



## Original Article

# Health literacy in Iranian adults: A population-based survey in southeast Iran in 2022

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## Abstract

**Introduction:** Health literacy (HL) is a crucial determinant of social health in any country. Based on the 7th World Health Promotion Conference in Nairobi, HL has been considered a key concept in health promotion policies since 2010. This study aimed to determine the status of HL in adults (18 to 65 years old) living in southeast Iran.

**Methods:** This was a cross-sectional study among 460 residents of southeastern Iran. Sampling was done with the multi-stage method. Data were collected using the "Health Literacy Instrument for Adults (HELIA)". One-sample *t* test, analysis of variance, were also used for data analysis in SPSS 25.

**Results:** The mean score of HL was  $68.10 \pm 15.16$ , and 55.7% of participants had adequate HL. "Understanding and comprehension ability" had the highest mean score ( $75.43 \pm 18.48$ ), while "reading ability" had the lowest ( $65.12 \pm 20.60$ ). All demographic variables, except for marital status, had a significant correlation with HL.

**Conclusion:** The level of HL among more than 55% of the participants is adequate. However, programs should focus on improving "reading ability" to better health information comprehension. Also, developing an integrated tool for measuring HL status for all regions of Iran can merge data related to Iranians' HL status.

**Keywords:** Health literacy, Consumer health information, Southeastern Iran, Adults

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## Introduction

Health literacy (HL) is the ability to obtain, process, and understand basic health information and services to make informed decisions.<sup>1</sup> Since 1970, this concept has been applied in health.<sup>2</sup> The World Health Organization (WHO) has highlighted HL as a crucial factor in maintaining a healthy lifestyle. Adequate HL is essential for making informed decisions and adopting health-oriented behaviors in various life situations.<sup>3</sup> Individuals with higher levels of HL tend to engage in better self-care practices and are less likely to experience injuries and health disorders.<sup>4</sup> HL is often divided into four different components by many sources. These include reading and comprehending health information, communication and decision-making skills, access to health information, and health knowledge and beliefs. Hence, HL should not be limited to just the ability to read and write health-related data.<sup>1,5</sup> HL, as one of the critical health indicators, is considered for the prevention of illnesses, especially non-communicable diseases. It is a strong predictor of individual and social health status, along with other factors such as age, education, income, and the economy.<sup>6</sup>

Empowering individuals to take control of their health and contribute to the community requires high HL. The higher the level of HL among the population, the stronger the community's social capital becomes.<sup>7</sup>

High HL has significant effectiveness in health promotion programs. It also facilitates the implementation of comprehensive health-focused interventions at various individual and social levels. Indirectly reducing HL lowers healthcare costs and disease burden by decreasing the need for secondary healthcare and unnecessary referrals.<sup>8</sup> On the other hand, a society with low HL lacks reliable health information, leading to misconceptions and harmful attitudes toward health issues, which threatens the community's well-being.<sup>9</sup> In communities with lower HL, people heavily favor unofficial and unreliable sources for health information, rarely consulting scientific sources. This, coupled with decreasing trust in healthcare systems and experts, leads them to cling to unverified online information, false beliefs, and slang, potentially harming their health.<sup>9</sup> Numerous studies conducted worldwide show varying levels of HL. According to studies, over 50% of the population in developed and industrialized



countries, such as Germany, have adequate and desirable levels of HL.<sup>10</sup> However, in developing and poorer countries, this rate drops significantly and can even be below 30%.<sup>11-13</sup> Several studies have also been conducted in Iran to estimate the level of HL among individuals. The findings indicate a significant difference between different population groups and regions of Iran, ranging from below 30% to around 70% in some provinces. In one of the most comprehensive national studies, a 2019 survey by Iranpour et al. showed that the level of Iranian HL is inadequate.<sup>11</sup> Using a standard tool to conduct regional assessments of the HL status can be a critical introduction to improving HL within communities, as many variables contribute to this subject. Therefore, the present study aims to investigate the HL status of adults in southeastern Iran in 2022.

## Materials and Method

### Study design and participants

This was a cross-sectional study among 460 residents in Bam city in southeastern Iran. Participants were native Persian speakers with adequate literacy skills, excluding those under 18 and over 65 years old. Three trained interviewers, briefed beforehand during a 40-minute session, collected data through face-to-face questionnaires completed by participants. Following COVID-19 protocols, interviewers wore masks and gloves, disinfected pens and forms regularly, and maintained a 1.5-meter distance. Interviews were conducted in two daily shifts (9:00 AM–11:30 AM and 4:30 PM–7:00 PM), with questionnaires taking an average of 10 minutes (7-12 minutes).

