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**RESEARCH ARTICLE**

# Investigating Iranians' Attitude, Practice, and Perceived Self-Efficacy towards COVID-19 Preventive Behaviors

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**Abstract:**

*Background:*

During the past two years, a new health crisis that affected the world was the emergence of the novel coronavirus disease 2019 (COVID-19). Currently, most health challenges and problems are mainly due to behavioral factors, so identifying these factors can play an important role in promoting public health. Therefore, this study was designed and conducted to investigate Iranians' attitude, practice, and perceived self-efficacy towards COVID-19 preventive behaviors.

*Method:*

This descriptive-analytical study was conducted online among 387 Iranian cyberspace users selected by convenience sampling method and invited through social media messaging apps (Telegram, WhatsApp). The data gathering tool was a researcher-made questionnaire divided into 4 parts (demographic information, items related to attitude, practice, and perceived self-efficacy). The validity of the questionnaire was confirmed by the content validity ratio (CVR) and content validity index (CVI) and its reliability by Cronbach's alpha. Kolmogorov-Smirnov, Mann-Whitney, analysis of variance, Pearson's correlation, and linear regression tests were used to analyze the collected data.

*Results:*

The results of the Pearson's test showed that there was a direct and significant correlation between the participants' attitude with practice ($r = 0.23$, $p < 0.001$) and perceived self-efficacy ($r = 0.21$, $p < 0.001$) regarding coronavirus preventive behaviors. There was also a direct and significant relationship between self-efficacy and practice ($r = 0.46$, $p < 0.001$). The results of univariate regression test also showed that occupation ($p = 0.002$, $\beta = -0.16$), marital status ($p = 0.003$, $\beta = -0.15$), attitude ($p < 0.001$, $\beta = 0.23$), and self-efficacy ($p < 0.001$, $\beta = 0.45$) are predictive and influential variables of the participants' practice towards coronavirus preventive behaviors.

*Conclusion:*

Various factors affect people's practice in relation to preventive behaviors. Paying attention to people's attitudes and self-efficacy can be considered in policies related to improving people's performance as well as planning future interventions to promote coronavirus preventive behaviors.

**Keywords:** Attitude, Self-efficacy, COVID-19, Practices, Social media, Health crisis.

## 1. INTRODUCTION

COVID-19 is a contagious disease caused by a newly discovered coronavirus that was declared a pandemic on February 11, 2020 [1, 2]. It is an emerging respiratory disease

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identified in Wuhan, China, in late 2019 and spread rapidly to most countries in the world, and was considered a pandemic disease by the World Health Organization (WHO) [3 - 5]. Due to the pathogenicity of the virus as well as its rate of spread and mortality, people's physical and mental health status is at risk [6, 7]. Some of the disease symptoms include pneumonia, fever, and muscles ache. By the time we conducted the present study, neither a vaccine nor an antiviral drug had been found to

be effective in controlling the disease. Therefore, the only way for the general public to prevent and control the infection was to follow the principles of personal hygiene. The number of COVID-19 patients worldwide was reported to be 191,825,033 on July 20, 2021, of whom 4,115,374 individuals died of the disease. Iran ranked 13th in the world with 3,548,704 patients and 87,374 deaths due to COVID-19 [8, 9].

The dramatic increase in the virus spread and its rising mortality rate around the world urged many researchers to identify potential vaccines to protect people against the disease. Perhaps, attempting to discover a potential vaccine for the prevention of the COVID-19 was the best approach to terminate this deadly pandemic [10 - 12]. Due to the lack of vaccines to promote public immunity, the most effective way to prevent the virus transmission was deemed to be their preventive behaviors [13]. The most important preventive measures to break the disease transmission chain include isolating the cases, identifying and following up with the patients, disinfecting the environment, and using personal protective equipment [14].

