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Willingness to Receive a COVID-19 Vaccine in an Iranian Population: Assessment of Attitudes, Perceived Benefits, and Barriers

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Abstract

Background: To significantly reduce the disease and mortality from the novel Coronavirus Disease (COVID-19), a safe and effective vaccine must be widely delivered to the community. However, the availability of a vaccine for COVID-19 does not ensure that individuals will want to be vaccinated. The present study investigated the attitudes, perceived barriers, and benefits of the COVID-19 vaccine, as well as vaccination intentions, among a sample of Iranian adults.

Methods: Demographic data were categorized in this study based on whether or not participants received the vaccine. Drawn from a multistage sampling protocol in 2021, a descriptive-analytical study was conducted on 1350 adults in Saveh, Iran. A survey with 5 different sections inquired about eligible participants' sociodemographic information, their attitudes, perceived benefits, and barriers, as well as their intentions to get vaccinated for COVID-19. Multiple logistic regression analysis (enter method) was performed to assess factors related to vaccination intent.

Results: The mean age of those who intended to receive the COVID-19 vaccine (57.9±19.2) was significantly higher than those who did not intend to receive the vaccine (43.4±16.8) (p=0.00). Additionally, married individuals were significantly more likely to receive the vaccine than individuals who were single and/or widowed. Additionally, (n=663) substantially more homemakers and retirees received vaccinations than workers and self-employed individuals (n=481) (p=0.001). Findings revealed that 78% of participants intended to receive the COVID-19 vaccine. Multiple unconditional logistic regression analyses showed that age and marital status, as well as the behavioral variables (attitude odds ratio [OR]=1.73, benefits OR=1.78, and perceived Barriers OR=0.52), had a significant relationship with vaccination intentions (p=0.001).

Conclusion: This study demonstrated that to increase intentions to receive the COVID-19 vaccine, public health campaigns and interventions should focus on promoting the benefits of the vaccine, improving the attitudes toward the vaccine, as well as reducing the perceived barriers.

Keywords: Vaccine Hesitancy, Attitude, Intention To Vaccinate, Vaccine Rejection, COVID-19, Benefits

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Introduction

The novel Coronavirus Disease (COVID-19), which is caused by the severe acute respiratory syndrome corona-

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↑What is "already known" in this topic:
The availability of a COVID-19, vaccine, does not merely guarantee sufficient safety from the virus, as the public must accept, and believe in the vaccine before they are willing to receive it. Attitudes and the individual's beliefs (Perceived benefits, and barriers) about vaccination are the main keys to mass vaccination and herd immunity.

→What this article adds:
The findings suggest that to increase intentions to receive the COVID-19 vaccine, public health campaigns and interventions should focus on promoting the benefits of the vaccine, improving the attitudes toward the vaccine, as well as reducing the perceived barriers.

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virus 2 (SARS-CoV-2), was declared a global pandemic by the World Health Organiz ation (WHO) in March 2021 (1, 2). Since its outbreak in Wuhan, China, in December 2021, there have been over 273 million cases and 5 million deaths reported globally (3). The spread ways of COVID-19 are well recognized. The WHO has made recommendations for strict infection control measures, including the use of community face masks, avoiding direct contact with people (ie, especially those with symptoms of acute respiratory infection), frequent handwashing, and limited travel (4, 5). Despite these measures, however, the COVID-19 virus continued to spread rapidly around the globe (6). To reduce the morbidity and mortality of COVID-19, a prophylactic vaccine must be rapidly delivered to the public (4, 7), as vaccines are one of the most effective ways to prevent and limit infectious diseases (7, 8). However, the availability of a COVID-19 vaccine does not simply ensure adequate protection from the virus because the public and the medical community must first accept, trust, and believe in the vaccine before they will be prepared to receive it (9, 10). It is crucial to have a vaccine that is effective, safe, and well-tolerated by people since, in order to acquire herd immunity against COVID-19, a sizable portion of the population (between 70% and 90%) must be immunized (10). Additionally, depending on the effectiveness and length of the vaccination, the efficacy increases with the vaccination rate (11). While these prospects are encouraging, an important question remains: Do people in Iran intend to get vaccinated for COVID-19? (3). We hypothesized that public distrust toward vaccines, and especially concerns about future side effects, will be barriers to receiving the COVID-19 vaccine. In order to solve these issues, interventions and programs that focus on minorities, such as women, people of color, and those with lower socioeconomic level and educational attainment, should look at who wants to receive vaccinations in Iran (12). A study conducted by Sanche et al in 2020 showed that people who are skeptical about vaccines have also historically questioned the basic principle of mass vaccination (13). Skepticism and negative attitudes about vaccination (ie, “immunity from surviving a disease is superior to immunity from vaccination”) are global public health concerns, as they are the main obstacles to mass vaccination and herd immunity (14).

