Contents lists available at Science-Gate

International Journal of Advanced and Applied Sciences

Journal homepage: http://www.science-gate.com/IJAAS.html

COVID-19 vaccine attitude: A review on turkey

Gökten Öngel [1], Gözde Bozkurt [2,*], İsmail Erkan Çelik [3]

[1]Child Health and Diseases Department, Istanbul Education Research Hospital, Istanbul, Turkey
[2]Department of Economics, Faculty of Economics and Administrative Sciences, Beykent University, Istanbul, Turkey
[3]Department of Economics, Faculty of Economics and Administrative Sciences, Doğuş University, Istanbul, Turkey

ARTICLE INFO

Article history:
Received 1 May 2022
Received in revised form
26 July 2022
Accepted 26 July 2022

Keywords:
COVID-19 pandemic
Anti-vaccination
Vaccine-refusal
Vaccine-hesitancy

ABSTRACT

The study investigates the anti-vaccine attitude and the attitude towards COVID-19 in Turkey. Within the scope of the study, an online questionnaire was applied to 564 volunteers with a convenience sampling technique between 21/05/2021 and 01/06/2021. Analysis was performed with descriptive and inferential statistical analysis techniques and a multiple probit model. As a result of the estimation, it has been determined that negative claims about the vaccine have an increasing effect on the probability of being vaccinated or undecided, according to the probability of being vaccinated. It has been seen that it has a reducing effect on their thoughts about making the vaccine compulsory. Opposition to the COVID-19 vaccine has become global, and people's behaviors endanger their health, public health, and global health due to the following unscientific theories that need to be further examined scientifically. In particular, awareness-raising activities for individuals, more efficient use of social media channels for communication, support of countries' academic studies on the subject, and transparent sharing of scientific data with the public will change the attitude toward vaccines. When we look at the literature, it has been seen that social media channels are neglected in the vaccination attitude. However, it was found to be an essential factor in line with the findings obtained from the study. For this reason, it is thought that it will contribute to future studies.

1. Introduction

After it was determined that the causative agent of the COVID-19 disease was a new virus belonging to the coronavirus family (officially SARS-CoV-2), organizations in the medical field, especially the World Health Organization (WHO), have made great efforts to control the disease. The development of a vaccine has been considered the most critical defense mechanism in the fight against the pandemic. Vaccines developed and applied in the process have resulted in anti-vaccination movements, wherein masses are organizing and holding demonstrations, especially in Europe and America. The study aims to investigate attitudes toward vaccine opposition and COVID-19. Despite opinions such as mandatory vaccinations in many countries and the completion of at least two doses of the vaccine so that people can go to public places and travel domestically and internationally, the global rate of one-dose vaccination as of July 21, 2021, is only 26.8%. The fact that it has reached a rate of 46.4% in Turkey increases the importance of the study (Mathieu et al., 2021). Undoubtedly, the vaccination has a chance of success due to its high acceptance rate and inclusiveness. Since it is necessary to reach the social immunity threshold (about 80%–95%) in order to prevent an epidemic, it can be said that reaching the threshold quickly is of great importance in a pandemic such as COVID-19, which has affected the entire world. The requirement for herd immunity for COVID-19 is predicted to be between 60% to 72% (Aksu et al., 2020). Despite the fact that the rate of one-dose vaccination in the world has reached only 26.8% and 46.4% in Turkey as of July 21, 2021 (Mathieu et al., 2021), it appears to be far from the target when evaluated together with the information that vaccine protection occurs after the second vaccination dose. The rapidly emerging mutations of the virus all over the world make the situation more critical.

WHO (2020) defined the abundance of true and false information regarding the epidemic as an

* Corresponding Author.
Email Address: gozdebozkurt@beykent.edu.tr (G. Bozkurt)
https://doi.org/10.21833/ijaas.2022.11.005
Corresponding author's ORCID profile:
https://orcid.org/0000-0001-8413-1099

"infodemic." This abundance of misinformation makes it difficult for people to find reliable sources and guidance for vaccine information. Even if they have access to the information, they typically must overcome certain barriers to take the recommended actions. Just like pathogens in epidemics, misinformation spreads quickly, thus complicating the emergency health response. In the context of the COVID-19 pandemic, the phenomenon of "infodemia" has become a situation that requires a coordinated response (WHO, 2020). At this point, where people receive information about the pandemic has become paramount, problems about the accuracy and reliability of the information followed on social media platforms can effectively determine and direct people's attitudes about vaccines. Opposition to the COVID-19 vaccine has spread, primarily through social media channels. Thus, the relevant subject is seen as a phenomenon that should be investigated.

