

## Investigating health literacy and its Relationship with the Social Influences of COVID-19 in Police force employees

### ABSTRACT

**Background and Objectives:** COVID-19 quickly spread worldwide, causing anxiety and fear among individuals and negatively impacting society. One key component for improving control over social factors is health literacy. This study aimed to investigate health literacy and its relationship with the social Influences of COVID-19 on Police force employees.

**Materials and Methods:** In this descriptive cross-sectional study, 300 employees of the Police force employees were included using the census sampling method. The data collection tool was a questionnaire consisting of demographic characteristics, a Health Literacy questionnaire (HELIA), and the social Influences of COVID-19 (SIQ) in 2022. The collected data were analyzed using statistical tests including analysis of variance, Pearson correlation, and regression analysis. The data were analyzed with SPSS24 software at a significance level of 0.05.

**Results:** The results of this study showed that the average health literacy score of Police force employees was  $21.91 \pm 68.11$ . In the division of health literacy, 32% had insufficient health literacy, 20.3% had sufficient health literacy, and 22.6% had excellent health literacy. Also, in the classification of the social Influences of COVID-19, 38% were found to have high social Influences, 3/38% had moderate effects, and 7/23% had low effects. Regression results showed a significant relationship between health literacy and the social Influences of COVID-19 ( $p < 0.001$ ). Health literacy can explain 64.0% of the variance of social Influences in Police force employees.

**Conclusion:** Given the importance of health literacy in preventing COVID-19 and its impact on the social Influences of COVID-19, it appears that educational programs aimed at increasing health literacy can be effective in addressing the social Influences of COVID-19.

**Paper Type:** Research Article

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## Introduction

Nowadays, health literacy is considered a vital indicator as it enables individuals to play an active role in the field of health and receive healthcare services (1). Health literacy is a set of skills, knowledge, motivation, and capacity that an individual has to access, comprehend, evaluate, and apply information for appropriate decision-making regarding health, healthcare, and performing suitable actions (2). Health literacy includes the ability to understand prescribed medication instructions, educational brochures, and consent forms, the ability to benefit from the complex medical system, analysis, decision-making, and the ability to use these skills in health situations that enable individuals to make judgments and decisions about their healthcare, disease prevention, and health promotion throughout their lives. It is evident that by increasing the level of health literacy in society, preventive measures can be identified in the initial stages which are controllable, and prevent the consequences of these diseases (3, 4). Additionally, health literacy can be considered a significant social factor that is effective in overcoming health barriers through intervention and empowerment of individuals, (5) since the benefits of health literacy can affect all activities of life, such as home life, work, community, and culture. Higher levels of health literacy lead to personal empowerment and independence, and can improve the quality of life of individuals, which ultimately leads to creating justice and stability in changes in public health in communities (6). Therefore, it can be said that one of the key components for improving control over determining social factors of

health is health literacy because social determinants are effective when people decide to move towards healthy behavior and action with relevant knowledge and awareness (7).

The COVID-19 virus and restrictive measures taken to control it have created challenges in interpersonal and social interactions. Measures such as social distancing and reduced public communication have greatly affected these relationships. Humans are social beings, and social relationships and interactions are essential to them. If such deep and meaningful relationships do not exist, it will undoubtedly lead to stressful conditions, anxiety, depression, psychological disorders, and health risks, as well as many other issues that affect individual life and social life as a whole (8). Life tensions between family members or individuals in society, due to economic reasons, financial constraints, and disagreements between the elderly, young people, and women, have gradually increased. In the crisis of COVID-19, despite the quarantine leading to increased isolation, the burden of responsibility for individuals in families, increased conflicts and family violence, suspension of social repair and relief mechanisms (such as mourning ceremonies), and business crises occurred (9).

The reduction in intercity and international travel has led to a decrease in income from tourism, especially in health tourism sites and locations, which was only one aspect of the social dimensions of this pandemic (10, 11). Health literacy can help reduce the negative effects of COVID-19 on society (12), especially among law enforcement personnel who are at risk of contracting the disease when in

contact with the public. One of the most important preventive measures against the spread of the COVID-19 virus is sufficient knowledge and awareness of health protocols.

Rasouli et al (13) showed that the e-health literacy of patients referred to the military hospital was not in a favorable condition. The level of health literacy of the soldiers was not very sufficient and the level of preventive behaviors was low. And the relationship between marital status and history of hospitalization with health literacy was significant, and the health literacy of married soldiers who had a history of hospitalization was higher (13).

