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Health Literacy and Its Related Factors Among the Elderly in Rasht City, Iran

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ABSTRACT

Introduction: Limited health literacy is a major concern among the elderly because they often need more health information and services to maintain their well-being.

Objective: This study was conducted to determine the level of health literacy of elderly members of the National Retirement Fund of Rasht City, Iran.

Materials and Methods: The present study was an analytical cross-sectional study conducted on 290 retirees of the National Retirement Fund of Rasht City using the convenience sampling method in 2017. The data collection tool was a questionnaire consisting of two sections: Personal profile and functional health literacy of adults (TOFHLA: Test of Functional Health Literacy of Adults). TOFHLA consists of two sections: reading comprehension and numeracy, which includes 67 questions (50 questions related to reading comprehension and 17 questions related to numeracy). The obtained data were analyzed using descriptive and inferential statistics (Chi-square test, Fisher exact-test, analysis of variance, and Independent t-test).

Results: The Mean±SD age of the participants was 65.38±4.96 years. About 52.1% of the subjects were men and the rest were women. Also, 54.8% had adequate health literacy. The highest Mean±SD score of health literacy was in the field of reading comprehension (36.30±7.90) and the field of numeracy (36.11±11.60). A statistically significant relationship was observed between the level of health literacy and the level of education (P=0.001) and between the level of education of the spouse (P=0.0001) and the history of cancer (P=0.008).

Conclusion: This study showed that about half of the elderly studied had poor health literacy. Providing appropriate training programs may be effective in improving the health of the elderly.

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Highlights

- Improving health literacy may be an effective strategy in improving health and utilizing health services.
- Almost over half of the elderly in this study had adequate health literacy.
- It seems that the best way to improve health literacy among the elderly is to provide training programs that are implemented according to the level of education, gender, and income of the people.

Plain Language Summary

Health literacy refers to the ability of individuals to acquire, analyze, and understand the basic health information and services they need. As a result, they can make the right decisions about their health issues. If people's health literacy is at an acceptable level, they can rightly interpret and analyze the issues related to their health, and better protect themselves and those around them from the pathogens. Health literacy has a profound effect on various aspects of elderly life. Therefore, inadequate health literacy in the elderly is a warning to officials, health policymakers, and health care providers. To determine the relationship between health literacy and related factors, this study was performed on 290 elderly people. According to the findings of this study, people's health literacy levels vary according to their level of education, so that the highest level of health literacy belongs to people who had a university education. Higher education provides greater access to health information, effective communication with health care workers, and the search for health-related content. In this study, the level of spouse's education also had a statistically significant relationship with health literacy. It seems that the presence of a spouse with higher education, in addition to causing more involvement of the elderly in health issues, can play a decisive role in promoting their health literacy.

Introduction

Health literacy is defined as the individuals' capacity to acquire, understand, and interpret basic information and health services that are necessary for appropriate health decision-making [1]. The term was first coined in a 1974 paper calling for minimum standards of health education for all levels and degrees in the United States and is now a global issue in the 21st century [2, 3].

Some researchers believe that health literacy is a stronger predictor of health than variables such as age, income, employment status, level of education, and race [4]. This means that people with a sufficient level of health literacy can take the best care of their health, family, and community [5]. While limited health literacy prevents people from effectively guide themselves through today's complex health systems and participate in health-related decisions [6]. Low levels of health literacy are more common in the elderly with chronic diseases. As a result, these individuals are considered to be at risk for adverse effects on low levels of health literacy [7].

Recent research has shown that low levels of health literacy in the elderly have consequences such as overlooking preventive behaviors (such as screening tests), adopting some high-risk health behaviors, and overall poor physical and mental health [3, 7, 8]. In Raisi's study in Isfahan, 79.6% of the elderly had insufficient health literacy, 11.6% had borderline health literacy, and only 8.8% had sufficient health literacy [8]. According to Lee's study of Taiwan's adult health literacy, 30% of those surveyed had insufficient and borderline health literacy [3]. In Mohseni et al. study, 52.5% of the studied elderly had an insufficient level of health literacy [7].

