2011, it reached 23,000 in 2018 (Gür, 2019). The prevalence of vaccine refusal in the society, especially among those with high education and economic level, is considered among the issues that should be addressed primarily in the field of public health in terms of being an important factor threatening public health (Eskiocak and Marangoz, 2019; Yiğit et al., 2020).

It was found that parents who had COVID-19 and did not vaccinate their children during the pandemic had a significantly higher SVH opposition sub-dimension score ( $p < 0.05$ ). The mean score of SVH total and sub-dimension (except for the benefit of the vaccine) of those who refused childhood vaccinations was found to be significantly higher. Due to the limited number of studies examining the approaches to anti-vaccination of parents who had COVID-19 and did not take their children to vaccination during the pandemic, it is thought that the study will contribute to the field and form the basis for studies to prevent anti-vaccination.

As the time allocated to social media increased in the study, the vaccine hesitancy sub-dimension score of SVH increased significantly. Likewise, as the time allocated to social media increased, it was found that there was a significant increase in the total and sub-dimensions of SMT/CS (except for the confirmation sub-dimension) ( $p < 0.05$ ). Today, it has become possible for parents to learn about the role of parenting, to transfer the personal parenting model to other parents, and to carry out their daily motherhood or fatherhood practices through the online environment, by making use of digital communication environments (Gül-Ünlü, 2020). In this context, it is possible to say that parents (Yiğit et al., 2020), who are the final decision makers about whether their children will be vaccinated or not, actively benefit from the digital environment to get information about the vaccine, and even the digital environment is often seen as the primary source of information about the vaccine (Ashkenazi et al., 2020; Azizi et al., 2017; Restivo et al., 2015; Wheeler & Bутtenheim, 2013; Wilson & Keelan, 2013; Witteman & Zikmund-Fisher, 2012). Various studies on the subject (Getman et al., 2018; Larson et al., 2014; Shoup et al., 2015) reveal that parents who encounter scientific evidence-based and qualified vaccination information in the digital environment have a positive impact on their decision to vaccinate. On the other hand, considering the nature of the digital environment, it would not be wrong to state that parents are more likely to be exposed to misinformation-based anti-vaccine discourse than to content-based content based on scientific evidence. The risk perception of the parents, who are faced with the anti-vaccine discourse, increases and this results in the parents' refusal or delay of vaccination (Kata, 2012; LaVail & Kennedy, 2012; Rodriguez, 2016; Weiner et al., 2015; Wheeler & Bутtenheim, 2013; Wilson & Keelan, 2013; Witteman & Zikmund-Fisher, 2012). Again, in the study, the moderate positive result of the relationship between SVH and SMT/CS scores gives the information that parents are affected by the anti-vaccination information shared on social media platforms. Due to the limited number of studies in the literature on the effect of parents' trust in social media on anti-vaccination, the study has the quality to contribute to the literature.

Preventive and long-term community-healing approaches in health care are directly related to the provision of social immunity. The field of public health is a branch of science that carries out studies in the provision of social immunity and aims to increase the well-being of the individual and society (Yigit, et al. 2020). When vaccination exceeds certain rates, individuals who cannot be vaccinated due to immunodeficiency or other health problems can also be protected thanks to social immunity (Kutlu-Altindiş, 2018).

However, anti-vaccine or vaccine instability, an approach that has increased worldwide, especially in recent years, threatens all historical achievements in reducing the burden of infectious diseases that have affected in-luck for centuries. Health workers have a great duty to eliminate such approaches by taking into account human health. The elimination of false and false information about vaccination can only be ensured through cooperation between all health workers, governments, technology sector and non-governmental organizations, especially child and family physicians, parents, public health officials, midwives and nurses involved in vaccination services. If this effort fails, the future health of unvaccinated children and communities including them will be under great threat. On the other hand, children as well as adults should be vaccinated if necessary.

Strategies to prevent instability against vaccines, which are seen as almost the only way to deal with the COVID-19 pandemic, which imposes a material and moral burden on all individuals, should be developed on the basis of countries. In addition, a global strategic approach must be adopted. The importance of vaccination should be expressed at every opportunity, not only in pandemics such as COVID-19, but also at all times by the relevant regulators on different platforms, and countries should be ensured to invest in knowledge and science.

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### Conflict of Interest

Authors declare that there is no conflict of interest.

### Author Contributions

Plan, design: N.A.B, N.N.İ.; Material, methods and data collection: N.A.B, N.N.İ. ; Data analysis and comments: N.A.B, N.N.İ.; Writing and corrections: N.A.B, N.N.İ.

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