Acta Scientiarum
http://periodicos.uem.br/ojs
ISSN on-line: 1807-8648
Doi: 10.4025/actascihealthsci.v46i1.65347

Community responses during early phase of the COVID-19 epidemic in the Razavi Khorasan province of Iran: a cross-sectional study

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ABSTRACT. Community responses are important for the management of outbreaks during the early stages,when preventive interventions are the major options. Therefore, this study aims to investigate the behavioral responses of the community during the early phase of the A cross-sectional online survey was conducted after the confirmed COVID-19 in Iran. The research instrument was a demographic and risk perception questionnaire, and anxiety was assessed using the 7-item GAD scale. COVID-19 epidemic in Razavi Khorasan province of Iran. The population of the study consist of 500 residents of Razavi Khorasan who were randomly surveyed. The data was analyzed using the SPSS statistical version (V.20). The mean of age participants was 31.9 ± 11.9 years. The mean GAD-7 scores were 6.4 ± 5.2 and 92.4% of participants had moderate or severe anxiety (GAD-7 score ⩾10). Many of the respondents reported their health status was very good or good (62.2 %; 311/500). About a quarter of them had respiratory symptoms in the last 14 days, and 20% of them had traveled outside the Razavi Khorasan province in the last month. The risk perception toward COVID-19 in the community of Razavi Khorasan province was moderate. Most participants are aware of the progression disease. This study suggested that timely behavioral assessment of the community is useful and effective to inform the next epidemic disease intervention, and risk communication strategies.

Keywords: Risk perception; corona disease; anxiety; epidemics; COVID-19.

Received on October 07, 2022
Accepted on May 05, 2023

Introduction

During the 2019–20 coronavirus outbreak, Iran reported its first confirmed cases of SARS-CoV-2 infections on February 19,2020 in Qom(Yavarian et al., 2020).

As of 7 March 2020, there have been 94640 confirmed cases and 6028 deaths in Iran (Figures 1 and 2)(Josh & Stanway, 2020; Aboulenein,2020). As of 3 March 2024, total coronaviruscases and total coronavirus deaths in Iran are 7,626,526 and 146,799 respectively(Figures 1 and 2).

Research shows that host behavior is important in managing outbreaks, especiallyin the early stages of the disease and when vaccination or treatment and non-pharmaceutical intervention (NPIs)are not available (Kwok et al., 2020). The effectiveness of this approach therefore depends on precautionary behaviors of people, such as hand hygiene, wearing masks, and self-isolation. One of the most constructs of the Health Belief Model (HBM) and Protection Motivation Theory (PMT) is risk perception. Risk perception is an important factor in a voluntarily involve individuals. So, people with a higher risk perception are more likely to engage in precautionary behaviors(Mousavi et al., 2021; Pourhaji,Pourhaji, Tehrani, Talebi, & Peyman 2022).

The previous research suggested one of the most important effects of the Coronavirus outbreak is anxiety and it has led to serious concerns for citizens in all countries(Sadati et al., 2020; Delshad, Pourhaji,& Zarmehri,2022a; Ghodrati Torbati,Eshaghzadeh, Imeni, & Abbaspour 2022). In a study by Wang et al. (2020) 1210 respondents from 194 cities in China were surveyed. The results of this study indicated that a total of 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reported moderate to severe depressive symptoms; 28.8% reported moderate to severe anxiety symptoms; and 8.1% reported moderate to severe stress levels. The study by Zhu et al. (2020)also found there no significant difference between participants with and without quarantine the screeningpositive rate of the self-

