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ORIGINAL ARTICLE

Investigating the structures of the health belief model following a covid-19 outbreak in Iran

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ABSTRACT

Due to the novelty of COVID-19 disease and the importance of determining the most important factors related to the health behaviors of people, this study was done to determine the structures of Health Belief Model (HBM) following the COVID-19 outbreak. This was an analytical-cross sectional study conducted in 2020. The statistical population included all users of Iranian social networks, of which 385 people participated in this study. Participants were selected using convenience sampling. The data collection tool was a researcher-made questionnaire. In this study, demographic variables (being a student, age, reporting violations in health protocols (RVHP), marital status, level of education, gender, and the number of children) were independent variables and constructs of the HBM were dependent variables. Data analysis software was SPSS 16. Data were analyzed using Mann-Whitney U and Kruskal-Wallis tests. The mean age of participants was 30.11 years. There was a significant difference between the perceived susceptibility of being a student (p=0.02), age (p=0.01), and RVHP (p=0.005). There was also a significant difference between the perceived severity with marital status, being a student, age (P<0.001), RVHP (p=0.04), and level of education (p=0.01). There was also a significant difference between perceived benefits with marital status (p=0.04), RVHP (p=0.01), and being a student (P<0.001) and perceived barriers with gender and number of children (p=0.03). There was also self-efficacy with RVHP (p=0.005). This study demonstrated the effectiveness of HBM constructs in determining the structures of HBM following the COVID-19 outbreak. Therefore, the HBM seems helpful as a framework for designing interventional programs for improving health behaviors among people during the COVID-19 pandemic.

Key words:
covid-19; coronavirus; infections; health belief model; prevention; Iran

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INTRODUCTION

COVID-19 is an emerging disease that has been named by the World Health Organization as a global concern[1] because it affected almost all countries of the world within a month and became a pandemic disease.[2]

The prevalence of this disease in Iran, which was performed on a population of 6 years and older, the modified prevalence of COVID-19 on 20 August 2020 was estimated at 14.2%, which was equal to 11,958,346, with the modified prevalence of this disease in men, women, urban, rural and over 60 years were 14.6, 13.8, 16.6, 11.7 and 19.4%, respectively. Ardabil, Golestan, and Khuzestan provinces had the highest, and Alborz, Hormozgan, and Kerman provinces had the lowest prevalence.[3]

The transmission mechanism and its prevalence are not yet fully understood. Still, the existing information about other coronaviruses indicates that they are transmitted from human to human through the respiratory fluid.[4-6]

During a study in Iran, Sajjadi and Hartley examined the Iranian government's policy responses during the early months of the COVID-19 epidemic. Inadequate early warning system which is a structural approach to prioritizing treatment over prevention, lack of facilities and human resources, insufficient coordination and management, control regulations for infectious diseases lack comprehensiveness, weak economic resilience amid external sanctions, desensitization of public participation, delay in the government's adoption of a normalization strategy were identified as weaknesses. COVID-19 crisis management, participation of all government units, support of clinical practices mainly by political elites, public charities and communities, employment of universities and specialized research institutes, mobilization of the global health network, and media cooperation as strength points were identified.[7]

During the COVID-19 pandemic , in the Iranian society, the government adopted protection measures and policies for the people to deal with mental health problems. For example, the government delayed water and electricity bills for 3 months, and installment payments were useful for the comfort of patients' families, which reduced psychological stress. Also established specialized treatment centers to treat COVID-19 patients after discharge from leading hospitals to keep COVID-19 patients separate from their families until complete recovery. Online and telephone psychological counseling services were available to provide services to COVID-19 patients and other healthy individuals free of charge through government initiatives .[8]

The best solution is to adopt preventive behaviors that depend on COVID-19 risk perception and play an important role in controlling the prevalence of this disease. [9-11] One of the widely used models to prevent diseases is the health belief model (HBM).[12, 13] According to this model, to choose a health behavior or prevent the risks of diseases, people should feel threatened by the health problem (COVID-19) (perceived susceptibility), perceive the depth of this risk and subsequent severe and serious complications (perceived severity), believe in the effect of the healthy behavior in reducing the threat of disease, and understand its usefulness and applicability in preventing disease (perceived benefits), then regard the barriers to disease prevention behaviors as less costly than its benefits (perceived barriers), then the more positive signs a person receives from their environment, the more likely he/she is to adopt that health behavior (a cue to action), ultimately the more a person believes in his/her ability to adopt preventive behaviors, the more likely he/she is to implement the recommendations (self-

