Investigation of Fear of COVID-19 and Attitudes toward COVID-19 Vaccine among Individuals Undergoing Coronary Artery Bypass Surgery

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Abstract

Background: Individuals who have undergone coronary artery bypass graft (CABG) surgery experience fear about the possibility of contacting the coronavirus disease of 2019 (COVID-19), in addition to their current situation after surgery. The level of fear is a determining factor in the attitudes of individuals toward vaccination.

Aim: The study aims to investigate the fear of COVID-19 and attitudes toward the COVID-19 vaccine among individuals undergoing CABG surgery.

Methods: The study was carried out with 152 followed up individuals who applied to the cardiovascular surgery outpatient unit of a training and research hospital between March 2021 and June 2021 as part of their follow-up appointments. Data were collected using the Fear of COVID-19 Scale and the Attitude toward the COVID-19 Vaccination Scale. Descriptive, parametric (one-way analysis of variance), and nonparametric (Mann–Whitney U and Spearman Correlation) tests were used to analyze the study results.

Results: The mean age of the patients was 60.39 ± 5.71, 56.6% were male, and 67.8% were illiterate. It was determined they had a moderate fear of COVID-19, and their positive attitude toward the COVID-19 vaccine was above average. A high level of fear was determined among individuals with a history of COVID-19 (40.1%) and who are also considering getting vaccinated (76.3%); however, 23.7% of individuals undergoing CABG surgery did not consider getting the COVID-19 vaccine.

Conclusion: In the study, individuals had a moderate fear of COVID-19. Individuals who have undergone CABG surgery in the high-risk group and their relatives should be provided with education and counseling on the individual and social positive effects of the COVID-19 vaccine. Multicenter studies with larger samples are recommended for attitudes toward the COVID-19 vaccine among individuals undergoing CABG surgery.

Keywords: Coronary artery bypass surgery, coronavirus disease of 2019 vaccines, Coronavirus disease of 2019, nursing

Introduction

According to the current data from the World Health Organization (WHO), 762,201,169 individuals have been confirmed cases, and 6,893,190 deaths have occurred since December 30, 2019, the outbreak of the coronavirus disease 2019 (COVID-19) in the world.[1] The first case in Türkiye emerged on March 11, 2020 [2] (a pandemic declared by the WHO), and a total of 17,004,677 confirmed cases and 101,419 deaths have been reported by the WHO's, Global WHO Coronavirus (COVID-19) Dashboard statistics.[3] These high infection rates and relatively high mortality rates naturally cause individuals to get anxious about COVID-19.[4] A study from Brazil determined that the fear of COVID-19 was higher in individuals in the cardiovascular disease group than in individuals with chronic diseases, pre-existing psychiatric diseases, and diabetes.[5]

COVID-19 has also caused individuals with heart disease requiring outpatient and elective treatment to experience a delay in receiving treatment due to fear of contacting COVID-19.[6] It has been reported that the damage caused by the pandemic is difficult to calculate due to delayed treatment, resulting in the worsening of the diseases and the deaths of the individuals.[7] In the study of Khalil et al,[8] the effects of the COVID-19 pandemic on coronary artery bypass graft (CABG) surgery in Brazil were reported, and the study found that the patients refused surgical intervention due to fear of contacting COVID-19. It has been determined that individuals who have experienced the acute phase (first 30 days) of COVID-19 are

found to have various and important risks of cardiovascular disease, and their long-term consequences as well as their 12-month burden have been determined.[9] For this reason, it is necessary for individuals to be careful not to catch COVID-19 and to be careful about cardiovascular diseases if they are caught. One of the most effective prevention methods against epidemics is vaccination/immunization. However, it is emphasized that unless a sufficient number of individuals are vaccinated, the benefit to society will be limited.[10] Unfortunately, statements of vaccine opponents from the past to the present have aroused fear among individuals, leading to an increase in vaccine refusal with anti-vaccine behaviors and vaccine hesitancy or indecision, resulting in a decrease in vaccination in society and an increase in deaths.[11] Vaccine rejection or vaccine hesitancy mostly arises from thoughts about the side effects of adjuvants such as whether adjuvants cause diseases or increase susceptibility to autoimmune disease.[12] Although many individuals have environmental, cultural, and politico-economic reasons for vaccine hesitancy and opposition, there are conspiracy theories that the virus was produced in the laboratory or emerged in other artificial ways. In this regard, the international comparative studies of Salali and Uysal,[13] in which they examined the relationship between vaccine hesitancy and the origin of coronavirus, reported that those who believe that the virus is of natural origin are more likely to accept the vaccine. In addition to the first known pulmonary consequences of COVID-19, patients infected with SARS-CoV2 may develop cardiac dysfunction and myocardial damage.[14,15]

