

## Health Literacy regarding Prevention and Control of COVID-19 in Iran

### ABSTRACT

**Background and Objectives:** Health literacy is a critical factor in the management of non-communicable and communicable diseases, such as COVID-19. The present study aimed to evaluate the status of health literacy concerning the prevention and control of COVID-19 among Iranian population in 2020.

**Materials and methods:** The present cross-sectional study was conducted using a researcher-made online questionnaire (The questionnaire consisted of seven multiple-choice demographic items and 50 questions on the health literacy of respondents during the coronavirus epidemic.) to collect data from 1200 Iranian compatriots selected via convenience sampling in 2020. Collected data were analyzed by running T-test, one-way analysis of variance, Pearson test, and regression test using SPSS 25 software. Significance level was considered based  $<0.05$ .

**Results:** The mean score of health literacy was  $66.33 \pm 15.48$  indicating higher rates in women, age group of 20-25 years, single people, urbanites, employees, healthy people, and individuals with academic education ( $p < 0.001$ ). Study variables could predict 42.5% health literacy concerning the prevention and control of COVID-19. Gender, residential area, health status, level of education, and occupation were significant predictors of health literacy ( $p < 0.001$ ).

**Conclusion:** Based on the findings, the health literacy of Iranian people was at a relatively desirable level. However, health authorities are required to design and implement purposeful and theory-based educational programs to raise the level of awareness in society.

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## Introduction

The Chinese government officially announced the outbreak of a new virus from the corona family in late 2019 (COVID-19) (1). The disease spread at an exponential rate throughout the world and turned into a pandemic (2). Within three months after the start of the epidemic, more than 100 thousand infected cases and about four thousand deaths caused by COVID-19 were recorded worldwide (3). At a time when dozens of countries had a growing number of new cases, the pattern of disease spread was declining in China (4). The disease pandemic was considered to affect the world's population significantly (5). Given the nature and widespread effects of COVID-19 on the individuals' psychological status, corona phobia (as an acute complication) was considered seriously and sometimes exaggeratedly in some countries (6). Since individuals' awareness and attitude play a significant role in the dissemination and implementation of preventive behaviors (7), health literacy is one of the significant factors affecting the prevention of infectious diseases (8).

Health literacy is defined as the degree to which persons have the ability to obtain, procedure, and comprehend health information and facilities wanted to make suitable choices around their health (10,9). So, health literacy is recognized as a vital effective factor in the results and costs of health care services (11). In the United States, nearly 90 million people were reported to have limited health literacy (11), which in turn increased the rates of hospitalization and emergency services in the United States (12-14). Based on the literature, low levels of health literacy have significant effects on people's behavior and can cause unpleasant consequences (15,16). The evidence shows that people with lower levels of health literacy have lower levels of health status (16,17) so hospitalization and mortality rates are higher among them(16,18,

19). Regarding Corona disease, poor health literacy is a major public health problem that is unfortunately downplayed by not only the general public but also the health policymakers (20). In Europe, almost half of the adults reported low levels of health literacy as well as a lack of the necessary competencies and capabilities to take care of themselves (20).

Health literacy is an essential factor in preventing non-communicable diseases that relies on purposeful education and communication in order to create sustainable healthy behaviors from the beginning of people's lives. Nevertheless, the exponential development of the COVID pandemic throughout the world has attracted public attention to the importance of health literacy for the prevention of non-communicable and communicable diseases. In other terms, the individuals' knowledge is as effective as the system's readiness to solve this complex problem. Although a long time is needed to improve people's health literacy, immediate measures are essential by governments and citizens (20). Consequently, this study was conducted to investigate the status of health literacy in the prevention and control of COVID-19 in Iran.

## Materials and methods

### Design

The present cross-sectional study was conducted online on 1200 Iranian participants in 2020. Using the sample size formula for mean estimation with 95% confidence interval and accuracy of 0.04. The sample size was estimated as 1045 with considering the sample loss, a total of 1200 people were included in this.

### Population

In this study, participants were selected through convenience sampling. The statistical population

included all Iranian people who had access to the Internet and virtual networks to answer the questions.

