



# Challenges of Accepting COVID-19 Vaccination Among Paramedical Students: A Qualitative Study

Fatemeh Sookhak<sup>1</sup>, Zahra Seifi<sup>1</sup>, Mohammad-Rafi Bazrafshan<sup>1\*</sup>

<sup>1</sup>Department of Nursing, School of Nursing, Larestan University of Medical Sciences, Larestan, Iran

## Abstract

**Background and aims:** In recent years, public confidence in vaccines has been decreasing. This study was conducted aiming at explaining the challenges of accepting the coronavirus disease 19 (COVID-19) vaccination by students.

**Methods:** This study is a qualitative content analysis. The samples were students who did not intend to get vaccinated against COVID-19. The applied data collection method was a semi-structured interview. Sampling continued until reaching data saturation. To analyze the data, first, the interviews were recorded and typed word by word. Then, they were entered into the MaxQ-10 software.

**Results:** Two main categories of individual barriers emerged from data analysis. The first category included false wrong peace of mind after vaccination, lack of belief in the effectiveness of the vaccine, fear of the vaccine and its side effects, infection with the coronavirus, a tendency to show the insignificance of the disease, and exacerbation of the symptoms of COVID-19 in the case of vaccination. The other individual barriers were the contraction of COVID-19 in the case of vaccination and beliefs in more effects of preventive methods as compared to vaccination. The second category contained collective barriers such as not having proper information regarding the media, considering the political nature of vaccination, waiting for access to vaccines made in Iran, and preventing the family from vaccination.

**Conclusion:** Based on the results of this study, to increase the acceptance of COVID-19 vaccination, there is a need to remove internal and external barriers through various methods such as providing the community with accurate and timely information through the mass media and facilitating people's access to various vaccines, especially Iran-made vaccine.

**Keywords:** Vaccine, COVID-19, Students, Iran

## \*Corresponding Author:

Mohammad-Rafi Bazrafshan,  
Email: seeder2007@gmail.com

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## Introduction

The spread of the coronavirus disease 19 (COVID-19) from the coronavirus family was announced at the end of December 2019 in Wuhan, China.<sup>1</sup> The World Health Organization (WHO) declared the outbreak of COVID-19 as a pandemic on March 11, 2020.<sup>2</sup> This disease starts with cold-like symptoms and dry cough, and in more severe cases, it shows itself with respiratory symptoms such as shortness of breath and acute respiratory distress. The evidence confirms the transmission of this disease through respiratory droplets.<sup>3</sup>

Vaccines are one of the most important strategies for protecting the population against COVID-19<sup>4</sup> and preventing and reducing its spread since severe acute respiratory syndrome coronavirus 2 is a highly contagious virus and has a widespread and global impact on the population. Efforts to produce a vaccine for COVID-19 and prevent the disastrous effects of this disease are still ongoing.<sup>5,6</sup>

The success of vaccination relies on the public acceptance of the vaccine, but in recent years, the level of public trust in vaccines has been decreasing.<sup>7</sup> Currently, the COVID-19 vaccine is available in Iran, and the vaccination against

this disease is being performed in our country<sup>7,8</sup>; although Iranian experts are making all their efforts to produce the COVID-19 vaccine (COV-Iran Barekat vaccine).<sup>9</sup> With the expansion of the community vaccination plan against COVID-19, it is necessary to check the level of acceptance of this plan by the community members.<sup>10</sup>

If the people living in a community are doubtful about vaccination against COVID-19, this causes them to refuse to receive the vaccine despite their access to the vaccine.<sup>11</sup> Therefore, access to the vaccine necessarily does not guarantee the adequate vaccination of the population because of the existing doubts about the vaccine.<sup>12</sup> Suspicion about injecting vaccines has always been a barrier to the complete safety of the population against highly infectious diseases; meanwhile, with the rapid development of COVID-19 vaccines worldwide, concerns about the safety of such vaccines can lead to doubts about vaccination.<sup>13</sup> Few studies have been conducted on the acceptance and hesitance of vaccination against COVID-19 and its determinants. A study performed among healthcare workers in China showed that there was a high acceptance of COVID-19 vaccination among healthcare workers compared to the general population.<sup>14</sup>

