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In or Out? Identifying the Factors Playing a Role in Covid-19 Decision Making in Turkiye

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Original Research

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Abstract

Objective: The study aimed at investigating the social, demographic, and economic factors affecting Covid-19 vaccine decisions before the vaccination started in Turkey. The study also aimed to understand the attitudes towards Covid-19 vaccines.

Methods: The study was conducted by exploiting the data of 693 individuals living in Turkey. The data was collected via a virtually applied questionnaire according to snowball sampling in late 2020 when the vaccination program had not started in Turkey yet. Multinomial logistic regression design was used to identify the factors affecting Covid-19 vaccine decisions.

Results: It was observed that Covid-19 vaccine acceptance was notably low before the vaccination started in Turkey. Further, almost 50% of the participants were indecisive about getting vaccinated. It was identified that age, gender, educational status, and residential status, as well as occupational status, the number of dependents, smoking, and the vaccination of governmental authorities, have associations with Covid-19 vaccination decisions.

Conclusions: Covid-19 vaccine acceptance is generally low, although it is relatively high among vulnerable groups (i.e., the elderly and smokers), and among those who are unable to isolate themselves. In addition, the vaccination of governmental authorities is remarkably effective on Covid-19 vaccine acceptance in Turkey.

Introduction

The Covid-19 disease has spread to the world infecting millions and causing death for hundreds of thousands.[1] The total number of cases has exceeded 352 million globally while the total worldwide number of deaths was almost 6 million at the time of this study.[2] As for Turkey, the number of cases has reached nearly 11 million and the death toll has risen to 86.125 within the same time frame.[3]

Vaccination started in Turkey by January 13, 2021. Since then, primarily healthcare workers and the individuals over the age of 65 were allowed to get vaccinated. The age restrictions were gradually lowered over time, and the individuals were allowed to get vaccinated without cost if they wanted to.[4]

It has been widely accepted that an effective vaccine is crucial to control the COVID-19 spread.[5,6] Various vaccine development experiments have been conducted over the world to prevent the spread and to eliminate negative outcomes.[7–9] The developed vaccines have encountered different attitudes in different societies so far.[10–12] It is important to understand the attitudes towards vaccines, the concerns about them, and the motivations behind vaccination decisions to interpret the public reaction of society.[13,14] Therefore, the factors affecting the Covid-19 vaccine decisions were investigated just before vaccinations started in Turkey. By doing this, the study aimed to understand the attitudes towards Covid-19 vaccines in general in Turkish society.

Although there is a great deal in literature that Covid-19 vaccines are widely (over 60%) accepted,[15–27] different factors affecting vaccination decisions are reported in different societies. COVID-19 vaccine acceptance varied per country/ region with many Asian countries having acceptance rates over 80%, while lower rates were reported in the Middle East, North Africa, and Europe, as well as Central Asia, and Western/ Central Africa.[28] Leng *et al.*[17] stated that factors such as vaccine efficacy, side effects, accessibility, and number of doses, as well as duration of protection, affected the vaccine decision. Kwok *et al.*[21] found that effectiveness, side effects, and duration of the protection have impacts on the Covid-19 vaccination decision. Al-Mohaithef and Padhi,[23] also revealed that several socio-demographic determinants like education, age, and profession are effective determinants of the Covid-19 vaccine decision. In addition, Harapan *et al.*[22] inferred that the acceptance of a Covid-19 vaccine is associated with some occupations and vaccine efficacy. In another study,[24] they found that factors such as demographic characteristics (age, gender, occupation) and health status were related to the vaccine acceptance level. In the study conducted by Sherman *et al*,[19] they suggested that personal and clinical characteristics, beliefs and attitudes about vaccination, and knowledge

competence, as well as perception of Covid-19 risk are found to be associated with the vaccine decision. Goodman *et al.*[28] also revealed that the new emergence and rapid development of vaccines, as well as inconsistent messages from scientists and government leaders about the epidemic, are related to the vaccine decision. Furthermore, Karlsson *et al.*[25] elicited that the recommendation by the authorities was effective on the vaccination decision in their studies. Johnson *et al.*[30] on the other hand, found that the increased knowledge of individuals about vaccine-preventable diseases was effective on the vaccine decision. Finally, Kreps *et al.*[31] stated that vaccine-related characteristics, political factors/ partisanship, and health care attitudes/ practices, as well as demographic characteristics such as age, gender, and race/ ethnic origin are related to the vaccine decision.

