



# Public Trust in Healthcare System in Iran: A Rapid Assessment During the COVID-19 Epidemic in Iran

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## Abstract

**Background and aims:** Public health policies and programs should be adapted to the level of public trust in the healthcare system, as an indicator of the public support level. Accordingly, the data about public trust level in the healthcare system is considered as a critical requirement for managing public health crises. This study aimed to rapidly assess the public trust in the healthcare system during the COVID-19 epidemic in Iran, as well as to evaluate the effect of socioeconomic status (SES) on this trust.

**Methods:** This cross-sectional and web-based study which was conducted in Iran during the COVID-19 epidemic included adults aged 18-60 years. A probability proportional to size multistage random sampling was applied and performed in 15 provinces of the country. Data on the main sources of information about COVID-19, trust in healthcare system, fear level of COVID-19, and demographics were collected via an electronic questionnaire. Multiple linear regression was applied, and adjusted regression coefficients and 95% confidence intervals (CIs) were estimated.

**Results:** A total of 5250 adults (response rate: 76%) were included in the study. The mean of reported trust scores was  $50.3 \pm 22.8$ , and that of fear scores was  $72.0 \pm 17.8$ . The highest (65%) and lowest (28%) levels of trust were observed among participants from the lowest and highest SES, respectively. Gender (male) ( $P=0.006$ ), higher levels of education ( $P<0.001$ ), higher socio-economic status ( $P<0.001$ ), and higher fear scores ( $P<0.001$ ) were independently correlated with the lower level of trust in healthcare system.

**Conclusion:** It was found that the public trust in Iran's healthcare system was not high enough at the time of the COVID-19 epidemic in the country, especially among higher social class population.

**Keywords:** Public, Trust, Healthcare system, COVID-19, Epidemic, Iran

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## Introduction

Public trust in healthcare system of a country is a critical requirement for handling the public health crises, such as the COVID-19 pandemic.<sup>1</sup> A healthcare system usually faces at least two serious challenges at the time of a public health crisis: one is the uncertainty caused by the lack of evidence; and the other one is the high number of destructive rumors being propagated.<sup>2</sup>

Over time, public health policymakers have to make new decisions based on new scientific evidence or correct their earlier statements.<sup>3,4</sup> The new decisions might be different from the previous ones, which can further exacerbate the public uncertainty crisis. On the other hand, different sources of information nowadays can negatively contribute to both challenges of the public panic and uncertainty.<sup>2,5,6</sup>

A tailored public epidemic communication can greatly help address these challenges.<sup>7,8</sup> In addition, we need people to be in a psychological state – a state called public trust in the healthcare system, in which the values of

the healthcare system are similar to those of the public, appropriate capabilities are possessed to deal with the crisis, and the best services are available to actively serve the public.<sup>9</sup> The public trust in healthcare system gives the health policymakers a solid base for winning the public support.<sup>10</sup>

Various distant and short-term factors build up the public trust in the healthcare system. It is recognized as a multidimensional issue.<sup>3,9-11</sup> Studies have shown that it can be even affected by the current conditions of the society and the healthcare system. Consequently, a healthcare system's responses towards a health crisis can weaken or enhance public trust in the healthcare system.<sup>12,13</sup> Evidence suggests that some other relevant factors such as socioeconomic status (SES), ethnicity, place of residence, current health status, people's past experiences with the healthcare system, media, and economic status of the community can also contribute to such trust.<sup>3,9-11</sup> It can be argued that in pervasive crises, the subgroups with less trust in the healthcare system are likely at greater risk and,

therefore, identification of these subgroups is necessary.<sup>14</sup>

Despite the acceptable quality of Iranian healthcare services, which has been praised by international organizations such as World Health Organization,<sup>15</sup> the Iranian healthcare system has been facing serious challenges hindering its operations to efficiently deal with the crises, including COVID-19 epidemic. Some of these challenges include a high and ever-increasing number of medical scandals propagated in the media alongside a shortage of medicines due to the economic conditions caused by sanctions posed by the United States in recent years.<sup>16</sup>

Moreover, lots of rumors have been propagated through social networks and other sources since the moment public announcements were issued regarding the start of the COVID-19 epidemic in Iran.<sup>17</sup> These conditions can severely damage the public trust in healthcare system of the country.