Health problems and risks are mainly caused by behavioral factors, the identification of which can play a paramount role in promoting community health and changing people's behavior through educational interventions [15]. Attitude reflects degrees of desirability or undesirability of a person's behavior and can be a positive or negative evaluation of the behavior. Usually, the more favorable the attitude is towards a behavior, the stronger one's intention will be to perform the behavior [16 - 18]. Unfounded attitudes and practices increase the chances of contagion [19]; therefore, attempts to identify and modify individuals' attitudes are a significant step in preventing diseases. Self-efficacy is also considered the most effective motivational factor and the strongest predictor of behavioral intention, so an individual who does not believe in himself or in his ability to perform the behavior will fail to adapt, initiate, and maintain that behavior. People with higher self-efficacy levels are more likely to succeed, anticipate potential outcomes of their strategies, and initiate further novel behaviors [20 - 25].

Due to the rapid spread of the coronavirus disease and the significantly rising number of patients in Iran, it seems essential to conduct various studies to identify factors affecting people's preventive behaviors in order to design and perform interventions for changing their behaviors. Therefore, the present study was designed aiming to investigate Iranians' attitude, practice, and perceived self-efficacy toward COVID-19 preventive behaviors.

## 2. METHODS AND MATERIALS

### 2.1. Study Design, Participants, and Setting

This cross-sectional study was conducted between April and June, 2020. The participants were selected through convenience sampling (n = 387). Due to the widespread prevalence of coronavirus disease and its epidemic risks, all Telegram and WhatsApp users were considered as the study population who were requested to join the study and fill out the questionnaires. The inclusion criteria included age over 15, basic literacy skills, access to a smartphone, and ability to

answer the questions through the internet and social networks. The questionnaire link was shared on two social networks, Telegram and WhatsApp, which have become even more popular during the pandemic. The participants showed their willingness to cooperate by signing an informed consent before starting the main questions and then were asked to complete the items carefully. The participants who did not complete the whole questionnaire were excluded from the study. Before beginning the study, all participants signed the consent form approved by the Ethics Committee of Sabzevar University of Medical Sciences (code: IR.MEDSAB.REC.1399.007).

### 2.2. Study Instruments

The study instrument was a researcher-made questionnaire (Supplementary File-Questionnaire) designed in three parts by reviewing relevant references. It was developed in Farsi (or Persian, which is the official language in Iran.

Part 1: The participants' demographic information, which contained eight items (age, gender, education, marital status, place of residence, occupation, and the respondent's or their family member's history of being infected with coronavirus).

Part 2: In order to determine the individuals' attitudes towards COVID-19 preventive behaviors, 11 items with a 5-point Likert scale (from zero "strongly disagree" to 4 "strongly agree") were designed with a score range of 0-44. Examples of these items included "a person who was once infected with coronavirus no longer needs to follow preventive measures" and "addicted people are protected against coronavirus."

Part 3 a: To measure the individuals' practices towards COVID-19 preventive behaviors, nine items were developed with a scale from "always = 3" to "never = 0", with a score range of 0-27. Examples of these questions included, "how often have you recently been wearing masks when going out?" and "how often have you recently been shaking hands with friends and relatives?"

Part 3 b: In order to measure the Iranians' perceived self-efficacy toward COVID-19 preventive behaviors, eight items with a 5-point Likert scale (from zero "Strongly disagree" to 4 "Strongly agree") were developed with a score range of 0-32. Examples of these questions included "I can avoid crowded places" and "I can prepare for using masks and protective equipment."

The validity and reliability of the questionnaire were also taken into consideration. In order to determine the content validity ratio (CVR) and content validity index (CVI), the opinions of 5 health education and promotion experts and one educational psychologist were obtained, and the questions were only confirmed after applying the experts' opinions (2 questions were deleted and five questions were modified). Cronbach's alpha was used to determine the internal reliability (α = 0.892).