The health belief model (HBM) delivers a structure for studying health actions and behaviors. The HBM highlights demographic, beliefs, attitudes, and individual causes to explain the possibility of engaging in a healthy lifestyle (15). This model provides a beneficial framework for understanding actions that affect health behavior (15). According to the HBM, an individual is more likely to perform a healthy behavior when they are prepared to do the behavior and when the advantages outweigh the obstacles and costs (16). Regarding vaccination, the benefits are described as the individual’s beliefs about being vaccinated, and perceived barriers are described as beliefs and psychological, physical, or financial factors that limit vaccination (16). It is crucial to take into account the many ideas that people have about vaccination in order to inform interventions since beliefs about vaccines have a significant role in both the desire to get vaccinated and the high vaccination rates required to achieve herd immunity. Therefore, the purpose of this study was to investigate the relationship between attitudes, perceived benefits, and barriers of the COVID-19 vaccine, as well as vaccination intentions, among a sample of Iranian adults.

Methods

Procedure and Participants

This was a descriptive-analytical study in which the participants were selected using a multistage random sampling protocol from all comprehensive health centers in Saveh, Iran. First, using the census method, all Saveh comprehensive health centers (N = 15) were identified and the electronic family health system was used to extract the names of all individuals 18 years or older Then, 90 people were selected from each center by systematic random sampling. After identifying the prospective participants, they were contacted by telephone and the purpose of the study was explained to them. Inclusion criteria for the present study included being 18 years or older (The minimum age of people was 18 years, but there was no limit for the maximum age.), having no prior COVID-19 vaccination, and ability to communicate in Persian.

Eligible participants provided informed consent and were interviewed. The sample size was calculated at 571 people based on the ratio comparison formula and based on the results of the study by Ansari-Moghaddam et al (ie, considering the 95% CI, with an accuracy of 0.04) (17). Considering the design effect index of 2, the total sample in this study included 1350 participants with (n=707) men and (n=543) women. Participants had a mean age of 51.2±19.4. Of a total of 1350 participants, 1053 people (78%) intended to get a vaccine; of these 1053 people (77%) were sure, 19% were hesitant, and 4% had been forced to get a vaccine by their relatives and family. Additional demographics are provided in Table 1.

Measures

Data were collected using a researcher-made questionnaire with 5 different sections that were compiled by referencing relevant literature (16, 18-21). The validity of the questionnaire was evaluated using content and face validity methods. Using qualitative and quantitative methods, content validation was performed with the help of 10 expert professors in the fields of infectious and internal medicine and epidemiology. In the qualitative method, the experts were asked to submit the questionnaire to the research team based on the criteria of using the appropriate words, inserting the items in the appropriate place, observing the grammar, and then giving the necessary feedback to the team. In content validity, content validity rate (CVR) and content validity index (CVI) indices were calculated quantitatively. In the CVR index, values greater than 0.62 and in CVI values greater than 0.79 were accepted. Face validity was performed with 20 clients who were not in the main study later. In face validity, items with a score of less than 1.5 were removed.

