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DOI:
10.4103/jehp.jehp_116_20

Health literacy and its predictors among urban and rural adults in Bijar County

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Abstract:

BACKGROUND AND PURPOSE: The World Health Organization has identified health literacy (HL) as one of the most important determinants of people's health. Therefore, this research aimed to investigate the status of HL and its predictors.

MATERIALS AND METHODS: This research was a cross-sectional study that was performed on 600 adults in Bijar County, Iran. Cluster sampling was used to select the samples. Data were collected using the questionnaire of HL for Iranian adults. Data were analyzed using one-way analysis of variance, Student's *t*-test, and multiple linear regression in SPSS 21.

RESULTS: The mean score of HL was 3.6 out of 5; 69% and 29% of the samples had a moderate-to-high health status, respectively. Among the dimensions of HL, the highest and the lowest means were perception (3.94) and evaluation (3.21), respectively. Based on the multiple regression results, the variables (gender – $B = -0.142$, confidence interval [CI]: -0.409 to -0.011 , $P = 0.39$; education level – $B = 0.391$, CI: 0.149 – 0.287 , $P = 0.00$; and income level – $B = 0.203$, CI: 0.00 – 0.00 , $P = 0.01$) were significantly positively associated with HL.

CONCLUSION: The results of this study can be applied to educational interventions through media and radio-television to increase public awareness. Education is also strongly recommended in terms of demographic variables and characteristics to promote HL in the society.

Keywords:

Adults, health literacy, Iran, predictors

Introduction

The World Health Organization (WHO) defined "health literacy (HL) as the individual characteristics and social resources needed by society to access, understand, evaluate and use services to make health decisions."^[1] It is one of the most important determinants of health.^[2] HL skills are effective in taking the health promotion messages,^[3] and also, it is important not only for personal health care but also to engaging in community discussions and planning on issues that affect health.^[4] HL is the pioneer of health and achievement a culture of health.^[5]

People's HL has been shown to play a key role in the search for health information.

People with poorer HL are less likely to use health services than those with higher HL and therefore have poor health outcomes (self-reported poor health and poor mental and physical health).^[6,7] Low HL is associated with increased hospitalization and mortality and nonadherence to treatment^[8] and is involved in evaluating online health information.^[9] Furthermore, low HL makes a person less aware of his/her medical condition and, as a result, shows poor self-care behavior.^[10]

HL is also affected by many factors including individual, social, cultural, and language

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How to cite this article: Baraie B, Pashaei T, Kakemam E, Mahmoodi H. Health literacy and its predictors among urban and rural adults in Bijar County. *J Edu Health Promot* 2020;9:181.

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Received: 11-02-2020

Accepted: 23-03-2020

Published: 28-07-2020

factors;^[11] based on results of previous studies, a survey of adult's HL in the United States showed that 20% of the study participants had a low HL, 29% had a marginal HL, and 51% had an adequate HL.^[12] The level of HL was reported by several studies in Iran. A study conducted by Tehrani *et al.* showed that 21.3% of people had adequate HL and 41.5% of participants were healthy in terms of general health variables.^[13] A study conducted among the Isfahan population showed that 8.8% of people had adequate HL, 11.6% had marginal HL, and 15.5% had insufficient HL,^[14] and findings from a nationwide population-based survey in Iran showed that the Iranian adult population has an insufficient level of HL.^[15]

Previous studies showed that HL can be predicted by gender, age, race/ethnicity, and level of education,^[16,17] and nationwide population-based survey in Iran showed that education level, age, female sex, residency in rural areas, and having permanent were significantly associated with more HL.^[15]

HL is a new concept, and few research studies have been done in this area; in Iran, there is little information about the status of HL as an important factor in the health system and decision-making. Considering the issue, it is necessary to address the subject and its dimensions and factors for helping planners and officials as an important tool. Therefore, the purpose of this study was to investigate HL and its predictors among urban and rural adults in Bijar County, Iran.

Materials and Methods

Type of study

A community-based cross-sectional study was carried out among the people aged 18–65 years.

Study setting

This study was conducted in Bijar. Bijar is the center of the city with a population of 51,714 and has common borders with the provinces of Hamedan, Zanjan, and West Azerbaijan. Bijar is located 125 km northeast of Sanandaj (the center of Kurdistan Province).^[18]

Population of study

The study population was adults aged 18–65 in Bijar.

Inclusion and exclusion criteria

Inclusion criteria for participating in the study included minimum literacy, 18–65 years of age, Iranian citizenship, residence in Bijar, and informed consent, as well as having cognitive and mental disorder, acute visual and auditory problems, and speech problem in a way that the subjects were unable to communicate; lack of consent to co-operate and incomplete completion of the questionnaire were some of the exclusion criteria.

