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Assessment of the Attitudes and Changes in Attitudes of Individuals Aged 65 and Over Toward the Vaccine after Being Informed about COVID-19 Vaccines

COVID-19 Aşıları Konusunda Bilgilendirme Yapılan 65 Yaş ve Üzeri Bireylerin Aşı Tutumları ve Aşı Tutumlarındaki Değişimin Değerlendirilmesi

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Abstract

Aim: Study aimed to assess the states of getting the vaccine and attitudes of the population at the age of 65 and above who was at the risk group in terms of mortality caused by COVID-19 after being informed about the COVID-19 vaccines.

Material and Method: Data, retrospectively scanned. Study population consisted of individuals aged 65 and above who were authorized to get the vaccine in the city center of Kayseri and who had not gotten the COVID-19 vaccine yet by the 1st of June 2021.

Results: According to the decisions of getting the vaccine after phone calls, 45% of the participants decided to get the vaccine while 42.9% stated that they would not get the vaccine. mRNA vaccine was the most preferred vaccine (35.4%) after the phone calls.

Conclusion: Results of study reveal that the attitude toward COVID-19 vaccine can be affected by many personal and non-personal factors.

Keywords: COVID-19 vaccines, information, 65 years and above, vaccine attitude

Öz

Amaç: Çalışma, COVID-19 aşıları hakkında bilgilendirildikten sonra, COVID-19'un neden olduğu ölümler açısından risk grubunda olan 65 yaş ve üzeri nüfusun aşı yaptırma durumlarını ve tutumlarını değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem: Veriler, retrospektif olarak taranmıştır. Çalışma evreni, 1 Haziran 2021 tarihine kadar Kayseri il merkezinde aşı yaptırma izni olan ve henüz COVID-19 aşısı yaptırmamış 65 yaş ve üzeri bireylerden oluşmaktadır.

Bulgular: Telefon görüşmeleri sonrasında aşı yaptırma kararlarına göre katılımcıların %45'i aşı yaptırmaya karar verirken, %42,9'u aşı yaptırmayacağını belirtmiştir. mRNA aşısı telefon görüşmeleri sonrasında en çok tercih edilen aşı olmuştur (%35,4).

Sonuç: Çalışmanın sonuçları, COVID-19 aşısına yönelik tutumun kişisel ve kişisel olmayan birçok faktörden etkilenebileceğini ortaya koymaktadır.

Anahtar Kelimeler: COVID-19 aşıları, bilgi, 65 yaş ve üstü, aşı tutumu

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INTRODUCTION

COVID-19, caused by SARS-CoV-2, is a major health problem of the 21st century.[1] Given its high infectivity, negative impact on the economy and healthcare systems, and lack of effective treatment, it's crucial to develop a safe and effective vaccine. Vaccines are successful and cost-effective in preventing infectious diseases, and are important in controlling COVID-19.[2,3]

COVID-19 vaccine research and development has improved greatly, but vaccination efforts face significant challenges. One major obstacle is uncertainty around vaccine acceptance, which is linked to public perception of disease risk, attitudes towards vaccines, and overall demand. High vaccination rates are crucial to effectively combat infectious diseases, particularly novel ones, and ensure successful immunization programs.[4–6] Studies show that vaccine acceptance for pandemics depends on several factors, such as perception of risk, attitude towards vaccination, ease of getting vaccinated, vaccine effectiveness and reliability, vaccination history, price, physician recommendations, and sociodemographic characteristics.[4,6–10]

The infectious agents are the primary cause of death in one third of the individuals aged 65 and above.[11] Old age is one of the most important factors affecting mortality and COVID-19 anxiety in COVID-19.[12,13] According to the Chinese Center of Disease Control and Prevention, while the rate of mortality caused by COVID-19 is 2.3% in general population this rate is 8% in the ages between 70 and 79 and 15% above the age of 80.[14]

mRNA and inactive COVID-19 vaccines in phase 3 which are supplied with the agreements made by the Republic of Türkiye Ministry of Health have been approved for urgent use in our country. On 19th of December 2020, the health personnel and individuals aged above 65 started to get vaccinated in Israel.[15] COVID-19 vaccination also started in Türkiye beginning with the specific groups (healthcare workers, adults aged above 65, etc.).