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Table 1. Basic characteristics of the participants (N = 1350)

Variable	Grouping	Vaccine Intention		*P-Value
		Yes N (%)	N(%)	
		1053 (78)	297(22)	
Mean ± SD age of total samples		57.9±19.2	43.4±16.8	0.001
Age	18-29	198 (19.5)	96 (32)	0.001
	30-49	246 (23.5)	75 (26)	
	50-69	281 (26)	71 (24)	
	70≥	328 (31)	55 (18)	
Gender	Male	497 (47)	146 (49)	0.553
	Female	556 (53)	151 (51)	
Education	Academic	227 (21.5)	31 (10.4)	0.196
	High school	314 (30)	91 (30.6)	
	Primary or secondary	360 (34)	122 (41)	
	Illiterate	152 (14.5)	53 (18)	
Marital status	Married	832 (79)	46 (15.5)	0.001
	Divorced or widowed	21 (2)	17 (6)	
	Single	200 (18.9)	234 (78.5)	
Occupation	Housewife	454 (43)	47 (16)	0.001
	Retired	118 (11)	19 (6)	
	worker	230 (22)	111 (37)	
	Freelance	251 (24)	120 (40)	
History of chronic disease	Yes	201 (19)	45 (15)	0.124
	No	852 (81)	252 (85)	

* Chi-square test

Demographic Characteristics

Participants were asked a series of sociodemographic questions regarding their age, sex, marital status, place of residence, underlying diseases, level of education, and occupation.

Attitude Toward the COVID-19 Vaccine

Participants' attitudes toward the COVID-19 vaccine were investigated with 7 questions, such as "without the COVID-19 vaccine, there is a possibility of getting COVID-19." Participants responded to each item using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The range of achievable scores was between 7 and 35. A higher total score was representative of a greater positive attitude toward the vaccine. The reliability of the questionnaire was confirmed with Cronbach's alpha coefficient of 0.79.

Perceived benefits of COVID-19 Vaccine

The perceived benefits of the COVID-19 vaccine were examined using 7 items, such as "I think high vaccine coverage is the key to preventing and controlling the disease in society." Participants responded to each item using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The range of achievable scores was between 7 and 35. For example, for the item "COVID-19 vaccine plays an important role in preventing hospitalization and death due to the disease," if someone believes in this statement, they will give it a high score, and if they disagree with this statement, they will give a low score. The reliability of the questions in the present study was surveyed using Cronbach's alpha method for perceived benefits of 0.81.

Perceived Barriers to COVID-19 Vaccine

Eight items were used to investigate the perceived barriers that may prevent individuals from getting the COVID-19 vaccine. Participants responded to items such as "I believe the vaccines available in Iran are not safe" using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The range of achievable scores was between 8 and 40. The reliability of the questions in the present study was surveyed using Cronbach's alpha for perceived barriers of 0.77.

Intent to Receive COVID-19 Vaccine

Participants were asked to respond "yes" or no" to whether they intended to get vaccinated.

Data Analysis

Data were analyzed using SPSS Version 18. The normality of data was tested using the Kolmogorov–Smirnov test. Multiple logistic regression analysis (enter method) was performed to assess factors related to vaccination intent. The independent variables were included in the multiple logistic regression model only if they had a significant relationship with the intention to get vaccinated in univariate analysis ($p \leq 0.05$). In the logistic regression model, the dependent variable was the intention to receive the COVID-19 vaccine, which was assessed using the question: "Do you intend to inject the corona vaccine?" With yes / no answers.