Ma and Stahl (2017), in their study on the posts in a public anti-vaccine Facebook group, determined that, despite the lack of expertise or evidence support, the participants shared their fundamental beliefs and goals about vaccines, which made it difficult to provide knowledge-based action. Okuhara et al. (2017) compared the readability of "health professional" websites and "nonhealthcare professional" websites, and the readability of "anti-vaccine" websites, and "professional" websites in Japan using a t-test. From a total of 145 websites, the study found that online messages written by nonhealth professionals were significantly more straightforward to read than those written by healthcare professionals, and antiflu vaccine messages were significantly more straightforward to read than messages in support of the flu vaccine. Accordingly, it can be said that anti-vaccine messages are more effective than the messages of health professionals who support the vaccine.

Considering the studies on anti-vaccination, it is seen that the rate of people who trust vaccines, in general, is around 70%, and 2% of them reject vaccines entirely. Notably, in the Middle East and Africa, the rates of hesitation/rejection regarding the vaccine are higher than in other regions (Lane et al., 2018; WHO, 2014). While the vaccination exemption rate for kindergarteners was 2.5% in California, the USA, in 2014, it was observed that this rate reached 22% in California and Nevada, as influenced by personal opinions and beliefs (Kutlu and Altındiş, 2018). Luyten et al. (2019) revealed that, among 1402 participants in England, 4% of the sample stated that they approached all 10 items about vaccination with hesitation, and 90% of them approached at least one item with hesitation. Türkay et al. (2017), in their study of 500 participants in Antalya, found that 6.2% of the participants defined themselves as "anti-vaccine," stating that the said rate could pose a danger to community immunity. Since it was determined that anti-vaccine individuals were low-income individuals in secondary school and below education levels, it was concluded that carrying out educational studies on this subject is essential.

2. Method

The questionnaire used in the study was distributed online, as COVID-19 epidemic safety precautions did not permit face-to-face interviews. The population of the research consists of individuals over the age of 18 who are internet users in 2021. The scope of the study includes 564 volunteers with a convenience sampling technique between May 21, 2021, and June 1, 2021. Ethics committee approval was obtained for the study from Beykent University on May 20, 2021. The researchers prepared the questions in the research scale as a result of the literature review. However, the study of Akyüz (2021) was used in the questionnaires to measure attitudes toward anti-vaccine claims.

SPSS version 25.0 and STATA version 17 statistical programs were used to analyze the data. In addition to descriptive analyses, tests for the significance relationship were also carried out. In addition, the analyses were carried out with a confidence level of 95% via the multiple probit model to examine the variables affecting attitudes toward the vaccine.

3. Results

It has been determined that the reliability of the scale used in the survey study is high $b(\alpha = 0.798)$. In the study, the Kaiser-Meyer-Olkin value was determined as 0.909; further, the Bartlett sphericity test (0.000<0.05) revealed a high correlation between the variables. As a result of factor analysis, the related variables have a total disclosure rate of 56%. Demographic information of the 564 volunteers is given in Table 1.

Among those not vaccinated, 69.1% thought to have it, 13.6% did not, and 17.4% were undecided. While 36.3% of the volunteers thought that sufficient information was provided about the vaccine, 47.3% stated that they did not think so, and 16.3% were undecided; 92.7% follow COVID-19 news, and 76.8% use social media platforms. Following the news, Twitter is preferred the most with 32.8%; Facebook is preferred the least with 2.8%. The volunteers frequently stated that scientific studies should be conducted on the safety of vaccines with a rate of 44.1% in reducing the situation of vaccine rejection. In the case of refusal by an individual who is required to be vaccinated, it was started with 54.3% that, if it is not requested despite persuasion efforts, the decision will be respected. Variables associated with being vaccinated against COVID-19 were examined by cross-tabulation analysis. Since there is a good relationship, i.e., above 0.20, as suggested by Healey (2014), only Cramer's V results above this value were evaluated.