efficacy). [6, 14] HBM is a model used to study behaviors related to preventing or reducing disease prevalence. [6] According to this model, the prevalence of COVID-19 is reduced efficiently in the case of a high level of susceptibility and perceived severity, lower perceived barriers, and adoption of steps to strengthen one's beliefs about self-efficacy (the ability to control one's illness). [14, 15] On the other hand, developing flexible disaster management strategies through public education and cooperation with official and religious organizations increases awareness, knowledge, and skills in reducing biological threats. [16] There are serious challenges faced by authorities to control the epidemic of emerging diseases due to limited scientific knowledge about them, like other diseases. [10, 14] A theoretical model of health beliefs is an essential tool for understanding the factors behind decision-making by assessing what inhibits and motivates people to adopt health-related behavior. HBM is one of the most widely used models for widely recognized conceptual frameworks of health behaviour. The HBM has provided a useful framework for investigating health behaviours and identifying key health beliefs. [17]

Due to the novelty and sudden prevalence of this disease, the limitation of studies was observed to evaluate the preventive behaviors of people, and the importance of determining the most important factors related to the health behaviors of people during the epidemic of the disease. This study was done to determine the structures of HBM following a COVID-19 outbreak among Iranian people. So that, we can identify the most important factors influencing the development of the disease by information about the knowledge and beliefs of individuals using the HBM and for developing preventive strategies in this regard. Therefore, the present study's findings can be useful for planning future interventions and prevention and control of COVID-19.

METHOD

This is a cross-sectional analytical study conducted between April 15 and May 15, 2020, in Iran. The study population included Iranian cyberspace users who used WhatsApp and Telegram social networks. The Cochrane formula was used to calculate the sample size and then the sample size was measured.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left[\frac{z^2 pq}{d^2} - 1\right]}$$

The d value (allowable error) is considered as 0.2 or 0.20 and/or less to have test power greater than 80%; d-value equaled 0.50 in this study. Z or t-value equaled 1.96 with a confidence level of 95% (α=0.05), in the Cochrane formula. To calculate the maximum sample size, p and q values were considered 0.5. Accordingly, the sample size equaled 385 (n=385).

Participants were selected using convenience sampling. Inclusion criteria included cyberspace users, literacy, and willingness to participate in the study. The exclusion criterion also included unwillingness to participate in the study.

The tool used to collect data was a researcher-made questionnaire. The questionnaire was made available to Telegram and WhatsApp users at https://survey.porsline.ir/s/sFIbeRR. The data obtained from the questionnaires were entered in SPSS 16 software. Given that the distribution of the studied variables was not normal after Kolmogorov-Smirnov test, descriptive and inferential statistics including Mann-Whitney test was used to compare differences between two

independent groups and Kruskal-Wallis test was used to compare differences between more than two groups.

Ethical considerations

The ethical considerations of the present study included consent and willingness to complete the questionnaire and confidentiality of the personal characteristics of individuals and their answers. This plan has been approved by Kerman University of Medical Sciences with ethics ID IR.KMU.REC.1399.306.

Data collection

After reviewing similar research [2, 6, 13, 18, 19] and summarizing the information obtained from valid websites (WHO, CDC and behdasht.gov.ir), a questionnaire was developed based on the HBM constructs. The questionnaire consisted of 3 parts, the first part included demographic characteristics of the samples (6 questions), the second part was related to measuring the structures of the health belief model (27 questions), and the third section included information resources available to people about Covid-19 disease, which consisted of 6 options and people chose one or more options in the case of health belief model constructs. The five-point Likert scale was used to score the questions (Strongly agree, Somewhat agree, Disagree, Somewhat disagree, and strongly disagree) and each phrase was assigned a score between 1-5. The constructs of perceived susceptibility, perceived severity and perceived benefits each included 6 questions with scores ranging from 6 to 30. Perceived barriers included 5 questions with a score range between 5-25 and self-efficacy included 4 questions with a score range of 4-20.

Content Validity

Content validity answers questions such as: does the designed tool includes all the main aspects of the concept of measurement? Does the tool item measure what it should? Was the validity of qualitative content, such as grammar and use of appropriate words consulted with the panel of experts ? (Including 4 health education & promotion specialists and 3 Epidemiologists). After collecting expert evaluations and consultation with the members of the research team, the necessary changes in the tool were made.

