

# Assessing the risk perception of COVID-19 among non-infected people attending emergency departments of selected hospitals in western Iran

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**Abstract:** **Objective:** It is important to know people's perceptions of the risks related to coronavirus disease 2019 (COVID-19) for controlling the pandemic. This study aims to assess the risk perception of COVID-19 among non-infected people referred to emergency departments (ED) of hospitals in Khorramabad, Iran during the pandemic and its related demographic factors.

**Methods:** This is descriptive/analytical study with a cross-sectional design. Participants were 380 adults referred to the ED of four hospitals (Shohadaye Ashayer, Shahid Rahimi, Asali, and Shahid Madani) in Khorramabad city in 2021 who were not infected by COVID-19. For data collection, the risk perception of COVID-19 questionnaire was used. Data were described using mean, standard deviation, frequency, and percentage. Chi-squared test was used in SPSS v.22 software to find the related demographic factors.

**Results:** It was found that 5 people (1.3%) had a moderate perception, 206 (54.2%) had good perception, and 169 (44.5%) had high perception. No one had poor risk perception. According to them, "own knowledge and experience" was the most effective factor in preventing COVID-19 followed by "the advice of experts in the media" and "the advice of friends and family". Chi-squared test results showed a significant difference in risk perception among people in terms of age ( $P=0.002$ ) and marital status ( $P=0.001$ ); the age group <25 years and single people had lower risk perceptions.

**Conclusion:** The risk perception of COVID-19 in people referred to the EDs in western Iran is at good level but is not high. It is necessary to improve their risk perception by education and increasing awareness on social media.

**Keywords:** Coronavirus; Infectious Diseases; Risk Factors

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## 1. Introduction

The novel coronavirus disease 2019 (COVID-19) that is caused by severe acute respiratory syndrome coronavirus 2, has affected people's physical and mental health and their economic and social aspects. It is the most severe global health challenge after the Spanish flu (1) such that it was declared as a global public health emergency by the world health organization (WHO). It was emerged in Wuhan, China, in December 2019 and rapidly spread across many other countries including Iran. It is transmitted through air or by direct contact, and its incubation period is 6.4 days, ranging from 2.1 days to 11.1 days (2,3). Fever is its most common symptom, followed by dry cough. The daily total number of COVID-19 cases was high globally, but for its new variants, there has been a declining trend in most of countries (3). Lack of medical supplies and services, low general health, and low efficacy of diagnostic tests can facilitate the spread of the virus. Different strategies have been proposed for its

prevention and control including social distancing, frequent hand-washing, no face touching with unwashed hands, frequent use of hand sanitizers, no handshaking and kissing, no direct contacts with sick people who have symptoms of respiratory infections, and wearing masks (4).

Risk perception is crucial for modifying the epidemic evolution, and can affect the number of new cases. It refers to people's judgments and assessments of hazards when being exposed to them (5). It has an important role in assessing people's perceptions of COVID-19 and their desire to have cooperation in implementing preventive measures. Risk perception of COVID-19 can be influenced by several factors such as experience of the virus, personal and social values, trust in scientists, government, and medical team, knowledge of measures adopted by the government, and personal and collective efficacy (6). Samadipour and Ghardashi (7) found that religious/cultural, cognitive, emotional, social, and political factors can affect the risk perception of COVID-19 in Iran.

He et al. (8) in a study in China reported that the risk perception is impacted by the demographic characteristics (income, marital status, living arrangement, and age). Alqahtani et al. (9) in a study in Saudi Arabia also found that many individual, social, and cultural factors can affect risk perception of COVID-19. The perceptions can trigger precautionary behaviors to deny the risks or react with caution. In Mertens et al.'s study (10) in the Netherlands, health anxiety, regular social media use, and fear of infection in loved ones were reported as the predictors of the risk perception of COVID-19. Rubaltelli et al. (11) reported that the impact of risk perception on protective behaviors against COVID-19 can be moderated by emotion regulation.