In some studies, the relationship between socioeconomic indicators, age, language barriers, low education, chronic illness, and poor mental health have been suggested as factors related to limited health literacy [9, 10]. Considering the growth of aging population in Guilan Province, the province with the oldest people in Iran [11], and its direct relation to the increase in social and medical costs, this study aims to determine the level of health literacy in the elderly who referred to the National Retirement Fund of Rasht City, Iran.

Materials and Methods

This analytical cross-sectional study was conducted in Rasht City and on the elderly group (60 years and older)

in 2017 [8]. The research environment in this study was the National Retirement Fund of Rasht City. The required sample size in the studied elderly, with 95% confidence interval (Z=1.96, α=0.95), and considering 5% margin of error (d=0.05), and based on the results of a similar study (with findings of 79.6% insufficient health literacy in the studied elderly) [8], a sample of 245 people were determined. Considering the probability of 15% dropout, finally, 290 people were selected.

The samples were selected by the convenience sampling method from the elderly who referred to the National Retirement Fund of Rasht City. The inclusion criteria were as follows: Being 60 years or older, being a member of the National Retirement Fund, living in Rasht City, and being able to communicate verbally to answer the questions. The exclusion criteria were as follows: Elderly people who had severe visual and auditory problems, or according to the researcher's observations, had symptoms of impaired comprehension, or unable to complete the questionnaire. However, to verify the accuracy of the statements made by the samples, at the beginning of the interview the researcher asked the participants to read a simple text aloud and listen to a text being read.

The data collection tool was a two-part questionnaire. The first part included personal and social information (age, gender, marital status, number of children, level of education, level of education of spouse and level of education of each child, monthly income, type of insurance, economic status, previous and current job, and history and duration of the disease). It should be noted that in this questionnaire, the criterion for assessing the economic condition of the samples was considered based on the amount of salary and monthly income of each person. Finally, based on the reports of the samples, three categories of good, bad, and average were considered for the economic condition.

The second part of the questionnaire was the Test of Functional Health Literacy of Adults (TOFHLA), which consisted of reading comprehension and numeracy sections. It included a total of 67 questions (50 questions related to reading comprehension and 17 related to the numeracy section). TOFHLA is one of the most important and reputable health literacy questionnaires in the world, and its translation has been validated in several languages. This questionnaire has been used in similar studies in Iran [7, 8, 12].

The reading comprehension section of this questionnaire examines the patient's ability to read authentic health care texts. This section, which includes 50 questions, examines patients' ability to read three different guidelines texts about preparing for upper gastrointestinal imaging, patient's rights and responsibilities in insurance forms, and a standard hospital consent form. Each of the questions in the reading comprehension section has one score, and each person's total score is recorded between 0 and 50.

In the numeracy section, the computation competence of the individuals in terms of understanding and following the recommendations of physicians and health educators is assessed. This section includes 10 explanations or health instructions about prescribed medications, doctor appointments, steps to receive financial aid, and an example of the results of a medical test. After handing over the cards containing these explanations to each person, the relevant questions (17 questions) will be asked. Each person's score in this section is calculated between 0 and 50, that is, the number of correct answers is weighted and 3 positive points are considered for each correct answer. Based on the sum of the scores of these two sections, the total score of each person's health literacy is calculated. It would be a number between 0 and 100 and is categorized into three levels of "insufficient", "moderate", and "sufficient" based on the separation points 59 and 74 [7].

After obtaining written approval from the Ethics Committee and the Research Vice-Chancellor of Guilan University of Medical Sciences, the researcher visited the Retirement Fund office and its affiliated agencies. Then, the researcher introduced ownself to the research samples and gave them information about the objectives of the research and ensured them the confidentiality of the information. Next consent forms were filled by samples. The completed questionnaires were then collected and analyzed. The samples studied in this research were chosen from different centers, including Department of Education, University of Medical Sciences, Tobacco Co., Regional Electricity Co., Department of Natural Resources, University of Guilan, Telecommunications Co., Department of Roads and Urban Development, Governor's Office, Judiciary Courthouse, Youth and Sports General Directorate, and Hope House of Retirees in Rasht City.