Since vaccination is an important public health strategy to tackle communicable diseases,[32] addressing the factors affecting Covid-19 vaccine decisions may contribute to tackling strategies for future epidemics (or pandemics) by enlightening the adoption of vaccination programs. Therefore, this study aims to reveal social, demographic, and economic factors that affected Covid-19 vaccine decisions just before the vaccination started in Turkish society.

Methods

The factors affecting the Covid-19 vaccine decisions in Turkey were examined. A virtual survey was conducted using a snowball sampling design in early December 2020, when the vaccination program had not yet started. The virtual survey was advantageous in data collection as it provided an opportunity to avoid person-to-person contact. A person who filled out the questionnaire was asked to send it to someone to complete the questionnaire. We calculated the sample size with a 95% confidence level, a standard deviation of 0.5, and a confidence interval (margin of error) of ± 5% according to the equation demonstrated below (See Eq. 1).

$$s = z^2 \times p \times \frac{(1-p)}{m^2} \tag{1}$$

where s is sample size for infinite population, z is z score that is determined based on the confidence level, p is population proportion and m is margin of error. Accordingly, the data of 742 individuals were collected but 49 were excluded due to inappropriateness. Hence the research was carried out using the data of 693 volunteers (living in Turkey and aged 18 and over).

The questionnaire inquired about the social, economic, and demographic characteristics of the participants as well as their statements regarding vaccination decisions. Accordingly, age, gender, and marital status, as well as educational status, income, occupational status, and residential status were included in the model. Other factors inquired about were the number of dependents, vulnerability status like smoking/ having a chronic disease, living with someone 65 years of age or above, and the status of vaccination acceptance if governmental authorities get vaccinated, were also included in the model.

Age, income, and the number of dependents were measured by continuous variables. 2 dummies were created for each to measure gender and marital status. Educational status was measured by 3 categories in total: (1) individuals whose educational level is high school or below, (2) individuals who hold a bachelor's degree, and (3) individuals who hold a master's degree or above. Occupational status was also measured by 4 categories depicting whether the individual was retired, unemployed, or working in the public or private sector. Residential status was measured by 2 categories indicating whether the individual was living in a city center or in a rural area. A dummy was generated for each vulnerability indicator, i.e., smoking, having a chronic disease, and living with someone aged 65 or older. Finally, a dummy variable was created to assess an individual's approval of the Covid-19 vaccine in the case that government officials receive the vaccination. Summary statistics of the variables used in the model are shown in Table 1.

Covid-19 vaccine decision was measured by a categorical variable where it's assigned 1 if the respondent accepts to get vaccinated, 0 if he/ she refuses to get vaccinated, and 2 if he/ she is indecisive about getting vaccinated. Since there is no hierarchical order among these alternatives, multinomial logistic regression was performed to identify factors affecting the Covid-19 vaccine decision. Accordingly, the multinomial logit model used can be illustrated as follows:

$$p_{ij} = \frac{e^{\alpha_j + \beta_j x_i}}{\sum_{j=1}^{3} e^{\alpha_j + \beta_j x_i}} \tag{2}$$

where p_{ij} refers to the probability of decision j ($j = 0$ - being indecisive, 1 - acceptance, and 2 - refusal in the present case) of the respondent i. x_i is case-specific regressors of the variables shown in Table 1. β is a vector of coefficients. This model ensures that $0 < p_{ij} < 1$ and. To ensure model identification, β_j is set to 0 for 1 of the categories, and coefficients were then interpreted in relation to that category. In our study, the base category is the acceptance of Covid-19 vaccination. The following estimates of the probability of accepting, rejecting, and being undecided were obtained using the following equations, respectively:

$$P_{i1} = \frac{1}{1 + e^{a_2+\beta_2 x_i} + e^{a_3+\beta_3 x_i}} \tag{3}$$

$$P_{i2} = \frac{e^{a_2+\beta_2 x_i}}{1 + e^{a_2+\beta_2 x_i} + e^{a_3+\beta_3 x_i}} \tag{4}$$

$$P_{i3} = \frac{e^{a_3+\beta_3 x_i}}{1 + e^{a_2+\beta_2 x_i} + e^{a_3+\beta_3 x_i}} \tag{5}$$