Therefore, the authors believed that there was an urgent need to inform the health policymakers about the level of public trust in Iran's health system in order to help them effectively manage the COVID-19 epidemic in the country.

### Objectives

This community-based rapid assessment aimed to assess the public trust in Iran's healthcare system during the COVID-19 epidemic in the country, as well as to evaluate the effect of SES on this trust.

### Methods

#### Type of Study

This cross-sectional and web-based study was conducted in Iran during the COVID-19 epidemic, based on the data collected from August 2020 to September 2020.

#### Study Population

Iranian adults, aged 18 to 60 years, who were able to read in Persian and work with smartphones were considered eligible to participate in this study. According to the local news agencies, penetration rate of smartphone use among Iranian adult population was estimated to be higher than 68.6%. Due to the lower rates of smartphone use among people aged over 60 years in Iran, they were not included in the study.

#### Estimation of Sample Size

A sample size of 6930 was calculated for this study after assuming a rate of 30% for trust in the healthcare system in Iran. Also, type I error of 5%, a probability proportional to size multistage cluster random sampling within 15 provinces, a design effect of two, and a rate of 40% of non-response were calculated.

#### Sampling Methods

Sampling strata were defined based on the province of residence, population of the residential area, gender, and age group. The sample proportion for each stratum was

defined based on its population proportion recorded in the latest Iranian national census in 2016. Sampling was conducted in Bushehr, Chaharmahal & Bakhtiari, Fars, Gilan, Isfahan, Kerman, Razavi Khorasan, Kurdistan, Lorestan, Mazandaran, Semnan, Sistan & Baluchestan, Tehran, West Azerbaijan, and Yazd provinces. These provinces were selected in a convenient way considering the feasibility of the study.

#### Data Collection

Since a face-to-face interview with a large number of participants was not achievable during the epidemic, a web-based platform was employed for collecting the required data. To this end, a web-based version of the data collection form was designed and its link was shared with randomly selected participants.

Random selection was performed using a list of fixed phone numbers in each province. Selected numbers were used to contact the individuals, and the study and its aims/procedures were explained to them. Then they were asked whether they were willing to participate in the study or not. Those willing to participate in the study were asked to provide their cellphone numbers (i.e., one cellphone number per one fixed phone number). The link to the study questionnaire was shared with participants via their cellphone numbers.

First phone calls were made by trained nurses who were well-introduced to COVID-19. They were also responsible for answering the questions about COVID-19 posed by the study participants, if they had any. Since we had to fill out a predefined number of questionnaires in each age-gender stratum, the sampling was continued after an interim analysis until the predefined samples were completed in all age-gender strata. To this end, the cellphone owners who were on the first calls were asked questions to find out if there was anyone with a specific age/gender in their families.

Taking into account some factors including contextual issues as well as a need to increase the participation rate and collect more accurate responses, the authors had to use a very short questionnaire (15 questions) for data collection and ignore the available questionnaire for measuring the trust in healthcare system. Accordingly, data on age, gender, educational level, ethnicity, province of residence, population size of area of residence, and the main source of information about COVID-19 were collected. To measure the SES, a short form that had been validated for obtaining data on participants' assets in Iran was used<sup>18</sup>. Two last variables including trust in the healthcare system during the epidemic and perceived fear of COVID-19 were measured using two visual analog scales (VAS) developed by Zhao et al.<sup>19</sup> Each VAS was ranged from zero to 100 (zero and 100 were designated for the worst and the best scores which participants could select, respectively). Initially, the trust and fear were defined for the participants; then they were asked to rate their trust in the healthcare system and their perceived fear. The trust was defined as "a state in

which you are sure that Iran's ministry of health possesses the required capabilities and competencies to control the COVID-19 epidemic in Iran, and it makes all necessary efforts to accomplish this"; and the definition given for the highest level of fear was "a state in which you worry that your life and your loved ones' lives are always endangered by COVID-19 every day; therefore, you are unable to do something".