This study aimed to assess the states of getting the vaccine and attitudes of the population at the age of 65 and above who was at the risk group in terms of mortality caused by COVID-19 and gradually increasing in number in our country after being informed about the COVID-19 vaccines.

MATERIAL AND METHOD

The study was carried out with the permission of Karabük University Non-interventional Clinical Researches Ethics Committee (Date: 06/08/2021, Decision No: 2021/607), and necessary permissions from Kayseri Provincial Health Directorate were obtained for the study. The ethical rules and the principles of the Declaration of Helsinki performed out all procedures.

The data obtained from the practice of COVID-19 vaccine information designed as a public health intervention were retrospectively scanned. The study population consisted of 6494 individuals aged 65 years and over who had permission to be vaccinated in the vaccination program that started on February 12, 2021 within the scope of the COVID-19 Vaccine-National Vaccination Strategy of the Ministry of Health of the Republic of Turkey within the scope of the COVID-19 Vaccine-National Vaccination Strategy in Kayseri city center and who had not yet received COVID-19 vaccine until June 1, 2021. The minimum sample size was calculated as 328, assuming a prevalence of vaccine refusal-ambivalence of 34%, alpha error level (a): 0.05, test power (1- ß): 0.80 and deviation level (d): 0.05.[16] The individuals aged 65 and above were called by the central operation team of Kayseri Provincial Health Directorate to give information about COVID-19 vaccines in accordance with the instructions of the Republic of Türkiye Ministry of Health between the 2nd of June 2021 and 11th of June 2021. On the phone calls, the individuals who were accessed were informed about the issues such as the vaccine types, effectiveness of the vaccines, undesired effects after the vaccines, and the importance of getting the vaccine in the groups at risk based on the documents prepared by the Republic of Türkiye Ministry of Health about COVID-19 vaccines and then questioned about their decisions on getting the vaccine. In addition, the questions asked by the individuals were answered and the answers were recorded on electronic media. The recorded data were retrospectively scanned and a total of 700 individuals were included in the study after those with missing and incorrect records were excluded.

Statistical Analysis

The study analyzed participants' demographics, vaccine status, and COVID-19 history using Jamovi 1.8.1. Frequency tables and statistical tests were used to assess distribution of numerical data. Parametric tests were used for normally distributed groups and non-parametric tests for groups that did not meet parametric assumptions. Statistically significant values were determined as $P<0.05$.

RESULTS

The study included 700 participants aged 65 and above, with 60.6% in the age range of 65-75 and 39.4% aged 75 and above. Male participants accounted for 39.1% and 71.3% of participants resided in urban areas. The mean age was 73.9 (±7.74) for the entire group, 73.2 (±7.85) for males, and 74.3 (±7.64) for females. (**Table 1**)

Table 1: Sociodemographic Characteristics of the Participants

Characteristics		n	%
Age group	Between 65-75	424	60.6
	75 and above	276	39.4
Gender	Male	274	39.1
	Female	426	60.9
Place of residence	Urban	499	71.3
	Rural	201	28.7

The most common reasons for not getting the vaccine were having diseases (31.1%) and not being able to get an appointment (20.9%). Hesitancy (5%) and a request for a domestic vaccine (3.7%) were the least common reasons. After phone calls, 45% of participants decided to get the vaccine while 42.9% stated they would not. The mRNA vaccine was the most preferred (35.4%) after the calls. (**Table 2**)

Table 2: Participants' Reasons for not getting the Vaccine, Decisions on the Vaccine after Phone calls and Vaccine Preferences