Many studies have been conducted in different countries to investigate the risk perceptions of COVID-19. For example, He et al. (8), Ding et al. (12), and Zhong et al. (13) evaluated the risk perception of COVID-19 in China and reported the high-risk perception in people. Shahin and Hussein (4) investigated risk perceptions regarding the COVID-19 outbreak among the general population of Saudi Arabia, Egypt, and Jordan. Their results showed that the perception of COVID-19 seriousness was significantly higher. Jahangiry et al. (14) assessed risk perception of COVID-19 in the general population of Iran. Their results revealed significant differences in protective behaviors and perceived treatment options in different age and sex groups. Taghrir et al. (15) assessed risk perception of COVID-19 in Iranian medical students. Their risk perception was reported moderate. Schneider et al. (16) conducted five cross-sectional studies for assessing public risk perception of COVID-19 and its relation to protective measures in the UK. Risk perception varied between different surveyed time points, and had a significant relationship with the adoption of protective measures such as wearing face masks or social distancing. Attema et al. (17) evaluated risk perceptions about COVID-19 in France. Their self-assessments were performed two weeks after lockdown started and two weeks before lockdown ended. The risk perceptions were rather high in absolute terms and were increased between the two surveyed times.

The preventive behaviors are determined not only by the awareness of subjective harms, but also by evaluating beliefs and judgments about these harms (5). Understanding risk perceptions of COVID-19 in people and their practices and behaviors are important for controlling the pandemic. Some individuals strictly adhere to the COVID-19-related restrictions, while others ignore them. Experiences in controlling previous infections such as severe acute respiratory syndrome (SARS), H1N1 influenza A and swine flu have shown that the adopted strategies and the obtained results are largely influenced by understanding the risk perception of residents (18,19). Due to the importance of risk perception during the COVID-19 pandemic, especially in Iran where the numbers of confirmed cases and deaths are increasing (at the time of current study), and considering that no study has been conducted on assessing the risk perception of people in

western Iran, the present study aims to survey the risk perception of people (with no COVID-19 infection) referred to emergency departments (ED) of hospitals in Khorramabad city located in western Iran and investigate the factors affecting their risk perception.

## 2. Methods

### 2.1. Study design and population

This is a descriptive study with a cross-sectional design. The study population consists of all people referred to the EDs of four hospitals in Khorramabad, Iran (Shohadaye Ashayer, Shahid Rahimi, Asali, and Shahid Madani) in June 2021 who had no COVID-19. The sample size was obtained 384 using the related formula considering 95% confidence interval (CI),  $Z_{1-\alpha/2}=1.96$ ,  $P=0.50$ , and  $d=0.05$ . For sampling, a multi-stage cluster sampling method was used where the EDs of hospitals was considered as a cluster and available people were selected as study samples from each department based on the inclusion criteria (consent to participate, no COVID-19, reading and writing literacy, no mental illness, ability to use online social media, and stable conditions in case of being patient) and exclusion criteria (unwillingness to continue participation and returning incomplete questionnaires).

### 2.2. Data collection

For data collection, a demographic form (surveying age, education, sex, and occupation) and the risk perception of COVID-19 questionnaire in Persian developed by Samadipour and Ghardashi (7) were used. It has 26 items measuring the risk perception in 5 areas of religious/cultural (6 items), political (5 items), social (4 items), cognitive (4 items), and emotional (6 items). The items 1-18 are rated on a 5-point Likert scale (strongly disagree, somewhat disagree, no idea, somewhat agree, strongly agree). Item 19 has 9 options, and items 20-26 are rated on a 5-point Likert scale from 1 to 5 (never, low, moderate, high and very high). Items 3, 7, 10, 16, and 17 have reverse scoring. To determine the risk perception level, the ratio of the subscale score to the total score was calculated and multiplied by 100. The scores were categorized based on 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and >75<sup>th</sup> percentiles as poor, moderate, good, and high-risk perception. The reliability of this questionnaire using Cronbach's alpha coefficient (0.78) and its validity using KMO test (0.834) have already been confirmed by Samadipour and Ghardashi (7). After obtaining permissions from the hospitals, a written informed consent from the participants, and ethical approval from Lorestan University of Medical Sciences, questionnaire were distributed and completed by the participants. Of 384 questionnaires, 380 returned completed.