Another study in the United States reported that only 20% of people refused the COVID-19 vaccine.<sup>15</sup> The results of a systematic review that included information on the acceptance of the COVID-19 vaccine in 23 countries of the world indicated that the acceptance rate of the COVID-19 vaccination was less than 70%, and especially the study reported a low rate of vaccine acceptance in the Middle East, Russia, Africa, and several other countries in Europe.<sup>16</sup> In a study conducted in France to investigate the attitude of the medical staff toward the vaccination against COVID-19 on 2678 cases, it was revealed that 28.4% of these people had doubts about receiving the vaccine. The lack of confidence in the safety of vaccine injections was the most important reason for it.<sup>17</sup> According to studies performed in other countries on the vaccination of COVID-19, the lack of sufficient knowledge about the safety and effectiveness of the vaccines was one of the most important reasons for people's doubts about receiving the vaccine and as a result having a negative attitude toward this matter.<sup>11,13</sup>

Given the newness of COVID-19, the unpredictability of the acceptance of vaccination in different societies, including Iran, and the importance of vaccination to end the disease, in the current situation, any doubt about the acceptance of the COVID-19 vaccine can seriously affect the global efforts to control the current pandemic; Further, it imposes a greater economic and life burden on human societies, which in turn increases the problems in countries with limited resources.

In spite of the reopening of medical universities and attendance of students in clinical environments and the requirement for vaccination, there are still a number of students who do not intend to inject vaccines or are doubtful about it; however, the presence of students in clinical environments and dormitories will increase the risk of infection. On the other hand, according to the warning of the WHO about the existence of infodemic around the current pandemic, it seems that the concerns about vaccination for COVID-19 should be taken into serious consideration.<sup>7</sup> Therefore, this study was designed with the aim of investigating the challenges of accepting the COVID-19 vaccine by some students of the University of Medical Sciences in Larestan.

## Materials and Methods

Among the different types of qualitative research methods, conventional qualitative content analysis was used in this study; this method was employed based on the purpose of the research. The inclusion criteria were showing a willingness to participate in the research, being a student of the Larestan University of Medical Sciences, and being able to share their experiences about the reasons for not injecting the COVID-19 vaccine; the subjects were excluded from the study in case they were unwilling to continue participating in the study.

In this study, a semi-structured interview was utilized to collect the required data. In this research, the interview

started by establishing intimate communication and explaining the purpose of the research to the participants; the interview started with a general and open question, "What is your opinion about the vaccine?" It continued and gradually focused on specific issues. If necessary, the researcher asked probing questions such as "What kind of vaccine do you prefer to get?" or "Do you think that the news broadcasted on TV has an effect on the acceptance of vaccination?"

As the interview process continued, the researcher encouraged the participants to express more topics. At the end of each interview, the interviewer asked the participants to talk about other important issues that were not mentioned during the interview. The comfort of the participants and the existence of a quiet and calm place for conducting the interviews were taken into consideration. In this study, sampling continued until reaching data saturation; in other words, we continued until the obtained classes had no changes, and the characteristics of each class were determined completely.

In this research, a purpose-based sampling method was used, and the students who did not intend to get the COVID-19 vaccine or had doubts about it were identified and interviewed according to the purpose of the study. For data analysis, first, each interview was recorded, and after listening to it several times, it was typed word by word and then entered into the MAXQDA-10 software.

Next, the content of the interview was read word by word, and then each text was broken into meaning units. Subsequently, the meaning units that had similar meanings were placed in the same category. Finally, based on the content and similarities, the main categories were formed using sub-categories.

The criteria of Lincoln and Guba were used to improve the trustworthiness of the findings.<sup>18</sup> They included the constant engagement of the researcher with the research subject, participants, and data, allocation of enough time to conduct interviews, constant review and comparison of codes in terms of similarities and differences, and re-checking of the findings with participants. The other criteria were the provision of detailed data analysis and deep and rich descriptions of the research for readers and the use of the corrective opinions of the research team members about the interview process, its analysis, and the extracted data. Moreover, a variety of informants regarding gender and the use of verification questions in the interviews were performed to ensure the confirmability and dependability of the data.

