

# Public Trust in Healthcare System and Its Correlates during the COVID-19 Epidemic in Iran

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## Research Article

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# Abstract

**Background:** Public trust in the healthcare system is a critical necessity of management in public health crises such as the COVID-19 pandemic. To rapidly assess the public trust in the healthcare system during the COVID-19 epidemic and its correlates in Iran.

**Methods:** A cross-sectional rapid assessment was conducted in Iran during the COVID-19 epidemic in the country. A probability proportional to size multistage random sampling was applied. Sampling was done in 15 provinces. We collected data on public perceived fear, public trust in health system and socio-demographics. Ordinary least square regression modeling was applied to identify correlates of public trust.

**Results:** A total of 5250 adults (response rate: 76%) were participated in the study. Mean of reported trust scores was  $50.3 \pm 22.8$ , and of fear scores was  $72.0 \pm 17.8$ . Being male ( $p=0.006$ ), higher levels of education ( $p<0.001$ ) and socio-economic status ( $p<0.001$ ), and higher fear scores ( $p<0.001$ ) were independently correlated with trust in healthcare system.

**Conclusion:** At the time of the COVID-19 epidemic in Iran, public trust in healthcare system is low. A dynamic public epidemic communication with appropriate strategies to communicate with higher social classes is urgent in Iran. Rapid assessments to identify appropriate strategies are needed. These results might be generalizable to the other similar countries during the COVID-19 pandemic.

## Background

Public trust in the healthcare system is a critical necessity of management in public health crises such as the COVID-19 pandemic[1]. At the same time as public health crises, the healthcare system usually struggles with at least two serious challenges. One is the uncertainty caused by the lack of evidence, and the other is the high number of destructive rumors being propagated[2]. The combination of these two challenges can lead to a devastating public panic, a situation that could lead to severe disruption of social functions and eventually more complicated conditions and even failure of crisis control efforts[3].

Over time, public health policymakers have to make new decisions based on new scientific evidence or refine their previous statements[4, 5]. It may contribute to a crisis of public uncertainty. On the other hand, different available sources of information can amplify both challenges of public panic and uncertainty[3, 6].

Scientific evidence suggests that a tailored public epidemic communication can greatly help control these challenges[7]. At the same time, however, as public health policymakers' decisions are not always simple and low-cost, such as hand washing, they need public trust in the healthcare system, a psychological state in which people believe that the values of their healthcare system are the similar to those of them, and it has adequate competencies and abilities to control the crisis, and to actively work to provide the

best services to the public[8]. Public trust in the healthcare system is the upstream root of public support for health policymakers' decisions and compliance with crisis control measures[9].

Public trust in the healthcare system is rooted in various distant and near-term factors. It is recognized as a multidimensional issue [4, 8-10]. Factors such as socioeconomic status, ethnicity, place of residence, current health status, people's past experiences with the healthcare system, media, and economic status of the community are some of the correlates of such trust [4, 8-10]. In addition, the healthcare system's actions targeted towards a health crisis can weaken or enhance public trust in the healthcare system[11, 12]. In pervasive crises, it can be argued that subgroups with less trust in the healthcare system may be at greater risk; as a result, identification of these at risk subgroups is necessary [13].

Despite the acceptable quality of Iranian healthcare services[14], the Iranian healthcare system has been facing serious challenges that hinder it being fully prepared to deal with crises such as COVID-19 epidemic. A few of those challenges include high and an 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[15].

Moreover, many rumors have been propagated through social networks and other sources since the instant of public announcement regarding the start of the COVID-19 epidemic in Iran. The COVID-19 attributed mortality rates in Iran are higher than in other parts of the world[2], some experts or political groups oppose the healthcare system's decisions to control the epidemic; and some extremist groups ridicule the healthcare system's recommendations. These conditions can severely damage public trust in the healthcare system.

This rapid assessment aimed to investigate the level of public trust in the health system and its correlates during the COVID-19 epidemic in Iran.

## Methods

A cross-sectional study was conducted in Iran during the COVID-19 epidemic in the country. 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.

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

Random digit dialing was done using fixed phone numbers. Selected numbers were called, and the study aim and its procedures were explained for those who were on the phone. Then, they were asked whether they were interested to participate in the study or not. If they accepted to participate, we shared the link of the study questionnaire with them via their cell phone numbers.

First phone calls were made by trained nurses. After an interim analysis, sampling was continued until completion of predefined samples in all age-gender strata.