### 2.3. Data Analysis

The collected data were analyzed using SPSS 17 (SPSS Inc., Chicago, IL, USA) using descriptive statistics as well as Kolmogorov-Smirnov, Mann-Whitney, analysis of variance, Pearson's correlation coefficient, and linear regression

analysis. The significance level was considered to be less than 0.05 for all analyses.

## 3. RESULTS

This online survey aimed to identify attitudes, practices, and perceived self-efficacy of Iranian participants towards COVID-19 preventive behaviors; 385 subjects voluntarily completed the study questionnaire at the beginning of the pandemic in Iran. The mean age of the participants was 28.62±9.67 years. Most participants were female (68.2%). Most of them had a university education (75.5%) and lived in urban areas (84.9%), and reported no history of their own (88.8%) or relatives (78.1%) having coronavirus infection.

The mean score of the participants' attitudes towards COVID-19 preventive behaviors was 27.85±4.33 (maximum score being 44; more than 63% achieved the total score). The mean score of their practices was 22.86±3.98 (maximum score being 27; more than 84% achieved the total score). The mean score of their perceived self-efficacy was 24.45±4.53 (maximum score being 32; about 70% achieved the total

score), which reflects a good level.

In response to "attitude" items, 64.5% of participants strongly agreed that "everyone should wear a mask when leaving home. Moreover, 50.7% disagreed that "people who were once infected with coronavirus no longer needed to follow preventive measures." Frequency of the participants' responses to "attitude" items is presented in (Table **1**).

The results of investigating the participants' perceived self-efficacy revealed that 46.2% of the respondents agreed that they could stay at home. Also, 49.9% of the respondents agreed that "they could prevent the COVID-19 disease by taking preventive measures" and 51.4% agreed that "they could avoid crowded places" (Table **2**).

The results of studying the participants' practices showed that 46.5% of the respondents wore a mask outdoors. Moreover, 67.4% of the participants never intended to shake hands with relatives or friends; 60.6% always disinfected their daily purchases, and 58% washed their hands regularly for about 30 seconds (Table **3**).

**Table 1. Frequency of the subjects' responses to the attitude questions about coronavirus preventive behaviors.**

|  | Questions | Strongly Disagree Number (%) | Disagree Number (%) | No Comment Number (%) | Agree Number (%) | Strongly Agree Number (%) |
|---|---|---|---|---|---|---|
| 1 | Everyone should wear a mask when going out. | 4 (1.0) | 43 (11.2) | 27 (7.0) | 123 (32.1) | 178 (64.5) |
| 2 | A person who once was infected with coronavirus no longer needs to follow preventive measures. | 194 (50.7) | 132 (34.5) | 26 (6.8) | 10 (2.6) | 9 (2.3) |
| 3 | I may be infected with coronavirus at present but have no symptoms. | 44 (11.5) | 57 (14.9) | 95 (24.48) | 90 (23.5) | 87 (22.7) |
| 4 | I feel I will be infected with the corona virus despite taking preventative measures. | 37 (9.7) | 129 (33.7) | 65 (17.0) | 99 (25.8) | 36 (9.4) |
| 5 | I feel I am more prone to be infected with coronavirus than others due to my working condition. | 57 (14.9) | 115 (39.0) | 65 (17.0) | 73 (19.1) | 59 (15.4) |
| 6 | Often, the elderly and people with medical conditions are infected with the coronavirus. | 47 (12.3) | 105 (27.4) | 39 (10.2) | 147 (38.4) | 35 (9.1) |
| 7 | Addicted people are protected against coronavirus. | 169 (44.1) | 107 (27.9) | 77 (20.1) | 12 (3.1) | 7 (1.8) |
| 8 | Alcohol consumption helps in preventing coronavirus. | 212 (55.4) | 103 (26.9) | 49 (12.8) | 5 (1.3) | 6 (1.6) |
| 9 | Being infected with coronavirus keeps others away from me. | 16 (4.2) | 40 (10.4) | 50 (13.1) | 171 (44.6) | 98 (22.6) |
| 10 | Washing hands regularly during the day is time-consuming and tiresome. | 93 (24.3) | 168 (43.9) | 30 (7.8) | 66 (17.2) | 19 (5.0) |
| 11 | Providing protective equipment, such as masks and disinfectants, is expensive. | 15 (3.9) | 57 (14.9) | 45 (11.7) | 191 (49.9) | 68 (17.8) |