Sample size and sampling method

In this research, the sample size considering the prevalence ratio and the confidence of 95% was calculated.

Assuming a rate of 28% for adequate functional health literacy (FHL) based on the results of a previous study (19), and 0.95 confidence level, the sample size was calculated using the formula $N = Z^2PQ/d^2$, where $Z = (1.96)^2$, $P = 0.28$, $Q = 0.72$ and $d = 0.04$ sample size equal 483. In order to consider the design effect, the sample size was multiplied by 1.5 ($n = 725$). Finally, assuming a non-response rate of 10%, the sample size was set to 795.

The population of Bijar was 93,714 people, considering that 44% of the population of Bijar (42,000 people) lived in villages, 24 rural clusters, and 29 urban clusters were finally selected. In urban sampling, considering the coverage of 5 comprehensive health service centers, the number of clusters per center was determined from 29 urban clusters based on the population covered by each center. Selection of head clusters in the city was done through a list of households covered by the comprehensive health centers. After selecting the head clusters, the residential units were selected by moving to the right when leaving the door of each house. Then, in each residential unit, the questionnaire was completed for all individuals of 18 years and older of households until the end of the cluster (15 individuals). The village head clusters were selected randomly from the list of households of a comprehensive health center/health house. After selecting the village head clusters, moving to the right (when leaving the door of each house), the completion of 15 questionnaires was continued. In the villages, houses were considered in the design of every other. To increase the coverage of the question, a re-referral was carried out if needed so that the households or individuals who were not present at the first referral were questioned.

Data collection tool

The data were collected using the questionnaire of (health literacy for Iranian adults). The validity and reliability of the questionnaire were evaluated in Iran. The construct validity was evaluated by the exploratory factor analysis, and the reliability was evaluated by calculating the internal correlation coefficient of the questionnaire, and the Cronbach's alpha in the relevant constructs was 72%–89%.^[20] The questionnaire had two parts: demographic characteristics (age, gender, education, marital status, occupation, place of residence, housing status, income status, and sources of health and illness information) and 33 questions in 5 main dimensions of reading (4 questions), accessibility (6 questions), understanding (7 questions), evaluation (4 questions), and decision-making and health information use (12 questions). The scale of scoring the questionnaire

is a five-option Likert scale; in the questions of reading skill, the score 5 belongs to the option very easy, 4 to the option easy, 3 to the option neither easy nor difficult, 2 to the option difficult, and 1 to the option quite difficult. In the other four dimensions of HL, the score 5 belonged to the option always, 4 to the option more often, 3 to the option sometimes, 2 to the option rarely, and 1 to the option never. After the researcher came to the research environments and explained the goals and obtained permission, the research tool was provided to the research participants, and the data were collected.

Ethical considerations

The protocol of this study was approved by the Ethical Committee of Kurdistan University of Medical Sciences (IR.MUK.REC.1396.67). At first, the aims of the research were described for the participants, and after acquiring the verbal informed consent, they completed the questionnaire and were assured that the information obtained would remain completely confidential.

Data analysis

SPSS 21 software was used for data analysis (IBM Corp., Armonk, NY, USA). Descriptive statistics such as frequency, percentage, mean, and standard deviation (SD) were used to describe demographic variables and total score and the HL dimensions. To obtain the level of HL, the mean scores of overall HL were divided into three intervals of low, moderate, and high HL, with a score of 1–2 for low HL, 2.01–4 for moderate HL, and 4.01–5 for high HL. The Kolmogorov–Smirnov test was used to determine the normality of the data. The results showed that the data are normal. *T*-test (two groups) and analysis of variance (ANOVA) (>2 groups) were used to evaluate the mean difference of HL among different groups. The predictors of HL were determined through multiple linear regression.

Results

A total of 795 individuals were included in the study, and 195 were excluded due to the incomplete completion of the questionnaire (75% response rate). The mean age (\pm SD) of the participants (\pm 13.17%) was 38.60 years. 44.2% of the sample were female, 79.2% were married, and 24% of them had a university education. Most of the participants (59%) reported physicians and health-care workers as sources of their health information and 21.6% reported the radio and television as sources of health information. HL scores were significantly higher among female and single participants than men and married ones ($P < 0.05$). Individuals with government jobs had better HL ($P < 0.001$), and the HL of those living in urban areas was higher than those living in rural areas ($P < 0.001$). Participants in the age group of 18–29 years had better HL than the other ages ($P < 0.001$). The level of

HL of college-educated participants was higher than the other groups, and ANOVA showed that this difference is significant ($P < 0.001$). Other participants' characteristics are shown in Table 1.