The sampling lasted for 35 days in the fall of 2017 until the required sample size for this study was completed. During this period, 711 people referred to the abovementioned centers. Of these individuals, 472 met the inclusion criteria. However, 165 of them did not include in the study due to the unwillingness to participate in the study. Finally, 307 people completed the question-

naires. Data from 17 samples could not be examined due to incomplete questionnaires, and finally, the data of 290 samples were analyzed.

Among the questionnaires completed by the samples, 5 people did not answer the questions of the numeracy section and 3 people did not answer the questions of the reading comprehension section, which was considered as 0 minimum in the analysis. The Chi-square test and Fisher exact-test were used to investigate the relationship between health literacy status and qualitative demographic variables. To compare the mean values of quantitative variables such as age, the number of children, etc., according to the health literacy status, we used 1-way analysis of variance. The significance level of the tests was considered P<0.05.

Results

A total of 290 elderly people with a Mean±SD age of 65.38±4.96 years participated in the study. The minimum and maximum age of the samples were 60 and 83 years, respectively. About 52.1% of the participants were male and 47.9% were female. Most subjects were married and had a university degree; 44.1% of the subjects had a spouse with a university degree; 76.6% reported their monthly income more than $250; 74.8% reported their economic situation to be moderate, with only 9.7% reporting their financial situation well; 88.6% of the samples were employees before retirement and 89.7% of them reported that they were unemployed at the time. Also, 93.8% of these people had health insurance, and 75.2% were retirees of the department of education.

The most prevalent of chronic diseases in subjects were joint diseases (49.3%), blood pressure (32.1%), and diabetes (21.7%). About 36.9% of the subjects reported that the duration of their disease was 10 years or more. The Mean±SD score of the numeracy section was 36.11±11.60; the Mean±SD score of the reading comprehension section was 36.30±7.90, and the Mean±SD score of the health literacy was 72.41±16.34. The level of health literacy of 22.1% of the elderly was insufficient; 23.1% had moderate health literacy and 54.8% sufficient health literacy.

In this study, a significant statistical relationship was found between the level of health literacy and the education of the individual (P=0.001) and the spouse (P=0.0001) (Table 1). The results of the 1-way analysis of variance showed that the health literacy score had a statistically significant difference in terms of the number of children (P=0.017) (Table 2). Regarding the level of health literacy and the history of the disease, the results showed a statistically significant relationship between the history of cancer and health literacy (P=0.008) (Table 3). No significant statistical relationship was found between health literacy and the history of other diseases, as well as between health literacy and duration of disease.

Discussion

The present study aimed to determine the level of health literacy in the elderly who referred to the National Retirement Fund of Rasht City. According to the results, more than half of these elderly people had adequate health literacy. These results are consistent with the results of various similar studies conducted [3, 13-15]. In some other studies, adults had lower levels of health literacy [7, 8, 12]. This may be due to differences in the study target groups, as most of these studies were about normal people in the community.

The retired seniors, most of whom had a university degree in medicine and education, attended the present study. The mean level of health literacy in the present study showed that about one-third of the samples had borderline health literacy, which is consistent with the results of many studies conducted in Iran [16-18]. A similar study by Liu to determine the health literacy of Chinese seniors had similar results [19].

The findings of the present study were inconsistent with the study of Raisi et al. concerning the level of health literacy [8]. It seems that the reason for this difference is related to the level of education of the samples participating in the present study because, in that study, the samples were elderly who referred to Health Treatment Centers with apparently lower levels of education.

The findings also showed that the highest score of health literacy of the samples was first in the reading comprehension section and then in the numeracy section. Similar results were obtained in Mulla Khalili and Borji's study [20, 21]. It seems that the reason for the lower score in the numeracy section is due to the nature of the questions related to this field, which requires more time and focus to answer the relevant questions, and perhaps these items are beyond the capacity and capability of the elderly.

