COVID-19 vaccination intent in university students and influencing factors: An analytical cross-sectional study

Media Subasi Baybuga[1], Hatice Ozkoc[2], Senay Akgun[3]

Abstract

Objective: To determine coronavirus disease-2019 vaccination intent and factors influencing the decision among university students.

Method: The analytical cross-sectional study was conducted from 25 January - 25 February 2021 at a state university in Muğla, Turkiye, and comprised undergraduate students. Data was collected using a self-designed questionnaire through Google Forms. Factors affecting vaccination intent were identified using multinomial logistic models. Data was analysed using SPSS 22.

Results: Of the 1069 subjects, 629(58.8%) were females and 440(41.2%) were males. The overall mean age of the sample was 21.34±2.99. Overall, 712(66.6%) students were enrolled in health-related fields, and 357(33.4%) were pursuing non-medical degrees. Besides, 578(54.1%) students intended to have the vaccine. While 458(64.3%) of the subjects studying health-related subjects intended to have the vaccine, only 120(33.8%) in other academic streams said they would get vaccinated. Students who had had the disease or had been in contact with someone who had it 102(33%) were more likely to believe that the vaccine was safe. Smoking, having a flu vaccine in the past, and having a coronavirus disease-2019 test were the factors influencing the intent to have the vaccination ($p<0.05$).

Conclusion: Having had a flu vaccine in the past, social media use, history of, or exposure to, coronavirus disease-2019 and enrolment in health-related programme of studies were the factors influencing the vaccination intent of the students.

Keywords: COVID-19, COVID-19 vaccine, Vaccine intent, University student, Public health. (JPMA 73: 785; 2023)

Introduction

The coronavirus disease-2019 (COVID-19) pandemic is a global public health problem. The increasing number of cases necessitated the development of safe and effective vaccines for the virus as part of a sustainable strategy to control the pandemic. Vaccines are one of the most powerful public health tools for fighting infectious diseases. It has been claimed that a 60-70% herd immunity, which would end the pandemic, can only be achieved with vaccinations.[1] While COVID-19 vaccination programmes continue, a lack of large cohorts in vaccine studies, and a lack of data with regard to serious adverse effects, together with speculations about their effects and protective capacities, have had a negative effect on confidence in COVID-19 vaccines.[2] Barello et al.[3] reported that university students have an insufficient or basic level of information about COVID-19, and also 86.1% students intended to have the COVID-19 vaccine, while the remaining 13.9% were not sure. Similarly, in another study, 50.6% students said they would get vaccinated, 29.8% said they would not, and 19.3% were undecided.[4]

University students are known to make a significant contribution towards increasing public awareness about vaccine uptake and, thus, towards preventing future pandemics. The current study was planned to determine COVID-19 vaccination intent and factors influencing the decision among university students.

Subjects and Methods

The analytical, cross-sectional knowledge-attitude-practice (KAP) study was conducted from 25 January - 25 February 2021 at a state university in Muğla, Turkey. After approval from the institutional ethics review committee, the sample size was calculated using the formula[5]

$$n = \frac{(N.p.q.z^2)}{((N-1).d^2)}$$

Where p and q were 0.5, effect size (d) 0.25, type I error (α) 0.05, z value 1.9616. It was calculated with 95% confidence interval (CI) and 50% proportion of population.

The sample was raised using purposive sampling technique from among undergraduate students enrolled

[1]Department of Nursing, Mugla Sitki Kocman University, Kotekli, Turkiye;

[2]Department of Business, Mugla Sitki Kocman University, Kotekli, Turkiye;

[3]Department of Nursing, Alanya Alaaddin Keykubat University, Alanya, Turkiye.