Based on the number of experts who evaluated the questions, the minimum acceptable Content Validity Ratio (CVR) value is determined based on the Laosche table. Questions that the amount of CVR calculated for them is less than the desired amount according to the number of evaluators, which should be excluded from the questionnaire. Given the number of evaluators in our study was 7, the Laosche number is 0.99. Questions whose CVR value was less than 0.99 were excluded from the test and thus scored 27 items higher than Laosche's number (0.99). In order to calculate the content validity according to the formula CVI = $\frac{n}{N}$ the number of experts agreeing with the first two options of each criterion for each item was calculated and divided by the total number of experts i.e. 7, and then, CVI of each item was determined. The results showed that all 27 items had CVI scores higher than 0.79 and were considered appropriate. The value of validity for all constructs was 0.89 which was calculated by averaging the item of each construct. Finally, the value of content validity of perceived susceptibility was 0.86, 0.87 for perceived severity, 0.92 for perceived benefits, 0.89 for perceived barriers and 0.91 for self-efficacy.

Reliability

The reliability of the tool was measured using Cronbach's alpha method. After removing 2 questions in the areas of perceived susceptibility and perceived severity and 1 question in the areas of perceived barriers and self-efficacy, the Cronbach's alpha for each area was obtained as the following: perceived

susceptibility (0.83), perceived severity (0.72), perceived benefits (0.81), perceived barriers (0.75 and self-efficacy (0.86).
Regarding the estimation of the sample size for factor analysis, Habibi has recommended that 5 or more samples be considered for each item, while others have generally considered a sample of at least 200 people to be sufficient [20]. Finally, considering that our instrument had 27 main items, 5 samples were considered for each item and therefore the required sample size was estimated at 135 people, while in the present study, 200 people were included in the study. Regarding the fit indices in factor analysis, it should be said that for the chi-square index with degrees of freedom, values less than 5 are desirable, which in the present study was equal to 2.39. Also NFI (0.92), IFI (0.95) and CFI (0.95), SRMR (0.075) and RMSEA 0.068 were obtained.

RESULTS

A total of 385 people participated in the present study, of whom 236 (61.3%) were males and 227 (59%) were students. The age range of participants was between 13-71 years with a mean age of 30.11 years. Most people had a bachelor's degree 127 (33%).

A total of 244 people (63.4%) registered on the salamat.gov.ir website. Mean and standard deviation structures of health belief model are given in Table 1.

Table 1: Mean and standard deviation of health belief model

Variable	Mean ± SD	The lowest score	The highest score
Perceived susceptibility	34.61±3.5	23	40
Perceived severity	27.07±2.9	10	30
Perceived benefits	28.53±2.4	18	30
Perceived barriers	17.52±4	5	25
Self-efficacy	16.9±2.6	8	20

Analysis of data about investigating the relationship between perceived susceptibility and perceived severity with demographic variables in the prevention and control of Covid-19 disease indicated that perceived susceptibility differed in people under 25 years of age from those people aged 25 to 40 years (p = 0.024) and over 40 years old (P = 0.018). There was a significant relationship between the perceived susceptibility to being a student, registration on the salamat.gov.ir website, age group, reporting health protocols, and willingness to cooperate with the University of Medical Sciences about Coronavirus. Perceived severity differed in people under 25 years of age with those aged 25 to 40 years (p = 0.016) and over 40 years (P <0.001). Perceived severity in people with postgraduate education is different from people with associate degree (p = 0.016), bachelor's degree (p = 0.001) and PHD (P = 0.026). The perceived severity was also significantly related to marital status, RVHP, and being a student (Table 2).

Table 2: Investigating the relationship between perceived susceptibility and perceived severity with demographic variables in the prevention and control of Covid-19 disease