In this study, a significant relationship was found between the level of education and health literacy. Higher education is likely to provide more access to health information, effective communication with health care

Table 1. Frequency distribution of health literacy status with qualitative the personal and social characteristics of study samples

Variables		Health Literacy Level Status No. (%)			Sig.*
		Insufficient	Moderate	Sufficient	
Gender	Male	35 (23.2)	40 (26.5)	76 (50.3)	0.234
	Female	29 (20.9)	27 (19.4)	83 (59.7)	
Marital status	Single	1 (50.0)	0 (0)	1 (50)	0.973
	Married	57 (22.0)	60 (23.2)	142 (54.8)	
	Deceased spouse	5 (20.0)	6 (24)	14 (56)	
	Separated spouse	1 (25.0)	1 (25)	2 (50)	
Level of education	Elementary	4 (40.0)	3 (30)	3 (30)	0.001
	High school	3 (33.3)	3 (33.3)	3 (33.3)	
	Diploma	31 (30.4)	30 (29.4)	41 (40.2)	
	College education	26 (15.4)	31 (18.3)	112 (66.3)	
Spouse education	Illiterate	4 (50.0)	3 (37.5)	1 (12.5)	0.001
	Elementary	1 (10.0)	1 (10)	8 (80)	
	High school	11 (42.3)	9 (34.6)	6 (23.1)	
	Diploma	34 (29.3)	32 (27.6)	50 (43.1)	
	College education	13 (10.2)	22 (17.2)	93 (72.7)	
Economic status	Weak	13 (28.9)	16 (35.6)	16 (35.6)	0.059
	Medium	45 (20.7)	47 (21.7)	125 (57.6)	
	Good	6 (21.4)	4 (14.3)	18 (64.3)	
Income ($)	<150	2 (25.0)	4 (50)	2 (25)	0.389
	150-250	12 (20.0)	14 (23.3)	34 (56.7)	
	>250	50 (22.5)	49 (22.1)	123 (55.4)	

*Chi-square test

Table 2. Frequency distribution of health literacy status with quantitative personal and social characteristics of study samples

Variable	Health Literacy Level Status Mean±SD			Sig.*
	Insufficient	Moderate	Sufficient	
Age	66.08±5.30	65.94±5.31	64.86±4.62	0.145
Number of children	2.88±1.08	2.84±1.43	2.47±1.01	0.017

* ANOVA test

personnel, and the ability to search for health-related content [18-25]. Perhaps the reason for this relationship is related to more learning skills in people with higher education and their greater involvement in health issues, which makes them more knowledgeable in various fields, including healthcare. In contrast, Ghaedi study that examined the relationship between health literacy and self-care in patients with type 2 diabetes reported different results. In his study, the health literacy of all patients with a degree higher than diploma was significantly lower than other levels of education. The researchers concluded that higher education did not guarantee higher health literacy [26].

In our study, the level of education of the spouse also had a significant relationship with health literacy, which was similar to the result obtained in the study of Ansari et al. [9]. It seems that the presence of a spouse with higher education, besides causing more involvement of the elderly in health issues, can play a decisive role in promoting their health literacy.

Table 3. Frequency distribution of health literacy status based on medical history