### 2.3. Statistical analysis

Collected data were analyzed in SPSS v.22 software. Data were described using mean, standard deviation, frequency, and percentage. Chi-squared test was used to assess the dif-

**Table 1** Characteristics of the study participants (n=380)

Characteristics		N	%
Sex	Male	203	83.4
	Female	177	46.6
Marital status	Single	142	37.4
	Married	238	62.6
Age (year)	<25	84	22.1
	25-35	145	38.2
	36-45	95	25
	>45	56	14.7
Education	Lower than high school education	60	15.8
	Diploma	120	31.6
	Associate degree	28	7.3
	Bachelor's degree	120	31.6
	Master's degree and higher	52	13.7
Occupation	Unemployed	39	10.3
	Office employee	45	11.8
	Employed in the private sector	25	6.6
	Employed in the health sector	32	8.4
	Employed in the cultural sector	31	8.2
	College student	27	7.1
	Self-employed	72	18.9
	Housekeeper	68	17.9
	Other	41	10.8

ference in risk perception scores in terms of demographic factors.

### 2.4. Ethical consideration

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The ethical approval was obtained from the Research Ethics Committee of Lorestan University of Medical Sciences (Code: IR.LUMS.REC.1400.010). Informed consent was obtained from all individual participants included in the study.

## 3. Results

### 3.1. Characteristics of participants

The mean age of participants was  $33.8 \pm 11.60$  years ranged from 14 to 66 years. Of 380 participants, 203 (53.4%) were male and 177 (46.6%) were female. Most of them were married (n=238, 62.6%) and self-employed (n=72, 18.9%) with a bachelor's degree (n=120, 31.6%) (Table 1). Results showed that 5 people (1.3%) had a moderate risk perception, 206 (54.2%) had good risk perception, and 169 (44.5%) had high risk perception. No one had poor risk perception.

### 3.2. Risk perception of COVID-19 in participants

Regarding their answers to the questions, results showed that among the items related to religious/cultural subscale (items 1-6), most of subjects were agreed with the items 1, 2, 5, and 6. For the item 3 stating "no need to do anything; by relying

on god, we can cope with COVID-19", most of them (72.4%) answered "strongly disagree". They answered, "no idea" to the item 4 stating "clergymen and cultural authorities agree with scientists on the risk of COVID-19". Regarding their answers to the items related to political subscale (items 7-11), results showed that most of subjects were agreed with the items 8, 9 and 11. Most of them answered, "strongly disagree" to the item 7 stating "control of COVID-19 outbreak is not my job; it is the job of others (scientists, officials, etc.)" (54.7%) and item 10 stating "healthcare managers and staff exaggerate the dangers of COVID-19" (26.8%). Most of subjects agreed with all items related to social subscale (items 12-15). Regarding their answers to the items related to cognitive subscale (items 16-19), most of subjects agreed with item 18. In the item 19 stating "which of the following factors are mostly effective in preventing COVID-19?" most of them selected "own knowledge and experience" (87%) followed by "the advice of experts" (86.3%) and "the advice of friends and family" (76.8%). Finally, regarding their answers to the items related to emotional subscale (items 20-26), most of subjects answered "very high" to the questions about washing hands (34.2%), wearing a mask outdoor (61.6%), not gathering in public places (30.3%), and not traveling (36.7%) which were items 20, 22, 23, and 26. For the items 21 and 25 that were related to disinfecting indoor surfaces and not visiting relatives, most of subjects answered "moderate" (31.3% and 27.1%, respectively).