Results

From a total of 1366 completed questionnaires, 16 questionnaires were eliminated due to incomplete information. The results showed that a total of 1053 (78%) of the participants intended to get a COVID-19 vaccine; 810 people (77%) were sure, 211 people (19%) were hesitant, and 42 (4%) were forced to get a vaccine by their relatives and/or family. The mean age of those who intended to receive the COVID-19 vaccine was significantly higher than those

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Table 2. Distribution of mean and SD scores of the attitude, perceived benefits, and barriers based on vaccine intention

Variable	Number of Questions	Vaccine Intention		Acquired Values	*P-Value
		Yes	No		
		Mean ± SD	Mean ± SD		
Attitude	7	24.9±3.8	21.2±6.4	7-35	0.001
Perceived benefits	7	21.7±3	18.6±3.7	7-35	0.001
Perceived barriers	8	24.2±5.9	28.8±4.1	8-40	0.001

* Chi-square test

Table 3. Response of participants about COVID-19 related perceived benefits

Perceived benefits	Agree+completely agree N (%)	Uncertain N (%)	Disagree+completely disagree N (%)
I believe that the COVID-19 vaccine plays an important role in preventing coronavirus hospitalization and death.	990 (73.3)	170 (12.6)	190 (14.3)
If I do not get vaccinated, the situation of coronavirus disease in my country will get worse.	848 (62.8)	275 (20.3)	227 (16.9)
I believe that high vaccine coverage is the key to preventing and controlling coronavirus disease in society.	910 (67.4)	264 (19.5)	176 (13.1)
Getting a corona vaccine keeps me and my family healthy.	979 (72.5)	159 (11.8)	212 (15.8)
Corona vaccine improves the mental health of the community by reducing restrictions.	1087 (80.5)	215 (16)	48 (3.5)
Getting a corona vaccine will improve the financial situation of myself and my family.	466 (34.5)	473 (35)	511 (37.5)
Getting vaccinated for myself and my family improves my life expectancy	631 (46.7)	392 (29)	327 (24.3)

who did not intend to receive the vaccine (p=0.001, demonstrating that as age decreased, intentions to receive the COVID-19 vaccine also decreased. Additionally, married individuals were significantly more likely to receive the vaccine than individuals who were single and/or widowed. Also, homemakers and retirees were significantly more likely to receive a vaccine than those who worked and those who were self-employed (p=0.001). Chi-square analysis did not reveal a significant difference between those with chronic conditions and those in good health in terms of vaccination intention (Table 1).

Further, as shown in Table 2, there was a statistically significant difference in the mean scores of attitudes, as well as the perceived barriers and benefits to vaccination, and fewer people who wished to receive the vaccine (p<0.05).

Pearson correlation analyses showed a significant negative correlation between attitudes toward the COVID-19 vaccine and perceived barriers (r= -0.39), as well as a positive and significant correlation between attitudes and perceived benefits (r=0.48; p<.0001). Further, reduction of constraints to improve community mental health (80.5%), prevention of COVID-19-related hospitalization and deaths (73.3%), as well as concern over individual and family health (72.5%), were the most important perceived benefits of receiving the COVID-19 vaccine (Table 3).

Moreover, the most common perceived barriers to receiving the COVID-19 vaccine included concerns about the potential side effects, the beliefs that health and disease were in God's hands, and distrust of vaccines, respectively (Table 4).

The results of the univariate analysis showed that demographic variables such as age, literacy level, marital status, region (eg, urban and rural), and behavioral variables, including attitudes and perceived benefits and barriers were positively associated with intentions to be vaccinated for COVID-19. Multiple logistic regression analysis revealed that among the demographic variables, age and marital status and all behavioral variables (attitude OR=1.73, benefits OR=1.78, and perceived barriers OR=0.52) had a significant relationship with vaccination intentions (p<0.05) (Table 5).