The study findings revealed that the mean score of HL was 3.60 out of 5. The highest and the lowest means were perception (3.94) and evaluation (3.21), respectively. Almost 70% of the participants had a moderate HL, and 29.2% had a high level of HL. Among the dimensions, the majority of the respondents (43.5%) had a high level of HL in terms of perception [Table 2].

The applied multiple linear regression [Table 3] analysis indicated that among demographic variables, gender, income, and education level were identified as predictors of HL. HL among women was 14.2% higher than men ($B = -0.142$, confidence interval [CI]: -0.409 to -0.011 , $P = 0.39$). In relation to the education level, the HL of individuals with university education was significantly higher than other groups ($B = 0.391$, CI: 0.149 – 0.287 , $P = 0.00$). Participants who had incomes above \$ 250 (ten million rials) had a 20% higher HL rate than those with incomes below \$ 250 (ten million rials) ($B = 0.203$, CI: 0.00 – 0.00 , $P = 0.01$).

Discussion

The aim of this study was to investigate the status of HL and its predictors among adults in Bijar County. HL status was moderate among the participants in this study. Our results showed that approximately 70% and 29% had a moderate and high HL, respectively. Findings from this study also demonstrated that participants who are female, single, had a government job, living in urban areas, and aged 18–29 had a higher HL compared to their counterparts.

In the present study, HL status was moderate among participants, which is in agreement with those reported in the previous studies.^[21–23] Improving HL can be a result of the impact of seeking health-related information through the media or exposure to information provided through the media. Previous studies showed that exposure to the media or social media can improve HL.^[24,25] Other studies have reported a poor HL level.^[19,26,27] The differences in HL in the different studies appear to be due to the use of various tools to measure HL and specific age and occupational groups or possibly different locations and cultures.

Among the five dimensions of HL, the perception and evaluation had the highest and lowest levels of HL from among other levels of HL that is consistent with other studies.^[22,27] Results from another study showed that the participants had poor access information, information perception, moderate judgment, and use

Table 1: Socioeconomic and demographic characteristics of adults in Bijar, Iran, 2016 (n=600)

Variables	Subgroup	n (%)	Mean (SD)	P
Sex	Male	335 (55.8)	2.86 (0.49)	0.041
	Female	265 (44.2)	3.27 (0.59)	
Education	Illiterate	78 (13.0)	3.54 (0.44)	<0.001
	Elementary	129 (21.5)	3.54 (0.44)	
	Guidance	135 (22.5)	3.84 (0.56)	
	High school	114 (19.0)	3.84 (0.56)	
	Academic	144 (24.0)	4.16 (0.55)	
Marital status	Single	125 (20.8)	3.79 (0.66)	<0.001
	Married	475 (79.2)	3.55 (0.68)	
Job	Unemployed	69 (11.5)	3.41 (0.63)	<0.001
	Homemaker	201 (33.5)	3.41 (0.63)	
	Manual worker	83 (13.8)	3.49 (0.64)	
	Government's employee	99 (16.5)	4.20 (0.56)	
	Self-employed	88 (14.7)	3.55 (0.53)	
	Others	60 (10.0)	3.67 (0.76)	
Residency	City	261 (43.5)	3.92 (0.63)	<0.001
	Village	339 (56.5)	3.35 (0.62)	
Household income	>10 million rials	84 (14.0)	3.6 (0.70)	0.815
	≤ 10 million rials	516 (86.0)	3.59 (0.57)	
Age group	18-29	184 (30.7)	3.71 (0.59)	0.001
	30-44	258 (43.0)	3.64 (0.66)	
	45-60	108 (18.0)	3.45 (0.72)	
	60-65	50 (8.3)	3.38 (0.84)	
Content access	Physician	354 (59.0)	3.46 (0.64)	<0.001
	Internet	84 (14.0)	4.16 (0.51)	
	TV	129 (21.6)	3.70 (0.64)	
	Friends	19 (3.2)	3.39 (0.97)	
	Book	5 (0.8)	3.47 (0.95)	
	Others	9 (1.5)	3.06 (0.41)	

SD=Standard deviation

Table 2: Mean (SD) of health literacy dimensions and total score of adults (n=600)

Health literacy dimensions	Mean (SD)	Health literacy level		
		Low	Moderate	High
Access information	3.38 (0.85)	21 (3.5)	448 (74.7)	131 (21.8)
Reading ability	3.66 (0.90)	32 (5.3)	363 (60.5)	205 (27.1)
Perception	3.94 (0.75)	10 (1.7)	329 (54.8)	261 (43.5)
Evaluation	3.21 (1.05)	103 (17.2)	365 (60.8)	132 (22)
Decision-making	3.80 (0.61)	4 (0.7)	401 (66.8)	195 (32.5)
Total of health literacy dimensions	3.60 (0.68)	7 (1.2)	418 (69.7)	175 (29.2)