Table 1: Demographic information

Gender	**%**	**Educational Status**	**%**	**Birth Year**	**%**
Female	55.9	University (4 Years)	36.5	1982-92	35.8
Male	44	Others	63.5	Others	64.2
Income Status	**%**	**City of Residence**	**%**	**Job**	**%**
0-3000 TL	23.9	İstanbul	68.3	Health	14.7
Others	76.1	Others	31.7	Others	85.3
Marital Status	**%**	**Number of Dependent Children**	**%**	**Accumulation Status**	**%**
Married	53.5	1	22	Yes	51.8
Single	46.5	Others	78	No	48.2
Getting infected with COVID-19	**%**	**COVID-19 Vaccine**	**%**	**Political Identity**	**%**
Yes	20.6	Yes	30.7	Laic	35.1
No	79.4	No	69.3	Others	64.9

It has also been determined that there is a solid relationship between vaccination and age (Cramer's V: 0.486), income (Cramer's V: 0.426), province of residence (Cramer's V: 0.391), and occupational groups (Cramer's V: 0.483). The results are given in Table 2 using the suitability of the data set to the normal distribution, as examined with the Kolmogorov–Smirnov test; it was determined that it was not normally distributed (*p:0.000<0.05*). Therefore, the Mann–Whitney U test was performed to determine the differences between those with and without the COVID-19 vaccine. The variables numbered in the analysis results are included in the questionnaire given in Appendix A.

Table 2: Mann–Whitney U test results

Variables	Vaccination status	Rank average	U	p-value
V_1	Yes	253.44	28793.500	0.000
	No	295.36		
V_3	Yes	235.33	25661.500	0.000
	No	303.37		
V_4	Yes	235.87	25754.000	0.000
	No	303.13		
V_5	Yes	248.55	27948.000	0.001
	No	297.52		
V_6	Yes	240.71	26591.000	0.000
	No	300.99		
V_7	Yes	253.53	28809.000	0.003
	No	295.32		
V_8	Yes	253.87	28869.000	0.004
	No	295.17		
V_9	Yes	235.15	25630.500	0.000
	No	303.45		
V_11	Yes	316.67	27909.500	0.001
	No	267.38		
	Yes	262.60		
V_13	No	291.30	30379.500	0.043
	No	305.09		
V_14	Yes	257.11	29428.500	0.010
	No	293.74		
V_15	Yes	235.55	25699.500	0.000
	No	303.27		
V_16	Yes	239.61	26402.000	0.000
	No	301.48		
V_17	Yes	315.66	28085.5000	0.001
	No	267.83		
V_18	Yes	308.09	29394.000	0.009
	No	271.18		

Table 2 reveals that adverse claims about the vaccine cause a significant change in being unvaccinated (*p<0.05*). It is seen that individuals ($\bar{r}$*=315.66*) who think that the vaccination should be made mandatory due to community insensitivity and imprudence are vaccinated. In addition, the author stated that those who believe that they should be vaccinated ($\bar{r}$=308.09) because society makes it difficult for health workers to be vaccinated. It has been determined that individuals who have been vaccinated also argue that the vaccine should be made mandatory ($\bar{r}$=316.67). The statistical findings of the variables associated with the idea of being vaccinated in individuals who have not yet been vaccinated against COVID-19 are given in Table 3.

When Table 3 is examined, the highest significant correlation with the thought of getting the COVID-19 vaccine is "I believe that vaccination should be done because I think the society is insensitive and careless." When evaluated in general, it was determined that the control perception of volunteers for the COVID-19 vaccine was higher than the vaccine rejection. Kruskal–Wallis analysis was carried out to determine which claims and thoughts caused a significant difference for those who are considering getting vaccinated, those who do not, and those who are undecided. A Tamhane T2 post hoc test was performed to determine in which groups the differences reside. The results are given in Table 4.