The increased risk of death from COVID-19-related cardiac factors appears to be significantly higher among individuals with core cardiovascular risk factors such as coronary heart disease, hypertension, and chronic cardiomyopathy.[16] Because it is not clear whether these factors are primarily a complication of the COVID-19 infection or the negative effect of the drug or vaccine given for the treatment of COVID-19, negative information and speculations about drugs and vaccines in the media are increasing.[17] This may lead to increased hesitations and concerns about COVID-19 vaccines in CABG patients. However, in current data, it was determined that those who were not vaccinated had a risk of myocarditis and pericarditis, and these risks were independent of the vaccination status.[9] At this point, nurses and health professionals have many responsibilities, one of which is to identify the situation (vaccination status and factors that may affect vaccination status) in order to determine effective interventions.[18] In this context, a study could not be found investigating the fear of COVID-19 and attitudes toward the COVID-19 vaccine among individuals undergoing coronary artery bypass surgery. Acute myocardial infarction' patients fear of COVID-19 has few studies and reviews in the literature.[19,20] The aim of the present study is to investigate fear of COVID-19 and attitudes toward the COVID-19 vaccine among high-risk patients, such as those undergoing coronary artery bypass surgery.

Study Questions

- What is the level of individuals fear of COVID-19?
- What is the level of the individuals' attitudes toward the COVID-19 vaccine?
- Does the level of fear of COVID-19 differ according to characteristics of the individuals?
- Does the level of attitudes toward the COVID-19 vaccine differ according to characteristics of the individuals?
- Is there a relationship between the fear of COVID-19 and attitudes toward the COVID-19 vaccine among individuals?

Materials and Methods

Study Design

The research was designed as a descriptive and prospective study.

Study Sample and Population

The population of the study consisted of individuals (n=236) who applied to the cardiovascular surgery outpatient unit of a training research hospital between March 2021 and June 2021 (for 4 months) as part of their follow-up appointments, while the study sample consisted of individuals having undergone surgery for CABG who applied to and met the sampling criteria. The sample size was calculated as 147 patients with a 5% margin of error and a 95% confidence interval with the sampling method whose universe is known ($P < 0.05$). A total of 152 (response rate: 62.3%) willing individuals were recruited for the study sample.

Inclusion Criteria of the Study

- No cognitive, visual, or auditory disability is needed to answer the questions
- Willingness to participate.

Data Collection Tools

Data were collected using the Information Form, the Fear of COVID-19 Scale (FCV-19S), and attitudes toward the COVID-19 Vaccination Scale.

Information Form

It was prepared by the researchers in line with the literature[21,22] and consists of seven questions investigating age, gender, marital status, education status, history of COVID-19 in close relatives, status of contracting COVID-19 disease (history of COVID-19), and attitudes toward COVID-19 vaccination. At the time when this study was conducted, vaccination was only applied to health-care workers in Türkiye, so the cases were questioned in terms of considering getting the COVID-19 vaccine.

The Fear of COVID-19 Scale

The scale was developed by Ahorsu et al,[23] of which Bakioğlu et al.[24] conducted the validity and reliability study and adapted it into Turkish. Each item on the 7-question scale is scored positively. Items were scored on a 5-point Likert-type scale (1: strongly disagree, 5: strongly agree). There is no reverse-scored item on the scale. A total score of 7–35 is obtained from the scale. The cut-off score of the scale was not specified. A high score indicates a high fear level of COVID-19[24] In the Turkish validity and reliability study, the Cronbach alpha value of the scale was calculated as 0.82.[24] In this study, the Cronbach's alpha value of the scale was calculated as 0.83.