Considering contextual issues, in order to increase the participation rate, and also collect more accurate responses, we had to use a very short questionnaire (15 questions) for data collection. Accordingly, data on age, gender, educational level, ethnicity, province of residence, the population in the area of residence, and the main source of information about COVID-19 were collected. To measure socioeconomic status (SES), we used a short form that was validated for use in Iran to collect data on participants' assets[16]. Level of trust in the healthcare system and perceived fear of COVID-19 were measured using two visual analog scales (VAS), inspired with method had applied by zhao et. al.[17]. Each VAS was ranged from zero to 100. We defined trust and fear for participants initially, then asked them to rate their trust in the healthcare system and their perceived fear. The definition of trust was "a state in which you are sure that Iran's ministry of health has adequate ability and competency to control the COVID-19 epidemic in Iran, and it is trying to do this with its bests". And the definition of the highest level of fear was as "a state in which you worry that the life of yourself and your loved ones is threatened by COVID-19 always and every day; therefore, you are unable to do anything".

This study was approved by the ethics committee of Shiraz University of Medical Sciences. We also adhere to the principles of the Helsinki Declaration on principles of biomedical research ethics.

#### Statistical analysis

To estimate the rank of participants in case of socioeconomic status (SES), we conducted an assets analysis using multiple correspondence analysis (MCA). The estimated latent factor was categorized into its deciles. Univariate analysis was done applying two independent sample t-test, and one-way analysis of variance (ANOVA). Pearson correlation coefficient estimated to measure the linear correlation of trust and fear scores. Multiple ordinary least square linear regression was applied to identify the correlates of trust in the healthcare system. We adjusted our regression modeling for the clustering nature of the data. As the sampling was done in a probability proportional to size design no weight was applied for data analysis. Crude and adjusted regression coefficients (RC) and their 95% confidence intervals (CI) were estimated. A P-value of 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% (5250 completed forms out of 6930 shared links). 50.5% (n=2653) of the study participants were female with a mean age of  $38.9 \pm 12.4$  years, and 49.5% (n=2598) were male with a mean age of  $39.2 \pm SD=12.5$ . Mean score of public trust in the healthcare system was estimated as  $50.3 \pm 22.8$ , and estimated mean score of perceived fear of COVID-19 was  $72.0 \pm 17.8$  (Table 1).

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

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

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

perceived fear (Figure 1).

Based on the multivariable 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) have statistically significant correlations with trust in the healthcare system (Table 2).

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

| Characteristics                         | Crude Coef.         | Adjusted Coef.      | P-value |
|---|---------------------|---------------------|---------|
|   | (95% CI)            | (95% CI)            |         |
| 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)  | -       |

## Discussion

In this national rapid assessment conducted in the time of the COVID-19 epidemic in Iran, we estimated the average level of public trust in Iran's healthcare system to be around 50%. Furthermore, our estimate for the average level of the public's perceived fear was more than 70%. Trust in the healthcare system and perceived fear varied across subpopulations. Individuals with higher SES reported lower levels of trust, and at the same time higher levels of perceived fear. Men and participants 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, although roughly equal to that estimated by Tabrizi et. al. in Tabriz in 2013[18], is significantly lower than the same parameter in developed countries[11, 19, 20]. However, a study in China has shown that only about 28% of Chinese have complete confidence in their healthcare system[17]. According to a study in Spain, most people believe that the health system is not trustable and needs to undergo radical changes [21].

Studies in various countries have shown that the level of public trust in national healthcare systems has been declining [10, 12, 22]. However, the level of trust in this study is approximately equal to that of seven years ago in northwestern Iran[18]. This may indicate the relative stability of the level of trust in the healthcare system in Iran even though the Iranian healthcare system has experienced a serious reform during these years[23]. Studies have shown, however, that levels of trust in healthcare systems have usually only been slightly affected by changes in the healthcare system alone; therefore, this might not be

a good indicator of healthcare system's performance[24]. Some authors have argued that indicators stemming from the structure of governance and community culture are at the root of public trust in the healthcare system [25-28].

Although in the context of the COVID-19 epidemic, a high level of public trust could provide many useful resources for management and control of the epidemic[19, 25], we showed that it is not at an acceptable and supportive level in Iran; Therefore, during the epidemic period in Iran, it is necessary to make decisions with complete caution, and anticipation of a low rate of public compliance and support[4].