The probability expressions are given in Equations (3), (4), and (5) are nonlinear. The estimated coefficients of the regressors do not represent their direct effects on the outcome variable due to the nonlinear feature of the multinomial logit model.[31] These expressions above can be translated to linear forms illustrated as follows:

$$\ln\left(\frac{p_{i2}}{p_{i1}}\right) = \alpha_2 + \beta_2 X_i \tag{6}$$

$$\ln\left(\frac{p_{i3}}{p_{i1}}\right) = \alpha_3 + \beta_3 X_i \tag{7}$$

Where:

$$p_{i1} = 1 - p_{i2} - p_{i3} \tag{8}$$

where Eq. (6) provides the log of the odds in favor of refusing Covid-19 vaccination over accepting it and Eq. (7) provides the log of the odds in favor of being indecisive about getting Covid-19 vaccination over accepting it. The odds are also known as relative risk ratios (RRR). Hence, RRR of choosing alternative

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Table 1. Summary statistics

Variables	Number of Obs.	Mean	Min.	Max.
Vaccine Decision of the Respondent	693	1.677	0	2
Age of Respondent	693	33.342	18	78
Gender of Respondent = Female	693	0.582	0	1
Gender of Respondent = Male (Reference Category)	693	0.418	0	1
Marital Status of Respondent = Married	693	0.548	0	1
Marital Status of Respondent = Single (Reference Category)	693	0.452	0	1
Lowest Education Category - High School	693	0.324	0	1
Middle Education Category – Bachelor's Degree (Reference Category)	693	0.442	0	1
Highest Education Category - Master's Degree and above	693	0.234	0	1
Occupation 1 = Being Unemployed	693	0.408	0	1
Occupation 2 = Working in the Public Sector	693	0.312	0	1
Occupation 3 = Working in the Private Sector (Reference Category)	693	0.216	0	1
Occupation 4 = Being Retired	693	0.064	0	1
Monthly Income (Turkish Lira-TL)	693	7846.391	0	200.000
Living with Someone 65 years of age (or older)	693	0.148	0	1
Smoking habit	693	0.217	0	1
Having chronic disease	693	0.106	0	1
Living in the City Centre	693	0.632	0	1
Living in District (Reference Category)	693	0.368	0	1
The State of Covid-19 Vaccine Acceptance in case of Governmental Authorities get vaccinated	693	0.523	0	1
The number of respondent's dependents	693	1.316	0	7

j (where j = *(no, undecided)*) rather than alternative 1 (which is accepting Covid-19 vaccination for this study) is given by:

$$\frac{\Pr(y_i = j)}{\Pr(y_i = 1)} = \exp(x_i', \beta_j) \quad (9)$$

where $e^{x\beta}$gives the proportionate change in the relative risk of choosing alternative j over alternative 1 (i.e., base alternative) when x_i changes by one unit. Therefore, the RRR of a regressor implies increased (RRR > 1) or decreased probability (RRR < 1) of refusing or being indecisive about getting vaccinated relative to accepting to get vaccinated. By doing this, the coefficients obtained can be interpreted as those estimated by binary logit models.

Results

This study examined the factors affecting the COVID-19 vaccine decision before the vaccination started in Turkey. The research was carried out with 693 volunteers living in Turkey. Accordingly, the mean value of the age of the respondents was 33, 58% of the respondents were female, and 55% of the participants were married. Almost 50% of the respondents have a bachelor's degree and 40% are unemployed. The mean monthly income of participants is 7850 TL. 15% of the respondents stated that they live with an elderly person, 20% have a smoking habit, and approximately 10% have a chronic disease. Most of the participants (almost 65%) live in the city center and about 52% of the respondents stated that if governmental authorities get vaccinated, they would accept the vaccination. Average dependent number of the respondent is 1. 26% of the participants accepted to be vaccinated, 27% refused, and 48% were indecisive about getting vaccinated.

Table 1 shows the summary statistics. Accordingly, the first column illustrates the variables used in the models. The second column shows the number of observations for each variable while the mean values of the variables can be seen in the third column. The fourth and fifth columns show the minimum and maximum values of that the variable takes. Table 2 presents multinomial logistic regression estimations results. The first and second columns in the table illustrate the panels of the model employed and the alternatives of vaccine decisions, respectively. The third column lists the variables used in the model. The fourth column demonstrates the effects of interest. The last 2 columns show the z-statistics and relative risk ratios with confidence intervals in brackets.