Military forces are high-risk groups in terms of infectious diseases and are exposed to contagious diseases in terms of gathering and close biological relationships (14). Complex missions, strict rules, distance from family, the possibility of disability, fear of failure, and even captivity and death other factors can affect the amount of attention paid to health behaviors and ultimately the health of military personnel (15). The results of Mehrabi Tawana et al. regarding the level of awareness of military forces regarding individual and collective health were not satisfactory (14). Also, the average knowledge and the health behavior of Korean soldiers in dealing with tuberculosis was 11 out of 20 (16). Azimzadeh et al. showed that with the increase in the health literacy of the soldiers, their preventive behaviors increased (17). Also, the results of Nowrozi et al showed that there was a significant relationship between health literacy and preventive behaviors against contracting Covid-19 (18). Paying attention to improving the health

literacy of people in different dimensions can be effective in controlling and preventing the spread of infectious diseases (4). Considering the importance of literacy in all members of society and especially in the military, this study was conducted to determine health literacy and its relationship with the social Influences of COVID-19 in Police force employees.

## Materials and Method

In this cross-sectional study, 300 employees of the special unit of the police force were selected using the census sampling method. The research community included all employees of the special unit of the Urmia police force in 2022. The total staff of the special unit was approximately 350 people, of which 300 people were available and willing to participate in the study. Finally, 300 people were included in the study. Criteria for inclusion in the study: being a special employee of the police force, being satisfied with participating in the study, and criteria for exiting the study: not being satisfied with participating in the study, not completing a maximum of 20% of the questions in the questionnaire.

The tool used was a 3-part questionnaire, the first part was about demographic information (age, education level, marital status...), the second part was a health literacy questionnaire, and the third part was a questionnaire related to the social Influences of the coronavirus.

To measure health literacy, the HELIA questionnaire was used. This questionnaire includes 5 dimensions of the main questionnaire (reading dimension, mastery dimension, comprehension dimension,

evaluation dimension, decision-making dimension, and application of health information) which had 33 questions. It measures the above dimensions and the scoring method is that the raw scores of the 5 areas of health literacy are calculated and then converted into a standard score between 0 and 100, so that scores from 0 to 50 are inadequate health literacy, 50.1 to 66 are considered as insufficient health literacy, 66.1 to 84 as adequate health literacy, and scores from 84.1 to 100 are considered as excellent health literacy. During the research, Montazeri and his colleagues tested the design and psychometrics of this instrument and found it to have good validity and acceptable reliability. In the study conducted by Montazeri et al., the reliability and validity of the questionnaire were assessed using internal consistency measures, test-retest method, and Cronbach's alpha coefficient of 0.89 was obtained (19).

The Societal Influences Questionnaire (SIQ) of Adelinejad et al (20). Was used to measure the social Influences of the coronavirus. This questionnaire includes 4 dimensions: social distance, social desirability, social information, and social anxiety. In total, the scale of the social Influences of the coronavirus consists of 14 questions, the answers of which are prepared in the Likert method and in the form of 4 options from "never" to "rarely" and "sometimes" to "often". A score of 1 is given for the "never" option, a score of 2 is given for the "rarely" option, a score of 3 is given for the "sometimes" option, and a score of 4 is given for the "often" option. The range of scores varies from 14 to 56. And higher scores indicate fewer social Influences of the

coronavirus. Scores from 14 to 28 are considered as high social Influences, scores from 28.1 to 42 as moderate social Influences, and scores from 42.1 to 56 as low social Influences. The validity of this tool for measuring content validity, concurrent validity, and construct validity and its reliability have been investigated by measuring internal consistency and stability (through retesting). In the study conducted by Adelinejad et al., the reliability and validity of the questionnaire were assessed using internal consistency measures, test-retest method, and Cronbach's alpha coefficient of 0.80 was obtained (20). The questionnaires were completed after explaining the objectives of the research and the satisfaction of the samples and with the guidance of the interviewer and in the form of a self-report. After collecting the data, they were entered into SPSS20 software and analyzed by descriptive statistics tests and statistical methods of analysis of variance, Pearson correlation, and regression.

### Ethical considerations

After stating the objectives of the research and obtaining verbal informed consent from the participants, data collection was done. It also emphasized the anonymity of the questionnaires and maintaining the confidentiality of the information.

### Results

The results showed that the average age of the studied employees was  $34.15 \pm 8.67$  years. All subjects were male. Also, the largest age group was between 35 and 30 years old (37%), and most married people were 172 (57.3%). In terms of education status, most people had a diploma (65.3%). And in terms

of economic status, most people had an average economic status of 164 people (54.7%). 46.3% of individuals have a history of being infected with COVID-19 and their test results have been positive. And 53.3% had received at least one dose of the COVID-19 vaccine.

The relationship between demographic variables and health literacy showed that health literacy had a statistically significant relationship with marital status, education level, history of infection with COVID-19, and history of COVID-19 vaccination ( $p < 0.05$ ). In this way, the average score of health literacy in employees who are married and employees who had a higher level of education was higher than other people. Also, employees who had a history of

infection with COVID-19 and a history of vaccination against COVID-19 were more health literate (Table 1).