Table 3: Crosstab analysis results

Variables	Pearson's X^2	p-value	Phi and Cramer's V
V_1	63.618	0.000	0.403
V_3	95.524	0.000	0.494
V_4	59.337	0.000	0.390
V_5	82.297	0.000	0.459
V_6	113.337	0.000	0.538
V_7	103.790	0.000	0.515
V_8	86.321	0.000	0.470
V_9	75.037	0.000	0.438
V_11	190.444	0.000	0.698
V_12	62.044	0.000	0.398
V_13	94.166	0.000	0.491
V_14	143.449	0.000	0.606
V_15	83.686	0.000	0.463
V_16	104.902	0.000	0.518
V_17	264.043	0.000	0.822
V_18	164.239	0.000	0.648
V_19	73.020	0.000	0.432

Table 4: Tamhane T2 test results

Variables	Vaccination Consideration	Vaccination Consideration	Average Difference	Standard Error	p-value
V_1	No	Yes	1.062	.140	.000
		Indecisive	.302	.169	.213
V_3	No	Yes	1.201	.144	.000
		Indecisive	.201	.160	.510
V_4	No	Yes	.973	.174	.000
		Indecisive	.072	.203	.979
V_5	No	Yes	1.132	.152	.000
		Indecisive	.147	.171	.776
V_6	No	Yes	1.445	.153	.000
		Indecisive	.481	.183	.029
V_7	No	Yes	1.269	.186	.000
		Indecisive	.385	.218	.222
V_8	No	Yes	1.432	.169	.000
		Indecisive	.702	.201	.002
V_9	No	Yes	1.193	.162	.000
		Indecisive	.648	.189	.003
V_10	No	Yes	1.371	.108	.000
		Indecisive	.627	.140	.000
V_11	Yes	No	1.887	.143	.000
		Indecisive	1.047	.126	.000
V_12	Indecisive	Yes	.809*	.143	.000
		No	.074	.237	.985
V_13	No	Yes	1.497	.189	.000
		Indecisive	.875	.228	.001
V_14	No	Yes	1.455	.138	.000
		Indecisive	.352	.156	.077
V_15	No	Yes	1.236	.136	.000
		Indecisive	.293	.153	.163
V_16	No	Yes	1.242	.129	.000
		Indecisive	.276	.151	.196
V_17	Yes	No	2.218	.145	.000
		Indecisive	1.119*	.110	.000
V_18	Yes	No	1.666	.154	.000
		Indecisive	.773	.105	.000
V_19	No	Yes	.904	.162	.000
		Indecisive	.386	.197	.150

Table 3 reveals that adverse claims about the vaccine are more effective in individuals who state that they will not be vaccinated than those who are undecided about being vaccinated and that they will be vaccinated. It has been determined that the idea of "I am hesitant about its compatibility with my religious belief because I do not know the active ingredients in the vaccine content" is more effective in being vaccinated than other groups experiencing indecision. In addition, it is seen that individuals who state that they will be vaccinated are more affected than others in their thoughts about making the vaccine mandatory. A multilogit model was established to determine the extent and direction of the effect of the variables found to be related to the idea of getting vaccinated. However, because the independence of the irrelevant alternatives between the groups could not be achieved, the transition to the multiple probit model was made. In addition, the fact that there is a correlation between the models as a result of the LR test and that they should be estimated together also supported the use of the multiple probit model. By estimating the multiple probit model, the variables that affect the probability of being vaccinated are specified. The estimation results of the model are given in Table 5.

The constant term was not included in Table 4 because it was statistically insignificant in each group. Only the statistically significant variables in any group were taken, and individuals who stated that they were considering getting vaccinated were determined as the comparison group. The model coefficients were estimated according to this group; the marginal effects of the group were also included. It has been determined that the claim to track people by inserting a chip off the coronavirus pandemic increases the probability of not being vaccinated by

0.009% and the probability of being undecided by 0.07%.