### 3.3. Factors related to the risk perception of COVID-19

In terms of demographic factors, results presented in table 2 showed that most of subjects in the age group <25 years had lower risk perception (3.6% with moderate level, 60.7% with good level, and 35.7% with high level) compared to the age groups 25-35, 36-45 and >45 years, and this difference was statistically significant according to the results of Chi-squared test (P=0.002). The risk perception of most single subjects was lower (n=45, 31.7%) compared to married subjects (n=124, 52.1%) and this difference was statistically significant (P=0.001). There was no significant difference in risk perception of COVID-19 between males and females (P=0.136) and among those with different educational levels (P=0.911) and occupations (P=0.508).

## 4. Discussion

The purpose of this study was to assess the risk perception of COVID-19 people in EDs of hospitals. The results of this study revealed that the majority of them strongly perceived that: by having tendency and belief, they can prevent and defeat COVID-19 (53.2% and 37.2%) and by only relying on god they cannot cope with COVID-19 (72.4%). They had no idea whether clergymen and cultural authorities agree with scientists on the risk of COVID-19 (31.1%) and whether the preventive measures are according to Islamic laws (34.7%). These perceptions were related to the religious/cultural di-

**Table 2** Risk perception levels of participants based on demographic factors

Characteristics		Risk perception, n (%)				Sig.*
		Poor	Moderate	Good	High	
Sex	Male	0 (0)	4 (2)	117 (57.6)	82 (4.04)	0.136
	Female	0 (0)	1 (0.6)	89 (50.3)	87 (49.2)	
Marital status	Single	0 (0)	1 (0.7)	96 (67.6)	45 (31.7)	0.001
	Married	0 (0)	4 (1.7)	110 (46.2)	124 (52.1)	
Age (year)	<25	0 (0)	3 (3.6)	51 (60.7)	30 (35.7)	0.002
	25-35	0 (0)	0 (0)	90 (62.1)	55 (37.9)	
	36-45	0 (0)	2 (2.1)	37 (38.9)	56 (58.9)	
	>45	0 (0)	0 (0)	28 (50)	28 (50)	
Education	Lower than high school education	0 (0)	1 (1.7)	33 (55)	26 (43.3)	0.911
	Diploma	0 (0)	3 (2.5)	64 (53.3)	53 (44.2)	
	Associate degree	0 (0)	0 (0)	15 (53.6)	13 (46.4)	
	Bachelor's degree	0 (0)	1 (0.8)	63 (52.5)	56 (46.7)	
	Master's degree and higher	0 (0)	0 (0)	31 (59.6)	21 (40.4)	
Occupation	Unemployed	0 (0)	0 (0)	24 (61.5)	15 (38.5)	0.508
	Office employee	0 (0)	0 (0)	20 (44.4)	25 (55.6)	
	Employed in the private sector	0 (0)	0 (0)	14 (56)	11 (44)	
	Employed in the health sector	0 (0)	0 (0)	18 (56.3)	14 (43.8)	
	Employed in the cultural sector	0 (0)	0 (0)	18 (58.1)	13 (41.9)	
	College student	0 (0)	1 (3.7)	16 (59.3)	10 (37)	
	Self-employed	0 (0)	2 (2.8)	44 (61.1)	26 (36.1)	
	Housekeeper	0 (0)	1 (1.5)	28 (41.2)	39 (57.4)	
	Other	0 (0)	1 (2.4)	24 (58.5)	16 (39)	