Correspondence: Senay Akgun. e-mail: senay.akgun@alanya.edu.tr

ORCID ID. 0000-0002-6604-4343

in various departments at the university. Data was collected online using a self-designed questionnaire through Google Forms. The questionnaires were pilot-tested on 99 students who were studying at locations other than the central campus. The power of the test was calculated by G*Power 3.1, and it was 0.9861.[6]

For the main study, data was collected aftertaking informed consent from the subjects. Those who did not volunteer to participate were excluded, and so were invalid questionnaires.

The questionnaire had two sections. The first was related to personal factors, including information, such as gender, where the participants lived, and the academic department. The second section was related to the particpants' general health, and of their families, COVID-19 status, and their views on getting vaccinated.

Data was analysed using SPSS 22 and STATA 16. Descriptive statistics, including mean, standard deviations, frequencies, percentages, and 95% CI were used to express data as appropriate. Chi-square test and multinomial logistic model (MLM) were also used. Factors affecting the intent to be vaccinated were determined using MLM. Two-tailed $p<0.05$ was considered statistically significant.

Results

Of the 1069 subjects, 629(58.8%) were females and 440(41.2%) were males. The mean age of the sample was 21.34+/-2.99. Overall, 712(66.6%) students were enrolled in health-related fields, and 357(33.4%) were pursuing non-medical degrees. Regarding the level of protection offered by vaccines at large, 349(32.6%) subjects were unsure, while 469(43.9%) were hesitant about the efficacy of COVID-19 vaccine compared to 321(30%) participants who had confidence in COVID-19 vaccine. Besides, 578(54.1%) students intended to have the vaccine. While 458(64.3%) of the subjects studying health-related subjects intended to have the vaccine, only 120(33.8%) in other academic streams said they would get vaccinated ($p<0.05$) (Table 1).

Table-1: Demographic data and its correlation with various study parameters (n=1069).

	Mean±SD	% (95%CI)
Mean Age (years)	21.34±2.99	
Mean Household Size:	4.65±1.75	
	n	
Gender		
Female	629	58.8 (55.7-61.6)
Male	440	41.2 (38.4-44.3)
Living with		
Family	892	83.4 (81.0-85.7)
Friend	86	8 (6.5-9.6)
Relative	11	1 (0.5-1.7)
Alone	71	6.6 (5.1-8.1)

	n	% (95%CI)
Other	9	0.8 (0.4-1.4)
Department/School		
Literature	18	1.8 (0.9-2.5)
Education Sciences	98	9.2 (7.5-11.0)
Science	37	3.5 (2.4-4.6)
Economics and Administrative Sciences	159	14.9 (13.0-17.2)
Engineering	18	1.7 (0.9-2.4)
Health Sciences	294	27.5 (24.9-30.0)
Sports Sciences	40	3.7 (2.7-5.0)
Aquaculture	10	0.9 (0.4-1.5)
Technology	12	1.1 (0.6-1.8)
Medicine	378	35.4 (32.6-38.1)
Tourism	3	0.3 (0.0-0.7)
Believe to be at risk of COVID-19		
Yes	517	48.4 (45.5-51.5)
No	552	51.6 (48.5-54.5)
Tobacco Use		
Yes	321	30 (27.2-32.6)
No	748	70 (67.4-72.8)
Have COVID-19 test		
Yes	278	26 (23.3-28.5)
No	791	74 (71.5-76.5)
Use of social media as an information source for COVID-19		
Yes	915	85.6 (83.4-87.7)
No	154	14.4 (12.3-16.6)
Confidence in COVID-19 vaccine		
Yes	321	30 (27.4-32.8)
No	176	16.5 (14.1-18.7)
Undecided	572	53.5 (50.3-56.8)
Believe that vaccines provide protection		
Yes	630	58.9 (55.8-61.7)
No	90	8.4 (6.8-10.2)
Undecided	349	32.6 (30.0-35.6)
Believe that COVID-19 vaccines provide protection		
Yes	459	42.9 (39.7-46.0)
No	141	13.2 (11.2-15.3)
Undecided	469	43.9 (40.7-47.1)
COVID-19 vaccination intent		
Yes	578	54.1 (51.1-57.2)
No	169	15.8 (13.7-18.1)
Undecided	322	30.1 (27.4-33.0)
COVID-19 vaccination intent of the family		
Yes	541	50.6 (47.4-53.9)
No	136	12.7 (10.8-14.8)
Undecided	392	36.7 (33.6-39.8)
Chronic Disease		
Yes	78	7.3 (5.8-9.1)
No	991	92.7 (90.9-94.2)
Chronic Medication use		
Yes	107	10 (8.2-11.8)
No	962	90 (88.2-91.8)
Want to have information about COVID-19 vaccine		
Yes	951	89 (87.2-90.8)
No	118	11 (9.2-12.8)
Social media is a reliable source for COVID-19		
Yes	407	38.1 (35.3-41.0)
No	662	61.9 (59.0-64.7)