### Methodology

Followed by receiving the Code of Ethics from the Vice-Chancellor of Research in Shahrekord University of Medical Sciences, a researcher-made questionnaire was administered online through social networks. On the first page of the questionnaire, participants were provided with comprehensive explanations of the study procedure, purposes, and stakeholders. They also ensured about confidentiality and anonymity of the collected data. All individuals with access to the Internet and social networks who could read and answer the questions were included in the study using the available sampling method. People who were not willing to participate in the study or had incomplete questionnaires or couldn't read and answer the questions were excluded.

### Data collection tool

The data were gathered via a researcher-made questionnaire developed followed by reviewing the related scientific sources. The questionnaire consisted of seven multiple-choice demographic items and 50 questions on the health literacy of respondents during the coronavirus epidemic. The health literacy questions were answered on a five-point Likert scale ranging from never (no score), rarely (1 score), sometimes (2 scores), most of the time (3 scores), to always (4 scores). The mean score of health literacy was calculated from 100 so that scores within the range of 0-50, 51-70, and 71-100 showed unfavorable, relatively favorable, and favorable levels of health literacy, respectively.

Validity and reliability of the Questionnaire

To investigate the questionnaire's face validity, it was piloted on 30 people who were asked to provide their opinions about the appropriateness,

level of difficulty, and possible ambiguity of the items. Followed by confirmation of the instrument's face validity after performing the initial revisions, a panel of experts consisting of six health education specialists was asked to review the questionnaire, provide their possible revisions, and confirm its content validity. Later, the content validity ratio (CVR) and content validity index were calculated to ensure that the most important and related contents (the necessity of questions) were selected and the questions were best designed to measure these contents, respectively. In order to determine the CVR, experts were consulted and CVR values higher than 0.56 were accepted based on the Lawshe table (21). To determine the content validity index, the criteria of relevance, clarity, and simplicity were checked for each item and values greater than 0.79 were accepted (22). Cronbach's alpha for health literacy questions was 0.82 corroborating its reliability.

### Data analysis

Descriptive statistics included frequency and percentage for the qualitative variables as well as mean and standard deviation for the quantitative variables. Considering inferential statistics, t-test, one-way analysis of variance, Pearson correlation, and linear regression were run using SPSS version 25.

### Results

The participants included 1200 Iranian people, of which 20.5% (n = 246) were in the age group of 20-25 years, 56.6% (n = 679) were female, 56.8% (n = 682) were married, 51.2% (n = 615) had university education, 62.9% (n = 755) were urbanites, 26.3% (n = 315) were employees, and 38.6% (n = 463) reported good health status (Table 1).

**Table 1. Frequency distribution of demographic variables in participants**

Variables	Sub-categories	N (%)
Age (years)	Less than 20 years	124 (10.3)
	20-25 years	246 (20.5)
	25-30 years	165 (13.8)
	30-35 years	153 (12.8)
	35-40 years	157 (13.1)
	40-45 years	119 (9.9)
	45-50 years	89 (7.4)
	50-55 years	86 (7.2)
	Older than 55 years	61 (5.1)
Gender	Male	521 (43.4)
	Female	679 (56.6)
Marital status	Single	431 (35.9)
	Married	682 (56.8)
	Divorced or widowed	87 (7.2)
Residential area	Urban	755 (62.9)
	Rural	310 (25.8)
	Suburb	135 (11.3)
Education level	Primary school	93 (7.8)
	Secondary school	223 (18.6)
	High school	269 (22.4)
	University	615 (51.2)
Occupation	Employee	315 (26.3)
	House keeper	258 (21.5)
	Worker	115 (9.6)
	Self-employed	236 (19.7)
	Retired	71 (5.9)
	Unemployed	205 (17.1)
Health status	Very good	290 (24.2)
	Good	463 (38.3)
	Moderate	359 (29.9)
	Bad	75 (6.3)
	Very bad	13 (1.1)

The total mean score of health literacy was  $66.33 \pm 15.48$ . Different age groups were significantly different in terms of their health literacy scores ( $p \leq 0.001$ ); the highest ( $72.14 \pm 37.21$ ) and lowest ( $60.12 \pm 58.85$ ) mean scores were observed in the age groups of 20-25 and 55 years, respectively. The mean score of health literacy in women ( $69.15 \pm 12.90$ ) was significantly higher than men ( $62.14 \pm 70.15$ ) ( $p \leq 0.001$ ).