Although the current level of trust in the healthcare system might not be helpful in controlling the COVID-19 epidemic in Iran, this situation can be an opportunity to rebuild trust in the healthcare system[1, 12]. In some studies it is illustrated that the level of public trust in the healthcare system has also been, to some extent, dependent on recent behaviors and triumphs of the same healthcare system [5, 12, 13, 25, 29]; therefore, the relative successes of the healthcare system in COVID-19 epidemic control may be a good opportunity to improve public trust in the healthcare system. In line with the immediate or medium-term rebuilding of public trust in the healthcare system, it is essential that the Iranian healthcare system, designs and implements a rigorous, transparent and honest strategy for communicating with the public about the COVID-19 epidemic, in addition to careful planning based on scientific evidence, and the selection of the most appropriate policies adopted by the public [6, 12, 30, 31].

Although it is possible to rebuild public trust in the healthcare system, implementing robust strategies is of vital importance[4]. Research to identify the underlying causes of mistrust should be strengthened and appropriate approaches must be designed based on the resultant evidence [4, 26]. Researchers have shown that, compared to mistrust caused by policy ambiguity, mistrust resulting from the incompetency of the healthcare system could be repaired by simpler strategies[27].

In rebuilding public trust in the healthcare system, it is important to note that in developing countries, such as Iran, one of the main levels of governance is dealing with people through the healthcare system; therefore, the functioning of the healthcare system in addition to trust in the healthcare system will also be directly related to trust in the government [28]. On the other hand, the performance of other parts of the government can also severely affect the trust in the healthcare system [21, 28]. Consequently, the Ministry of Health of Iran needs to actively lobby for the restoration of trust in the healthcare system through various methods and advocacy at all levels of government. Since trust in the healthcare system will be a serious determinant of health, any political-economic event in the country should be monitored by the Ministry of Health and reconciled with the public's trust in the healthcare system [8, 28, 32].

In the current circumstances of the COVID-19 epidemic, one of the important reasons for the decline of public trust in the healthcare system is the numerous rumors propagated by individuals, groups, or other states with political-economic goals [3, 6]; therefore, the Iranian Ministry of Health needs urgent planning and action to identify these rumors alongside their source/s of dissemination, social origins, social influence and acceptability, and ultimately the appropriate way of communicating with the public about

them[6, 26, 33]. Dealing with this source of mistrust properly can help rebuild trust in Iran's healthcare system[33].

Another important factor in rebuilding public trust in the healthcare system in times of health crises is the appropriate public communication about uncertainties[6, 34]. People have a variety of news sources with different tendencies[26]. Moreover, in times of crisis, there is usually a lack of sufficient evidence, and as a result, policymakers' control decisions change. Sometimes some unreliable and inappropriate information can damage subgroups of the public and need to be handled appropriately[35]. In such circumstances, it is necessary to establish clear and honest communication with the public and to clarify the reasons for the decisions made regarding the crisis [6, 30, 31]. Two-way communication and listening to the public's voices can help improve public trust in Iran's healthcare system[12, 22]. To do so effectively, communicators need to receive specialized training, be selected from a variety of groups with higher social acceptability, actively engage with social influencers, 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. All communicators must provide similar content in different ways, and policies that are probably not accurate must not be denied but must be explained to the public [6, 11-13, 26-30, 32, 33, 35].

Our study showed that some groups with probably higher social influence, namely those with higher education and those with better SES, reported lower levels of trust in the healthcare system. Although various studies have reported conflicting results on the impact of the social class on the trust in the healthcare system [17, 19, 36, 37], the Iranian healthcare system now needs to interact constructively with these social subgroups. In most countries, even though the level of public trust in the healthcare system at the macro level is low, public trust in service providers has been reported to be at a satisfactory level [19, 20, 36]. In Iran, healthcare providers and teachers have a satisfactory level of public trust[38]; therefore, the Iranian healthcare system might also need a plan for constructive communication with these groups and take advantage of their potential social influence. Such strategies are necessary to rebuild trust in the healthcare system and control the COVID-19 epidemic.

Since our study used a single question approach to measure social trust in the healthcare system, an approach that has been applied repeatedly by others[17, 28], it did not measure the six recommended dimensions of public trust in the healthcare system[20]. However, this was in line with the purpose of the study, namely to rapidly assess the overall level of trust in the healthcare system at the early phase of the COVID-19 epidemic in Iran. Moreover, measuring the various dimensions of trust in the healthcare system at the time of the COVID-19 epidemic would not provide more information than measuring the overall level of trust[19], on the other hand, it was not possible in almost a short time. This study is the first national-level study in Iran to measure public trust in the healthcare system.

## Conclusions

At the time of the COVID-19 epidemic in Iran, the level of trust in the healthcare system is not acceptable and supportive. Urgent actions are needed to promote public trust in the healthcare system. People with higher social class had the lowest levels of trust in the healthcare system. Further studies are needed to identify the reasons for the low level of public trust in the Iranian healthcare system.