reportquestionnaire (SRQ-20), the generalized anxiety disorder (GAD-7), and the patient health questionnaire (PHQ-9)(all $p \geqslant 0.303$). The results of this study showed a relatively high prevalence of mental health problems in our sampleresearch. However, these mental health problems were not related to the control measure of quarantine.This study found that there was a statistically significant longitudinal reduction in mean IES-R scores (from 32.98 to 30.76, $p < 0.01$) after 4 weeks. Nevertheless, the mean IES-R score of the first- and second-survey respondents were above the cutoff scores (>24) for post-traumatic stress disorder (PTSD) symptoms, suggesting that the reduction in scores was not clinically significant. During the initial evaluation, moderate-to-severe stress, anxiety, and depression were noted in 8.1%, 28.8%, and 16.5%, respectively and there were no significant longitudinal changes in stress, anxiety, and depression levels ($p > 0.05$) (Zhu et al., 2020). The study by Tan et al. (2020b) suggested 10.8% of 673 workforce respondents met the diagnosis of (PTSD) after returning to work. The respondents reported a lower prevalence of anxiety (3.8%), depression (3.7%), stress (1.5%), and insomnia (2.3%). There were no significant differences in the severity of psychiatric symptoms between workers/technicians and executives/managers.

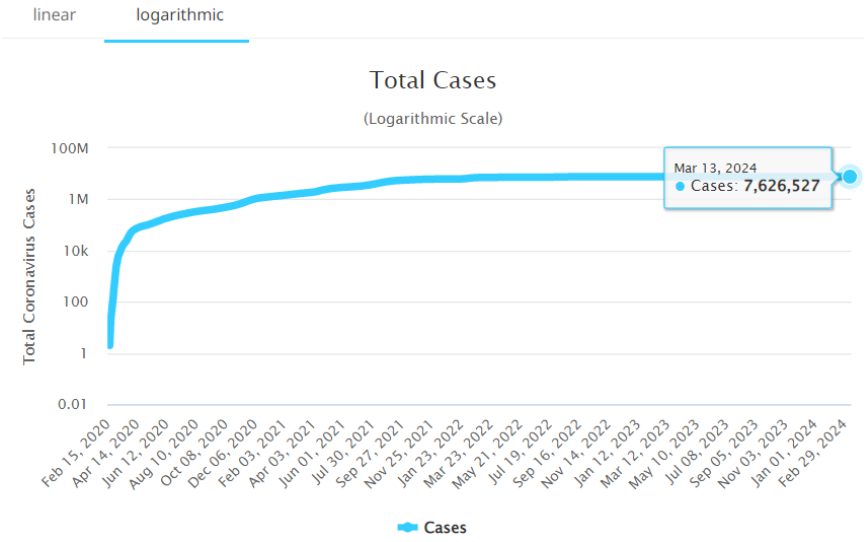

Figure 1. Total Coronavirus Cases COVID-19 in Iran (Worldometers. 2024).

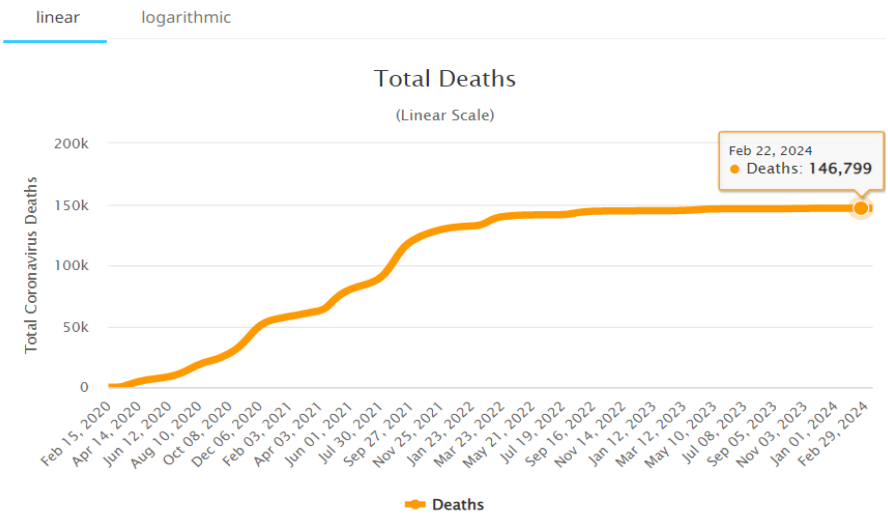

Figure 2. Total Coronavirus Deaths in Iran (Worldometers. 2024).