Single people ( $68.15 \pm 81.44$ ), urbanites ( $71.14 \pm 80.92$ ), employees ( $73.13 \pm 21.82$ ), and people with university education ( $1363 \pm 59.59$ ) also showed higher health literacy scores than other groups ( $p \leq 0.001$ ). The mean score of health literacy was significantly higher in people who reported very good health status ( $73.15 \pm 09.34$ ) than others (Table No. 2. )

**Table 2. Mean scores of health literacy based on the participants' demographic variables**

Variables	Sub-categories	Std. deviation ± Mean	P.value
Age (years)	Less than 20 years	65.17±15.07	0.001≥
	20-25 years	72.37±14.21	
	25-30 years	67.01±15.61	
	30-35 years	67.67±15.60	
	35-40 years	67.49±17.27	
	40-45 years	61.81±15.83	
	45-50 years	60.16±13.42	
	50-55 years	61.63±11.80	
	Older than 55 years	60.58±12.85	
Gender	Male	62.70±14.15	0.001≥
	Female	69.12±15.90	
Marital status	Single	68.81±15.44	0.001≥
	Married	66.17±15.54	
	Divorced or widowed	55.28±9.23	
Residential area	Urban	71.80±14.92	0.001≥
	Rural	57.67±12.10	
	Suburb	55.61±9.92	
Education level	Primary school	53.5±8.02	0.001≥
	Secondary school	54.93±10.13	
	High school	59.12±11.07	
	University	75.63±13.59	
Occupation	Employee	73.21±13.82	0.001≥
	House keeper	63.22±14.81	
	Worker	57.37±10.11	
	Self-employed	62.97±14.50	
	Retired	59.80±13.58	
	Unemployed	71.65±16.17	
Health status	Very good	73.09±15.34	0.001≥
	Good	70.58±15.23	
	Moderate	58.42±11.60	
	Bad	54.03±7.90	
	Very bad	53.27±12.71	

Table 3 contains the results of regression analysis to determine the predictors of health literacy in the prevention and control of COVID-19. According to the results, the investigated variables could predict 42.5% of health literacy in

preventing and controlling the disease. Among the studied variables, gender ( $p \leq 0.001$ ), residential area ( $p \leq 0.001$ ), health status ( $p \leq 0.001$ ), level of education ( $p \leq 0.001$ ), and occupation ( $p = 0.030$ ) were significant predictors of health literacy.

**Table 3. Health literacy predictors in preventing and controlling COVID-19 \***

Variables	Regression coefficient ( $\beta$ )	Standard error	P.value	Coefficient of determination (R <sup>2</sup> )
Age	0.025	0.172	0.331	0.425
Gender	0.130	0.709	0.001 $\geq$	
Marital status	0.046	0.686	0.078	
Residential area	0.188	0.588	0.001 $\geq$	
Educational level	0.443	0.406	0.001 $\geq$	
Occupation	0.054	0.259	0.030	
Health status	0.166	0.431	0.001 $\geq$	

\* Independent variables were entered into the regression model simulta

### Discussion

The present study aimed to investigate the status of health literacy in the prevention and control of the COVID-19 pandemic in the population of Iran. Based on the findings, the level of health literacy was relatively good in the participants. Variable of gender ( $p \leq 0.001$ ), residential area ( $p \leq 0.001$ ), health status ( $p \leq 0.001$ ), level of education ( $p \leq 0.001$ ), and occupation ( $p = 0.301$ ) could significantly predict the participants' health literacy. In a similar study, Okan et al. maintained that 49.9% of individuals had adequate health information while 34.9% were at inadequate levels of health literacy (23). McCaffery et al. reported that poorly educated people had lower levels of knowledge about the symptoms of COVID-19, adopted less infection-preventing behaviors, and had more difficulty in searching information and implementing the government messages about COVID-19 than others (24).