Ethical considerations in this research, including keeping information confidential, giving the participants the right to withdraw at every stage of the research, and making the final results available to the participants, were carefully considered in this study.

## Results

Overall, 19 students (10 males and 9 females) participated in this study. The means and standard deviations of the

subjects' age were  $21.79 \pm 1.18$ . Based on the results, 5 participants (26.3%) were majoring in the operating room and 14 people (73.7%) were doing their studies in nursing. Of them, 9 (47.4%), 7 (36.8%), and 3 (15.8%) students were studying in the 6th, 4th, and 8th semesters, respectively. The demographic characteristics of the samples are summarized in Table 1. A total of 12 sub-categories were extracted from the data, which were categorized into 2 main domains of individual and collective barriers. Individual barriers were false peace of mind after vaccination, lack of belief in the effectiveness of the vaccine, fear of the vaccine and its side effects, infection with the coronavirus, a tendency to demonstrate insignificance of the disease, and exacerbation of the symptoms of COVID-19 in the case of vaccination. The other barriers of this category included the contraction of COVID-19 in the case of vaccination and belief in more effects of preventive methods as compared to vaccination. Collective barriers were not having proper information in the media, waiting for access to vaccines made in Iran, considering the political nature of vaccination, and preventing the family from vaccination (Table 2).

**Table 1.** Demographic Characteristics of the Samples

Participant	Field of Study	Age (y)	Semester	Gender
1	Operation room	20	4	Female
2	Operation room	20	4	Male
3	Operation room	20	4	Male
4	Nursing	21	4	Male
5	Nursing	20	4	Male
6	Nursing	21	4	Male
7	Nursing	23	8	Male
8	Nursing	23	8	Male
9	Nursing	23	8	Female
10	Nursing	22	6	Female
11	Nursing	22	6	Male
12	Nursing	23	6	Male
13	Nursing	21	6	Female
14	Nursing	23	6	Female
15	Operation room	23	6	Male
16	Nursing	22	6	Female
17	Nursing	22	6	Female
18	Operation room	23	4	Female
19	Nursing	22	6	Female

**Table 2.** Extracted Categories and Sub-categories

Theme	Category	Subcategory
Barriers to adhering to COVID-19 vaccination	Individual barriers	False wrong peace of mind after vaccination, lack of belief in the effectiveness of the vaccine, fear of the vaccine and its side effects, infection with the coronavirus, a tendency to show the insignificance of the disease, exacerbation of the symptoms of COVID-19 disease in the case of vaccination, contraction of COVID-19 in the case of vaccination, and belief in more effects of preventive methods as compared to vaccination
	Collective barriers	Not having proper information in the media, considering the political nature of vaccination, waiting for access to vaccines made in Iran, and preventing the family from vaccination

Note COVID-19: Coronavirus disease 19.

### **Barrier 1: Individual Barriers**

This category included the sub-category of false peace of mind after vaccination, lack of belief in the effectiveness of the vaccine, fear of the vaccine and its side effects, infection with the coronavirus, and a tendency to represent insignificance of the disease. Additionally, the exacerbation of the symptoms of COVID-19 in the case of vaccination, contraction of COVID-19 in the case of vaccination, and belief in more effects of preventive methods as compared to vaccination were the other sub-categories.

#### *False Peace of Mind After Vaccination*

Participants reported that the injection of the vaccine has a psychological aspect that causes no desire to inject the vaccine.

*"The injection of the vaccine has more psychological aspect; for example, people are sure that their body is protected against the disease"* (Female, 20 years old).

*"The effect of indoctrination is strong, and vaccine injection has a psychological aspect as well; in general, the injection of the vaccine does not have a great effect on contracting the disease"* (Male, 23 years old).

#### *Lack of Belief in the Effectiveness of the Vaccine*

This belief was very strong that people have been infected with COVID-19 despite the injection of all three doses of vaccine, for this reason, they avoided taking these vaccines. *"People around us have been infected with COVID-19 despite the injection of all three doses of vaccine"* (Female, 20 years old).

*"The vaccine has no effect at all because out of 6 people in our family, three were vaccinated but were infected with COVID-19, while the others who were not vaccinated were not infected"* (Male, 23 years old).