Structures Variable		**perceived susceptibility**		**perceived severity**	
		Mean±SD	P value	Mean±SD	**P value**
*Gender	man	27.93 (0.16)	0.156	27.13 (0.18)	**0.845**
	female	27.55 (0.24)		26.96 (0.27)	
**Education	Diploma and sub-diploma	27.45 (0.28)	0.275	26.31 (0.32)	**0.016**
	Associate Degree	27.81 (0.39)		27.88 (0.33)	
	Bachelor	28.03 (0.21)		27.47 (0.25)	
	Master of Science	28.08 (0.27)		26.78 (0.42)	
	Doctorate and specialty	27.35 (0.46)		27.25 (0.33)	
*Marriage status	Single	27.75 (0.17)	0.352	26.74 (0.19)	**<0.001**
	Married	27.83 (0.21)		27.46 (0.25)	
**Number of children in married people	0	27.05 (0.48)	0.135	26.83 (0.51)	**0.256**
	1	28.00 (0.34)		27.96 (0.36)	
	2	27.98 (0.38)		27.45 (0.49)	
	≤3	28.45 (0.50)		27.65 (0.62)	
*being a student	Yes	27.62 (0.17)	0.025	26.68 (0.19)	**<0.001**
	No	27.01 (0.21)		27.60 (0.24)	
*registration in salamat.gov.ir website	Yes	28.11 (0.15)	<0.001	27.11 (0.20)	**0.383**
	No	27.22 (0.25)		26.99 (0.24)	
**age	<25	27.55 (0.19)	0.017	26.63 (0.20)	**<0.001**
	25-40	27.96 (0.25)		27.29 (0.27)	
	>40	28.09 (0.31)		27.82 (0.37)	
*reporting violation in health protocols	Yes	28.04 (0.15)	0.005	27.23 (0.19)	**0.04**
	No	27.25 (0.27)		26.73 (0.26)	
*Collaborating with the University of Medical Sciences about Coronavirus	Yes	28.11 (0.28)	0.104	27.06 (0.41)	**0.427**
	No	27.69 (0.15)		27.07 (0.16)	
*willingness to cooperate with the University of Medical Sciences about Coronavirus	Yes	27.93 (0.16)	0.028	27.00 (0.19)	**0.816**
	No	27.45 (0.24)		27.21 (0.25)	

* *Mann-Whitney U test*
** *Kruskal-Wallis test*

The perceived benefits differed in people under 25 years and over 40 years (p = 0.006). There was a significant relationship between perceived benefits with marital status, registration in the salamat.gov.ir website, RVHP, and being a student. The distribution of perceived benefits in childless married individuals was different from those with one child (p= 0.046), two children (p = 0.049), and three or more children (p = 0.007). Results demonstrated a significant relationship between perceived barriers and gender (Table 3).

Table 3: Investigating the relationship between perceived benefits and perceived barriers with demographic variables in the prevention and control of Covid-19 disease

Structures		**perceived benefits**		**perceived barriers**	
Variable		Mean±SD	P value	Mean±SD	**P value**
*Gender	man	28.67 (0.15)	0.252	17.93 (0.25)	**0.038**
	female	28.37 (0.22)		17.04 (0.35)	
**Education	Diploma and sub-diploma	28.33 (0.25)	0.257	17.38 (0.44)	**0.646**
	Associate Degree	28.78 (0.34)		16.72 (0.58)	
	Bachelor	28.73 (0.21)		17.76 (0.38)	
	Master of Science	28.75 (0.28)		17.49 (0.46)	
	Doctorate and specialty	28.12 (0.37)		18.12 (0.51)	
*Marriage status	Single	28.42 (0.17)	0.044	17.72 (0.27)	**0.367**
	Married	28.71 (0.19)		17.42 (0.32)	
**Number of children in married people	0	28.27 (0.46)	0.432	15.90 (0.59)	**0.038**
	1	28.78 (0.31)		17.62 (0.65)	
	2	28.77 (0.33)		17.71 (0.52)	
	≤3	29.20 (0.33)		18.95 (0.83)	
*being a student	Yes	28.28 (0.17)	<0.001	17.69 (0.26)	**0.59**
	No	28.92 (0.17)		17.44 (0.33)	
*registration in salamat.gov.ir website	Yes	28.77 (0.15)	0.012	17.87 (0.26)	**0.122**
	No	28.18 (0.22)		17.10 (0.34)	
**age	<25	28.38 (0.18)	0.013	17.60 (0.28)	**0.456**
	25-40	28.62 (0.23)		17.23 (0.38)	
	>40	28.89 (0.27)		18.08 (0.49)	
*reporting violation in health protocols	Yes	28.80 (0.14)	<0.001	18.30 (0.25)	**0.122**
	No	28.04 (0.24)		16.11 (0.33)	
*Collaborating with the University of Medical Sciences about Coronavirus	Yes	28.74 (0.28)	0.145	17.65 (0.46)	**0.698**
	No	28.50 (0.14)		17.57 (0.23)	
*willingness to cooperate with the University of Medical Sciences about Coronavirus	Yes	28.68 (0.14)	0.335	17.79 (0.25)	**0.106**
	No	28.27 (0.24)		17.12 (0.37)	

** Mann-Whitney U test*
*** Kruskal-Wallis test*

The self-efficacy variable showed a significant relationship with registration on the salamat.gov.ir website and the report of violation of health protocols (Table 4).