## List Of Abbreviations

AE, academic education

RC, regression coefficient

CI, confidence interval

SD, standard deviation

SES, socioeconomic status

MCA, multiple correspondence analysis

ANOVA, one-way analysis of variance

## Declarations

### Ethics approval and consent to participate

Informed consent has been obtained from each participant. This study has been approved by the Ethics Committee of the Shiraz University of Medical Sciences, Shiraz, Iran (code of ethics IR.SUMS.MED.REC.1399.301).

### Consent for publication

Not applicable.

### Availability of data and materials

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

### Competing interests

KBL is an ex-health minister in Iran. MHI, is an ex-president of Shiraz University of Medical Sciences. Authors declare no conflict of interests.

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## Authors' contributions

KBL and HMV contributed to the design of the study. KBL, HMV, AHH and MHI contributed to the implementation and analysis plan. HMV has written the first draft of this manuscript and all authors have read the text and contributed with inputs and revisions, and all authors read and approved the final manuscript.

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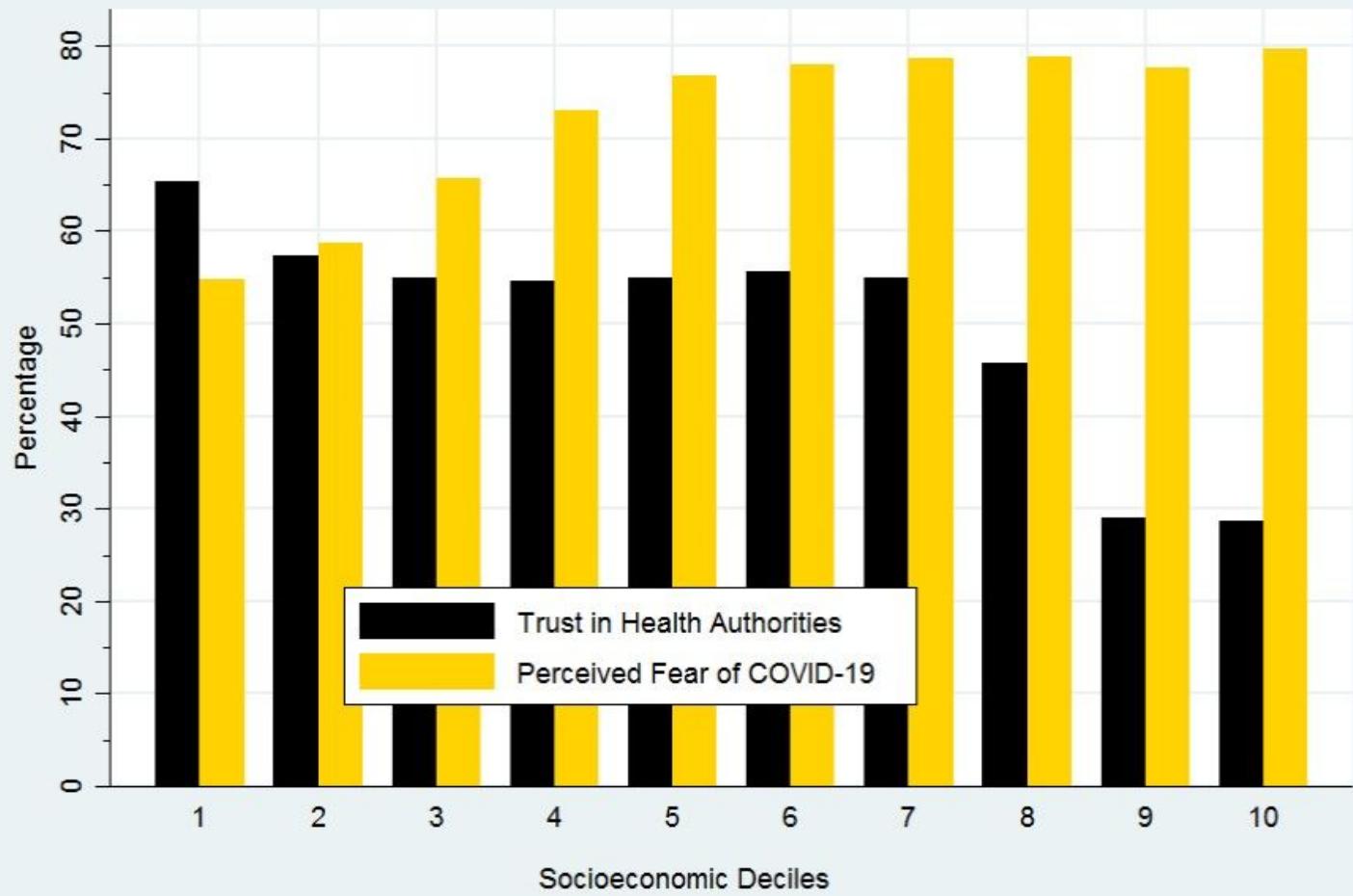
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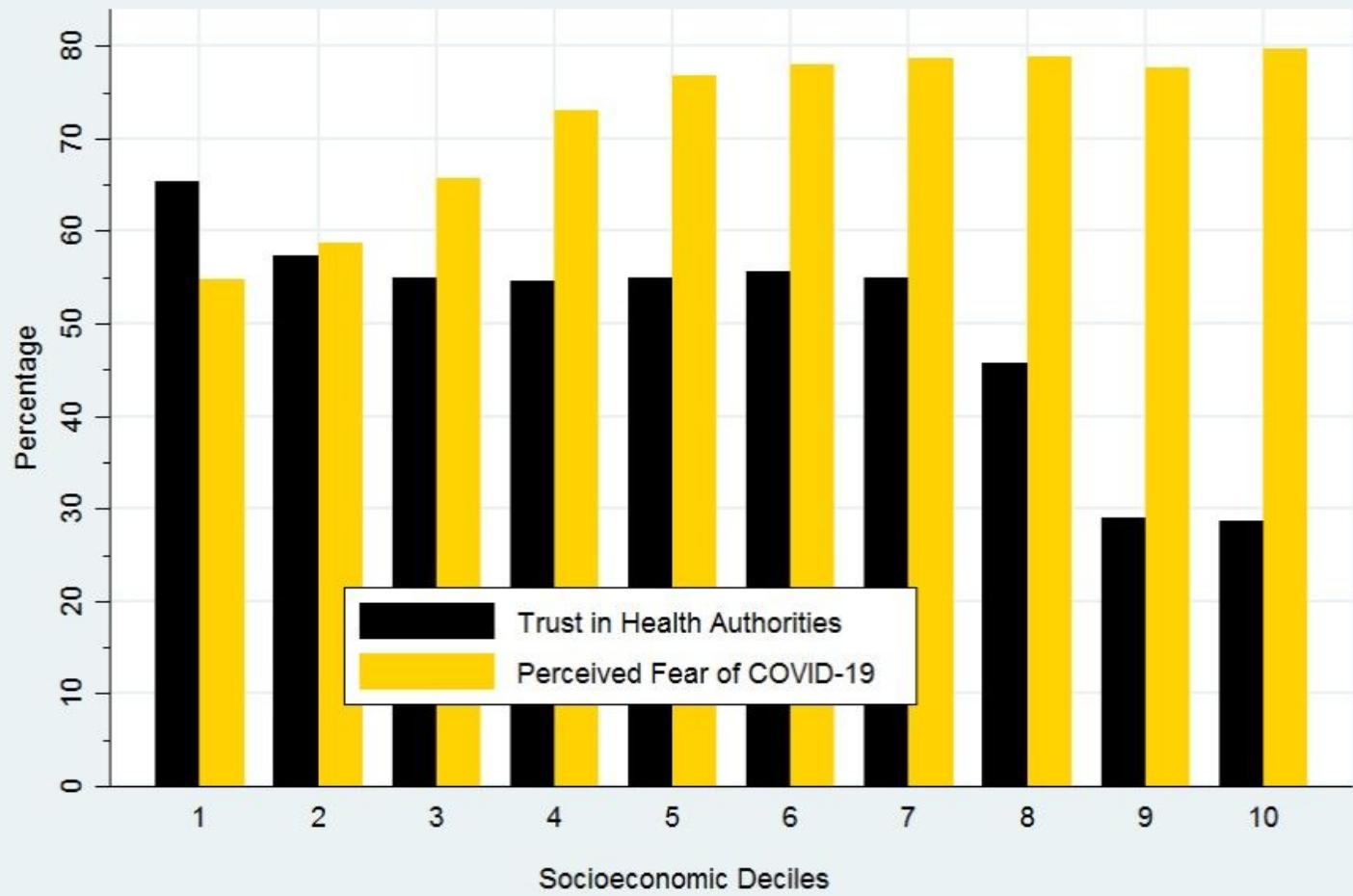
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## Figures



**Figure 1**

Correlation of Socioeconomic Status and Public Trust in the Healthcare System during the COVID-19 Epidemic in Iran



**Figure 1**

Correlation of Socioeconomic Status and Public Trust in the Healthcare System during the COVID-19 Epidemic in Iran