*"My father was infected with the Omicron variant despite the injection of all three doses, and 25% of his lungs were involved"* (Female, 22 years old).

#### *Fear of the Vaccine and its Side Effects*

Participants talked about the side effects of the vaccine, including blood clots which sometimes occurred with vaccines. They stated that they refused to take vaccines for fear of side effects.

*"I was afraid that if I receive a vaccine, I would have an unwanted complication such as blood clots"* (Female, 20 years old).

*"Complications may occur in people about 10-15 years later because these vaccines have not passed their own"*

tests. We were the first people to inject vaccines, and we have become like a laboratory mouse” (Male, 20 years old).

“I was waiting for the side effects of the vaccine to be determined on the other people and then get vaccinated. I was doubtful, and we still don’t know what the long-term side effects of the COVID-19 vaccine are” (Female, 23 years old).

#### *Infection With the Coronavirus*

Participants cited the coincidence of the disease and the time of the next vaccine injection were the other reasons for refusing to receive the COVID-19 vaccine by some participants.

“I did not receive the vaccine myself because I was infected with Corona” (Male, 21 years old).

#### *Showing Insignificance of the Disease*

Some of the participants stated that by showing the insignificance of the disease, you can strengthen your morale and fight the disease without vaccination.

“In my opinion, if we strengthen our morale and do not take the virus too seriously, we will easily cope with the disease, and there is no need for a vaccine. The morale of people is much more effective than the vaccine” (Male, 22 years old).

#### *Exacerbation of the Symptoms of COVID-19 in the Case of Vaccination*

Some participants believed that the symptoms of COVID-19 will worsen in the case of vaccination and contracting COVID-19 after vaccination. Therefore, fear of aggravation of the disease symptoms after vaccination was one of the reasons for refusing to receive the COVID-19 vaccine by some participants.

“People around me got involved with COVID-19 disease twice despite receiving both doses of the vaccine; in my opinion, the vaccine does not have that much effect, and the symptoms of COVID-19 disease were still severe after two injections” (Female, 21 years old).

#### *Contraction of COVID-19 in the Case of Vaccination*

Some participants indicated that they would be infected with the disease if they were injected with the COVID-19 vaccine, thus they refused to inject the vaccine.

“My mother had a lot of complications with the injection of the vaccine and showed the symptoms of COVID-19. I do not intend to inject at the moment” (Female, 23 years old).

#### *Belief in Further Effects of Preventive Methods as Compared to Vaccination*

Some participants mentioned that vaccination had little effects in preventing the spread of the disease, and prevention methods should be used to deal with the disease.

“The number of infected and death cases should be

reduced by wearing a mask. In my opinion, the news spread by the media about the effectiveness of the vaccine are all lies. My friends in the dormitory have been infected with the severe form of the disease despite the injection of all three doses of the vaccine” (Male, 23 years old).

#### **Barrier 2: Collective Barriers**

Collective barriers were the other barriers to adhering to COVID vaccination in students. This category included the sub-category of not having proper information on the media, considering the political nature of vaccination, waiting for access to Iran-made vaccine, and preventing the family from injecting the vaccine.

#### *Not Having Proper Information on the Media*

The fear of complications due to the lack of information about the COVID-19 vaccine was observed in many of the participants’ statements.

“Rumors in cyberspace cause fear of vaccine injection; for example, rumors of clot formation due to AstraZeneca vaccine injection” (Male, 21 years old).

“Mass media is effective in creating positive or negative thoughts about the vaccine” (Female, 22 years old).

“Unfortunately, due to the low level of awareness in society, some people refuse to be vaccinated. When the media provides the public with the facts correctly, people’s trust in them increases, and this is how the media can be effective in attracting people’s attention and opinion” (Female, 23 years old).

#### *Considering the Political Nature of Vaccination*

Some students stated that the aim of the authorities in injecting the vaccine is to control people in the community.

“The purpose of the government in forcing people to inject vaccines is to control the minds and behavior of the people in the community so that they work for them like an iron man” (23-year-old woman).

“I am completely against vaccination. I have no faith in vaccines, and they are all dirty politics and considered a type of business. The goal is to control the world’s population, and it’s just a funny game” (Female, 22 years old).