Discussion

The present study investigated the relationship between the attitudes and perceived benefits and barriers of the COVID-19 vaccine, as well as vaccination intentions, among an Iranian population. Our results demonstrated that 78% of adults in Iran intended to receive the COVID-19 vaccine, which is in line with recent research that showed 63% to 83% of adults intend to get vaccinated (18, 22, 23). The results also showed that vaccination intentions increased with age, which is in line with the extant literature (24, 25). For example, Mahmud et al (2021) found that people aged 50 and over were 2.11 times more willing to be vaccinated than people aged 18 to 29 (19). In another study, the desire to receive the COVID-19 vaccine was significantly associated with being over 45 years. This finding may be explained by the national immunization program of Iran specifically targeting COVID-19 vaccination among elderly populations. Other possible explanations for this finding include antivaccine organizations publicly attributing the natural deaths of the elderly to obtaining the vaccine, as well as younger individuals being bombarded with false information about the vaccine on social media and having lower health literacy (26). Last but not least, poor vaccination intentions may also be influenced by the comparatively high prevalence of myths among younger groups, such as "young people are less sensitive to COVID-19." As in our study, 25% of participants believed that they do not need to get vaccinated because they are young and healthy.

Further, married participants were more willing to receive the vaccine than those who were divorced,

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Table 4. Response of participants about COVID-19 related perceived barriers

Perceived barriers	Agree+comeletly agree N (%)	Uncertain N (%)	Disagree+completely disagree N (%)
Health and disease are in the hands of God, so injecting the vaccine or not injecting it does not affect COVID-19.	367 (27.2)	200 (14.8)	783 (58)
I believe that the vaccines available in Iran are not safe and valid.	351 (26)	186 (13.8)	813 (60.2)
I do not need to be vaccinated because I am young and healthy	340 (25.1)	213 (15.8)	797 (59)
I do not want to get vaccinated for fear of injections	29 (2.1)	36 (2.7)	1285 (95.2)
I am afraid of getting vaccinated because I have an underlying disease.	64 (4.7)	18 (1.3)	1268 (93.9)
Vaccination does not affect the prevention, hospitalization, and death of COVID-19	188 (13.9)	165 (12.2)	997 (73.9)
I do not have enough time to get vaccinated	32 (2.5)	12 (.8)	1306 (96.7)
I am worried about the side effects of COVID-19 vaccination	492 (36.5)	176 (13)	682 (50.5)

Table 5. Results of the multiple logistic regression analysis of psychological and sociodemographic variables

Demographic variable						95% C.I.for EXP (B)	
	B	S.E.	Wald	*P*-value	Exp (B)	Lower	Upper
Age							
18-29	Ref.						
30-49	0.21	0.25	0.71	0.395	1.24	0.75	2.05
50-69	1.06	0.21	24.2	0.001	2.90	1.90	4.43
70≥	1.16	0.20	32.2	0.001	3.19	2.13	4.76
Marital status							
Single	Ref.						
Divorced or widowed	0.37	0.17	4.67	0.034	1.45	1.03	2.0
Married	1.36	0.55	6.26	0.012	3.96	1.34	11.6
Behavioral factors							
Attitude	0.55	0.14	14.1	0.001	1.73	1.30	2.30
Perceived benefits	0.57	0.14	15.3	0.001	1.78	1.33	2.37
Perceived barriers	-0.64	0.15	16.9	0.001	0.52	0.38	0.71

widowed, and single people, which was consistent with Wang et al (2020) and Stefanut et al studies (2021) in which married people were significantly more willing to get vaccinated than those who were single (27, 28). This finding suggests that members of social networks, especially close relationships, such as a partner or friend, may have significant effects on an individual's attitudes and behaviors toward vaccination. This is crucial because prior studies have demonstrated that married people exhibit healthier behaviors than single and widowed people (29, 30).

The results also showed that perceived benefits were the most important predictors of participants' intent to receive the COVID-19 vaccine. Other studies have shown the efficacy of the perceived benefits in creating the willingness to receive the vaccine (31, 32). For et al (2020) found that among the HBM constructs, the perceived benefits of the COVID-19 vaccine were the most important factor in vaccination intentions (20). Additionally, Wong et al (2020) discovered that a crucial HBM construct for persuading readers to acquire the COVID-19 immunization was a strong perception of the benefits of vaccination. (16)

Further, the present study showed that 81% of the participants believed improving the mental health of the community, as well as the reductions in social restrictions, was the most important benefits of vaccination. Previous studies have highlighted the destructive psychological effects of COVID-19 (33), and it seems that 2 years of forced quarantine and the reduction of various ceremonies and social gatherings have caused fatigue and stress among Iranian individuals. This is especially important given that Iran is one of the most affected countries by COVID-19, with over 6 million infections and 130,000 deaths since the start of the pandemic (13).