There are 3 alternatives that the respondents can choose about getting vaccinated: (1) acceptance, (2) refusal, and (3) being indecisive. The first panel (top of Table 2) provides the estimations of refusing the vaccination in relation to accepting it. Positive coefficients imply increased odds for refusing the vaccination over accepting it, holding all other regressors constant, and vice versa. As for RRRs, they will take the values higher than 1 if the odds are in favor of refusal over acceptance and the values lower than 1 otherwise. The second panel (bottom of Table 2) provides the estimations of being indecisive about getting vaccination in relate to accepting it. Hence, a positive coefficient suggests increased odds for being indecisive over accepting the vaccination, and vice versa. RRRs will take the values higher than 1 if the odds are in favor of being indecisive over accepting Covid-19 vaccination and the values lower than 1 otherwise.

According to Panel 1, 1 unit of increase in the respondent's age is associated with the decrease in the logarithmic chance of refusing vaccination by *0,8* over accepting it. In other words, acceptance of Covid-19 vaccination is about the increase with increasing age (RRR = 0.92; 95% CI= 0.89 - 0.96). The logarithmic chance of refusing vaccination is *0.582* greater for women compared to men implying that women are less likely to accept the vaccination compared to men. In addition, the respondents living in the city center are more likely to refuse the vaccination compared to their district-resident counterparts. Public sector employees are almost 2 times (1/ 0.47) less likely to refuse vaccination compared to

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Table 2. Determinants of COVID-19 vaccine decision

Panel	Decision	Variable	Coef.	z - Statistic	Risk Ratio[a]
1	***0 = No***	Age	− **0.800*****	− 4.44	0.92 (0.89 – 0.96)
		Income	− 0.000	− 0.75	0.99 (0.99 – 1.00)
		Married	0.207	0.58	1.23 (0.61 – 2.49)
		Female	**0.582****	2.14	1.79 (1.05 – 3.05)
		High School	0.294	1.00	1.34 (0.75 – 2.39)
		Master's Degree and above	− 0.040	− 0.13	0.96 (0.51 – 1.80)
		Unemployed	− 0.338	− 0.89	0.71 (0.34 – 1.50)
		Working in Public Sector	− **0.756****	− 2.14	0.47 (0.23 – 0.94)
		Being Retired	0.379	0.58	1.46 (0.40 – 5.30)
		Living in City Centre	**0.467***	1.85	1.60 (0.97 – 2.62)
		The number of respondent's dependents	0.733	0.55	1.07 (0.83 – 1.40)
		Living with Someone at 65 years of age (or older)	− 0.127	− 0.34	0.88 (0.42 – 1.84)
		Smoking	− **0.772****	− 2.54	0.46 (0.25 – 0.84)
		Having chronic disease	− 0.628	− 1.41	0.53 (0.22 – 1.28)
		The vaccination of governmental authorities	− **2.057*****	− 7.49	0.13 (0.8 – 0.21)
		Constant	*3.543****	*5.33*	*34.60 (9.40 – 127.35)*
1 = Yes (Base Outcome)					
2	***2 = Undecided***	Age	− **0.039*****	− 2.93	0.96 (0.94 – 0.99)
		Income	− 7.860	− 0.10	0.99 (0.99 – 1.00)
		Married	0.233	0.8	1.26 (0.70 – 2.27)
		Female	0.334	1.51	1.39 (0.91 – 1.00)
		High School	− 0.188	− 0.75	0.83 (0.51 – 1.36)
		Master's Degree and above	− **0.433***	− 1.65	0.65 (0.39 – 1.09)
		Unemployed	− **0.642****	− 1.97	0.53 (0.28 – 1.00)
		Working in Public Sector	− **0.654****	− 2.28	0.52 (0.30 – 0.91)
		Being Retired	− 0.184	− 0.38	0.83 (0.32 – 2.14)
		Living in City Centre	**0.562*****	2.66	1.76 (1.16 – 2.66)
		The number of respondent's dependents	− **0.264****	− 2.39	0.77 (0.61 – 0.95)
		Living with Someone at 65 years of age (or older)	0.345	1.21	1.41 (0.81 – 2.47)
		Smoking	− **0.538****	− 2.32	0.58 (0.37 – 0.91)
		Having chronic disease	− 0.284	− 0.91	0.75 (0.41 – 1.40)
		The vaccination of governmental authorities	− **0.528****	− 2.46	0.89 (0.39 – 0.90)
		Constant	*2.786****	*5.12*	*16.22 (5.57 – 47.19)*
		Number of obs: 693			
		LR chi^2 (30): 208.98			
		Prob > chi^2:0.000			
		Pseudo R^2: 0.14			