**Table 2. Frequency of the subjects' responses to perceived self-efficacy questions about coronavirus preventive behaviors.**

|  | Questions | Strongly Disagree | Disagree | No Comment | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 1 | I can stay home despite my busy schedule and not having much fun. | 11 (2.9) | 59 (15.4) | 29 (7.6) | 177 (46.2) | 100 (26.1) |
| 2 | I can prevent corona disease by taking preventative measures. | 1 (0.3) | 15 (3.9) | 16 (4.2) | 191 (49.9) | 153 (39.9) |
| 3 | I can avoid crowded places. | 2 (0.5) | 13 (3.4) | 17 (4.4) | 197 (51.4) | 148 (38.6) |
| 4 | I can prevent corona disease by taking preventative measures. | 1 (0.3) | 15 (3.9) | 16 (4.2) | 191 (49.9) | 153 (39.9) |
| 5 | I can avoid shaking my family members' and friends' hands and kissing them. | 0 | 10 (2.6) | 8 (2.1) | 149 (38.9) | 210 (54.8) |
| 6 | I can make surface disinfectant solution at home. | 9 (2.3) | 47 (12.3) | 43 (11.2) | 190 (49.6) | 86 (22.5) |
| 7 | I can disinfect home surfaces daily. | 2 (0.5) | 40 (10.4) | 45 (11.7) | 183 (47.8) | 105 (27.4) |
| 8 | I can keep the necessary distance from others at work and outside. | 4 (1.0) | 40 (10.4) | 23 (6.0) | 200 (52.2) | 110 (28.7) |

**Table 3. Frequency of the subjects' responses to the questions of practice regarding coronavirus preventive behaviors.**

| - | Questions | Never | Rarely | Sometimes | Always |
|---|---|---|---|---|---|
| 1 | How much have you recently gone to crowded places? | 74 (19.3) | 187 (48.7) | 102 (26.6) | 13 (3.4) |
| 2 | How much have you recently worn masks when going out? | 36 (9.4) | 49 (12.8) | 114 (29.8) | 178 (46.5) |
| 3 | How much have you recently been out of the house? | 22 (5.7) | 178 (46.5) | 115 (30.0) | 61 (15.9) |
| 4 | How much have you recently used public transportation? | 282 (73.6) | 61 (15.9) | 23 (6.0) | 11 (2.9) |
| 5 | How much have you recently been in contact with people with suspected COVID-19? | 221 (51.7) | 103 (26.9) | 45 (11.7) | 7 (1.8) |
| 6 | How much have you recently shaken your friends and relatives' hands? | 258 (68.4) | 82 (21.4) | 33 98.6) | 5 (1.3) |
| 7 | How much have you recently disinfected your daily purchases? | 19 (5.0) | 43 (11.2) | 81 (21.1) | 232 (60.6) |
| 8 | How much have you recently used tissue or your elbow when coughing and sneezing? | 13 (3.4) | 25 (6.5) | 85 (22.2) | 253 (66.1) |
| 9 | Do you wash your hands regularly for about 30 seconds? | 3 (0.8) | 33 (8.6) | 118 (30.8) | 222 (58.0) |
| 10 | How many times have you recently been to a party? | 192 (50.1) | 125 (32.6) | 52 (13.6) | 5 (1.3) |