The results of study's Chew et al. (2020) showed out of the 906 healthcare workers who participated in the survey, 48 (5.3%) screened positive for moderate to very-severe depression, 79 (8.7%) for moderate to extremely severe anxiety, 20 (2.2%) for moderate to extremely severe stress, and 34 (3.8%) for moderate to severe levels of psychological distress. The commonest reported symptom was headache (32.3%), with a large number of participants (33.4%) reporting more than four symptoms.

In addition, the growth of information technology and the acquisition of information from various sources, especially cyberspace and social networks, have made people aware of different sources and this may affect their risk perception. Given the importance of host behavior in reducing transmissionand the vision timely inform in COVID-19 disease, this study aimed to investigate risk perception and behavioral responses in the early phase of the COVID-19 epidemic among the Iranian population.

Material and methods

This cross-sectional online survey was conducted after the confirmed case of COVID-19 in Iran. The participants were 500 residents of the RazaviKhorasan province who were randomly surveyed. The online Raosoft sample size calculation methodology was applied in this study (Raosoft, 2020). According to this method a minimum of 385 participants is needed; as regards the margin of error alpha (α) = 0.05, the confidence level is = 95%, the total population of Razavi Khorasan province= 6434501, and the response of distribution = 50%. Our study was able to recruit a close number of 385 participants. Due to the drop in the sample, the sample size was increased to 500 people in order to increase the accuracy of the study. The simple random sampling was applied for selecting participants and the online questionnaire was sent to the participants.

The inclusion criteria for participation were: 1) Being literate and completing the questionnaire2) Ability to work with a computer and Android phone to complete the questionnaire, 3) residing in Razavi Khorasan province, and 4) Iranian nationality. The exclusion criterion was non-Iranian and incomplete and distorted questionnaire.

The research instrument

The study data were collected using 3 self-report questionnaires, as described below.

1. The first part includes demographic information, including (gender, age, education and occupational status, self-perceived health status, travel history in the past month, and living district.)

Risk perception instrument

Risk perception toward COVID-19 was measured by a questionnaire and two dimensions: a) perceived susceptibility, and b) perceived severity.

a) Perceived susceptibility was the assessment by how likely are you or your family to become infected with COVID-19 if you do not preventive behavior? b) The perceived severitywas measured by how likely are you COVID-19 is serious, their perceived chance of having COVID-19 cured and that of survival if infected with COVID-19.

Information sources

Participants were asked 1 question about the sources from which they obtained information about COVID-19. They were included: television/radio, doctors/nurses, families or friends, newspapers, magazines, official websites, unofficial websites, and the social networks. They were also answered 1 question about the type of information that they interested to receive.

Preventive behavior instrument

Participants from Razavi Khorasan province areas were invited to share our survey link and promotion messages on their web pages, social media networks, and channels. Participants were asked whether they carry out precautionary measures. Three types of precautionary measures were considered: hygienic practices, Observing social distancing,and travel avoidance. Usually, use to transmit information to the target population and there was no limits on their emissions. Participants who were 18 years or above, understood Persian and lived in Iran in the last month are eligible to participate. To avoid duplicate responses from the same responder, the survey could only be taken once from the same electronic device.

The generalized anxiety disorder (GAD) instrument

Anxiety was assessed using the 7-item GAD scale (Spitzer, Kroenke, Williams, & Bernd, 2006). The generalized anxiety disorder questionnaire measures the severity and severity of symptoms of generalized anxiety disorder over the past two weeks (Delshad, Abdollahi, Pourhaji, Azhdari Zarmehri, & Heidarnia, 2022b). Many studies have shown that GAD is valid for the Iranian community population(Naeinian et al., 2011). A cut point was identified that optimized sensitivity (89%) and specificity (82%) (Spitzer et al., 2006). The cut-off point is a scale 10 and summary GAD scores ranging from 0-21 (Qian et al., 2020).