### Sampling and sample size

This study employed a multi-stage sampling method. In the first phase, the neighborhoods of Bam were categorized into three socioeconomic levels based on the urban map: rich, medium, and low-income. Following this, a proportional-to-size sampling strategy was implemented, selecting six, three, and two clusters from the rich, medium, and low-income categories, respectively. Data collection spanned four weeks. Cochran's formula for cross-sectional studies was used to calculate a minimum sample size of 382. This ensured the final sample adequately represented the entire population of Bam City. Ultimately, 460 individuals participated in the study (207, 133, and 120 participants from the rich, medium, and low-income categories, respectively).

### Data collection instrument

The "Health Literacy Instrument for Adults (HELIA)" questionnaire was used to assess HL status. Its validity and reliability have been confirmed in previous studies.<sup>14,15</sup> The questionnaire consists of two main parts:

- Respondent characteristics: age, gender, marital

status, literacy level, and source of health information.

- 33 items in five subscales: Access to health information (6 items), Reading ability (4 items), Understanding and comprehension ability (7 items), Evaluation ability (4 items), Decision-making and application of information (12 items).

All items are answered on a five-point Likert scale. The options for the "Reading Ability" subscale are: Completely easy=5, Easy=4, Neither easy nor difficult=3, Difficult=2, Completely difficult=1. The options for the other subscales are: Always=5, Most of the time=4, Sometimes=3, Rarely=2, Never=1. According to Tavousi estimate in the HELIA questionnaire psychometric and development study,<sup>14,15</sup> the raw score for each participant in each subscale is obtained by the sum of the item scores in that subscale. Then, the following formula is used to convert this score to a range of zero to 100:

$$\left( \frac{\text{Crude score in subscale} - \text{min possible score in subscale}}{\text{max possible score in subscale} - \text{min possible score in subscale}} \right) * 100$$

To calculate the total HL score, the sum of the subscale scores is divided by the number of five subscales on a scale of 0 to 100. The possible score range for HL is 33 to 165, and the HL level is ranked into four categories: Inadequate (0-50), Not very adequate (51-66), Adequate (67-84), Excellent (85-100).

### Data analysis

Data analysis was performed using SPSS 25 software. Descriptive statistics, including mean, standard deviation, and frequency, were used to characterize the data. Sample *t* test and one-way ANOVA were utilized to compare subscale scores across background variables, and to assess differences in background variable scores. The Kolmogorov-Smirnov test was used to assess the normality of the data. A significance level of 0.05 was adopted for all analyses.

## Results

The mean age of participants was  $32.38 \pm 10.53$  years, and 62% were female (This imbalance can be attributed to the data collection method. Due to COVID-19 safety protocols, the survey was conducted face-to-face during limited hours, often coinciding with work times. This made women more readily available to participate). Furthermore, 48% of participants reported having a university education, and 72% identified as married (Table 1).

The mean score of HL among participants was  $68.10 \pm 15.16$  (out of a total of 100 points). Among the HL subscales, the highest and lowest mean scores were observed for "Understanding and comprehension ability" ( $75.43 \pm 18.48$ ) and "Reading ability" ( $65.12 \pm 20.60$ ), respectively (Table 2).

Overall HL Levels among 55.7% of the participants had

**Table 1.** Characteristics based on gender among participants

Characteristics	Female (n = 275)	Male (n = 175)	Total (N = 460)	
Educational level, No. (%)	Illiterate/Elementary	10 (3.5)	7 (4.0)	17 (3.7)
	Secondary/High school	128 (44.9)	94 (70.0)	222 (48.3)
	College/university	147 (51.6)	74 (42.3)	221 (48.0)
Job position, No. (%)	Permanent job	50 (17.5)	33 (18.9)	83 (18.0)
	Unemployed	78 (27.4)	3 (1.7)	81 (17.6)
	Housewife/ homemaker	0 (0.0)	4 (2.3)	4 (0.9)
	Retired	20 (7.0)	14 (8.0)	34 (7.4)
	Student	137 (48.1)	109 (62.3)	246 (53.5)
	Other (Temporary job)	0 (0.0)	12 (6.9)	12 (2.6)
	Marital status, No. (%)	Married	212 (74.4)	121 (69.1)
Wifeless/bachelor/single		73 (25.6)	54 (30.9)	127 (27.6)
Healthy accessible sources, No. (%)	Ask from physicians	138 (48.4)	77 (44.0)	215 (47.6)
	Internet	8 (2.8)	7 (4.0)	15 (3.3)
	Telephone	39 (13.7)	22 (12.6)	61 (13.3)
	Radio and TV	75 (26.3)	56 (32.0)	131 (28.5)
	Newspaper and journals	0 (0.0)	2 (2.0)	2 (2.0)
	Ask from friends and others	4 (1.4)	1 (0.6)	5 (1.1)
	Healthy brochures	6 (2.1)	1 (0.6)	7 (1.5)
	Satellite	13 (4.6)	6 (3.4)	19 (4.1)
	Other sources	2 (0.7)	3 (1.7)	5 (1.1)
	Age (y), Mean $\pm$ SD	31.55 $\pm$ 9.7	33.75 $\pm$ 11.6	32.38 $\pm$ 10.5