Table 4. Investigating the relationship between self-efficacy and demographic variables in the prevention and control of Covid-19 disease

Variable		Mean±SD	P value
*Gender	man	17.08 (0.17)	**0.672**
	female	16.99 (0.23)	
**Education	Diploma and sub-diploma	16.72 (0.30)	**0.502**
	Associate Degree	16.69 (0.46)	
	Bachelor	17.16 (0.23)	
	Master of Science	17.36 (0.29)	
	Doctorate and specialty	17.09 (0.36)	
*Marriage status	Single	16.92 (0.18)	**0.296**
	Married	17.20 (0.21)	
**Number of children in married people	0	16.54 (0.46)	**0.217**
	1	17.12 (0.39)	
	2	17.39 (0.33)	
	≤3	17.95 (0.51)	
*being a student	Yes	16.88 (0.18)	**0.108**
	No	17.27 (0.20)	
*registration in salamat.gov.ir website	Yes	17.23 (0.17)	**0.046**
	No	16.74 (0.22)	
**age	<25	16.85 (0.19)	**0.110**
	25-40	17.06 (0.25)	
	>40	17.51 (0.30)	
*reporting violation in health protocols	Yes	17.31 (0.15)	**0.005**
	No	16.50 (0.26)	
*Collaborating with the University of Medical Sciences about Coronavirus	Yes	17.22 (0.32)	**0.224**
	No	17.00 (0.15)	
*willingness to cooperate with the University of Medical Sciences about Coronavirus	Yes	17.12 (0.16)	**0.359**
	No	16.89 (0.24)	

** Mann-Whitney U test*
*** Kruskal-Wallis test*

With regards to priority and trust in information sources about COVID-19, the highest frequency belonged to radio and television (N=160 people) and the lowest frequency to family, relatives, and friends (N=3 people), and 253 people referred to international satellite channels as the sixth priority or in other words the last priority.

DISCUSSION

The present study showed that individuals had a high perceived susceptibility and perceived severity, consistent with a similar study conducted by King in Hong Kong. [15] The findings of Mirhosini et al., Barakat et al., and Jose et al. also suggest that higher perceived sensitivity and perceived severity were factors influencing health behaviors.[2, 12, 21] This compared with the findings of Mahindaratan's study showed that perceived sensitivity and perceived severity have little effect on preventive measures.[17] The reason could be that the respondents in the sample population might have perceived a less or more similar level of susceptibility and severity towards COVID-19, in other words, the sensitivity

and severity perceived in the sample population prevailed in a low variation.

Higher levels of the above variables were reported in individuals aged above 40 years than in other age groups, which may be attributed to the fact that the prevalence of chronic diseases such as diabetes, hypertension, and chronic lung disease is higher in people aged over 40 years than those with lower age range. [22] Since COVID-19 is more severe in people with chronic underlying diseases, it thus seems logical to observe higher perceived susceptibility and severity in older people than in others. In this regard, in a study on the risk factors of COVID-19 using HBM, Costa showed that people with autoimmune diseases and those affecting the immune system, including allergic disease and rheumatism, had a higher perceived susceptibility than others. [22] In another study, perceived susceptibility and perceived severity modify behaviors so that an individual is more likely to take healthy behaviors seriously to avoid Covid-19. [15, 21] Perceived susceptibility and severity were also higher in non-students than students. This rate was also higher in married people than in single ones. A study in the United States also showed a significant relationship between risk perception and marriage. [23] The degree of perceived severity was higher in people with postgraduate education than in those with other levels of study. In Costa's study, people with lower educational levels were more concerned about possible symptoms, and their perceived severity was higher than those with other levels of study. [22] However, people with higher perceived severity are more likely to seek preventive behaviors and medical services [2, 24], which is consistent with the present study. According to the results, people with higher perceived susceptibility and severity reported violations of health protocols more frequently. Therefore, it can be concluded that if people have a higher level of perceived susceptibility and perceived severity, they are more willing to follow health standards for infectious diseases.