The results of this study showed that the average health literacy score of Police force employees was  $21.91 \pm 68.11$ . In the division of health literacy, 25.4% of Police force employees had inadequate health literacy, 32% had not very adequate health literacy, 20.3% had adequate health literacy, and 22.6% had high health literacy. Also, in the division of the social Influences of COVID-19, 38% were unfavorable social Influences, 38.3% were relatively favorable Influences, and 23.7% favorable Influences were obtained (Table 2).

**Table 1. Demographic information and its relationship with health literacy in the studied population**

Demographic information		Frequency (%)	HL Mean(SD)	p-value
Age	25-30	27(9)	68.38±13.86	0.09
	30-35	111(37)	67.12±28.95	
	35-45	105(35)	69.14±22.92	
	>45	57(19)	68.10±20.90	
Marital status	Single	128	66.18±23.96	<0.001
	Married	172	70.26±20.86	
Level of Education	Guidance	27	66.10±22.88	0.002
	Diploma	196	68.12±20.90	
	University	77	70.11±21.95	
The economic situation	Good	37	69.08±18.89	0.08
	medium	164	68.13±24.92	
	Weak	99	67.12±21.91	
History of infection with covid 19	Yes	139	71.07±26.89	<0.001
	No	161	65.15±16.93	
The vaccination history of covid 19	Yes	160	72.18±18.86	<0.001
	No	140	64.05±24.96	

The Pearson correlation results between health literacy and the social Influences of the coronavirus showed that there is a strong positive correlation between health literacy and all its dimensions and the social Influences of COVID-19 and all its dimensions ( $p < 0.001$ ) (Table 3).

The results of the regression test showed that health literacy significantly predicted the social Influences of COVID-19 on employees ( $p < 0.001$ ). In this way, the increase in health literacy predicts 64% of the variance of social Influences in Police force employees.

**Table 2. Mean and standard deviation of health literacy scores and social Influences of COVID-19 on the studied subjects**

Health literacy variables	Mean and standard deviation
Accessibility	13.41±3.91
Reading skills	8.98±4.01
Understanding and comprehension	12.88±3.41
Assessment	10.01±3.14
Decision making	21.81±4.51
Total health literacy	68.11±21.91
Societal Influences	Mean and standard deviation
social distance	16.02±5.67
social acceptance	8.86±2.95
social information	5.61±1.93
social anxiety	7.15±2.54
Total Societal Influences	37.65±11.09

**Table 3- Pearson correlation coefficient matrix between health literacy and the social Influences of the coronavirus**

Health literacy variables	Societal influences	Social distance	Social acceptance	Social information	Social anxiety	Total societal influences
Accessibility	R=0.45 p<0.001	R=0.51 p<0.001	R= 0.41 p<0.001	R=0.37 p<0.001	R=0.38 p<0.001	R=0.42 p<0.001
Reading skills	R=0.37 p<0.001	R=0.34 p<0.001	R=0.32 p<0.001	R=0.42 p<0.001	R=0.47 p<0.001	R=0.57 p<0.001
Understanding and comprehension	R=0.44 p<0.001	R=0.45 p<0.001	R=0.47 p<0.001	R=0.57 p<0.001	R=0.50 p<0.001	R=0.49 p<0.001
Assessment	R=0.48 p<0.001	R=0.59 p<0.001	R=0.60 p<0.001	R=0.39 p<0.001	R=0.49 p<0.001	R=0.43 p<0.001
Decision making	R=0.35 p<0.001	R=0.41 p<0.001	R=0.42 p<0.001	R=0.44 p<0.001	R=0.48 p<0.001	R=0.58 p<0.001
Total health literacy	R=0.55 p<0.001	R=0.56 p<0.001	R=0.51 p<0.001	R=0.47 p<0.001	R=0.46 p<0.001	R=0.59 p<0.001

The correlation coefficient in this study showed that there is a strong and significant relationship between health literacy and the social Influences score (Table 4).

**Table 4. Regression analysis indicators for predicting the social impacts of COVID-19 on Police force employees**

Independent variable	r correlation coefficient	r <sup>2</sup> coefficient of determination	F	Beta	t	p
Health Literacy(HL)	0.78	0.64	346.1	0.79	17.12	p<0.001

## Discussion

The results showed that by increasing the health literacy of Police force employees, the social Influences of COVID-19 will decrease. The study by Omrani et al. (6), Shin & Lee (21), and Wong et al. (22) showed that the more people's health literacy is; the social

knowledge and behavior of people in the field of prevention of COVID-19 improved and the number of patients and complications caused by COVID-19 and other diseases had decreased. The results of this study were consistent with the study of Turhan et al. (23), Navid et al. (24).