Attitudes toward the COVID-19 Vaccination Scale

Cırakoglu[25] developed the Attitudes Toward Vaccination Scale (T-Asi) with an internal consistency coefficient of 0.82 to determine attitudes toward the H_1N_1 vaccine in the Turkish population, which was adapted to COVID-19 by Geniş et al.[26] ATCVS consisted of 9 items and 2 sub dimensions (positive and negative attitudes). Responses to items include "Absolutely disagreed (1)," "Disagreed (2)," "Undecided (3)," "Agreed (4)," and "Absolutely agreed (5)."[26] Items in the negative attitude sub-dimensions (5,6,7,8,9) are scored reversely.[26] A value between 1 and 5 is obtained by dividing the total score obtained from

the sub-dimension by the number of items in that sub-dimension.[26] The cutoff score of the scale was not specified. Higher scores from the positive attitude sub-dimension indicate positive attitudes toward vaccination.[26] The calculation is made after the items in the negative attitude sub-dimension are reversed, and higher scores obtained from this sub-dimension indicate a less negative attitude toward the vaccine.[26] Geniş et al.[26] determined the Cronbach alpha coefficient of the scale to be 0.80 as a result of the validity and reliability analysis conducted.[26] The Cronbach's alpha value of the study was calculated as 0.79.

Data Collection

The data were collected through the face-to-face interview technique in the interview room. The interview room was an empty polyclinic room next to the outpatient clinic room, where the individuals made an appointment. The interviews were conducted by the researchers and lasted about 10 min. Prior to data collection, the study was explained to individuals, and their written and verbal informed consent was obtained. Throughout the data collection process, healthcare researchers and patients rigorously observed personal precautions, including wearing masks, practicing social distancing, and maintaining hand hygiene with antiseptic.

Data Analysis

The data were analyzed with the IBM Statistical Package for the Social Science Statistics Version 24 software package (IBM SPSS Corp.; Armonk, NY, USA).

Descriptive statistics were used to express data such as frequency, percentage, arithmetic mean, standard deviation, minimum, and maximum. The conformity of the data to a normal distribution was evaluated using the Kolmogorov–Smirnov test and the Shapiro-Wilk test, and it was found that the scores of the scales exhibited a normal distribution for some variables but not for all. Therefore, among parametric tests, one-way analysis of variance (ANOVA) was used for comparisons between groups with a normal distribution, while among nonparametric tests, the Mann–Whitney U test and Spearman correlation test were used for comparisons between groups without a normal distribution. $P < 0.05$ was considered statistically significant.

Ethical Considerations

The study was initiated after written permission and ethics committee approval (Approval Number: February 18, 2021/04, Date: November 01, 2014) were obtained from Van Training and Research Hospital, where the research would be conducted. The study was conducted in accordance with the Declaration of Helsinki. Written permission was obtained from the institution where the study was conducted. Written permission was obtained from the Scientific Research Center of the Ministry of Health (2021-01-04-T11_02_10). After the individuals were informed about the research, it was stated that their participation in the research was voluntary. A written informed consent form was obtained from the volunteer individuals. Permission was obtained for the scales to be used in this study.

Results

The mean age of the individuals was 60.39 ± 5.71 (min: 39–max: 71) years; 51.3% were between the ages of 57–65; 56.6% (n = 86) were male; and 65.8% (n = 100) were married. The illiteracy rate was 67.8% (n = 103). It was determined that more than half (59.9%, n = 91) did not get infected with COVID-19, but the majority of their close relatives contacted the infection (86.2%, n = 131) and 23.7% (n = 36) of the patients did not consider getting a COVID-19 vaccine (Table 1).

The total FCV-19S mean score of the individuals was 24.24 ± 2.87 (min: 14–max: 33), whereas the mean ATCV score from the positive sub-dimension was 3.77 ± 0.63 (min: 2–max: 5) and the mean ATCV score from the negative sub-dimension was 3.03 ± 0.29 (min: 2–max: 3.8) (Table 2).

Evaluation of the total FCV-19S scores of the individuals according to their individual characteristics revealed no significant difference between the total mean FCV-19S scores according to age, gender, marital status, education status, and history of COVID-19 in close relatives ($P > 0.05$). It was observed that the mean FCV-19S scores of those with a history of COVID-19 were higher than those who did not contact the infection, whereas the mean FCV-19S scores of those considering to get the COVID-19 vaccine were higher than those who did not ($P < 0.05$) (Table 3).