sufficient overall HL levels. Only 0.7% of the participants had excellent HL levels, and 11.1% had inadequate HL levels. There was a significant difference in HL levels across all background variables except marital status (Table 3).

## Discussion

In current survey, more than half of the participants had adequate HL. However, studies from different regions of Iran show a wide range of results.<sup>16</sup> Some studies found lower HL than the adequate level.<sup>17,18</sup> Afshari et al. in Hamedan found inadequate HL in over half of participants,<sup>17</sup> and Mohseni et al. in Kerman reported similarly.<sup>18</sup> In contrast, Zaree et al found that about 59% of participants had adequate HL,<sup>19</sup> and Panahi et al reported similar findings.<sup>20</sup> Our study aligns with the latter, with 55.7% having adequate HL. Notably, a national survey by Haghdoost et al<sup>11</sup> in 2019 estimated lower HL for Iranians overall. This difference likely stems from variations in participant groups and regional factors.

Interestingly, the city of Bam received special attention from health officials after the earthquake. Establishing an independent University of Medical Sciences in 2012 and balanced distribution of resources across Kerman province have contributed to the improvement of general HL in recent years.<sup>21,22</sup>

Another notable point is that a variety of tools and questionnaires have been used to assess HL in Iran.<sup>15,23,24</sup>

In the present study, the HELIA questionnaire was used. The reason for choosing this questionnaire for the present study was its simplicity and comprehensibility, the number of questions, and its high reliability coefficient, which was well demonstrated by Tavousi and colleagues in their study.<sup>15</sup> In contrast, the study by Haghdoost et al used another questionnaire, the "Iranian Health Literacy Questionnaire (IHLQ)", with a different measurement accuracy, and it was also validated.<sup>25</sup> Previously, other questionnaires such as "Test of Functional Health Literacy in Adults (TOHIFA)", "Newest Vital Sign (NVS)", and "National Assessment of Adult Literacy (NAAL)" had been used to assess HL in other parts of Iran, which have different levels of accuracy and quality.<sup>26-28</sup> Therefore, the development of a standard and acceptable tool for all regions of Iran can greatly help in comparing and measuring the level of HL in different regions of Iran.<sup>11</sup>

This study found that educational level impacted HL. Numerous studies have found a correlation between education level and individual HL. For instance, Afshari et al found that participants with higher education levels in Hamedan had better HL.<sup>17</sup> Similarly, Haghdoost et al. identified education level as a key factor when designing an HL assessment questionnaire.<sup>25</sup> Tavousi et al also emphasized the critical role of education in determining HL.<sup>15</sup> These studies suggest that improving education and increasing educational attainment can significantly enhance HL.

**Table 2.** Descriptive of mean scores of HL and its subscales among participants

HL and its subscales	Mean ±SD (crude)	Mean ±SD (0-100)	Min	Max	Number of items
Reading ability	14.41 ± 3.29	65.12 ± 20.60	5.00	20.00	4
Access to health information	22.15 ± 5.04	67.30 ± 21.03	6.00	30.00	6
Understanding and comprehension ability	28.12 ± 5.17	75.43 ± 18.48	7.00	35.00	7
Evaluation ability	14.49 ± 3.38	65.61 ± 21.14	4.00	20.00	4
Decision-making and application of information	44.18 ± 9.03	67.06 ± 18.82	12.00	60.00	12
HL total	68.10 ± 15.16		11.25	100.00	33