Features		n	%
Reasons for not getting the vaccine	Having a disease	218	31.1
	Unable to get an appointment	146	20.9
	COVID-19 (+) within the last 6 months	104	14.9
	Thought that the vaccine is unnecessary	75	10.7
	Unable to contact a health institution	50	7.1
	Fear of vaccine/injection	46	6.6
	Hesitant	35	5.0
	Request for getting the domestic vaccine	26	3.7
Total		700	100.0
Decision on getting the vaccine after phone calls	Will get the vaccine	315	45.0
	Hesitant	85	12.1
	Will not get the vaccine	300	42.9
Total		700	100.0
Vaccine preference if s/he will get the vaccine	Pfizer/Biontech (mRNA)	112	35.4
	Sinovac (Inactive)	35	11.1
	Any of them	79	25.2
	Does not know	89	28.3
Total		315	100.0

After phone calls, over half of the participants with medical conditions, almost 90% who thought the vaccine was unnecessary, about 72% who feared vaccines, and 77% who requested the domestic vaccine said they would not get vaccinated. (**Table 3**)

Table 3: Attitudes of the Participants after Phone Calls

Reason for not getting the vaccine	Will get the vaccine	Hesitant n (%)	Will not get the vaccine n (%)	Total* n (%)
Diseases	63 (28.9)	33 (15.1)	122 (56.0)	218 (100.0)
Unable to get a vaccine	129 (88.4)	11 (7.5)	6 (4.1)	146 (100.0)
COVID-19 (+) within the last 6 months	65 (62.5)	13 (12.5)	26 (25.0)	104 (100.0)
Thought that the vaccine is unnecessary	4 (5.3)	4 (5.3)	67 (89.3)	75 (100.0)
Unable to contact a health institution	29 (58.0)	3 (6.0)	18 (36.0)	50 (100.0)
Fear of vaccine	8 (17.4)	5 (10.9)	33 (71.7)	46 (100.0)
Hesitancy	13 (37.1)	14 (40.0)	8 (22.9)	35 (100.0)
Request for domestic vaccine	4 (15.4)	2 (7.7)	20 (76.9)	26 (100.0)
Total	315 (45.0)	85 (12.1)	300 (42.9)	700 (100.0)

*: Line totals of numbers and percentiles were given.

After phone calls, 61.7% of male participants were hesitant or unwilling to get the vaccine (p<0.005). Age and place of residence did not affect attitudes (p>0.005). The highest rate of vaccine uptake was seen in participants who previously hesitated or had diseases (p<0.001). Fear of vaccine/injection, domestic vaccine preference, and belief in vaccine necessity did not affect vaccine uptake after phone calls (p>0.005). (**Table 4**)

Table 4: Relationship of the participants' sociodemographic characteristics and reasons for not getting the vaccine with their attitudes after phone calls

Variables	Will get vaccine n (%)*	Hesitant-will not get the vaccine n (%)*	Total n	X2	p
Gender					
Male	105 (38.3)	169 (61.7)	274	8.110	0.004
Female	210 (49.3)	216 (50.7)	426		
Age Group					
65-75 years	201 (47.4)	223 (52.6)	424	2.510	0.113
75 years and above	114 (41.3)	162 (58.7)	276		
Place of residence					
Urban	220 (44.1)	279 (55.9)	499	0.584	0.445
Rural	95 (47.3)	106 (52.7)	201		
Reasons for not getting the vaccine**					
Vaccine hesitancy	13 (37.1)[a]	22 (62.9)[a]	35	23.100	<0.001
Diseases	63 (28.9)[b]	155 (71.1)[b]	218		
Fear of vaccine/ injection	8 (17.4)[c]	38 (82.6)[c]	46		
Request for domestic vaccine	4 (15.4)[c]	22 (84.6)[c]	26		
Thought that vaccine is unnecessary	4 (5.3)[c]	71 (94.7)[c]	75		

*: Line totals of numbers and percentiles were given. **: Difference between the groups shown with the same exponential letter is not significant.