Continued on next page

COVID-19 vaccination intent in university students and influencing factors . . . . . .

787

Continued from previous page ....

	n	% (95%CI)
Agree that COVID-19 vaccines have side effects		
Yes	396	37 (34.1-40.0)
No	87	8.1 (6.5-9.7)
I do not know	586	54.8 (51.5-57.8)
Had influenza/pneumonia vaccine in the past		
Yes	262	24.5 (22.0-27.0)
No	807	75.5 (73.0-78.0)
Place of residence		
Home	1012	94.7 (93.4-96.1)
Boarding house	33	3.1 (2.1-4.1)
Apartment hotels for students	20	1.9 (1.0-2.7)
Other	4	0.4 (0.1-0.7)

SD: Standard deviation, COVID-19: Coronavirus disease-2019.

The majority of the students 908(84.9%) believed that healthcare workers should be vaccinated, and that the vaccination process should be carried out hospitals and primary care practices. The overall knowledge about COVID-19 protective measures, including the vaccine, and the choices of the subjects were noted in detail (Table 2).

Table-2: Vaccine, methods of protection and general status about COVID-19 (n=1069).

	n (%)
Who should take the vaccine	
People >65 years	822 (76.9)
Healthcare workers	908 (84.9)
People with chronic diseases	898 (84.0)
All civil servants	666 (62.3)
All people >18 years	639 (59.8)
Other	216 (20.2)
Where should vaccines be administered	
Hospital	789 (73.8)
Primary Care Centre	754 (70.5)
Home	334 (31.2)
School	161 (15.1)
Pharmacy	149 (13.9)
Other	47 (4.4)
COVID 19 history	
Respondent	119 (11.1)
Family	187 (17.5)
Neighbour	329 (30.8)
Relative	419 (39.2)
Friend	365 (34.1)
Other	107 (10.0)
Contact with a COVID-19 patient	
Respondent	175 (16.4)
Family	167 (15.6)
Neighbour	142 (13.3)
Relative	179 (16.7)
Friend	203 (19.0)
Other	74 (6.9)
Past Quarantine/isolation	
Respondent	159 (14.9)
Family	182 (17.0)
Neighbour	219 (20.5)
Relative	244 (22.8)
Friend	269 (25.2)
Other	91 (8.5)
Minimum one of them (COVID 19 history + Contact with a COVID-19 patient+ Past Quarantine/isolation)	
Respondent	309 (28.9)
Family	348 (32.6)
Neighbour	445 (41.6)
Relative	522 (48.8)
Friend	507 (47.4)
Other	161 (15.1)
Which protective measures should be used for COVID-19	
Mask	1030 (96.4)
Goggles	149 (13.9)
Disinfectant	990 (92.6)
Social distance	1051 (98.3)
Face shield	341 (31.9)
Hand washing	1034 (96.7)
Vaccine	776 (72.6)
Supplements (vitamins, drugs etc.)	471 (44.1)
Other	86 (8.0)
Which protective measures are used for COVID-19	
Mask	1055 (89.7)
Goggles	77 (7.2)
Disinfectant	966 (90.4)
Social distance	1025 (95.9)
Face shield	67 (6.3)
Hand washing	1039 (97.2)
Vaccine	-
Supplements (vitamins, drugs etc.)	259 (24.2)
Other	68 (6.4)
Who can have an effect on your information about vaccination?	
Social media influencers	107 (10.0)
Healthcare workers	885 (82.8)
Friend	238 (22.3)
Family	344 (32.2)
University lecturers	657 (61.5)
Celebrities	93 (8.7)
Other	105 (9.8)
Who can influence your attitude towards vaccination?	
Social media influencers	81 (7.6)
Healthcare workers	682 (63.8)
Friend	184 (17.2)
Family	379 (35.5)
University lecturers	556 (52.0)
Celebrities	82 (7.7)
Other	87 (8.1)
Who can influence your vaccination intent?	
Social media influencers	73 (6.8)
Healthcare workers	662 (61.9)
Friend	185 (17.3)
Family	350 (32.7)
University lecturers	501 (46.9)
	70 (6.5)
	83 (7.8)
Choice of vaccine	
Female Local	385 (36.0)
European	327 (30.6)