No statistically significant difference was found between the mean scores of the ATCVS Positive Attitudes sub-dimension according to age, gender, marital status, education status, and history of COVID-19 ($P > 0.05$). However, the mean scores of those with a history of COVID-19 in close relatives and who considered COVID-19 vaccination were statistically higher than the mean scores of those with no history of COVID-19 in close relatives and who did not consider COVID-19 vaccination. Evaluation of the scores from the Negative Attitudes sub-dimension according to individual characteristics revealed no significant difference between the variables of age, gender, marital status, education status, history of COVID-19, and history of COVID-19 in close relatives, whereas only the mean scores of those who considered COVID-19 vaccination were statistically higher ($P < 0.05$) than the mean scores of those who did not consider COVID-19 vaccination (Table 4).

There was a weakly significant and positive relationship between the mean FCV-19S and ATCV scores ($P < 0.05$) (Table 5).

Discussion

There is not enough information about the fear of COVID-19 and the hesitations and concerns about COVID-19 vaccines in high-risk CABG patients. In this study, it was determined that a few individuals who were undergoing CABG surgery did not want to be vaccinated. The rate of hesitations (not being sure and unwilling to get a vaccine) in this study was found to be similar to previous studies of healthy populations in Türkiye,[13] France,[27] the USA,[10,28,29] and Israil.[30] In the Consensus Report of the Turkish Society of Cardiology published in Türkiye (2020), it is stated that patients with cardiovascular diseases, those most affected by COVID-19, and the patient group with high death cases, therefore, guidelines in the COVID-19 pandemic, are routinely administered influenza and pneumococcal vaccines. It is emphasized that it is important to do this with the COVID-19 vaccine.[31] On the other hand, the rate of considering the COVID-19 vaccine in our study was found to be lower than the rate of vaccination in studies conducted with samples of cancer patients[32] and dialysis patients.[33] It is thought that this is due to the fact that cancer and dialysis patients, unlike CABG patients, require regular care, treatment, and control in the hospital after the disease, and their fear of contagion is higher. However, the reasons why it is not accepted by 23.7% should be further investigated. This might be due to mistrust

Table 1. Individual Characteristic(n=152)

	n	%
Age range		
39–56	35	23.0
57–65	78	51.3
66 and above	39	25.7
Gender		
Female	66	43.4
Male	86	56.6
Marital status		
Married	100	65.8
Single	52	34.2
Education status		
Illiterate	103	67.8
Primary education and above	49	32.2
Status of contacting COVID-19 disease		
Yes	61	40.1
No	91	59.9
History of COVID-19 in close relative		
Yes	131	86.2
No	21	13.8
The case of considering getting a COVID-19 vaccine		
Yes	116	76.3
No	36	23.7

COVID-19: Coronavirus.

Table 3. Fear Level of Coronavirus COVID-19 According to Individual Characteristics (n=152)

Characteristics (n=152)	n	Total mean FCV-19S scores	Statistical values	
Age range		±SD	F	P
39–56	35	24.51±2.60		
57–65	78	24.26±2.85	0.359	0.699
66 and above	39	23.95±3.15		
Gender			t	P
Female	66	24.23±2.60	0.414	0.971
Male	86	24.24±3.08		
Marital status			t	P
Married	100	24.21±2.89	−1.174	0.242
Single	52	24.29±2.87		
Education status			T	P
Illiterate	103	24.04±2.98	−0.144	0.885
Primary education and above	49	24.62±2.64		
Status of contacting COVID-19 disease			T	P
Yes	61	24.93±2,89	2.496	0.014*
No	91	23.77±2.76		
History of COVID-19 in close relatives			Z	P
Yes	131	24.31±2.99	−1.383	0.167
No	21	23.76±1.90		
The case of considering getting a COVID-19 vaccine			T	P
Yes	116	24.59±2.73	2.824	0.005*
No	36	23.08±3.03		

F: One Way ANOVA, FCV-19S: Fear of coronavirus (COVID-19) Scale, t: Independent samples t test, Z: Mann-Whitney U, *$P<0.05$.

about vaccines,[33,34] individual factors (religiosity and political commitment),[35] thoughts such as serious side effects, and speculation in the media. Even if these concerns affect the vaccination situation, one of the biggest reasons for the vaccination acceptance rate is the fear of getting sick by contracting the COVID-19 infection.