Vaccine preferences were statistically similar according to male and female genders, age groups and participants' places of residence (p=0.850, p=0.562 and p=0.087 respectively). (**Table 5**)

Table 5: Relationship between the participants' sociodemographic characteristics and vaccine preferences

Variables	Btc (mRNA) n (%)*	Snv (Inactive) n (%)*	Total n	X2	p
Gender					
Male	40 (76.9)	12 (23.1)	52	0.037	0.850
Female	71 (75.5)	23 (24.5)	94		
Age group					
65-75	68 (73.9)	24 (26.1)	92	0.337	0.562
75 and over	43 (79.6)	11 (20.4)	54		
Place of residence					
Urban	73 (71.6)	29 (28.4)	102	2.920	0.087
Rural	38 (86.4)	6 (13.6)	44		

DISCUSSION

Morbidity and mortality caused by COVID-19 increases by age.[12] Therefore, this study including a population aged 65 and above who was admitted as the group at risk aimed to provide anticipation about the elderly and vaccination during COVID-19 pandemic.

Although the COVID-19 vaccine attracts intense attention some of the elderly are hesitant to get the vaccine.[16,17] There are a limited number of studies on vaccine hesitancy of the elderly in the society. In the study assessing the vaccination frequency and awareness of 303 individuals aged 65 and above in Istanbul, mean age of the participants was 71.3 and 56.4% were female.[18] In the study assessing the COVID-19 vaccine hesitancy in old individuals, 45% of the participants were between the ages of 65 and 74 and 55% were above the age of 75. Mean age of the participants in our study was 73.9. The age range in our study was similar to those in literature. Of the participants in our study, 60.9% were female, which is different from and higher than the rates in similar studies in literature. This may be because 28.7% of our participants lived in rural areas and the gender may be effective in access to the vaccine.

Attitudes and behaviors toward the COVID-19 vaccine can vary according to the age groups.[16] In another study in which the participants who refused or were hesitant to get the vaccine in Istanbul were asked about their reasons for not getting the vaccine, 75.9% were afraid of the vaccine side effects as it was a new vaccine, 34.4% did not trust the companies producing the vaccine, 20.9% thought that the vaccine would not prevent COVID-19 (thought that the vaccine was unnecessary), 15.6% did not think himself or herself in the risky group, 12.7% did not need the vaccine as they took their own measures, and 3.4% were generally anti-vax.[19] The reasons for not getting the vaccine among the participants in our study were having a disease for 31.1%, being unable to get an appointment for 20.9%, being COVID-19 (+) within the last 6 months for 14.6%, thought that the vaccine was unnecessary for 10.7%, being unable to contact with the health institution for 7.1%, fear of vaccine/injection for 6.6%, hesitancy about getting the vaccine for 5%, and desire to get the domestic vaccine for 3.7%. The characteristics of the participants such as the place of residence, education levels or local and cultural factors may have caused variable and different orders of the rates and frequencies in the reasons for not getting the vaccine in the studies. Moreover, the first reason for not getting the vaccine was "not having knowledge of the necessity of getting the vaccine" in the study by Mutlu, which suggests that the other adult vaccines are known less compared with the COVID-19 vaccines. On the other hand, the first reason for not getting the vaccine was "being afraid of side effects as it is a new vaccine" in the study by Mert, which reveals that the awareness on COVID-19 vaccines is higher.

As a result of the study performed online on 1293 individuals by Mert, while 41.2% of the participants had positive attitude toward getting the COVID-19 vaccine 37.9% were hesitant.[19] According to the studies, the rate of giving positive answer to getting the vaccine was 91.3% in China, between 88% (China) and 54% (Russia) in the study performed jointly in 19 countries, and 83% in the UK and 66% in Türkiye in the study performed jointly in the UK and Türkiye.[20–22] After 700 individuals aged 65 and above were called by the central operation team of Kayseri Provincial Health Directorate to give information about COVID-19 vaccines 45% of the participants stated that they would get the vaccine, 42.9% stated that they would not get the vaccine and 12.1% were hesitant to get the vaccine. Although the individuals were informed by phone calls the result obtained from our study reveals that the acceptance level of COVID-19 vaccine in Türkiye is low, which is consistent with some studies in Türkiye, compared with the other countries despite the ongoing COVID-19 pandemic.