According to researchers, a person's perception of benefits paves the way for action, and a person behaves, acts, or avoids a certain action based on the analysis of benefits minus barriers. Prior research has shown that identifying and reducing physical and psychological barriers that may make the COVID-19 vaccination an unpleasant experience is an effective factor in increasing vaccine acceptance (22, 23, 34). Many studies have also shown that the most common reasons cited by those who are not willing to get vaccinated for COVID-19 are doubts about the vaccine's efficacy as well as fears of complications from the vaccine. According to previous research, our study demonstrated that perceived barriers were a significant determinant of whether people intended to receive the COVID-19 vaccine. In particular, the biggest obstacles to vaccination were insufficient trust in the vaccine and concerns about complications following vaccination. Further, skepticism and rejection of the COVID-19 vaccination can be a major obstacle to combating the spread of the disease, as well as the devastating health, economic, and psychological consequences that ensued. Thus, identifying and using effective interventions to reduce perceived barriers to COVID-10 vaccination effectively increase vaccination intentions.

Additionally, the present study revealed that participants' attitudes were significantly associated with their intentions to be vaccinated. This finding is consistent with Fernandes et al (2021) and Schneider et al (2021) in which attitudes toward vaccines were important factors in both accepting and receiving the vaccine. (18, 35) Previous studies have also emphasized the importance of atti-

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tude in performing the behavior (36). Hornsey also believes that identifying psychological factors that can reflect an individual's attitude toward COVID-19 vaccination is invaluable in designing evidence-based strategies to help combat the doubts about receiving the vaccine (37).

Limitations

The use of a self-administered questionnaire and the cross-sectional character of the research were limitations of the present study; as a result, we were unable to draw a cause-and-effect relationship.

Conclusion

The present study sought to investigate individuals' attitudes and perceived benefits and barriers to the COVID-19 vaccine, as well as their intent to receive the vaccination. Our results demonstrated that to increase an individual's willingness to get vaccinated for COVID-19, public health interventions should aim to increase the understanding of the benefits of the COVID-19 vaccine, reduce perceived barriers, and improve attitudes. Furthermore, the present study showed that mistrust for the vaccine, as well as the fear of the possible side effects from it, are 2 of the most significant concerns that individuals have regarding the COVID-19 vaccine. Thus, public health interventions aimed at increasing vaccination for COVID-19 should consider these determinants. Overall, the findings of this study can be applied as a useful theoretical foundation in designing strategies to increase people's motivation to accept the corona vaccine.

Ethical Approval

Ethical approval was obtained from Saveh University of Medical Sciences Ethics Committee (IR.SAVEHUMS.REC.1400.005). To comply with the research ethics, all information received was confidential and was used only to achieve the objectives of the study. In addition, the name of the participants were not mentioned in this study.

Conflicts for Publication

All participants were told that their information would be described in the manuscripts and the participants stated their agreement.

Availability of Data

The datasets used and/or analyzed during this study are available from the corresponding author upon reasonable request.

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Conflict of Interests

The authors declare that they have no competing interests.