**Table 3.** Level of HL according to characteristics among participants

Characteristics	Insufficient = 51 (11.1%)	barely enough = 150 (32.6%)	Enough = 256 (55.7%)	Excellent = 3 (0.7%)	P value	
Age group (y), No. (%)	18 to 35	25 (9%)	99 (35%)	157 (56%)	0 (0%)	<0.01
	35 to 45	13 (11%)	34 (28%)	72 (59%)	3 (2%)	
	45 to 65	13 (24%)	17 (31%)	24 (44%)	0 (0%)	
	≥ 65	0 (0%)	0 (0%)	3 (100%)	0 (0%)	
Gender, No. (%)	female	25 (9%)	86 (30%)	172 (60%)	2 (1%)	<0.05
	male	26 (15%)	64 (37%)	84 (48%)	1 (1%)	
Marital status, No. (%)	Married	37 (11%)	102 (31%)	191 (57%)	3 (1%)	0.74
	Wifeless/bachelor/ single	14 (11%)	48 (38%)	65 (51%)	0 (0%)	
Educational level, No. (%)	Illiterate/Elementary	4 (24%)	3 (18%)	10 (59%)	0 (0%)	<0.001
	Secondary/High school	30 (14%)	83 (37%)	109 (49%)	0 (0%)	
	College/university	17 (8%)	64 (29%)	137 (62%)	3 (1%)	
Job position, No. (%)	Permanent job	28 (11%)	65 (26%)	150 (61%)	3 (1%)	<0.05
	Unemployed	4 (12%)	13 (38%)	17 (50%)	0 (0%)	
	Housewife/ homemaker	9 (11%)	39 (48%)	33 (41%)	0 (0%)	
	Retired	0 (0%)	2 (50%)	2 (50%)	0 (0%)	
	Student	6 (7%)	27 (33%)	50 (60%)	0 (0%)	
	Other (Temporary job)	4 (33%)	4 (33%)	4 (33%)	0 (0%)	
Healthy accessible sources, No. (%)	Ask from physicians	21 (10%)	65 (30%)	127 (59%)	2 (1%)	<0.05
	Internet	15 (11%)	43 (33%)	73 (56%)	0 (0%)	
	Telephone	1 (20%)	2 (40%)	2 (40%)	0 (0%)	
	Radio and TV	8 (13%)	24 (39%)	29 (48%)	0 (0%)	
	Newspaper and journals	1 (14%)	3 (43%)	3 (43%)	0 (0%)	
	Ask from friends and others	0 (0%)	6 (40%)	9 (60%)	0 (0%)	
	Healthy Brochures	3 (16%)	5 (26%)	11 (58%)	0 (0%)	
	Satellite	1 (50%)	0 (0%)	1 (50%)	0 (0%)	
	Other sources	1 (20%)	2 (40%)	1 (20%)	1 (20%)	

Among the different HL subscales, the “understanding and comprehension ability” had the highest scores in this study. Several factors inhibit the general public’s understanding of health information, including its specialized nature, diversity, complexity, continuous development, and variety of health determinants. Technical terms bombard patients navigating the healthcare system. Fortunately, virtual spaces like educational websites and social media platforms, along with expanded services, can empower them with health knowledge and practical tips. This comprehensive approach can greatly improve their overall understanding

and comprehension of health information.<sup>29,30</sup>

Improving the HL of residents and helping them better understand health-related information can be achieved through several approaches. several other strategies can enhance the community’s HL. Establishing medical universities, designing targeted scientific programs tailored to regional needs, and incorporating active and expert educators are crucial components. Additionally, allocating applied fields based on local conditions and assuming regional responsibilities ensure the initiatives address specific community needs. Building upon past experiences, these combined efforts can make a

significant impact on overall HL.<sup>31</sup>

### Conclusion

The level of HL among more than 55% of the participants is adequate and the *Understanding and comprehension ability* receiving the highest score. However, programs should focus on improving *reading ability* to better health information comprehension. Also, developing an integrated tool for measuring HL status for all regions of Iran can merge data related to Iranians' HL status.

### Limitations and Suggestions

The limitations and conditions caused by the COVID-19 pandemic created a special situation for data collection in the present study. To address this, specific guidelines for conducting the survey were developed for the interviewers based on the preventive guidelines issued by the National Coronavirus Headquarters. These guidelines included the use of masks, gloves, and face shields while completing the questionnaires, maintaining a safe distance of at least 1.5 meters from participants, and limiting the survey hours to 9:30 AM to 12:00 PM.

The present study was conducted on the population aged 18 to 65 years living in Bam County. To improve comparability, the study can be replicated in the student and elderly populations of this region. Additionally, by measuring HL in the cities and villages of this region, better and more comprehensive data can be provided for planning and comparison in the field of HL in the southeast of the country.

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### Authors' Contribution

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### Competing Interests

The authors declare that there is no conflict of interest in this study.

### Ethical Approval

Before completing the questionnaire, all participants in this study

were informed of the study's objectives, and their verbal informed consent was obtained. The research team also ensured the confidentiality of all data. The study was approved by the Ethics Committee of Bam University of Medical Sciences with the ethics code IR.MUBAM.REC.1398.074.

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