### Data Analysis

The data were cleaned and prepared using appropriate statistical techniques. Internal and external inconsistencies as well as missing and outlier values were checked. An asset analysis was conducted using multiple correspondence analysis. The estimated latent factor was categorized into its deciles. Univariate analysis was performed applying two independent sample t-test and one-way analysis of variance (ANOVA). Pearson correlation coefficient was estimated to measure the linear correlation of the trust and fear scores. Multiple linear regression was applied to investigate the correlates of the trust in healthcare system. Crude and adjusted regression coefficients and their 95% confidence intervals (CIs) were estimated. A *P* value less than 0.05 was considered statistically significant. Data

analysis was done using Stata software (release 11.2; StataCorp LP, College Station, TX, US).

### Results

Response rate was 76% (out of 6930 shared form links, 5250 ones were checked and the forms were completed). The mean age of the study participants was  $39.1 \pm 12.4$  years. As for the gender of participants, 50.5% ( $n=2653$ ) of them were female with a mean age of  $38.9 \pm 12.5$  years, and 49.5% ( $n=2598$ ) of them were male with a mean age of  $39.2 \pm 12.5$  years. The highest proportion of the participants (41%) were from cities with a population of more than one million.

The mean score of public trust in the healthcare system was estimated to be  $50.3 \pm 22.8$ , and estimated mean score of perceived fear of COVID-19 was  $72.0 \pm 17.8$  (Table 1).

There was a significant correlation between the SES level and the trust in the healthcare system (*P* value<0.001). There was also a negative linear correlation ( $r=-0.21$ , *P* value<0.001) between the trust and the perceived fear (Figure 1).

According to the multiple regression modeling, the SES level (RC, -3.43; 95% CI: -3.63, -3.21) and perceived fear of COVID-19 (RC, -2.13; 95% CI: -3.00, -1.22) had

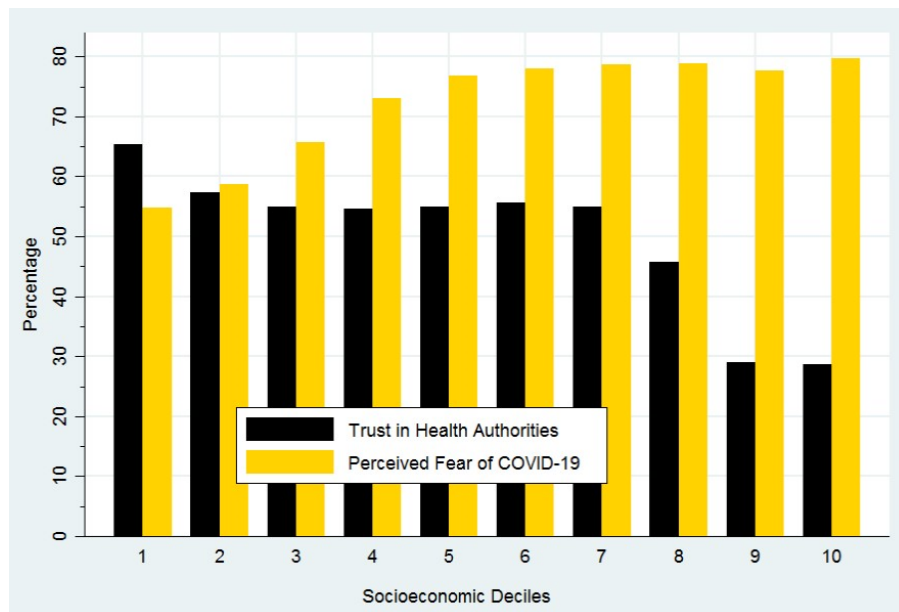
**Table 1.** Iranian Public Trust in Healthcare System During the COVID-19 Epidemic by Their Characteristics