References

1. Mesri M, Rouhani M, Koohestani HR, Azani H, Ahad A, Karimy M. Clinical features and outcomes of suspected and confirmed covid-19 patients in Saveh, Iran, 2020. J Maz Univ Med Sci. 2021;30(194):51-61.
2. Mesri M, Saber SSE, Godazi M, Shirdel AR, Montazer R, Koohestani HR, et al. The effects of combination of Zingiber officinale and Echinacea on alleviation of clinical symptoms and hospitalization rate of suspected COVID-19 outpatients: a randomized controlled trial. J Complement Integr Med. 2021;18(4):775-81.
3. Abdallah DA, Lee CM. Social norms and vaccine uptake: College students' COVID vaccination intentions, attitudes, and estimated peer norms and comparisons with influenza vaccine. Vaccine. 2021;39(15):2060-7.
4. Farnoosh G, Alishiri G, Zijoud SH, Dorostkar R, Farahani AJ. Understanding the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease (COVID-19) based on available evidence-a narrative review. J Mil Med. 2020;22(1):1-11.
5. Araban M, Karimy M, Koohestani H, Montazeri A, Delaney D. Epidemiological and clinical characteristics of hospitalized patients with COVID-19, Saveh, Islamic Republic of Iran. East Mediterr Health J. 2021;28(4).
6. Shati M, Mortazavi SS, Moghadam M, Solbi Z, Barakati SH, Rezaei F. COVID-19 in Older Adults: Iran Health Care System Response. Med J Islam Repub Iran. 2022;36(1):310-2.
7. Graham BS. Rapid COVID-19 vaccine development. Science. 2020;368(6494):945-6.
8. Ung COL, Hu Y, Hu H, Bian Y. Investigating the intention to receive the COVID-19 vaccination in Macao: implications for vaccination strategies. BMC Infect Dis. 2022;22(1):218.
9. DeRoo SS, Pudalov NJ, Fu LY. Planning for a COVID-19 vaccination program. Jama. 2020;323(24):2458-9.
10. Sharpe HR, Gilbride C, Allen E, Belij□Rammerstorfer S, Bissett C, Ewer K, et al. The early landscape of coronavirus disease 2019 vaccine development in the UK and rest of the world. Immunology. 2020;160(3):223-32.
11. Anderson RM, Vegvari C, Truscott J, Collyer BS. Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. Lancet. 2020;396(10263):1614-6.
12. Paul E, Steptoe A, Fancourt D. Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications. Lancet Region Health Eur. 2021;1:100012.
13. Sanche S, Lin YT, Xu C, Romero-Severson E, Hengartner N, Ke R. High contagiousness and rapid spread of severe acute respiratory syndrome coronavirus 2. Emerg Infect Dis. 2020;26(7):1470.
14. Edwards KM, Hackell JM, Byington CL, Maldonado YA, Barnett ED, Davies H, et al. Countering vaccine hesitancy. Pediatrics. 2016;138(3).
15. Karimy M, Bastami F, Sharifat R, Heydarabadi AB, Hatamzadeh N, Pakpour AH, et al. Factors related to preventive COVID-19 behaviors using health belief model among general population: a cross-sectional study in Iran. BMC Public Health. 2021;21(1):1934.
16. Wong LP, Alias H, Wong PF, Lee HY, AbuBakar S. The use of the health belief model to assess predictors of intent to receive the COVID-19 vaccine and willingness to pay. Hum Vaccin Immunothers. 2020;16(9):2204-14.
17. Ansari-Moghaddam A, Seraji M, Sharafi Z, Mohammadi M, Okati-Aliabad H. The protection motivation theory for predict intention of COVID-19 vaccination in Iran: a structural equation modeling approach. BMC Public Health. 2021;21(1):1-9.
18. Fernandes N, Costa D, Costa D, Keating J, Arantes J. Predicting COVID-19 vaccination intention: the determinants of vaccine hesitancy. Vaccines. 2021;9(10):1161.
19. Mahmud I, Kabir R, Rahman MA, Alradie-Mohamed A, Vinnakota D, Al-Mohaimeed A. The health belief model predicts intention to receive the covid-19 vaccine in saudi arabia: Results from a cross-sectional survey. Vaccines. 2021;9(8):864.
20. Lin Y, Hu Z, Zhao Q, Alias H, Danaee M, Wong LP. Understanding COVID-19 vaccine demand and hesitancy: A nationwide online survey in China. PLoS Negl Trop Dis. 2020;14(12):e0008961.
21. Araban M, Karimy M, Mesri M, Rouhani M, Armoon B, Koohestani HR, et al. The COVID-19 Pandemic: Public Knowledge, Attitudes and Practices in a central of Iran. J Educ Community Health. 2021.
22. Al-Sanafi M, Sallam M. Psychological determinants of covid-19 vaccine acceptance among healthcare workers in kuwait: A cross-