The results of the Pearson's correlation coefficient analysis showed that there was a statistically significant positive relationship between the participants' age and practices regarding COVID-19 preventive behaviors (r=0.12, p=0.02); consequently, older subjects performed the preventive behaviors better than the younger ones. The results of the analysis of variance showed that there was a statistically significant relationship between partcipants' occupation and their perceived self-efficacy score regarding coronavirus preventive behaviors (p <0.001); therefore, public employees had higher perceived self-efficacy than self-employed individuals (p = 0.003). There was no statistically significant difference between employed participants' self-efficacy and that of housewives. But there was a statistically significant relationship between participants' occupation and their practices of preventive behaviors (p <0.001); therefore, public employees outperformed self-employed individuals (p <0.001). However, there was a positive and significant relationship between female participants' self-efficacy and practices, so females had higher self-efficacy and practice compared to male participants (p <0.001). There was a statistically significant relationship between participants' attitude (p=0.04), practice (p=0.003), and perceived self-efficacy (p=0.02) regarding the COVID-19 preventive behaviors and their marital status; therefore, married participants showed higher scores of attitude, practice, and perceived self-efficacy than participants who were single (Table **4**).

**Table 4. The relationship of demographic characteristics with attitude, practice, and perceived self-efficacy scores of research units regarding coronavirus preventive behaviors.**

| Variable | | Number (%) | Attitude | Practice | Self-Efficacy |
|---|---|---|---|---|---|
| - | | | Significance Level | Significance Level | Significance Level |
| **Gender** | Male<br>Female | (31.3) 120<br>(67.1)<br>257 | 0.55 | <0.001 | <0.001 |
| **Education** | Academic<br>Non-academic | (75.5)<br>289<br>(14.1)<br>54 | 0.32 | 0.31 | 0.61 |
| **Occupation** | Employee<br>Self-employed<br>Housewife/house-husband<br>Other | (29.5)<br>113<br>(9.7)<br>37<br>(12.8)<br>49<br>(37.9)<br>145 | 0.09 | <0.001 | <0.001 |
| **Marital status** | Married<br>Single | (47.5)<br>182<br>(48.6) 186 | 0.03 | 0.007 | 0.01 |
| **Place of residence** | City<br>Village | (84.9)<br>325<br>(11.2)<br>43 | 0.21 | 0.94 | 0.56 |
| **History of the disease in the individual** | Yes<br>No | (6.5)<br>25<br>(88.8)<br>340 | 0.28 | 0.22 | 0.96 |

| Variable | | | Attitude | Practice | Self-Efficacy |
|---|---|---|---|---|---|
| - | | Number (%) | Significance Level | Significance Level | Significance Level |
| **History of the disease in relatives** | Yes<br>No<br>I do not know | (10.7)<br>41<br>(78.1) 299<br>(8.1)<br>31 | 0.76 | 0.71 | 0.16 |

**Table 5. Processed linear regression model to investigate the factors related to the subjects' practice toward coronavirus preventive behaviors.**

| Variable | B** | β* | p-value | R² |
|---|---|---|---|---|
| Self-efficacy | 0.41 | 0.46 | 0.000 | 0.26 |
| Attitude | 0.10 | 0.11 | 0.02 | |
| Marital status | 0.85 | -0.10 | 0.003 | |

* Standardized regression coefficient ** Unstandardized regression coefficient

In addition, the results of the Pearson's correlation coefficient analysis showed a positive and statistically significant relationship between the participants' attitude, practice (r =0.23, p <0.001), and their perceived self-efficacy (r =0.21, p <0.001) in coronavirus preventive behaviors. There was a significant positive relationship between their self-efficacy and practice (r=0.46, p<0.001); therefore, by increasing the level of attitude and self-efficacy, their preventive practices improved.

The linear regression model was used to investigate the factors related to attitude, practice, and perceived self-efficacy towards coronavirus preventive behaviors. The results of the multivariate regression test showed that self-efficacy, attitude, and marital status were the most important predictors of practice, and these variables altogether predicted 26% of the variance in the individuals' practices (R2=0.26). The results of univariate regression test also indicated that occupation (p=0.002, β= -0.16), marital status (p=0.003, β= -0.15), attitude (p <0.001, 23 B = 0.), and self-efficacy (p <0.001, β =0.45) were predictive factors in the participants' practice of preventive behaviors (Table **5**).