In our study, more than half of Police force employees (57%) did not have sufficient health literacy and 78% of Police force employees had moderate to high social Influences caused by the COVID-19 disease. But in Mahmoudiani et al.'s study (4), 40% of the participants did not have a sufficient literacy level. The gender difference in the two studies could be the reason for the inconsistency in the results. In our study, all participants were male and non-Police force employees. In Yang et al.'s study (25), Chinese residents had high health literacy and it improved their mental health. In the study of Nowrozi et al. (26), the level of health literacy in the residents of Ardabil was above average, and preventive behaviors regarding COVID-19 were improved. But in the study of Borji et al. (27), and Yousefi et al. (28), Tavana et al (3). Choi et al (5). Most of the participants had an inadequate level of health literacy, and the general health status of the majority of them was unfavorable.

This inconsistency seems to be related to the level of education of the participants in different studies. On the other hand, health literacy is a complex construct and several factors such as economic and social factors, cultural status, individual characteristics, demographic groups and the number of different samples may affect this construct. Also, health literacy in married people who had a higher level of education (28).

Saatchi et al. (29) In a study conducted in Ardabil City, the relationship between health literacy and marital and sexual satisfaction was investigated in women who were referred to health-treatment centers, and people who had higher health literacy had better marital satisfaction and quality of life.

(30) Military personnel who have higher education; have more ability to search for health-related content in virtual space and have more access to information and scientific texts. They can also communicate effectively with other members of society. Health literacy refers to a person's level of knowledge and awareness about health-related issues. Studies have shown that there was a positive relationship between health literacy and the education of graduate students (31).

According to the studies carried out in the research, in general, it can be said that with the increase in health literacy, the preventive behaviors of getting infected with COVID-19 increase. Accordingly, people with more health literacy pay more attention to media information and social responsibility, which can Prevention of corona infection should be effective (1). The results of our study showed that health literacy explained 64% of social Influences. In Omrani et al.'s study (6), health literacy had a significant relationship with social commitment, and with the increase in social commitment, social anxiety, which was one of the components of social Influences, was reduced, and finally, people's mental health was improved. Social commitment is known as a factor that causes positivity, and responsibility, and increases the participation of people in controlling the disease of COVID-19. In Rajabi et al.'s study, with the increase in health literacy, the social Influences (mental health, desirability, knowledge, and social distance) of people improved (32). And it was similar to the study of Kugbey et al. (33), Nguyen et al. (34), and Nowrozi et al. (26) some studies have also shown that older people with higher levels of health literacy

show higher care behaviors and are healthier. (28, 35) People who have a higher level of health literacy; may pay more attention to their health status and therefore choose healthy behavioral habits and increase their health-related social desirability.

Regarding mental health, in a study conducted by adults in Poland, higher health literacy was associated with a lower level of anxiety (36). This finding was consistent with the results of studies conducted in other countries. In our study, employees who had a history of infection with COVID-19 and a history of vaccination against COVID-19 were more health literate. It is possible that people who were infected with COVID-19; had more perceived threats, so they have been referred to more doctors, books, and resources for their prevention and treatment. In McCaffrey et al.'s study, using the STAI questionnaire on a sample of adult Australians, the insufficient level of health literacy was associated with a lower perceived threat and a higher level of anxiety (37). Wolff et al also observed a greater degree of anxiety in patients living in the United States who had low health literacy (38). Higher health literacy protected against the occurrence of depressive symptoms in people suspected of having COVID-19 (34) and in medical students from fear related to COVID-19 (39). The results of Duplaga et al.'s study showed that those who had a regular daily schedule and exercised regularly and sought information about COVID-19 had better mental health compared to those who avoided this topic (40).

#### **Study Limitations and Strengths:**

Conducting the study in men and military personnel, intersectionality of the study and self-reporting reduces the generalization of

the results to other groups. It can be suggested that in future studies, similar research should be conducted in the group of women as well as civilians, and different groups should be compared.

#### **Conclusion**

With the increase in health literacy, the social influences of Covid-19 among police force employees were moderated. Considering that health literacy is an essential element in people's ability to understand, process, and carry out health-related information and spread the activities of preventing the disease of COVID-19 and the effect it has on the social Influences of COVID-19, educational programs in Increasing health literacy can be effective in the social Influences of COVID-19.

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**Availability of data and materials:** Data will be available upon request from the corresponding author.

**Conflicts of interests:** The authors declare that they have no conflict of interest.

**Consent for publication:** Not applicable.

**Ethical approval and consent to participate:** All methods were carried out in accordance with relevant guidelines and regulations as defined by the Declaration of Helsinki. The ethics committee of Islamic Azad University, Urmia Branch (IR.IAU.URMIA.REC.1400.098) approved the present research. In addition, the study team obtained Informed consent from participants.

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