Continued on next page........

	n (%)
American	163 (15.2)
Chinese	164 (15.3)
Russian	110 (10.3)
Other	129 (12.1)
Male Local	209 (19.6)
European	257 (24.0)
American	141 (13.2)
Chinese	110 (10.3)
Russian	50 (4.7)
Other	86 (8.0)
Reasons not to take the vaccine	
Vaccines were developed in a very short period of time	285 (26.7)
Immediate side effects	181 (16.9)
The exact reason why vaccines were developed is not known	145 (13.6)
Lack of scientific studies on vaccines	164 (15.3)
Long term vaccine associated adverse reactions/complications/diseases	399 (37.3)
Reaction of the body to the vaccine is not known	363 (34.0)
Vaccines are foreign products /not trusted	198 (18.5)
Hearsay/second hand information/effect of negative opinions in the society	97 (9.1)
Effect of social media/TV etc.	59 (5.5)
Lack of confidence/belief in the protection of vaccines	236 (22.1)
Lack of information	203 (19.0)
Fear of vaccines	150 (14.0)
Other	40 (3.7)
Reasons why your family does not take the vaccine	
Vaccines were developed in a very short period of time	270 (25.3)
Immediate side effects	235 (22.0)
The exact reason why vaccines were developed is not known	165 (15.4)
Lack of scientific studies on vaccines	160 (15.0)
Long term vaccine associated adverse reactions/complications/diseases	381 (35.6)
Reaction of the body to the vaccine is not known	359 (33.6)
Vaccines are foreign products /not trusted	201 (18.8)
Hearsay/second hand information/effect of negative opinions in the society	160 (15.0)
Effect of social media/TV etc.	109 (10.2)
Lack of confidence/belief in the protection of vaccines	258 (24.1)
Lack of information	226 (21.1)
Fear of vaccines	185 (17.3)
Other	34 (3.2)

COVID-19: Coronavirus disease-2019; Respondents were allowed to choose more than one answer.

The two most significant reasons for not getting vaccinated were the possibility of side effects 399(37.3%), and lack of knowledge about the body's potential reaction to the vaccine 363(34.0%).

Willingness to be vaccinated against COVID-19 varied in line with respondents' characteristics. Smoking, having a flu vaccine in the past, and having a COVID-19 test were the factors influencing the intent to have the vaccination ($p<0.05$). Students who had had the disease or had been in contact with someone who had it were more likely to believe that the vaccine was safe 102(33%) (Table 3).

The students used social media as a source of information about COVID-19 ($p<0.05$). Female students were more concerned about having relevant information than male students ($p<0.05$), but were more hesitant about having the COVID-19 vaccine than male students ($p<0.05$).