Individuals undergoing CABG are classified as high-risk patients in terms of COVID-19 transmission due to advanced age, previous cardiovascular disease, and other accompanying chronic diseases.[31,36,37]

Table 2. Fear of Coronavirus COVID-19 and Attitudes Towards COVID-19 Vaccination (n=152)

Scales		Min-max values received	Available to min-max values
FCV-19S	24.24±2.87	14–33	7–35
ATCV sub-dimension			
Positive attitudes	3.77±0.63	2–5	1–5
Negative attitudes	3.03±0.29	2–3.8	1–5

ATCV: Attitudes toward COVID-19 vaccination, FCV-19S: Fear of coronavirus (COVID-19) scale, SD: Standard deviation.

It is also stated that COVID-19 causes cardiovascular complications that require long-term care and treatment for the cardiovascular system and may even lead to mortality.[38] It has been determined that patients who have undergone CABG already need long-term care, treatment, and rehabilitation due to their post-operative problems and complications.[39] In addition, various cardiovascular side effects of drugs used or to be used for COVID-19 are reported.[31] In this context, CABG patients are expected to have a high level of fear of getting infected by COVID-19. However, this study determined that the individuals had a moderate fear of COVID-19. The results of this study were found to be similar to the results of the studies conducted with healthy individuals by Gencer[22] and Özdemir and Arpacıoğlu[40] and Yelken et al.[41] On the other hand, Marotta et al.'s[20] study found a higher fear of COVID-19 among acute myocardial patients than the general population in Italy. As a matter of fact, a study conducted in Israel determined that having a chronic disease and being in the risk group is associated with a higher fear of COVID-19.[42] In our country,

Table 4. Attitude Towards COVID-19 Vaccination (ATCV) According to Individual Characteristics (n=152)

Characteristics	n	Positive attitudes	Statistical values		Negative attitudes	Statistical values	
Age range		±SD	F	*P*	±SD	F	*P*
39–56	35	3.96±0.61			3.02±0.26		
57–65	78	3.74±0.62	2.047	0.133	3.05±0.26	0.304	0.738
66 and above	39	3.96±0.65			3.01±0.36		
Gender			t	*P*		t	*P*
Female	66	3.75±0.64	−0.376	0.708	3.01±0.25	−0.824	0.411
Male	86	3.79±0.62			3.05±0.32		
Marital status			t	*P*		T	*P*
Married	100	3.78±0.61	0.146	0.884	3.06±0.28	1.358	0.177
Single	52	3.76±0.68			2.99±0.31		
Education status			t	*P*		T	*P*
Illiterate	103	3.79±0.62	0.191	0.628	3.03±0.29	0.351	0.652
Primary education and above	49	3.76±0.67			3.03±0.30		
Status of contacting COVID-19 disease			t	*P*		t	*P*
Yes	61	3.88±0.56	1.632	0.105	3.06±0.28	0.992	0.323
No	91	3.71±0.66			3.01±0.29		
History of COVID-19 in close relatives			Z	*P*		Z	*P*
Yes	131	3.83±0.61	2.507	0.007**	3.03±0.30	−0.502	0.796
No	21	3.46±0.63			3.06±0.22		
The case of considering getting a COVID-19 vaccine			t	*P*		t	*P*
Yes	116	4.01±0.49	10.735	0.000**	3.09±0.25	3.646	0.001**
No	36	3.03±0.41			2.86±0.34		

ATCV: Attitudes Towards COVID-19 Vaccination, F: One Way ANOVA, t: Independent Samples t test, Z: Mann-Whitney U, *P<0.05, **P<0.001.

Gönderen Çakmak et al.,[43] in a qualitative study conducted with individuals with chronic diseases in the COVID-19 pandemic, it was determined that they had negative feelings of fear of death, fear of being in a social environment, lack of knowledge about the pandemic, and external pressures. As a matter of fact, at the time of the research, it was recommended to minimize the number of hospital admissions and outpatient check-ups, as these patients could be infected by COVID-19 health-care professionals during cardiovascular care or treatment service.[31] The news about COVID-19 in the media caused a fear of COVID-19 contamination from the hospital, so individuals with cardiovascular disease avoided going to doctor's check-ups.[19] In this context, this fear was expected to be high considering the total number of 2.711.479 and 5.256.516 cases in Türkiye, where the research was conducted, especially between March 01 and June 01, 2021.[44] It was thought that the reason for the fear of contagion to be at a moderate level could be due to the fact that the patients included in the sample were outpatients (patients for control) and that they and the majority of their relatives had COVID-19.