#### *Waiting for Access to Iran-made Vaccine*

Some participants declared that they did not receive vaccines due to the unavailability of Iranian vaccines.

“I was waiting for the Barekat vaccine (COVIran Barekat vaccine) at first. It was not available, so my injection was delayed a bit” (Male, 21 years old).

“I did not trust in foreign vaccines when I received the first vaccine injection, and I waited until the production of the Iranian vaccine. I have more trust in the Iranian vaccine” (Female, 22 years old).

#### *Preventing the Family From Injecting the Vaccine*

Some participants stated that some families also prevented their children from getting vaccinated because of the fear

of causing complications in them after the injection of the COVID-19 vaccine.

*“At first, my parents prevented me from receiving the vaccine because they thought the vaccine might be contaminated (political issues)”* (Female, 21 years old).

## Discussion

Currently, one of the main concerns of people in the world is related to COVID-19 vaccination. The availability of the COVID-19 vaccine seems to be an important step to combat the epidemic of this disease, but hesitance to accept the vaccine is a great threat to the global health during this epidemic and the world's health organizations to control the epidemic of COVID-19. Therefore, identifying important factors in the non-acceptance of the COVID-19 vaccine by people is necessary in designing an action plan in order to improve the acceptance of the COVID-19 vaccination by different sections of society. This qualitative research aimed to identify the reasons for not accepting the COVID-19 vaccine by the students of Larestan University of Medical Sciences; to achieve this goal, the qualitative method of content analysis was used to gain the depth of the participants' experiences. The findings revealed that individual and collective barriers have been effective in accepting the COVID-19 vaccine in this population.

According to the results of the present study, individual barriers were one of the most important barriers to adhering to COVID vaccination in students.

Concerns in the field of safety and efficiency of the vaccine are among the main reasons for doubting about COVID-19 vaccination and have been reported in other research that should be taken into account.<sup>14</sup> In this regard, Shekhar et al investigated the level of people's acceptance of the COVID-19 vaccine. The results demonstrated that creating a suitable and effective level of immunity against corona mutation was the most common concern of people after getting the vaccine.<sup>15</sup> In another study, Bono et al found that uncertainty about the efficacy of the vaccine causes hesitation and resistance to the vaccination of COVID-19, and people who considered themselves to be from the low-income group often believed that the vaccine was ineffective. This could explain their lower chances of acceptance. Therefore, bridging the gap in willingness to be vaccinated against COVID-19 between people of lower and higher socio-economic classes is highly important.<sup>16</sup>

COVID-19 mutation and possible side effects were the most common concerns of people after vaccination.<sup>17</sup> A survey in Canada reported that the main concerns of people who report that they are unlikely to accept the COVID-19 vaccine are the safety risks and side effects of vaccination.<sup>19</sup> Aboelsaad et al also indicated that the difference in acceptance or non-acceptance of the vaccine is affected by the influence of the vaccine and its side effects.<sup>20</sup> In a study, Shekhar et al examined people's acceptance of the COVID-19 vaccine and concluded that the possible side effects were the most common concern

of people after vaccination.<sup>15</sup> In another study, Bono et al mentioned side effects as a factor of doubt in accepting the COVID-19 vaccine,<sup>16</sup> which is in line with the results of the present study. Therefore, interventions to increase vaccine acceptance require targeting specific vaccine-related attitudes and knowledge relevant to each country and cultural setting.

The tendency to show the insignificance of the disease was one of the reasons for the reluctance of students to receive the vaccine. Some participants stated that by ignorance of the disease, you can boost your morale and fight the disease without vaccination. Based on the results of the study performed by Valieiny et al, it seems that the more people consider themselves to be at a higher risk of contracting the COVID-19 virus, the more willing they are to receive the vaccine.<sup>21</sup> The results of Dror et al also indicated that employees who were in contact with COVID-19 patients were more willing to receive the COVID-19 vaccine.<sup>13</sup> Hence, the willingness to inject vaccines in health workers is more due to the importance of showing the disease. COVID-19 vaccine studies also represented an association between risk perception and vaccine acceptance. In the United States, the moderate risk perception was significantly higher in those who reported receiving the vaccine than those who were hesitant to receive the vaccine.<sup>22</sup> A meta-analysis study on the effectiveness of interventions revealed that risk perception is one of the essential factors in intention and behavior change, and further understanding of these two has been associated with greater alternations in behaviors.<sup>23</sup> An improper understanding of the risk of COVID-19 and the effectiveness of the vaccine can influence its acceptance, which is in conformity with the results of the present study. Thus, given the physical, social, economic, cultural, and psychological consequences of vaccination, it is necessary to make the public more aware of the benefits of vaccines. For example, holding workshops to introduce the benefits of vaccination for groups that are against the vaccination process can be a step toward increasing people's awareness of the importance of vaccination.