Patient and public involvement

Participants were asked questions about the preventive measures, information sources, risk perception, and anxiety about COVID-19. An uniform resource locator (URL) linking to the consent form was sent to each participant who agreed to participate, and consent to participate was confirmed through electronic signature (the ticking of the box on the form). After the consent form was received, an URL for the Google Forms questionnaire was sent to the participants by social-media applications and text messaging, returned 500 (100%) responses.

Statistical analysis

Frequency and proportion of participants organized. Statistical data were analyzed using independent t-test, paired t-test, one-way ANOVA, and Pearson correlation coefficient and by using the SPSS statistical version (V.20).

Ethics approval statements

This study has been approved by the Ethics Committee of Torbat Heydariyeh University of Medical Sciences (ID:IR.THUMS.REC.1398.055).

Results

The survey was conducted from 19 February 2020 to 13 March 2020. Our survey period covers important clinical cases, including the first local death. Data from 500 participants were analyzed. The means of age participants were 31.9 ± 11.9 years. Many respondents were female (74.2%; 371/500). The majority of participants were 18-27 years old (42.6%). The results indicated 167 (33.4%) of participants were single, 327 (65.4%) them were married and 6 (1.2%) divorced. The mean GAD-7 scores were 6.4 ± 5.2. The majority of participants had moderate or severe anxiety (GAD-7 score ⩾10) (92.4%; 462/500). Other results are in Table 1.

Table 1. Participant characteristics.

Characteristics	Number of respondents (%) (n = 500)
Gender	
Male	129 (25.8)
Female	371 (74.2)
Age (years)	
18-27	213 (42.6)
28-37	144 (28.8)
38-47	84 (16.8)
48-57	42 (8.4)
58 or above	17 (3.4)
Educational level	
Elementary and lower	35 (7)
Guidance school	18 (3.6)
High School and Diploma	104 (20.8)
Graduate and above	343 (68.6)
Employment status	
Employee	188 (43.6)
Employer	14 (2.8)
Housekeeper	218 (43.6)
Retired	12 (2.4)
Unemployed	68 (13.6)
Living district	
Taybad	12 (2.4)
Torbatjam	29 (5.8)
Torbat-e Heydarieh	113 (22.6)
Neyshabur	22 (4.4)
Mashhad	196 (39.2)
Kashmar	28 (5.6)
Quchan	20 (4)
Sarakhs	24 (4.8)
Khaf	24 (4.8)
Chenaran	16 (3.2)
Gonabad	16 (3.2)

Table 2 shows the background in health status and travel history of participants. Many respondents reported their health status were very good or good (62.2 %; 311/500). About a quarter of them had respiratory symptoms in the past 14 days (132/500) and experienced 20% of them travelling outside Razavi Khorasan in last month's (100/500).

Table 2. Background in health status and travel history of participants.

Characteristics	Number of respondents (%) (n = 500)
Self-perceived health status	
Very good	91 (18.2)
Good	220 (44)
Middle	157 (31.4)
Bad	20 (4)
Very bad	12 (2.4)
Medical visit in the last 14 days	
Yes	60 (12)
No	440 (88)
Having had respiratory symptoms in the last 14 days	
Yes	132 (26.4)
No	368 (73.6)
Last month's travel history	
Yes	100 (20)
No	400 (80)
Anxiety level	
Low	38 (7.6)
Moderate	72 (14.4)
Severe	390 (78.0)
Behavioral outcomes	
Avoid public transportation	(61.8%)
Avoid eating in restaurants	(64.2%)
Avoid visiting public places	(60%)
Wearing masks	(34.8%)
Using gloves	(37.2%)
Cleaning hands	(54.2%)

Table 3 shows the perceived susceptibility and severity of COVID-19 among individuals.The results indicated the most participants considered themselves moderately at risk for COVID-19 (77%). The majority of respondents thought it was not likely to COVID-19.