The study revealed that the individuals' positive attitudes toward the COVID-19 vaccine were above moderate, and their negative attitudes toward the vaccine were at an average level. Similarly, the study of Coşkun and Karabela[45] determined that healthy individuals also scored above medium in the positive attitude sub-dimension and moderate in the negative attitude sub-dimension. In the study of Cordina et al,[46] it was found that individuals generally exhibited positive attitudes toward the COVID-19 vaccine. Concerns of CABG patients about contacting COVID-19 in the hospital and the associated risks have led to a moderately positive attitude toward the vaccine. In addition, it was thought that this might be due to the fact that vaccination was not started in Türkiye at the time of the research

Table 5. Fear of coronavirus COVID-19 and attitudes towards COVID-19 vaccine relationship between score averages (n=152)

Variables	ATCV mean scores	Positive attitudes	Negative attitudes
FCV-19S mean scores			
r	0.269**	0.263**	0.167*
P	0.001	0.001	0.039

ATCV: Attitudes towards COVID-19 vaccination, FCV-19S: Fear of coronavirus (COVID-19) scale, r: spearman correlation, *P<0.05, **P<0.001.

and its effects were not known. This may be due to the fact that the vaccine is widely accepted by health-care professionals, and they see health-care professionals as role models.

The present study determined that the individuals who had COVID-19 had high levels of fear. The results were consistent with the results of other studies conducted with adults[40] and elderly individuals.[47] However, the fear levels of those who were considering vaccination were higher than those who did not want to be vaccinated. As a matter of fact, an international comparison study found that those who have a high risk of contracting COVID-19, as well as a higher COVID-19 anxiety score, exhibit higher acceptance rates regarding the COVID-19 vaccine.[13] Individuals with higher scores of COVID-19 fear exhibited higher vaccine acceptance rates in this study. In this study, parallel with other studies, it was revealed that the positive attitudes of those who had relatives in contact with COVID-19[45] and who were considering getting the COVID-19 vaccine[13] had a high positive attitude. It can be thought that the COVID-19 disease increases feelings of fear, anxiety, and stress related to death and enables the relatives of the patients to turn to the vaccine.

This study determined that positive attitudes toward the COVID-19 vaccine increased with greater fear of coronavirus. In similar studies conducted by Turan et al.[48] individuals older than 18 years of age, Tarus et al.[49] reproductive women and Kilic et al.[50] healthy adults, it was observed that as coronaphobia increased, positive attitudes toward the COVID-19 vaccine also increased. In the sample of patients undergoing CABG surgery, no study was found in which the relationship between the two variables was sought. However, this was in parallel with the result of the study, in which it was determined that fear and individual perceived risk regarding COVID-19 were associated with acceptance of the COVID-19 vaccine.[4] Similarly, another study found that individuals who reported a higher probability of contacting COVID-19 in the future or perceived the effectiveness of a COVID-19 vaccine were more willing to be vaccinated.[28] Kreps et al.[29] found that both personal contacts with someone diagnosed with COVID-19 and the belief that the pandemic will worsen are associated with an increased tendency toward vaccination. As a matter of fact, in the study of Özdemir and Arpacıoğlu,[40] a higher level of fear was observed among individuals who attach greater importance to health-seeking behaviors, which include methods to seek a cure for the disease.

Limitations

Since the vaccination had not started in the general population at the time of the study and only applied to health-care workers, individuals undergoing coronary artery bypass surgery were only assessed in terms of their attitudes toward getting the vaccine. The results cannot be generalized as the study was conducted with patients applying to the cardiovascular surgery department of a training-research hospital only in a single province. Factors such as other chronic diseases that may affect the fear and loss of relatives due to the pandemic have not been considered.

Conclusion

The present study was conducted in one of the provinces where COVID-19 rates are the highest, so it was pleasing to see that the positive attitudes toward the vaccine of individuals were above average, although their fear of COVID-19 was moderate. In particular, the reasons for not getting vaccinated and their beliefs and attitudes toward

vaccination should be investigated specifically for society. We recommend conducting other studies in larger samples to examine the change in fear and attitudes towards the COVID-19 vaccine of individuals undergoing CABG over time. Additionally, it may be recommended to provide training and consultancy on the individual and social positive effects of the COVID-19 vaccine, especially for patients in the high-risk group, such as those who have undergone CABG surgery, and their relatives.

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