Table 5: Multiple probit model prediction results

Independent Variables	Groups	Coefficient	Standard Error	z	P>|z|	95% Confidence Interval		dy/dx
I think the coronavirus pandemic was started for the purpose of tracking people by inserting a chip.	Yes							-.0843669
	No	.6507449	.2041697	3.19	0.001	.2505796	1.05091	.0095289
	Indecisive	.4907349	.1674594	2.93	0.003	.1625204	.8189493	.074838
I do not think that the safety and effectiveness of the vaccines produced have been adequately tested.	Yes							-.0553024
	No	.7423237	.2153765	3.45	0.001	.3201935	1.164454	.0121462
	Indecisive	.2940858	.1596045	1.84	0.065	-.0187334	.606905	.0431561
I believe vaccination should be made mandatory.	Yes							.0741624
	No	-.677357	.2123481	-3.19	0.001	-1.093552	-.2611624	-.0103443
	Indecisive	-.4221761	.159695	-2.64	0.008	-.7351725	-.1091797	-.0638182
I think that because the vaccines produced contain many chemicals, they will cause other discomforts.	Yes							-.1461135
	No	.6629547	.2322225	2.85	0.004	.2078069	1.118103	.0078319
	Indecisive	.8904423	.1864197	4.78	0.000	.5250664	1.255818	.1382816
I believe that people should be vaccinated because I think that society is insensitive and careless.	Yes							.1147348
	No	-1.288035	.2159768	-5.96	0.000	-1.711342	-.8647283	-.0204899
	Indecisive	-.6321574	.1588199	-3.98	0.000	-.9434387	-.3208762	-.0942448
I do not believe that there is such a disease/factor as the coronavirus disease	Yes							-.0475495
	No	.5927476	.2229805	2.66	0.008	.1557138	1.029781	.0095931
	Indecisive	.2568342	.175832	1.46	0.144	-.0877902	.6014587	.0379564

Not believing in a disease called “coronavirus” increases the probability of not being vaccinated by 0.009% and the probability of being undecided by 0.03%. The thought that the produced vaccines will cause other diseases because they contain many chemicals increases the probability of not getting the vaccine by 0.007% and being undecided by 0.13%. Failure to think that the safety and efficacy of the produced vaccines are adequately tested increases the probability of not being vaccinated by 0.012% and the probability of being undecided by 0.04%. In addition, it has been determined that the belief in the need to be vaccinated due to the idea of making the vaccine mandatory and the idea that society is insensitive and careless has a reducing effect. Related statements reduce the probability of not being vaccinated and being undecided according to the probability of occurrence. When the results obtained are evaluated in general, it has been determined that adverse claims about the vaccine increase the probability of not being vaccinated or being undecided, according to the probability of getting the vaccine. It has been seen that it has a reducing effect on efforts to make the vaccine mandatory.

4. Discussion and conclusion

Global vaccine studies and applications have been initiated to combat COVID-19, which has been declared a global pandemic. This practice, which was initiated to eliminate the adverse effects of exposure to disease, heavy transmission, and transmission risks on the functioning of social life, is a public health intervention tool. However, as of July 21, 2021, it is seen that the global rate of one-dose vaccination has reached only 26.8%. However, it seems impossible to think of any country in isolation from other countries in our globalized world. This attitude toward vaccination, a global defense mechanism in the fight against epidemics, is an important issue that needs to be examined.

Further, it is known that there are differences between countries when the application of vaccines in an epidemic is evaluated from a legal point of view. For this reason, problems are discussed, and solutions are sought in countries that do not have legal regulations regarding mandatory COVID-19 vaccine applications. The shocking effects, unknown aspects, and legal regulation problems experienced during the COVID-19 pandemic have led to the emergence of false information, rumors, the dominance of fear, and increased infodemic information. As a result of the increase in infodemic information worldwide, claims that vaccines are an initiative movement to control the human race have increased. Therefore, this study investigated Turkey’s attitudes and opposition to the COVID-19 vaccine, and its determinants and effects were examined.

Information about the vaccine globally and in Turkey is not considered sufficient, per 47.3% of the participants. In addition, 16.3% stated that they were undecided. Participants follow the current news of COVID-19 by 92.7%, and 76.8% use social media platforms. Twitter is the most-used platform, with 32.8% following the news. Social media platforms provide the opportunity to participate in news production and dissemination. These platforms, which are essential in daily life communication, are also open to manipulation and speculative news about mass events. Considering the relevant findings obtained in the study, the importance of news quality and sources in protecting public health and changing negative attitudes and thoughts about vaccines is discussed.

In studies examining vaccine opposition, individuals have a negative attitude toward the vaccine (Uyar et al., 2019; Dolu et al., 2021). Considering the studies on anti-vaccination, it is seen that the rate of people who trust vaccines, in general, is around 70%, and 2% of them reject vaccines entirely. When the literature is evaluated in general, it is seen that the obtained findings are supported.