MLM showed that having had a flu vaccine in the past, social media use, a history of COVID-19 and education in medical/nursing schools were the factors influencing the students' intent to get vaccinated (Table 4).

Discussion

The current study had participants with chronic diseases and those who smoked. One study demonstrated a correlation between severe COVID-19 infection and diabetes mellitus (DM).[7] In another study, active smokers were found to be at almost twice the risk of COVID-19 disease.[8] Given the negative effects of smoking and tobacco use on the severity of COVID-19, ensuring that university students are aware of these issues will contribute to the prevention of many chronic diseases and to the fight against COVID-19.

The main protective measures against COVID-19 among the current students were mask usage, handwashing, social distancing, hand sanitisers, dietary supplements, goggles, and face shields. These findings may indicate that students who felt at risk were more careful about following the protective measures, whereas those who did not feel at risk were more relaxed about such protective measures. The most frequently used protective measures against COVID-19 are masks, social distancing, avoiding crowded spaces, handwashing and vaccination.[9] Compliance with the recommended protective measures is important.

Although the percentage of students who had confidence in the COVID-19 vaccines was reasonably high, those who were undecided in this regard were even more in numbers. It was observed that people's confidence and trust in COVID-19 vaccination, and their intent to get vaccinated, varied depending on whether they had had COVID-19 or had been in contact with a COVID-19 patient. Vaccination hesitancy is associated with a decrease in acceptance of COVID-19 vaccines.[10] It is believed that widespread vaccine hesitancy due to concerns over a vaccine's safety and effectiveness jeopardises the process of achieving herd immunity. The fact that the participants were not willing to have the vaccine or were unsure about having the vaccine showed that they needed more information.[4] It is important to convince people who are not sure about the safety of the vaccine to have the vaccine, and information about the potential side effects and safety profile of the vaccine should be provided to these people to reduce the level of hesitancy.[11] The current study showed that some students were afraid of the unknown. Social media plays a significant role in the spread of fear and hesitancy about

COVID-19 vaccination intent in university students and influencing factors . . . . . .

789

Table-3: Willingness to be vaccinated against COVID-19 according to respondent characteristics (n=1069).

	Agree that COVID-19 vaccines have side effects				COVID-19 vaccination intent				Want to have information about COVID-19 vaccination			Confidence in COVID-19 vaccine			
	Yes	No	I do not know	p-value	Yes	No	Undecided	p-value	Yes	No	p-value	Yes	No	Undecided	p-value
Gender															
Female	235	43	351	0.174	326	97	206	0.079	587	42	0.000***	159	101	369	0.000***
Male	161	44	235		252	72	116		364	76		162	75	203	
Chronic disease															
Yes	39	7	32	0.033**	42	11	25	0.878	65	13	0.077	23	18	37	0.244
No	357	80	554		536	158	297		886	105		298	158	535	
Chronic Medication use															
Yes	48	6	53	0.174	61	18	28	0.643	92	15	0.328	33	24	50	0.164
No	348	81	533		517	151	294		859	103		288	152	522	
Tobacco Use															
Yes	126	32	163	0.145	171	64	86	0.035**	278	43	0.111	103	69	149	0.002***
No	270	55	423		407	105	236		673	75		218	107	423	
Believe to be at risk of COVID-19															
Yes	208	33	276	0.032**	275	78	164	0.516	465	52	0.331	135	89	293	0.026**
No	188	54	310		303	91	158		486	66		186	87	279	
Had a COVID-19 test															
Yes	105	40	133	0.000***	163	49	66	0.026**	239	39	0.075	86	51	141	0.483
No	291	47	453		415	120	256		712	79		235	125	431	
Use of social media as an information source for COVID-19															
Yes	327	73	515	0.060	493	138	284	0.140	829	86	0.000***	270	146	499	0.244
No	69	14	71		85	31	38		122	32		51	30	73	
Had influenza/pneumonia vaccine in the past															
Yes	94	16	152	0.282	152	24	86	0.003**	237	25	0.428	93	38	131	0.080
No	302	71	434		426	145	236		714	93		228	138	441	
Believe that vaccines provide protection															
Yes	230	70	330	0.000***	474	23	133	0.000***	574	56	0.000***	307	41	282	0.000***
No	58	9	23		9	71	10		56	34		4	75	11	
Undecided	108	8	233		95	75	179		321	28		10	60	279	
Believe that COVID-19 vaccines provide protection															
Yes	157	64	238	0.000***	412	12	35	0.000***	415	44	0.000***	296	13	150	0.000***
No	91	10	40		18	103	20		98	43		4	112	25	
Undecided	148	13	308		148	54	267		438	31		21	51	397	
COVID-19 vaccination intent of the family															
Yes	181	71	289	0.000***	442	25	74	0.000***	488	53	0.000***	267	31	243	0.000***
No	74	5	57		12	92	32		97	39		2	89	45	
Undecided	141	11	240		124	52	216		366	26		52	56	284	
Medical/nursing/health education															
Yes	252	62	398	0.249	458	65	189	0.004***	637	75	0.534	251	73	388	0.000***
No	143	25	187		120	102	133		313	42		70	102	183	
COVID-19 interaction (self)															
Yes	123	28	158	0.297	166	65	78	0.000***	266	43	0.037**	102	60	147	0.040**
No	273	59	428		412	104	244		685	75		219	116	425	