Table 3. Mean and standard deviation risk perception towards COVID-19.

	Number (%)					
	Level 1	Level 2	Level 3	Level 4	Level 5	Mean ± SD
Perceived susceptibility						
a How likely are you to become infected with the Corona virus?	34(6.8)	74(14.8)	164(32.8)	149(29.8)	79(15.8)	5.3 ± 2.03
a How likely are you that your family will be infected with the Corona virus?	26(5.2)	60(12.0)	221(44.2)	124 (24.8)	69(13.8)	
Perceived severity						
b How serious is a COVID-19 disease?	365 (73)	94(18.8)	20 (4.0)	19 (3.8)	2 (4)	11.29 ± 1.9
b Chance of having COVID-19cured?	11 (2.2)	65 (13)	239(47.8)	159 (31.8)	26 (5.2)	
b Chance of survival if infected with COVID-19?	23 (4.6)	17(3.4)	218(43.6)	199(39.8)	43(8.6)	

a Level 1 =Very likely: Level 2 =likely: Level 3 = neutral: Level 4 =Unlikely: Level 5 =Very unlikely. b Level 1 =Very low: Level 2 =low: Level 3 = neutral: Level 4 =High: Level 5 =Very high

Table 4 shows the types of COVID-19 information wanted by the 500 participants who demonstrate such need. The information which participants were most interested in were: the number of patients infected with

coronavirus (77%), Symptoms/ How to know if someone is suffering from COVID-19 (75.6%), what to do if infected with COVID-19 and the risks and consequences of COVID-19 (74%). Figure3 shows the information sources. The most sources were television/radio (90.4%) and social networks (83.6%). The results suggested the means of preventive behaviors was 20.6 ± 4.12. Personal hygiene practices, including avoiding public transportation (61.8%),avoiding eating in restaurants (64.2), avoiding visiting public places (60%), wearing masks (34.8%), using gloves (37.2), and cleaning hands (54.2%). The prevalence was significantly higher in Neyshabur ($p \leqslant 0.01$).

Table 4. Information required by the participants.

The information you required to receive about COVID-19	Number (%) (n = 500)
Distribution of COVID-19 disease cases	290 (58)
Number of patients infected with Coronavirus	385 (77)
Interventions of Ministry of Health in Iran	314 (62.8)
Preventive proceedings	364 (72.8)
Disease advancement	329 (65.8)
Symptoms/ How to know if someone is suffering from COVID-19	378 (75.6)
The actions of international organizations to combat COVID-19	312 (62.4)
What to do if infected with COVID-19	370 (74)
Impact of the disease in high-risk groups	302 (60.4)
The Risks and Consequences of COVID-19	370 (74)

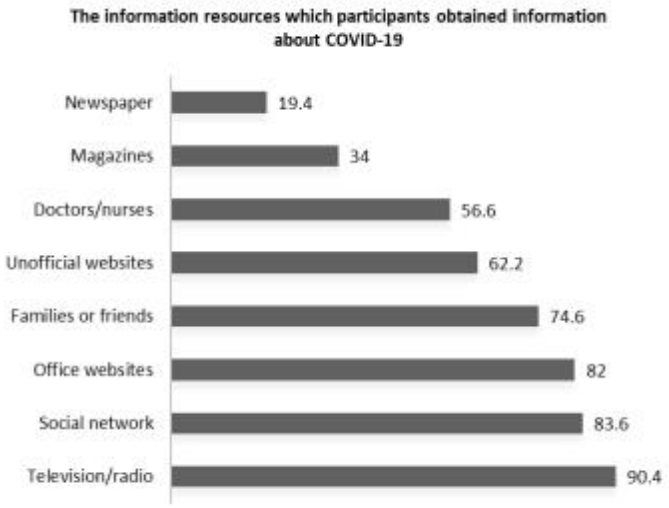

Figure 3. The information sources which participants obtained information about COVID-19. The figure was provided the information sources to obtain information about COVID-19. It presents eight sources (A) Television/radio (B) Social network (C) Office websites (D) Families or friends (E) Unofficial websites (F) Doctor and nurses (G) Magazines (H) Newspaper