\*: Chi-squared test

mension of risk perception. Most of participants were completely aware that they also have a role in controlling COVID-19 outbreak (54.7%) and healthcare managers and staff do not exaggerate the dangers of COVID-19 (26.8%). They somewhat agreed that executive authorities are doing their best to control COVID-19 pandemic (29.7%); the measures of the authorities are accompanied by giving hope and encouraging people to fight against COVID-19 (34.2%); and authorities' warnings are commensurate with the severity of COVID-19 pandemic (39.2%). These perceptions were related to the political dimension of risk perception. Moreover, the majority of them were completely aware that: by staying at home as a precautionary social distancing measure they can break the chain of COVID-19 transmission (41.6%) and it is the duty of all of them to help control COVID-19 infection (80%). They somewhat agreed that informing about preventive measures in social media, television (TV), and newspapers have been impressive (40.8%) and public campaigns in social media, TV, and newspapers have worked well to prevent COVID-19 (41.6%). These perceptions were related to the social dimension of risk perception. Furthermore, majority of participants strongly perceived that: the risk of COVID-19 is high (54.7%); they are not strong enough against COVID-19 (64.2%), and the disease is dangerous enough to kill the patient (26.8%). According to them, own knowledge and experience was the most effective factor in preventing COVID-19 followed by the advice of experts in the national media and the advice of friends and family.

Hence, raising awareness and understanding of COVID-19 is one of the main methods to prevent and control the pandemic in Iran.

Washing hands, wearing a mask outdoor, not gathering in public places, and not traveling were perceived highly by most of them, while disinfecting indoor surfaces and not visiting relatives were perceived moderately.

Most of participants in our study had good risk perception (54.2%), but it was not high. In the studies by Ding et al., He et al., and Zhong et al. in china, Shahin and Hussein in Saudi Arabia, Egypt, and Jordan, and Attema et al. in France, the risk perception of people was reported high (4,8,12,13,17). In Taghrir et al.'s study (15) in Iran, the risk perception of COVID-19 in medical students was at moderate level. These discrepancies may be related to difference in the study population, study area, economic/political status of the country, or assessment tools.

People with higher risk perception are more likely to make rational decisions and have more self-care behaviors, resulting in less harm. In our study, those who were single and young (<25 years) had significantly lower risk perception. This indicates that marital status and age were the factors affecting the risk perception of COVID-19 in those referred to EDs during the pandemic. This is consistent with the results of He et al. (8) in China. The risk perception between males and females and among those with different educational levels and occupations were not significantly different. In Jahangiry et al.'s study, (14), higher scores were reported in women than in men regarding perceived self-efficacy and defensive responses (reactance, and avoidance), while men had higher perceived susceptibility.

Abdelrahman (20) in a study on the risk perception during the COVID-19 pandemic in Arab residents of Qatar, found that women had higher adherence to social distancing rule



than men. The results of these two studies are not consistent with our results in terms of gender. In our study, women had better perceptions than men, but the difference was not statistically significant. This discrepancy may be related to difference in the study population and the assessment tool. Jahangiry et al. used a self-designed questionnaire based on the extended parallel process model, while Abdelrahman used an online questionnaire assessing social distancing, personal hygiene, and dangers of COVID-19, only.

## 5. Limitations

There were some limitations and challenges in this study including low number of samples, using a self-report tool which can affect the responses. Since this study was conducted in the emergency department of a hospital in one city of Iran (Khorramabad), generalization of the results to all departments of hospitals in Iran should be done with caution. Moreover, it should be noted that the participants in our study had no COVID-19 infection. More studies should be conducted on the risk perception in COVID-19 patients in Iran using larger sample size (including illiterate samples) in other departments of hospitals and cities. Moreover, a further study is recommended to assess their perception of COVID-19 vaccines.

## 6. Conclusion

The risk perception of COVID-19 in people referred to the EDs in western Iran is at good level but is not high. It is necessary to improve their risk perception by education and increasing awareness on social media. Attention should be paid to those with low risk perception due to being at higher risk of infection with COVID-19.

## 7. Declarations

### 7.1. Acknowledgement

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### 7.2. Authors' contribution

Conceptualization and data collection: HG; Data analysis and supervision: PB; Writing initial draft and project administration: FM. All authors have read and approved the manuscript.

### 7.3. Conflict of interest

The authors declare that they have no conflict of interest.

### 7.4. Funding

None.

### 7.5. Consent for publication

Not applicable.

## 7.6. Availability of data and materials

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

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