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[DOI: 10.47176/mjiri.36.132]

sectional study using the 5c and vaccine conspiracy beliefs scales. Vaccines. 2021;9(7):701.
23. Reiter PL, Pennell ML, Katz ML. Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated? Vaccine. 2020;38(42):6500-7.
24. Detoc M, Bruel S, Frappe P, Tardy B, Botelho-Nevers E, Gagneux-Brunon A. Intention to participate in a COVID-19 vaccine clinical trial and to get vaccinated against COVID-19 in France during the pandemic. Vaccine. 2020;38(45):7002-6.
25. Sherman SM, Smith LE, Sim J, Amlôt R, Cutts M, Dasch H, et al. COVID-19 vaccination intention in the UK: results from the COVID-19 vaccination acceptability study (CoVAccS), a nationally representative cross-sectional survey. Hum Vaccin Immunother. 2021;17(6):1612-21.
26. Tavousi M, Haeri Ma, Rafiefar S, Solimanian A, Sarbandi F, Ardestani M, et al. Health literacy in Iran: findings from a national study. Payesh. 2016.
27. Wang J, Jing R, Lai X, Zhang H, Lyu Y, Knoll MD, et al. Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. Vaccines. 2020;8(3):482.
28. Ştefănuţ AM, Vintilă M, Tomiţă M, Treglia E, Lungu MA, Tomassoni R. The influence of Health Beliefs, of Resources, of Vaccination History, and of Health anxiety on Intention to accept COVID-19 Vaccination. Front Psychol. 2021;12.
29. Azizi N, Karimy M, Abedini R, Armoon B, Montazeri A. Development and validation of the health literacy scale for workers. Int J Occup Environ Med. 2019;10(1):30.
30. Araban M, Baharzadeh K, Karimy M. Nutrition modification aimed at enhancing dietary iron and folic acid intake: an application of health belief model in practice. Eur J Public Health. 2017;27(2):287-92.
31. Rodriguez M, López-Cepero A, Ortiz-Martínez AP, Fernández-Repollet E, Pérez CM. Influence of Health Beliefs on COVID-19 Vaccination among Individuals with Cancer and Other Comorbidities in Puerto Rico. Vaccines. 2021;9(9):994.
32. Azizi N, Karimy M, Naseri Salahshour V. Determinants of adherence to tuberculosis treatment in Iranian patients: Application of health belief model. J Infect Dev Ctries. 2018;12(9):706-11.
33. Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al. Depression, anxiety and stress among Indians in times of Covid-19 lockdown. Community Ment Health J. 2021;57(1):42-8.
34. Zagefka H, dela Paz E, Macapagal MEJ, Ghazal S. Personal willingness to receive a Covid□19 vaccine and its relationship with intergroup psychology: Evidence from the Philippines and Pakistan. Applied Psychology: Health and Well□Being. 2022.
35. Schneider KE, Dayton L, Rouhani S, Latkin CA. Implications of attitudes and beliefs about COVID-19 vaccines for vaccination campaigns in the United States: A latent class analysis. Prev Med Rep. 2021;24:101584.
36. Karimy M, Abedi AR, Abredari H, Taher M, Zarei F, Shahsavarloo ZR. Does the theory-driven program affect the risky behavior of drug injecting users in a healthy city? A quasi-experimental study. Med J Islam Repub Iran. 2016;30:314.
37. Hornsey MJ, Harris EA, Fielding KS. The psychological roots of anti-vaccination attitudes: A 24-nation investigation. Health Psychol. 2018;37(4):307.

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