Belief in the greater effectiveness of preventive methods, compared to vaccination, was one of the barriers affecting the acceptance of the vaccine. A few study participants mentioned that they were skeptical about vaccination, did not believe in the need for vaccination, and considered physical distancing, good respiratory hygiene, and hand washing to be sufficient to prevent infection for themselves and their families. Such reports, though limited, are remarkable and concerning. These findings conform to those of other vaccine-related studies, suggesting that individuals' attitudes about vaccines can influence their decision to vaccinate themselves, their children, and their families, and their recommendation could impact the vaccination of others.<sup>24,25</sup>

Collective barriers were the other barriers to adhering to COVID vaccination in students. According to the findings of this study, not having proper information from the

media and waiting for access to the vaccine were among the reasons for not accepting the COVID-19 vaccine. Valieiny et al stated that the necessary training about vaccination should be provided to people, including health workers, and these people should encourage the public to get vaccinated by relying on the results of scientific research on the safety and effectiveness of COVID-19 vaccination.<sup>21</sup>

In a large interventional study in the United States and the UK, 6000 study participants in the intervention group (providing misinformation about COVID-19 and the vaccine) and 2000 controls were exposed to factual information. After performing the intervention and the exposure of individuals to misinformation in both countries, a decrease of more than 6% was observed in vaccine acceptance.<sup>26</sup> Recently, some videos were released in Iran of metal objects such as keys, spoons, and the like, sticking to the bodies of individuals, claiming to have received the COVID-19 vaccine, or of a gathering of protests with unknown scientific identities in front of the Ministry of Health and Medical Education of Iran to stop COVID-19 vaccination. These events are examples of the dissemination of misinformation that has sometimes been accompanied by bias. This information, without the support of scientific evidence, has spread throughout the community and led to public concerns about the COVID-19 vaccine. Preventing the spread of misinformation in real and virtual space is among the major tasks of healthcare leaders and reputable social media authorities. Despite movements against vaccination, healthcare system staff and managers have remained the most valuable sources in supporting acceptance and desire toward vaccination and must be supported by governments. It is evident that to increase vaccine acceptance, in addition to expressing the effectiveness of the vaccine, there should be planning to enhance health literacy, and especially vaccine literacy, to improve the willingness to receive the vaccine. The critical point in increasing vaccine literacy among individuals is to design programs and strategies that could eliminate misconceptions about vaccines, address religious and cultural sensitivities, and use the potential of the health network.

Moreover, regarding waiting for access to the vaccine, Gyan-Galbraith et al reported that information support in the form of providing information and awareness about vaccination, emotional support in the form of encouragement about vaccination, and instrumental support in the form of access to the vaccine were effective in accepting the vaccine.<sup>27</sup> In other words, social support through providing information to people, encouraging them to get vaccinated, and providing convenient access to the vaccine can improve the acceptance of the vaccine.

Participants expressed insufficient trust in the managers, their recommendations, and the implications of COVID-19 vaccination. They also declared that an obstacle in their vaccine acceptance. Trust in healthcare authorities and policymakers has always been associated with adherence to public health recommendations such as vaccination.<sup>28</sup> A