Another finding determined that adverse claims about the vaccine caused a significant change in non-vaccination. At the same time, it is seen that individuals who think that the vaccine should be mandatory due to the insensitivity of society and carelessness also received at least one dose of the vaccination. When the difference was examined, it was determined that the control perception of the volunteers for the COVID-19 vaccine was higher than the vaccine rejection. The effects due to lack of transparent information, conspiracy theories, and adverse claims, which are thought to cause negative attitudes toward the vaccine, were examined through multiple probit model estimation. It has been determined that negative claims about the vaccine have an increasing effect on the probability of not being vaccinated or being undecided, according to the probability of getting the vaccine. It has been seen that it has a reducing effect on thoughts about making the vaccine mandatory. For this reason, it is possible to say that the transparency of information on vaccination is essential for public health. It has been stated that the level of awareness in social media should be increased in studies conducted to prevent vaccine rejection (Ma and Stahl, 2017; Odabaş and Kuzlu Ayyıldız, 2020). However, it is thought that the study will contribute to this field due to the limited number of studies in the literature and the spread of anti-vaccination, primarily through social media channels, especially during the COVID-19 process. Therefore, it is critical in terms of global health to carry out studies in Turkey and globally to prevent anti-vaccination. Vaccination opposition, which is a complex issue, needs to be evaluated holistically.

5. Limitations

The study has limitations in terms of the participants being only from Turkey, the use of the online survey methods, and the duration of the study. It is assumed that participants in the study gave objective answers. The main question of the study, "What are the variables that affect anti-vaccine attitudes?" is the central hypothesis that "negative claims and infodemic information affect anti-vaccination attitudes." It is essential to research anti-vaccine attitudes and attitudes toward COVID-19 during this pandemic. When studies on vaccine rejection/opposition are examined, especially in the literature, it is seen that they are mainly in the form of compilations and focus on childhood vaccines. It seems that there are few studies based on extensive field studies and especially studies on COVID-19 vaccines for adults. Based on fieldwork, this research contributes to the literature in terms of examining people's attitudes toward vaccines administered to adults during the COVID-19 pandemic.

Appendix A. Survey form

The form used in this research for survey purposes is shown in Table A1.

Table A1: Survey form

No	Mark (x) your level of agreement with the following statements.	1	2	3	4	5
1	I think the coronavirus was produced in a laboratory environment.	☐	☐	☐	☐	☐
2	I think that the number of cases and deaths in Turkey is underestimated.	☐	☐	☐	☐	☐
3	I think there are companies that want to sell drugs behind the coronavirus.	☐	☐	☐	☐	☐
4	I think the Chinese state knowingly spread the coronavirus to the world	☐	☐	☐	☐	☐
5	I think that the coronavirus pandemic was started with the aim of transforming the world economic system.	☐	☐	☐	☐	☐
6	I think coronavirus vaccines will change people's DNA (genetic structure).	☐	☐	☐	☐	☐
7	I think the coronavirus pandemic was started for the purpose of tracking people by inserting a chip.	☐	☐	☐	☐	☐
8	I think that alternative medicine can bring more effective solutions than vaccines in the treatment of coronavirus.	☐	☐	☐	☐	☐
9	I believe passing coronavirus instead of getting vaccinated will provide better immunity.	☐	☐	☐	☐	☐
10	I do not think that the safety and effectiveness of the vaccines produced have been adequately tested.	☐	☐	☐	☐	☐
11	I believe vaccination should be made mandatory.	☐	☐	☐	☐	☐
12	Since I do not know the active ingredients in the vaccine, I am hesitant about its compatibility with my religious belief.	☐	☐	☐	☐	☐
13	I don't think the coronavirus is more deadly than the flu.	☐	☐	☐	☐	☐
14	I think that because the vaccines produced contain many chemicals, they will cause other discomforts.	☐	☐	☐	☐	☐
15	I think the decision to get vaccinated is an individual right.	☐	☐	☐	☐	☐
16	I don't think the side effects have been adequately explained, as the vaccine manufacturers are making high profits.	☐	☐	☐	☐	☐
17	I believe that people should be vaccinated because I think that society is insensitive and careless.	☐	☐	☐	☐	☐
18	I believe that it is necessary to be vaccinated because society makes it difficult for health workers during the pandemic process.	☐	☐	☐	☐	☐
19	I do not believe that there is a disease/factor called coronavirus disease	☐	☐	☐	☐	☐