Discussion

This study gives a timely assessment of risk perception, information exposure, and acceptance of preventive measures at an early stage of the COVID-19 epidemic in Razavi Khorasan, Iran. Although the disease was somewhat unknown to the Iranian people (including transmissibility, transmission path,and pathogenesis) at the early stage, the perceived risk of COVID-19 in the research community was moderate. In other words, perceivedsusceptibility and perceived severity were moderate and only 38.8% of individuals perceivedsusceptibility and 17.8% of the participants was high. While in the study's Kin On Kwok and et al.(2020) perceived susceptibility and severity in the majority of individuals were reported as high. In our study, the results indicated the majority of respondents thought it was not likely to COVID-19 (73%) while in China population(Kwok et al., 2020) 97 percent thought it was likely to COVID-19 (97%). It seems that one of the reasons could be related to the study conditions in China that the Chinese people studied under conditions that start the large-scale social-distancing intervention, standing of sales of high-speed rail tickets to and from Wuhan, closing public places and entertainment facilities, postponing school resumption, also increasing official threat intensity in COVID-19. A great increasing generalized anxiety disorder was observed over the study period(Qian et al., 2020). In this study generalized anxiety disorder was 92.4%, while reported among Wuhan population 32.7% and 20.4%, and study's Want et al. among the whole of China 28.8% reported

moderate to severe anxiety symptoms; that's mean during the initial phase of the COVID-19 outbreak in China, about one-third reported moderate-to-severe anxiety(Wang et al., 2020).Therefore, our findings showed a higher level of psychological impact and adverse mental health status compared to the above studies, which can be used to develop psychological interventions to improve the mental health of vulnerable groups during the COVID-19 epidemic.

Also, in the study by Abdulkarim Al-Rabiaah et al.(2020) generalized anxiety disorder was reported 2.7 ± 3.1. Perhaps one reason for this is that the sample of this study was medical students who may be different in terms of information and understanding of illness and health literacy from our target group who were citizens.

Our study provides new evidence on risk perception and community responses to disease outbreaks in RazaviKhorasan to the early phase of the COVID-19 epidemic. The results suggested that the anxiety level and behaviors have changed rapidly and significantly in the early stage of the outbreaks. Our findings also produce several important public implications. First, providing the public with accurate and reliable information is key for addressing the psychological consequence of communicable disease outbreak. We found that hand washing according recommendations by WHO (over 40 seconds) was slightly in population research. Then, further training on proper hand washing is recommended.

Our study has a number of limitations. First, in order to assess the extent to which the public responded to the major public health crisis, we shortened our survey questionnaire and shortened our survey questionnaire to obtain representative population samples using random sampling. Second, we asked participants to remember some of their behaviors, as a result, their answers might have recalled bias.

This study did not inquire about the occupation of respondents who were employed. If this study recruited healthcare workers, they are at the highest risk of psychological distress during the COVID-19 outbreak (Tan et al., 2020a) and confound the results. This study mainly focused on anxiety and did not explore other common psychiatric symptoms such as depression that is beyond anxiety and panic disorder (Ho et al., 2020).

Conclusion

Risk perception toward COVID-19 in the community of the RazaviKhorasan province was moderate. Most participants are aware of progression disease. It seems that psychological and behavioral outcomes of COVID-19 had been considered during the phase of the outbreak. The level of anxiety increased from its normal level in this area. This study suggested that timely behavioral assessment of the community is useful and effective to inform the next epidemic disease intervention, and risk communication strategies.

Acknowledgements

The authors would like to thank all the individuals who took part in the study. The authors also thank Torbat Heydariyeh University of Medical Sciences for its financial support for this study.

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