| Characteristics                               | No. of Participants (%) | Trust, Mean $\pm$ SD | <i>P</i> Value |
|-----------------------------------------------|-------------------------|----------------------|----------------|
| Gender                                        |                         |                      | 0.012          |
| Male                                          | 2598 (49.5)             | 49.5 $\pm$ 24.1      |                |
| Female                                        | 2653 (50.5)             | 51.1 $\pm$ 21.3      |                |
| Educational level                             |                         |                      | <0.001         |
| Lower than diploma                            | 214 (4.1)               | 55.2 $\pm$ 26.8      |                |
| Academic education 1*                         | 861 (16.4)              | 52.0 $\pm$ 22.6      |                |
| Academic education 2                          | 1869 (36.1)             | 50.2 $\pm$ 22.4      |                |
| Academic education 3                          | 1724 (32.8)             | 49.9 $\pm$ 21.0      |                |
| Academic education 4                          | 556 (10.6)              | 46.5 $\pm$ 22.7      |                |
| Population of the area of residence (in 1000) |                         |                      | 0.049          |
| Less than 100                                 | 1157 (22.0)             | 51.4 $\pm$ 23.3      |                |
| 100 to 500                                    | 707 (13.5)              | 51.2 $\pm$ 22.2      |                |
| 500-1000                                      | 1228 (23.4)             | 49.3 $\pm$ 23.2      |                |
| More than 1000                                | 2159 (41.1)             | 49.6 $\pm$ 23.0      |                |
| Main source of information about COVID-19     |                         |                      | <0.001         |
| Agencies inside Iran                          | 3699 (70.4)             | 51.9 $\pm$ 22.6      |                |
| Agencies outside Iran                         | 1552 (29.6)             | 46.7 $\pm$ 21.6      |                |
| Ethnicity                                     |                         |                      | 0.560          |
| Fars                                          | 3660(69.7)              | 50.4 $\pm$ 22.6      |                |
| Turk                                          | 571(11.0)               | 50.5 $\pm$ 22.8      |                |
| Lor                                           | 460(8.26)               | 49.4 $\pm$ 23.3      |                |
| Kurd                                          | 350(6.7)                | 49.0 $\pm$ 22.7      |                |
| Others                                        | 210(4.0)                | 52.2 $\pm$ 23.2      |                |
| Age (Mean $\pm$ SD) <sup>a</sup>              | 39.1 $\pm$ 12.4         | 50.3 $\pm$ 22.8      | 0.0154         |

SD, standard deviation.

\*1, two years of academic education (AE); 2, four years of AE; 3, six years of AE, 4, more than six years of AE

<sup>a</sup> Pearson correlation coefficient was estimated at 0.033 for the linear correlation of age and trust and it was statistically significant.



**Figure 1.** Socioeconomic Status and the Level of Public Trust in the Healthcare System During the COVID-19 Epidemic in Iran.

statistically significant correlations with the trust in healthcare system (Table 2).

### Discussion

In this national rapid assessment conducted in Iran at the time of the COVID-19 epidemic, the average level of public trust in Iran's healthcare system was estimated to be around 50%. Furthermore, the average level of the public's perceived fear was found to be higher than 70%. The trust in healthcare system and perceived fear varied across subpopulations. Individuals with higher SES reported lower levels of trust but higher levels of perceived fear. Male participants and those with higher levels of education reported lower levels of trust. Individuals with higher levels of perceived fear had less trust in the healthcare system.

The average score of public trust in the healthcare system in our study was roughly equal to that estimated by Tabrizi et al in Tabriz<sup>20</sup>; however, this score was significantly lower than the score calculated by the studies carried out in developed countries.<sup>12,21,22</sup> The lower rate of public trust in Iranian healthcare system compared to the level of trust reported by the above-mentioned studies could have been due to the fact that the given studies had not been conducted during a public health crisis and, accordingly,

this comparison may not have been free of bias. On the other hand, a study in China showed that only about 28% of Chinese had complete trust in their country's healthcare system.<sup>19</sup> A study carried out in Spain also revealed that most Spanish (more than 70%) found their country's health system unreliable and in need of radical changes and reformation.<sup>23</sup>

Although a high level of public trust could provide many useful resources for management and control of the epidemic in the context of the COVID-19 epidemic,<sup>21,24</sup> our study results demonstrated that it was not at an acceptable and supportive level in Iran. Therefore, it was highly recommended that the decisions be made with extreme caution and the anticipation of a low rate of public compliance and support be given a careful attention at the time of the epidemic in Iran.<sup>3</sup>

Although the ongoing level of the trust in healthcare system was not likely helpful in dealing with the COVID-19 epidemic in Iran, this situation could have been considered as an opportunity to rebuild the trust in country's healthcare system.<sup>1,13</sup> Some studies have shown that the level of the public trust in a healthcare system is also, to some extent, dependent on the recent measures and successes of the healthcare system<sup>4,13</sup>; therefore, the