***$P < 0.01$, **$P < 0.05$, *$P < 0.1$.
[a]Lower and upper limit at the 95% confidence interval is in parentheses.

private sector employees which is the reference category. The odds in favor of accepting the vaccination are greater than refusing it for the smoking variable, implying that smokers are less likely to refuse the vaccination in comparison with their non-smoking counterparts (RRR = 0.46; 95% CI = 0.25 - 0.84). Finally,. the respondents are almost 8 times less likely to refuse the vaccination if governmental authorities get vaccinated (RRR = 0.13; 95% CI = 0.8 - 0.21).

According to Panel 2, the odds of being indecisive to get vaccinated decrease with 1 unit of increase in the respondent's age (RRR = 0.96; 95% CI = 0.94 - 0.99). In another saying, older respondents are less likely to be indecisive about getting vaccinated. In addition, the participants with the highest level of education are more likely to be indecisive about getting vaccinated than their less-educated counterparts. The logarithmic chance of being indecisive about vaccination is *0.562* greater for the respondents living in the city center compared to their counterparts living in the districts, implying that the respondents living in the city center are comparatively more likely to be indecisive about getting vaccinated. Unemployed individuals (RRR = 0.53; 95% CI = 0.28 - 1) and public sector employees (RRR = 0.52; 95% CI = 0.30 -0.91) are almost 2 times less likely to be indecisive about getting vaccinated compared to private sector employees. The logarithmic chance of being indecisive about getting vaccinated is *0.538* lower for smokers. In other words, smokers are less likely to be indecisive about getting vaccinated compared to non-smokers. In addition, being indecisive about getting vaccinated is less likely to occur if governmental authorities get vaccinated (RRR = 0.89; 95% CI = 0.39 -0.90). Finally, 1 unit increase in the number of respondents' financial dependents is associated with the decrease in the odds of being indecisive about vaccination over accepting it. In other words, individuals with a higher number of dependents

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are less likely to be indecisive about getting vaccinated (RRR = 0.77; 95% CI = 0.61 - 0.95).

Taking all these into the consideration, it is obvious that the probability of accepting the vaccination tends to increase with increasing age of the respondent. In addition, public sector employees are more likely to accept the vaccination. The respondents living in the city center are less likely to accept vaccination. Smokers are more likely to accept vaccination. Finally, the vaccination of governmental authorities is associated with the increase in Covid-19 vaccine acceptance. It is therefore understood that Covid-19 vaccine acceptance is relatively high among vulnerable groups.

It is understood that Covid-19 vaccine acceptance is significantly low (26%) in Turkey as literature suggests more than 70% of acceptance in other countries including France,[20,34,35] the USA,[36–38] China,[27,37–39] and Denmark, as well as Portugal, Netherland, Germany.[39] This also includes the United Kingdom,[40,41] Canada,[37] Italy,[40,42] and Australia,[43] as well as Brazil, South Africa, South Korea, and Mexico. Countries like India, Spain, Singapore, and Sweden, as well as Nigeria, Poland,[37] Israel,[44] and Indonesia,[22] coupled with Ecuador,[37,45] and Malaysia,[18] make the list.

The study identifies that age, gender, educational status, and occupational status, as well as residential status, smoking, and the vaccination of governmental authorities, have impacts on Covid-19 vaccine decisions of individuals living in Turkey.

Accordingly, it was revealed that the probability of accepting the vaccination increases with the increasing age of the participants. Although there are conflicting findings in literature,[21,24,31,43] the result is in line with the studies suggesting age effects.[15,17,19,23,35,40,47,48] Higher acceptance of the Covid-19 vaccine among elderlies may be explained by the fact that older individuals are more vulnerable to the Covid-19 infection. Hence, they may be more likely to get vaccinated due to their higher levels of fear. Contrasting age effects in literature may be attributed to different beliefs in different cultures. In this context, it is believed that exploring the levels of fear due to Covid-19 infection among elderlies living in different societies may contribute to existing literature.