## 4. DISCUSSION

Considering the role of public education through mass media and social networks and the importance of research in assessing public awareness, the present study was designed hoping to help decision-makers and policymakers in promoting preventive behaviors against the spread of the COVID-19 disease by examining the participants' attitude, practices, and self-efficacy. In fact, this online survey aimed to investigate the attitude, practice, and perceived self-efficacy of people towards coronavirus preventive behaviors. The results indicated the participants' positive attitude, high self-efficacy, and proper practices in adopting preventive behaviors against COVID-19 disease, which is consistent with the results of Shahnazi (2020) [26]. Having a positive attitude, higher levels of self-efficacy and proper practices towards this disease is likely to play an important role in controlling the disease, preventing its spread, and reducing its prevalence.

A study in Indonesia was conducted to examine individuals' knowledge, attitude, and practice toward social distance as a solution to prevent coronavirus, the results of which showed that most people had a positive attitude and proper practice toward coronavirus preventive behaviors [21, 27, 28]. The results of Khasawneh's (2020) study in Jordan also showed that medical students had an appropriate level of knowledge, attitude, and practice toward coronavirus prevention [29]. Also, the results of a study in Ethiopia showed that most of the participants had high knowledge and self-efficacy regarding coronavirus prevention [30], which is consistent with the findings of the present study. Goni *et al.* (2019), in their study in Malaysia entitled "Assessing the knowledge, attitude, and practice of Hajj pilgrims towards prevention of respiratory infections," reported that although the subjects had high knowledge about respiratory infections, their attitude and practices were not appropriate, which is not consistent with the results of the present study [31]. The difference between the aforementioned study and the present study can be due to different study populations and tools. Moreover, they measured the pilgrims' knowledge, attitude, and practices towards all respiratory infections in general, and this study was performed prior to the COVIID-19 outbreak.

In the present study, a significant positive relationship was observed between gender with perceived self-efficacy and practice, so female participants had better self-efficacy and practice against coronavirus preventive behaviors than male ones. This result is consistent with the results of Goni (2019) and Kebede (2020) [30, 31]. The results of a study conducted in Iran to evaluate COVID-19 preventive behaviors based on the Health Belief Model showed that the mean score of COVID-19 preventive behaviors in females was higher than in males [26]. In Hong Kong, according to a study on the H1N1 pandemic, women performed better than men in performing preventive behaviors against the disease [32], which is consistent with the results of the above study. Another study in Sudan also reported that women took more preventive measures than men in protecting themselves and others against the spread of coronavirus [33]. This result may emphasize the role of women in the family as both a wife and a mother, who are more motivated to protect themselves than men do; therefore, they showed better self-efficacy and practice in preventing coronavirus than men did.

The results of the present study further showed that occupation was one of the predictors and influential variables on the individuals' practice towards coronavirus preventive behaviors. The results also showed that public employees had higher perceived self-efficacy regarding coronavirus preventive behaviors than self-employed individuals. Yanti (2020) reported that government employees had a better attitude and behavior towards coronavirus prevention than people in other occupations [27]. Kebede's (2020) study also reported that employees adopted more preventive behaviors against the spread of coronavirus than self-employed people did, and occupation was a positive predictor of coronavirus preventive behaviors; this is also consistent with the results of the present study [30].

In the current study, the individuals' educational level showed no significant relationship with their attitudes, practice, and perceived self-efficacy, which is not in line with the results of Yanti's (2020) study [27]. Rather, participants with higher education showed a positive attitude and appropriate behavior towards 'social distance' for prevention. However, in Kebede's (2020) study, participants with higher education had better self-efficacy and practice regarding coronavirus prevention [30]. A study in the US conducted on the evaluation of COVID-19-related knowledge, attitude, and practice among chronically ill adults reported that people with limited health literacy had poorer attitudes towards COVID-19 disease [34]. Another study in Peru showed that people with higher education reported a better understanding of COVID-19 control measures and preventive strategies [35, 36]. The difference between the findings of the above studies and the present study is due to the type of education level categorization in the present study. In terms of education, the participants were divided into two categories: academic and non-academic; due to the type of sampling in the present study, which was online, 75% of the participants included people with academic literacy.