**Table 2.** Correlates of Public Trust in the Healthcare System During the COVID-19 Epidemic in Iran

| Characteristics                         | Crude Coef. (95% CI) | Adjusted Coef. (95% CI) | P Value |
|-----------------------------------------|----------------------|-------------------------|---------|
| Higher SES (Deciles)                    | -3.46 (-3.65, -3.27) | -3.43 (-3.63, -3.21)    | <0.001  |
| Gender (Ref.: Female)                   | -1.58 (-3.12, -0.04) | -1.82 (-3.00, -0.62)    | 0.006   |
| Higher education (level)                | -1.62 (-2.27, -0.97) | -1.52 (-2.13, -0.92)    | <0.001  |
| Information source (Ref.: inside Iran)  | -5.18 (-6.33, -4.01) | -5.65 (-6.96, -4.32)    | <0.001  |
| Perceived fear (ref.: less than median) | -5.01 (-5.84, -4.18) | -2.13 (-3.00, -1.22)    | <0.001  |
| Constant                                | 50.32 (49.11, 51.54) | 83.14 (78.98, 87.3)     | -       |

relative success of the healthcare system in dealing with the COVID-19 epidemic may create an excellent opportunity to improve the public trust in healthcare system.

At the time of this study and in the ongoing circumstances of the COVID-19 epidemic, one of the most important reasons for the decline of public trust in the healthcare system was the numerous rumors propagated by individuals, groups, or other states with political-economic objectives<sup>2,5</sup>; therefore, the Iranian Ministry of Health needed to take urgent planning and measures to identify these rumors alongside their source(s) of dissemination, social origins, social influence and acceptability, as well as the appropriate lines of communication with the public about them<sup>5,8,25</sup>. Dealing with this source of mistrust properly could have facilitated rebuilding the trust in Iran's healthcare system.<sup>8</sup>

Another decisive factor that contributes to rebuilding of the public trust in a healthcare system at the time of a health crisis is establishing an appropriate public communication channel to resolve the uncertainties.<sup>5,26</sup> People use a variety of news sources with different tendencies.<sup>25</sup> Moreover, there is usually a lack of sufficient evidence at the time of a crisis and, therefore, policymakers may change their decisions. Sometimes unreliable and inappropriate information damages the public trust of the subgroups, which requires a proper management.<sup>6</sup> Under these circumstances, it is necessary to establish a clear and honest communication with the public and explain the rationale behind the decisions regarding the crisis.<sup>5,27,28</sup> To this end, communicators need to receive specialized training, be selected from a variety of groups with higher social acceptability, engage with social influencers actively, provide the right environment for the public so that their voices are heard, communicate constructively and proactively with the various media, and introduce reliable news sources.

Our study results showed that some groups with probably higher social influence (i.e., those with higher education and those with better SES) had lower levels of trust in the healthcare system. Although various studies have already reported conflicting results concerning the impact of the social class on the level of trust in healthcare system,<sup>19,21</sup> our findings indicated that Iranian healthcare system had to interact constructively with these social subgroups.

This study had some limitations. Since the study was conducted in the social distancing era at the time of a serious public health crisis – COVID-19 pandemic in Iran, a community-based rapid assessment was conducted which was not a well-established study and, accordingly, minimum data items were measured. Collecting minimum data items led to a probable residual confounding effect which was not possible to adjust for it. Moreover, a single question approach was adopted in this study to measure the social trust in healthcare system. Although this approach was valid and had been frequently applied by other researchers,<sup>19,29</sup> it may not have provided the most robust data which one was able to collect about the trust in

healthcare system.

## Conclusion

At the time of the COVID-19 epidemic in Iran, the level of public trust in healthcare system was not high enough, especially among high social class populations. People with higher social class had the lowest levels of trust in the healthcare system. However, it was recommended that further studies be carried out to uncover the reasons behind such pattern of the public trust in the Iranian healthcare system.

## Ethical Approval

This study was approved by the ethics committee of Shiraz University of Medical Sciences (Approval Code: IR.SUMS.MED.REC.1399.025).

## Conflict of Interest Disclosures

The authors declare that there is no conflict of interests.

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