SD=Standard deviation

of information.^[28] In the section of perception, the item “perception healthy nutrition recommendations” had the highest score, and the items “I understand the meaning of the contents written in the instruction sheet before performing a test, ultrasound or radiologic,” had the lowest score; we can increase people’s HL by educating physicians and staff in different parts of the hospital. In the evaluation dimension, the item “I can evaluate the accuracy of health information provided on the Internet” had the lowest score; the citizens need to be educated in order to properly judge and analyze the health information and, with regard to the basic health information and services they need, make the right decisions to enhance their health. Given that the lowest

level of HL in this study was related to the dimensions of evaluation, access information, and reading ability, it is possible to increase the level of HL through media and radio/television. This, of course, requires cross-sectoral cooperation and organizations that are somehow involved in protecting people’s health.

Multiple regression results showed that HL had a significant relationship with the income status of individuals so that the individuals with high-income level are of high level of HL; this is consistent with a study conducted in Germany.^[11,29] This, of course, is inconsistent with a study done in Iran.^[23] Individuals or families with high incomes can be attainment

Table 3: Factors associated with health literacy among adults (n=600)

Variable	B (CI 95%)	P
Marital status	-0.027 (-0.231-0.141)	0.636
Sex	-0.142 (-0.409--0.011)	0.039
Education level	0.391 (0.149-0.287)	<0.001
Job	-0.039 (-0.086-0.047)	0.568
Housing situation	-0.002 (-0.154-0.149)	0.973
Income	0.203 (0.00-0.00)	0.001
Acquire information	-0.009 (-0.044-0.037)	0.861
Age	0.062 (-0.003-0.009)	0.303

CI=Confidence interval

high education level, and therefore, they can able to understand medical information or leaflets. However, this relationship cannot be directed means that persons who have a high level of education are still at risk of low HL.

There was also a significant relationship between HL and gender, and the women's health status was better than men's, which is consistent with the previous study.^[30] However, other studies have rejected the significant relationship between HL and gender.^[31,32] Women are seeking care and their familiarity in navigating the health care system more than men in Iranians society, therefore it can be the reason for they have a high level of HL. And also, women have an important role in the health of the family, and they have knowledge about health-care processes. Previous studies showed that women has have role care for children's and patient members of the family, especially this heightened amongst pregnant women who seeking care for their children.^[33]

On the other hand, education had a significant relationship with the level of HL, meaning that people with higher education had a higher level of HL. This indicates the role of basic public literacy in enhancing HL, leading to increased knowledge and awareness of people and increased attention to the issue of health and well-being; this result is in line with other studies.^[34-36] The results of this research showed that the questioning of physicians and staff of health centers and then the radio and television were the most important sources of health information for the participants. This is consistent with other studies.^[13,37] A study conducted in Iran indicated that the audience received the information about health mostly (42.5%) through radio and television.^[38] One of the limitations of this study is that it was a cross-sectional study that examined only a part of time. It is recommended that future studies be conducted as an intervention to promote HL and to consider other variables such as cultural and social factors.

In a recent document of the WHO, the Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development, it is stated that HL empowers

individual citizens and enables their engagement in collective health promotion action;^[39] therefore, our findings help us to understand the level of HL among our population study and design educational programs to improve HL and empowerment them to self-care and access promoting health- care equality. This indicates a need to understand the various perceptions of the level of HL that exists among different cultures and various population studies.

In addition, other variables such as cultural backgrounds affecting HL have not been evaluated, and the data were collected as self-report. Furthermore, this study was conducted in one of the cities of Kurdistan Province. The results should be generalized with caution for other environments.

Conclusion

In this study, the individuals' HL status was moderate, and income, gender, and education level were identified as predictors of HL. The design and implementation of educational interventions based on the demographic variables and characteristics is strongly recommended to promote HL in the society. The results of our study indicated that most adults have a moderate HL. Since the HL is an important factor in understanding the health messages and recommendations of health-care providers, and since the questioning of physicians and health-care staff has been the most important source of health information for the participants, it is imperative that the physicians and health professionals to can be use effective methods of transferring information and communicate appropriately based on the level of HL of the clients.

Acknowledgments

Hereby, we would like to thank all those who participated in this study as well as the staff of Bijar health centers.

Financial support and sponsorship

This research was supported by the Kurdistan University of Medical Sciences.

Conflicts of interest

There are no conflicts of interest.

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