The participants who would get the vaccine were assessed in terms of their vaccine preferences and according to the results, 35.4% preferred Comirnaty (BNT162b2, Pfizer/Biontech), the mRNA vaccine, 11.1% preferred Coronavac, the inactive SARS-CoV-2 vaccine, 28.3% did not know which one to prefer, and 25.2% could prefer both of the vaccines. In a study in Istanbul, 51.3% of the participants preferred Comirnaty (BNT162b2, Pfizer/Biontech), the COVID-19 vaccine of German origin, and 18.5% preferred Coronavac, the inactive SARS-CoV-2 vaccine of Chinese origin.[19] Comirnaty, the mRNA vaccine, was preferred more in the two studies in Türkiye, which may be because of the positive information transfer about mRNA vaccines in the country and the attitude of the public toward the vaccines as well as mRNA-inactive vaccine types.

In a study in which 82 individuals refusing to get their children vaccinated were called to give information and in which the effect of COVID-19 on the decision of vaccination was investigated, none of the participants changed their minds on getting their children vaccinated after phone calls and 64.3% did not change their minds on getting themselves vaccinated.[23] According to the attitudes of the participants who did not get the vaccine, 89.3% of those who thought the vaccine was unnecessary, 76.9% of those who wanted to get the domestic vaccine, 71.7% of those who were afraid of vaccines, and 56% of those who could not get the vaccine due to diseases did not change their minds after the informative phone calls. High rates of participants who did not change their minds after the informative phone calls in the studies may be due to including individuals who support vaccine refusal in the study populations, personal characteristics that cannot be changed in a short time such as diseases and fear of vaccine and non-personal characteristics such as the desire of domestic vaccine. The statistical significance in the relationship between the participants' reasons for not getting the vaccine and their attitudes after the phone calls makes the proportional changes between the reasons for not getting the vaccine more important ($p<0.001$) and this is supported by the result of our study that 88.4% of those who did not get the vaccine as they could not get an appointment and 58% of those who could not access a health institution changed their minds to get the vaccine after the phone calls.

According to the relationship between the sociodemographic characteristics of the participants in our study and their attitudes after the phone calls, the rate of female gender who changed their mind to get the vaccine was higher compared

with the male gender, which was statistically significant (p:0.004). This result is not consistent with some studies revealing that male individuals have more positive attitude toward getting the vaccine in literature.[19,20,23–25] However, there is also a study revealing that women have more positive attitude toward the vaccine like in our study.[22] Women in reproductive age group can be more hesitant to get the vaccine due to the instinct to protect their reproductive health, fetus or babies they breastfeed; however, higher number of women in our study changed their minds in a positive way as they were old individuals whose reproductive age ended. Moreover, women are generally more interested in medical issues including the vaccines and more sensitive to information about the vaccines compared with the men, which may have caused this result.[26]

There was no statistical significance in the relationship of the participants' sociodemographic characteristics with their vaccine preferences. As there are studies in which no significance has been found in the relationship of sociodemographic characteristics with vaccine preferences there are also studies in which significance has been found.[20,24,25,27] The reason why no significant relationship was found between the sociodemographic characteristics such as gender, age group and place of residence and vaccine preferences in our study may be the equality of the use of similar informative ways by all classes of the society and our informative phone calls as well as the participants' inadequate level of knowledge of the vaccines.

CONCLUSION

Our study found that the attitudes of people aged 65 and older towards COVID-19 vaccines are influenced by personal and non-personal factors. With high mortality and morbidity rates in this age group, it's important to increase vaccination rates. To achieve this, we suggest raising awareness, providing reliable information through media, and improving health literacy. While our study sheds light on vaccine hesitancy in this population, further research is needed due to the limited number of studies conducted in Türkiye.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Karabük University Non-interventional Clinical Researches Ethics Committee (Date: 06/08/2021, Decision No: 2021/607).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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