Individuals with low health literacy are less likely to understand the importance of social distancing and have more difficulty accessing the needed medications during the pandemic. The majority of people with low health literacy confirmed misconceptions about COVID-19 and vaccination. Rubeena et al. (25) noted that half of the individuals had high digital health literacy, while Schaeffer et al. reported that 54.3% of the

participants had inadequate health literacy (26). Similarly, Alidosti and Tavassoli (27) concluded the health literacy mean score was 45.23. Another study in Iran showed that health literacy was at an insufficient level (28). Given the current significance of health literacy and its important role in people's decisions in health-related areas, policymakers have noticed health literacy as one of the basic factors in improving the community health and quality of health care services (29). Health literacy skills enable people to use available resources, services, and training provided by health professionals to increase their awareness in accessing information sources and receiving accurate information (30).

In this study, we observed that the mean score of health literacy was higher in the age group of 20-25 years compared with other age groups. This finding is supported by Silva et al. indicating that young people have higher levels of health literacy than others (31). According to the findings, the mean score of health literacy was higher in women than men, which is in line with some studies (31, 32, 33) but contradicts others (31, 32, 33) but contradicts with others (34, 35). Moradi and Bahraminia (36) maintained that men and women were similarly at appropriate levels of health literacy. Such discrepancies in

the results can be explained by the variety in studies' population, demographic information of participants, and data collection instruments. Considering the difference between men and women in perceiving health information, health officials and policymakers are recommended to consider gender-specific strategies to deliver educational content.

The mean score of health literacy was higher in single individuals, urbanites, employees, and people with university education, which is in line with the results of a study stating that people with academic degrees had higher levels of health literacy (31). Shahbazi et al. (33) indicated that the majority of single participants had adequate levels of health literacy but noted no significant difference between them. Another study reported that single and married people were at the desired level of health literacy, although less-educated individuals were at more inadequate levels of health literacy (36). People's health literacy enhances as their level of education increases; so, vulnerable groups in each society should be provided with understandable and accessible educational content to raise their awareness and health literacy.

Moradi and Bahraminia (36) also found that retirees had the highest level of health literacy, while housewives were at the lowest level of health literacy compared to other occupational groups. This can be due to the lower levels of education among housewives compared to other occupational groups. In the present study, employees had the highest level of health literacy among the participants. Furthermore, the score of health literacy was higher in housewives of the present study compared to the research by Moradi and Bahraminia (36). In order to improve the level of health literacy among the vulnerable groups of the society, collaborative solutions should be devised to tackle health-related

problems by facilitating public access to health centers rendering health care services, such as health promotion courses.

The mean score of health literacy was higher in participants who declared that their health status was very good compared with other individuals. In the same vein, Izadi Rad and Zarban (37) observed a statistically significant relationship between health literacy and general health status. In other words, people with good general health status had higher levels of health literacy.

With regard to the current pandemic throughout the world, promoting health literacy is of greater importance than ever to prepare people for such situations that require a quick response. All members of the community, including those seeking health information and services and medical staff providing them, require health literacy that should be promoted in association with social responsibility and solidarity (8). To this end, comprehensive cooperation is necessary among the public media, Education Organization, Ministry of Health and Medical Education, as well as the staff of public and private health centers to enhance the level of health literacy and provide public access to health services. For instance, specific brochures containing basic medical and health information can be designed and distributed among patients referring to physicians' offices and those admitted to hospitals. Different groups of society can also receive a wide variety of attractive educational contents via cyberspace. Proper, purposeful, and appropriate education along with identification of limitations and principled planning is required to address the identified deficiencies and take measures to promote health literacy in the society.

A limitation in this study was related to its inclusion criteria. Since literacy and access to the Internet or virtual networks were necessary to

collect data online, a large number of compatriots could not enter the study. However, the present research is one of the few studies carried out to examine the health literacy of people in the community.

**Conclusion:** Although the level of health literacy was relatively desirable in Iranian participants, targeted and based education is required to inform different groups of the community. As a result, fewer complications and consequences are observed caused by communicable and non-communicable diseases such as COVID-19.

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