Health Literacy of History of Disease		No. (%)			Sig.*
		Health Literacy Level Status			
		Insufficient	Moderate	Sufficient	
Joint pain	No	38 (25.9)	37 (25.2)	72 (49)	0.114
	Yes	26 (18.2)	30 (21)	87 (60.8)	
Cardiovascular disease	No	55 (22.9)	49 (20.4)	136 (56.7)	0.059
	Yes	9 (18)	18 (36)	23 (46)	
Hypertension	No	46 (23.4)	44 (22.3)	107 (54.3)	0.725
	Yes	18 (19.4)	23 (24.7)	52 (55.9)	
Gastrointestinal diseases	No	53 (21.6)	58 (23.7)	134 (54.7)	0.834
	Yes	11 (24.4)	9 (20)	25 (55.6)	
Respiratory disease	No	63 (22.9)	60 (21.8)	152 (55.3)	0.058
	Yes	1 (6.7)	7 (46.7)	7 (46.7)	
Diabetes	No	46 (20.3)	50 (22)	131 (55.7)	0.161
	Yes	18 (28.6)	17 (27)	28 (44.4)	
Cancer	No	63 (22.3)	62 (21.9)	158 (55.8)	0.008
	Yes	1 (14.3)	5 (71.4)	1 (14.3)	
Kidney disease	No	64 (23)	63 (22.7)	151 (54.3)	0.161
	Yes	0 (0)	4 (33.3)	8 (66.7)	
Stroke	No	63 (21.9)	67 (23.3)	158 (54.9)	0.553
	Yes	1 (50)	0 (0)	11 (50)	
Other diseases	No	56 (22.8)	61 (24.8)	129 (52.4)	0.132
	Yes	8 (18.2)	6 (13.6)	30 (68.2)	
Duration of the disease (y)	No	15 (34.9)	9 (20.9)	19 (44.2)	0.405
	<1	1 (16.7)	1 (16.7)	4 (66.7)	
	1	2 (14.3)	5 (35.7)	7 (50)	
	1-5	13 (23.2)	11 (19.6)	32 (57.1)	
	5-10	9 (14.1)	13 (20.3)	42 (65.6)	
	>10	24 (22.4)	28 (26.2)	55 (51.4)	
	Total	64 (22.1)	67 (23.1)	159 (54.8)	

* Fischer exact-test

Although this study did not show a significant difference between health literacy and gender, the findings indicated higher health literacy in women. Also, this relationship was significant in the study of Afshari [27] and Ansari [9]. In their study, women had higher health literacy. Different results can be due to social and cultural differences.

According to the findings of this study, there is a significant relationship between health literacy status and history of cancer in the studied samples. According to a study conducted by Asna Ashari on employee health literacy in relation to the risk factors for chronic diseases, it was found that most people had insufficient levels of health literacy [28]. This finding is consistent with the results of other related studies [29, 30]. It seems that the involvement of most patients with the history of their cancer disease is probably due to their deep involvement in treatment and care processes, which

subconsciously affected their health literacy level. This study did not show a statistically significant relationship between health literacy and the duration of the underlying diseases (mentioned by the samples), although this relationship was significant in Arbabi, Mansouri, Nooshirvani, and Arbab studies [16, 31].

The results of the present study also showed a statistically significant relationship between the number of children and health literacy. A similar study by Simon et al. on the "level of health literacy in a population of chinese seniors" found similar results [24]. This may be due to the education of adults by their young (and possibly educated) children.

It seems that identifying people with low health literacy and providing appropriate educational programs for them can play an important role in community health. Besides, by determining the level of health literacy and developing comprehensive programs, creating understandable media and educational materials, as well as efficient educational interventions based on information obtained about people with poor health literacy, we can take an effective step to develop health literacy skills and improve health in the community. Finally, this method can reduce the negative effects of low levels of health literacy in society. It is recommended that future studies examine the health literacy of the elderly about various diseases.

Considering the tools used to measure health literacy in the present study, it was only possible to examine reading comprehension and numeracy skills, both of which are only part of the overall concept of health literacy. However, to improve the health system, it is necessary to examine other skills as well.

Ethical Considerations

Compliance with ethical guidelines

This research was registered by the Ethics Committee of Guilan University of Medical Sciences (Code: GUMS.REC.1396.175.IR).

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Authors contributions

Study design and project management: Nasrin Mokhtari, Farzaneh Sheikholeslami, Afsaneh Nezafati and Ehsan Kazemnezhad Leili; Implementation, writing the manuscript, and data collection: Afsaneh Nezafati; Data Analysis: Ehsan Kazemnezhad Leili; and Reviewing and editing the manuscript: All authors.

Conflict of interest

The authors declared no conflict of interest.

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