COVID-19: Coronavirus disease-2019; Notes: *p<0.10, **p<0.05, ***p<0.01. Estimates shown in bold are significant at 5%.

the COVID-19 vaccine. Information campaigns that stress the social benefits of vaccination and collaboration among public officials are important strategies to decrease hesitancy and increase willingness to have the vaccine.[11]

Also, strategic public health approaches are needed to reduce fear and encourage healthy behaviour.

Having had a flu vaccine in the past, social media usage, history of COVID-19 and education in medical/nursing schools were the main factors influencing vaccination intent in the current study. One study found that vaccine rejection and hesitancy were significantly correlated with female gender, age, low education level, adverse reactions to previous vaccines, and having no specific chronic condition.[12] According to another study, people who did not have university degrees were more inclined to accept the vaccine.[13] In another study, the factors affecting vaccination intent were gender, marrital status, risk perception, having had a flu vaccine in the past, believing in the efficacy of COVID-19 vaccines, following doctors' recommendations, the convenience of vaccine procedures and the price of the vaccine.[14] Based on the results of a logistic regression analysis, another study demonstrated that gender, being married, higher risk perception, having had a flu vaccine in the past, believing in the efficacy of COVID-19 vaccines, and following doctors' recommendations could increase acceptance of the need to be vaccinated.[15]

The reasons cited in literature regarding vaccine hesitancy include the fact that the vaccine is 'new', potential side effects, lack of trust in the vaccine's efficiency and safety, believing that the disease poses no threat to them, that the vaccine is dangerous for health, that the vaccine is not effective, that long-term side-effects of the vaccine are not known, that the vaccine is harmful, that they suffer from allergies, that there are not enough studies about the safety of the vaccine, not wanting to risk long-term health, the fear of the unknown, that more data and evidence are needed, and various conspiracy theories.[4,11,15-17]

In the current study the students believed that healthcare workers, people with chronic diseases and people who are aged >65 years should be vaccinated. Healthcare workers have priority in COVID-19 vaccination programmes.[18]

The current study has limitations in terms of sample orientation. Besides, data was collected using a self-administered online survey, which may allow for subjectivity although it is the most appropriate method that matches the study design.

Further qualitative and quantitative studies will contribute significantly to medical literature.

Conclusion

Having had a flu vaccine in the past, social media use, history of, or exposure to, COVID-19 and enrolment in health-related programme of studies were found to be the factors influencing the vaccination intent of the students.