1: I strongly disagree; 2: I do not agree; 3: Neither agree nor disagree; 4: I agree; 5: Absolutely I agree

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Aksu K, Naziroğlu T, and Özkan P (2020). Factors determining COVID-19 pneumonia severity in a country with routine BCG vaccination. Clinical & Experimental Immunology, 202(2): 220-225. https://doi.org/10.1111/cei.13507 **PMid:32813879 PMCid:PMC7461370**

Akyüz SS (2021). Aşi karşitliği ve şeffaflik algisinda iletişim pratikleri ve siyasal aidiyetlerin rolü. Yeni Medya Elektronik Dergisi, 5(2): 172-185. https://doi.org/10.17932/IAU.EJNM.25480200.2021/ejnm_v5i2005

Dolu İ, Söğüt S, and Cangöl E (2021). Sağlık alanında çalışmayan akademisyenlerin aşı reddi ile ilgili görüşlerinin incelenmesi. Turkiye Klinikleri Journal of Nursing Sciences, 13(2): 287-294. https://doi.org/10.5336/nurses.2020-78757

Healey JF (2014). Statistics: A tool for social research. Cengage Learning, Boston, USA.

Kutlu HH and Altındiş M (2018). Aşı karşıtlığı. Flora Dergisi, 23(2): 47-58. https://doi.org/10.5578/flora.66355

Lane S, MacDonald NE, Marti M, and Dumolard L (2018). Vaccine hesitancy around the globe: Analysis of three years of WHO/UNICEF Joint reporting form data (2015–2017). Vaccine, 36(26): 3861-3867. https://doi.org/10.1016/j.vaccine.2018.03.063 **PMid:29605516 PMCid:PMC5999354**

Luyten J, Bruyneel L, and van Hoek AJ (2019). Assessing vaccine hesitancy in the UK population using a generalized vaccine hesitancy survey instrument. Vaccine, 37(18): 2494-2501. https://doi.org/10.1016/j.vaccine.2019.03.041 **PMid:30940484**

Ma J and Stahl L (2017). A multimodal critical discourse analysis of anti-vaccination information on Facebook. Library and Information Science Research, 39(4): 303-310. https://doi.org/10.1016/j.lisr.2017.11.005

Mathieu E, Ritchie H, Ortiz-Ospina E, Roser M, Hasell J, Appel C, Giattino C, and Rodés-Guirao L (2021). A global database of COVID-19 vaccinations. Nature Human Behaviour, 5(7): 947-953. https://doi.org/10.1038/s41562-021-01122-8 **PMid:33972767**

Odabaş N and Ayyildiz T (2020). Anne babaların çocukluk dönemi aşılarına yönelik bilgi ve uygulamalarının değerlendirilmesi. Batı Karadeniz Tıp Dergisi, 4(1): 7-11. https://doi.org/10.29058/mjwbs.2020.1.2

Okuhara T, Ishikawa H, Okada M, Kato M, and Kiuchi T (2017). A readability comparison of anti-versus pro-influenza vaccination online messages in Japan. Preventive Medicine Reports, 6: 47-52. https://doi.org/10.1016/j.pmedr.2017.02.013 **PMid:28271020 PMCid:PMC5328916**

Türkay M, Ay EG, and Aktekin MR (2017). Anti-vaccine status in a selected groups in Antalya. The Akdeniz Medical Journal, 2: 107-112. https://doi.org/10.17954/amj.2017.78

Uyar M, Yildirim EN, and Şahin TK (2019). On sekiz yaş ve üzeri erişkin bireylerin aşılar ve aşılama hakkındaki bilgi, tutum ve davranışlarının belirlenmesi. Flora İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Dergisi, 24(4): 288-294. https://doi.org/10.5578/flora.68195

WHO (2014). Strategies for addressing vaccine hesitancy–A systematic review. World Health Organization, Geneva, Switzerland.

WHO (2020). 1st WHO infodemiology conference. World Health Organization, Geneva, Switzerland.