The findings suggest that women are more likely to refuse Covid-19 vaccination compared to men, confirming the existing literature.[15,24,31,35,36,40,46] The finding may be related to their beliefs about the exposure of adverse effects of the vaccination during their current or future pregnancy or breastfeeding. In addition, the participants with higher level of education are less likely to be indecisive about the vaccination. This can be the case if the knowledge of the vaccines increases with the increased level of education. Hence, more educated individuals may be more decisive about the vaccinated owing to their higher level of knowledge. Such finding is also in line with previous literature highlighting the impacts of educational status on vaccine decisions.[23,47]

It is obvious that public sector employees are more likely to accept the vaccination compared to their counterparts working in private sector. This is probably related to the lack of distance working opportunities for public employees. Since they will be unable to isolate themselves in their occupational time, they may desire to get vaccinated more than those living in private sector. The finding confirms the literature suggesting occupational effects on vaccine decisions.[15,24]

It was identified that smokers are clearly more likely to accept the vaccination compared to non-smokers. This may be related to the relatively high risk of smokers. Since it is well stated that smokers are more prone to the adverse effects of the Covid-19 infection,[49–52] they may desire to get vaccinated more in comparison to their non-smoking counterparts. The result confirms the findings of Alqudeimat *et al.*[24] while it conflicts with Mozid *et al.*[53]

It was revealed that the vaccination of governmental authorities has a significant impact on Covid-19 vaccine acceptance. The participants are more likely to accept the vaccination if governmental authorities get vaccinated. The finding confirms Viswanath *et al.*[55] while it conflicts with Kreps *et al.*[31] The finding is probably related to decreased disbeliefs about Covid-19 vaccines after the authorities get vaccinated. Contradictory observations from different societies may imply different trust levels to governmental authorities. Hence, further studies investigating the effects of governmental authorities on the attitudes towards Covid-19 vaccination programs may contribute to existing literature of vaccine studies.

Interestingly, it is observed that the participants living in the city center are less likely to accept vaccination compared to those living in the rural areas. The finding, which conflicts with existing literature by Mahmud *et al.*,[48] is unexpected since the risk of spread is comparatively high in urban areas due to higher population. Further research exploring vaccination motivations of urban people in Turkey may contribute to broader literature.

The research conducted has a few strengths and limitations. First, the study detects the reaction of Turkish population towards Covid-19 vaccines before the vaccination in action. Therefore, the study enlightens policy makers in terms of vaccination acceptance in case of an epidemic (or pandemic). Second, since the research about the factors affecting vaccination decision in Turkey is limited; the study contributes to literature by revealing the characteristics playing a role in vaccination decision.

The research also has some limitations. Since the study aims to evaluate the reactions towards Covid-vaccines before the vaccination started in Turkey; the data is required to be collected in limited time. Due to this, the study collected the data in a short period. Relatively high number of participants would be possible if longer periods devoted to the data collection process.

Conclusion

This study investigates social, demographic, and economic factors affecting Covid-19 vaccine decisions just before the vaccination program started in Turkey. Exploiting the data of 693 individuals, the study reveals that age, gender, educational status, occupational status, residential status, smoking, the number of dependents, and the vaccination of governmental authorities play significant roles in determining Covid-19 vaccine decisions.

It was identified that Covid-19 acceptance is notably low just before the vaccination program started in Turkey. Further, it is observed almost that half of the participants are indecisive about getting vaccinated. In the light of existing literature suggesting augmenting effects of increased levels of education[15,46,55] and awareness[56–58] on Covid-19 acceptance, it is thought that the provision of more and accurate information about the vaccines may either (i) increase Covid-19 vaccine acceptance or (ii) reduce Covid-19 vaccine hesitancy in Turkey.

The study reveals that Covid-19 vaccine acceptance is relatively high among vulnerable groups, i.e., elderlies and smokers, and among those who are unable to isolate themselves, i.e., public employees. In addition, it is understood that the vaccination of governmental authorities is remarkably effective on Covid-19 vaccine acceptance in Turkey. Therefore, the study affirms that

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the public demonstration of the vaccination of governmental authorities to encourage the public to get vaccinated may play a critical role to increase vaccination rates in Turkey. Further studies exploring the effects of such demonstration on the vaccination rates in particular may contribute to literature about Covid-19 pandemic.

Finally, it is important to note that the study deals with the decisions just before the vaccination program started in Turkey. Hence, a comparative study exploring the motivations of Covid-19 vaccine acceptance (or refusal) in future may also contribute to literature.

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