Concerning perceived benefits, the results showed that individuals had a high understanding of the perceived benefits of COVID-19 prevention behaviors, which is consistent with a similar study conducted on this disease using another tool in Sudan.[18]

Shahnazi et al. also expressed a positive relationship between perceived benefits and COVID-19 prevention behaviors.[25] Various studies have mentioned perceived benefits as factors influencing COVID-19 prevention behaviors.[17, 26, 27] The results of our study were not consistent with the study of Tadesse et al. In their research, most people reported low perceived benefits. [28]This discrepancy might be due to the type of tool used and the difference in the study population.

Precautionary behaviors not only are beneficial to oneself but also can contribute to the community health as a whole because COVID-19 is highly infectious. [26, 27]

Married people had higher perceived benefits than single people, and higher in the group over 40 years than in other age groups. It may be said that older people have higher perceived benefits of COVID-19 preventive behaviors because if they become infected, they may be more likely to develop a severe form of the disease. Also, the perceived benefits were higher in non-students than students. Higher perceived benefits were also seen in people who reported violations of health protocols and registered on the salamat.gov.ir website.

The lowest score belonged to perceived barriers in the present study, which indicates that people had high levels of perceived barriers to COVID-19 preventive behaviors. Also, higher levels of perceived barriers were reported by men

than women, which is consistent with the research conducted by Nasir et al. [18] Higher levels of perceived barriers were reported by people having more children which may be because following hygiene recommendations (such as buying masks, gloves, and disinfectants) in a large family imposes huge costs. On the other hand, Iranian men are the main source of financial support for family members, so it seems logical to observe higher perceived barriers in men than in women. In line with our study, Mahindarathne's findings also indicate that perceived barriers significantly negatively impact COVID-19 preventive behaviors. [17] A study in Egypt also mentioned environmental barriers, including the lack of masks, disinfectants, and alcohol pads as barriers to COVID-19 disease prevention behaviors. [2] The results of a study by Jose et al. were not in line with the research during their study. People mostly cited intellectual barriers as a barrier to performing disease-preventing behaviors.[21]

Studies have identified several barriers to preventative behaviors for COVID-19 disease.

Serious preventative behaviors include encouraging people to stay home during the Covid-19 epidemic. Staying at home has numerous risks, such as poorer mental health [27], loneliness[29], economic loss[30], boredom, and intimate partner violence. [31]

Ultimately, if individuals perceive these risks as outweighing the benefits, they may not perform appropriate preventative behaviors. Therefore, it is very important to pay attention to the potential benefits of preventive behaviors for people when designing programs and interventions.

Self-efficacy is one of the most important constructs of the HBM because it does not matter how strongly preventive measures are taken to control epidemics. The important point, however, is that people believe in choosing certain behaviors to limit the threat. [25] Participants of the present study had moderate self-efficacy, which means that people have a moderate level of self-efficacy to follow preventive health guidelines and measures, including social distancing and hand hygiene. According to the results of a study by Tadesse et al., 52.4% of the respondents had a high level of self-efficacy in prevention practice with COVID-19 disease. [28] The results showed a positive relationship between perceived self-efficacy and perceived severity in individuals and make people carry out preventive behaviors more frequently [24], which justifies higher perceived self-efficacy in participants who reported violations in health protocols and registered on the salamat.gov.ir website.

One of the limitations of the present study was the study population, which consisted only of cyberspace users. Another limitation was collecting information in a self-reporting manner, which certainly limits the generalization of research findings. This study also limits the assessment of people who do not have a smartphone, such as the elderly or people with low economic status.

RECOMMENDATIONS

The study of people's preventive behaviour using HBM provides a practical and very useful input for designing effective preventive behaviour for people against COVID-19. In Iranian society and other countries with poor socioeconomic status, due to the people's economic problems, it is suggested that masks, disinfectants, and gloves be provided to the people for free or at a low price. Also, in such epidemics that encourage people to stay at home, the necessary incentives, including livelihood subsidies, should be provided to people with low economic status. Our study was not representative of the entire population due to limitations. Future research should use multiple

methods to collect data to cover all segments of society.

CONCLUSION

The HBM-based tool could appropriately investigate the model constructs regarding COVID-19 and its related factors. Based on the results of the study, it is suggested to put more focus on removing perceived barriers and improving self-efficacy to prevent COVID-19 in the Iranian population in future planning. Therefore, the HBM model seems to be helpful as a framework for designing interventional programs for improving health behaviors among people during the COVID-19 pandemic.

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CONFLICT OF INTEREST

The author declares that there are no conflicts of interest to report.

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