References

1. Yavuz E. COVID-19 Vaccines. Turk J Fam Pract 2020; 24: 223-34.

2. Jackson LA, Anderson EJ, Rouphael NG, Roberts PC, Makhene M, Coler RN, et al. An mRNA Vaccine against SARS-cov-2 — Preliminary Report. N Engl J Med 2020; 383: 1920-31.

3. Barello S, Nania T, Dellafiore F, Graffigna G, Caruso R. Vaccine hesitancy'among university students in Italy during the COVID-19 pandemic. Eur J Epidemiol 2020; 35: 781-3.

4. Synnott CK. College Student's COVID-19 Vaccine Hesitancy. J. High. Educ. Manag. 2021; 36: 152-9.

5. Erdogan S, Nahcivan N, Esin MN. Research in Nursing. Istanbul: Nobel Tip Kitabevleri; 2014.

6. Faul F, Erdfelder E, Buchner A, Lang Ag. Statistical power analysis using g power 3.1: lests for correlation and regression analysis. Behav Res Methods. 2009; 41:149-60.

7. Zhao Q, Meng M, Kumar R, Wu Y, Huang J, Lian N, et al. The impact of COPD and smoking history on the severity of COVID-19: A systemic review and meta-analysis. J Med Virol 2020; 92: 1915–21.

8. COVID-19 How to Protect Yourself & Others. Centers for Disease Control and Prevention. [Online] [Cited 2021 Apr 20]. Available from: URL: https:// www.cdc.gov/ coronavirus/ 2019-ncov/ prevent-getting-sick/prevention.html.

9. Gagneux-Brunon A, Detoc M, Bruel S, Tardy B, Rozaire O, Frappe P. et al. Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross-sectional survey. J Hosp Infect 2021; 108: 168-73.

10. Neumann-Böhme S, Varghese NE, Sabat I, Barros PP, Brouwer W, Exel JV, et al. Once we have it, will we use it? A European survey on willingness to be vaccinated against COVID-19. Eur J Health Econ 2020; 21: 977-82.

11. Michaël S, Verity W, Pierre A, François A, Stéphane L. COVID-19 vaccine hesitancy in a representative working-age population in France: a survey experiment based on vaccine characteristics. Lancet Public Health 2021; 6: e210-e221.

12. Malik AA, McFadden SM, Elharake J, Omer SB. Determinants of COVID-19 vaccine acceptance in the US. EClinicalMedicine 2020; 26: 100495.

13. Lazarus JV, Ratzan SC, Palayew A, Gostin LO, Larson HJ, Rabin K, et al. Global survey of potential acceptance of a COVID-19 vaccine. Nature Med 2020; 27: 225-8.

14. Wang J, Jing R, Lai X, Zhang H, Lyu Y, Knoll MD, Fang H. Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. Vaccines (Basel) 2020; 8: 482.

COVID-19 vaccination intent in university students and influencing factors . . . . . .

791

15.   Taneri PE. An evaluation of the knowledge and attitudes of medical students in Istanbul towards COVID-19 at the beginning of the outbreak. Turk J Public Health 2020; 18: 78-85.

16.   Romer D, Jamieson KH. Conspiracy theories as barriers to controlling the spread of COVID-19 in the U.S. Soc Sci Med 2020; 63: 113356.

17.   Korn L, Böhm R, Meier NW, Betsch C. Vaccination as a social contract. Proceedings of the National Academy of Sciences of the United States of America. Proc Natl Acad Sci U S A 2020; 117: 14890-9.

18.   World Health Organization SAGE. Values framework for the allocation and prioritization of COVID-19 vaccination. [Online] 2020 [Cited 2021 Apr 10]. Available from: URL: https://www.nitag-resource.org/media-center/who-sage-values-framework-allocation-and-prioritization-covid-19-vaccination.