The results also indicated that self-efficacy and attitude were the most important predictors of the individuals' practice of preventive behaviors. In Goni's (2019) study, a significant positive relationship was reported between the attitude and practice of pilgrims in preventing respiratory infections [31]. The results of Carico's (2020) study in the US also showed that perceived self-efficacy was an important factor in reinforcing COVID-19 preventive behaviors, such as practicing social distancing and staying at home [37]. Shahnazi's (2020) study in Golestan also showed that perceived self-efficacy was a predictor of practice in preventing coronavirus [26], which is consistent with the results of the present study.

An individual's attitude can predict his/her behavior. Whether an issue is considered good or bad will affect an individual's practice, and the type of attitude can determine one's practice. Health behaviors are, in fact, affected by both external and internal factors, such as knowledge and awareness, perception, attitude, emotions, and motivation. Discovering a new infectious disease may increase motivational pressures and cause behavioral change [27]. Self-efficacy is also a mediator between knowledge and behavior, and an important prerequisite for behavior change is, in fact, the confidence that an individual has in his/her ability to perform the behavior [38]. Self-efficacy is increasingly associated with health behavior changes and is a strong predictor of health-promoting behaviors. Regarding the coronavirus, increased self-efficacy has been found to cause a decrease in the virus prevalence [33]. Our results, together with the findings of previous studies, suggest that enhancing the individuals' awareness of the disease using educational packages, social media, *etc.*, can lead to behavior changes like sticking to health protocols, *e.g.*, by maintaining physical distance, wearing masks, and participating in preventive programs such as vaccination [39, 40].

One limitation of the present study was the online data collection, which was inevitable because of the pandemic and associated risks for the participants. As a result, random sampling was not feasible, and people with lower literacy, lower economic status, or elderly people with limited or no access to smartphones could not join the study.

## CONCLUSION

The results showed the participants' positive attitude, strong self-efficacy, and proper practices towards coronavirus preventive behaviors. Self-efficacy, attitude, occupation, and marital status were the most important predictors of the participants' practice. Due to males' poorer self-efficacy and practice than females, it is suggested that interventions be designed and implemented to improve the practice of males regarding coronavirus prevention. It is suggested that in planning for the prevention of the COVID-19 disease and other epidemics, priority should be given to the important role of attitude and self-efficacy in promoting preventive behaviors to control the disease and reduce its mortality rate.

## LIST OF ABBREVIATIONS

| **n cov-2019** | = | Novel Coronavirus Disease |
|---|---|---|
| **WHO** | = | World Health Organization |
| **CVR** | = | Content Validity Ratio |
| **CVI** | = | Content Validity Index |

## AUTHORS' CONTRIBUTIONS

H.J., Z.Z., and M.H. contributed to the design of the study, were responsible for the management and retrieval of data, contributed to initial data analysis and interpretation, and drafted the initial manuscript. A.M., R.Sh. and N.M. decided upon the data collection procedures and were responsible for relevant data analysis decisions. H.E.A. conceptualized and designed the study, supervised all stages of the study, critically reviewed and revised the manuscript, and approved the final manuscript for submission. All authors read and approved the final manuscript.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethics Committee of Sabzevar University of Medical Sciences (code: IR.MEDSAB.REC.1399.007).

## HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

## CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

## STANDARDS OF REPORTING

STROBE guidelines were followed.

## AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available in this article.

## FUNDING

## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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## SUPPLEMENTARY MATERIALS

Supplementary material is available on the Publisher's website.

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