recent survey among 13426 individuals from 19 countries with a high prevalence of COVID-19 demonstrated that the tendency to receive the COVID-19 vaccine was related to greater confidence in the information provided by government sources. In this study, countries in which the acceptance of the COVID-19 vaccine exceeded 80% of the population included the Asian countries (China, South Korea, and Singapore), where individuals had high confidence in their governments.<sup>29</sup> The results of Miyachi et al showed that people's weak trust in the government reduces their willingness to get vaccinated.<sup>30</sup> Griffith et al also found that political pessimism and the ruling political power are factors that influence the acceptance of and skepticism about the vaccine in an environmental context.<sup>31</sup> This finding corroborates those of the present study, representing that people's views on the health system and prevailing social policies can affect vaccine acceptance as environmental factors. Our qualitative findings indicated that trust in the government and its policies to control COVID-19 spread is low. However, it seems that the production and import of COVID-19-approved vaccines, more transparency by manufacturers, publication of the results of clinical trial studies practically to the general population, and the use of the trusted media of the general public for encouraging the vaccination, increasing the public confidence, and consequently minimizing the reluctance to vaccination.

The acceptance or non-acceptance of the COVID-19 vaccine by different sectors of society is considered an important issue in controlling the epidemic; it is also important and necessary as the discovery of the vaccine. Accordingly, removing the needs and barriers to accepting the vaccine based on individual-social factors and informing others about its benefits should be prioritized by organizations and institutions related to health and treatment. For this purpose, based on the results of the study, there is a need for educational and information campaigns regarding the awareness of the benefits of vaccination in order to make vaccination more popular among different segments of the society. Therefore, individual-social and vaccine-related concerns are eliminated by informing people about the effect of vaccination in reducing infections. Accordingly, the joint efforts of governments, health policy-makers, and media sources, including information in the context of social networks, facilitate this direction. Additionally, explaining the policies and laws to promote people's desire to receive the COVID-19 vaccination is necessary. Finally, with the help of mass media, people should be provided with reliable information, and measures should be taken to control the pandemic by attracting the participation of the in vaccination.

### Limitations of the Study

Due to the quarantine conditions and the need to observe social distancing, it was impossible to have a face-to-face interview, which can be one of the limitations of this study.

## Conclusion

Based on the results of this study, opportunities should be provided in society through environmental changes (social support and environmental context) in order to increase the acceptance of COVID-19 vaccination. In other words, some actions can increase the rate of acceptance of the vaccine by people, including holding communication and educational campaigns, marketing, and showing vaccination benefits by policy-makers, doctors, and healthcare workers. The other actions included making the vaccine available in public offices and centers and increasing public awareness of the benefits and effectiveness of vaccination in reducing the incidence of infection. Expanding vaccine education and literacy, especially through online education, and creating a sense of responsibility for the health of community members are the most critical strategies to increase youth participation in COVID-19 vaccination.

This study was conducted on a group of paramedical students. However, the concerns of vaccination in some groups require further investigations, thus it is suggested that the present study be performed at the national level to understand the acceptance of the vaccine and its affecting factors.

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## Authors' Contribution

**Conceptualization:** Fatemeh Sookhak, Zahra Seifi.

**Data curation:** Fatemeh Sookhak.

**Formal analysis:** Mohammad-Rafi Bazrafshan.

**Investigation:** Fatemeh Sookhak, Zahra Seifi, Mohammad-Rafi Bazrafshan.

**Funding acquisition:** Fatemeh Sookhak, Zahra Seifi, Mohammad-Rafi Bazrafshan.

**Methodology:** Mohammad-Rafi Bazrafshan.

**Project administration:** Mohammad-Rafi Bazrafshan.

**Resources:** Fatemeh Sookhak, Zahra Seifi, Mohammad-Rafi Bazrafshan.

**Supervision:** Mohammad-Rafi Bazrafshan.

**Validation:** Fatemeh Sookhak, Zahra Seifi, Mohammad-Rafi Bazrafshan.

**Visualization:** Fatemeh Sookhak, Zahra Seifi, Mohammad-Rafi Bazrafshan.

**Writing—original draft:** Fatemeh Sookhak, Zahra Seifi, Mohammad-Rafi Bazrafshan.

**Writing—review & editing:** Mohammad-Rafi Bazrafshan.

## Competing Interests

There is no conflict of interests.

## Ethical Approval

The present article was the result of a research project at Larestan University of Medical Sciences, which was approved by the Ethics Committee with the code of IR.LARUMS.REC.1400.024.

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