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Original article

Survey of the Relationship between Health Literacy Level and health status among elderly people referring to Retirement Centers in Rasht city

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Abstract

Background and objectives: Lower levels of health literacy have been associated with adverse health outcomes, especially for elderly.

Methods: This cross-sectional study was conducted on 290 retired elder from the Retirement Centers in Rasht city by convenient sampling during the year 2017. Data collection tools included, Test of Functional Health Literacy in Adults (TOFHLA) and general health standard questionnaire (GHQ-28). The data were analyzed using descriptive and inferential statistics in SPSS.

Results: More than half of the participants (54.8%) had adequate health literacy. The highest mean of the health literacy was in the domain of reading comprehension (36.30±7.90) and then in the domain of numeracy (36.11±11.60). There was a significant relationship between the level of health literacy and the level of education, the level of education of the spouse and the history of cancer ($P<0.05$), the mean of the general health of the subjects was 20.67±8.27. by adjusting the effects of demographic variables, there was a significant relationship between the health literacy and the general health ($P=0.04$), such that by improving each level in the health literacy status, the chance of a favorable general health status, increases by 1.4 times (Odds Ratio=1.4).The findings, show a 0.95 confidence interval for variables related to general health.

Conclusion: This study approved that the level of education was the most important determinant of health literacy and general health, identifying elderly with poor health literacy and providing them with appropriate education can play a major role in promoting community health.

Keywords: Health Literacy, Health status, Elderly.

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Introduction

Health literacy is defined as 'the degree to which people are able to access, understand, appraise, and communicate information to engage with the demands of different health contexts in order to promote and maintain good health across the life-course (1). This term first appeared in a 1974 paper calling for minimal health education standards for all grade levels in the U.S (2). During the last decades, there has been a growing interest in the concept of health literacy, along with an increased emphasis on individual responsibility for health and self-management of chronic illness (3).The decisions and actions that people make about their lifestyle behavior are affected by their level of health literacy (4). Therefore, an individual with an adequate level of health literacy has the ability to take responsibility for one's own health as well as one's family health and community health (5). However, limited health literacy hinders people's ability to navigate effectively through today's complex health systems and to make informed health-related decisions (6). Health literacy is an important determinant of public and individual health and is seen as a core element of patient-centered care (7). Low health literacy is associated with increased mortality, hospitalization, poor adherence to prescribed medications, difficulty communicating with health professionals, and poor knowledge about disease processes and self-management skills among people with chronic illness (8). Also, individuals with low health literacy have higher medical costs and are less efficient when using services (9). Poor health literacy has also been linked with increased healthcare costs; so that the costs associated with inadequate health literacy among adults at the national level have been estimated to be $73 billion per year (8, 9).According to the results of universal surveys, health literacy is low, even lower than that is expected (10). In Iran, statistics show that health literacy in different age groups and in urban and rural areas of the country is from borderline to insufficient (10-12). In the study conducted by Mohseni et al. on the relationship between health Literacy and physical health in elderly Kerman, most of the studied elderly had insufficient health literacy levels (52.5%)(10). In the study of Raesi et al., who probed the relationship between health literacy and health status and health behaviors in the elderly in Isfahan. About 79.6% of the elderly had insufficient health literacy (11). Also, in the study of Tavusi et al., who studied the health literacy of Iranian adults, about 44% of the population studied had limited health literacy, which was often seen in the vulnerable group (12).Regarding the subject of this study, older adults are major consumers of health care services and are at particularly high risk for low health literacy (13). Actually, the elderly have the highest proportion of chronic illness of any age group. If they are used, health care services for preventable illnesses are effective in reducing morbidity and mortality among older adults (14).Furthermore, a decline in an older adult's cognitive ability could contribute to an older adult's ability to comprehend and or recall new topics (15). This needed more attention in supporting the health and well-being of this population and, in particular, the role of health information in promoting the health and well-being of older adults (16). Guilan is one of the Iranian provinces that has grown ascendant toward elderly and is known as the oldest province (in term of its residents' age) in Iran (17). This high age is associated

with increased social and therapeutic costs. Therefore, it is necessary to conduct this research in Guilan province with the aim of improving the health literacy of the elderly in order to improve their general health.

Materials and Methods

This cross-sectional study was conducted from mid-September to early October 2017 on an elderly group including people with the age of (60 years and older). The research environment in this study was the Retirement Centers of Rasht.

The sample size required in the elderly studied was determined using the formula, $n \geq \frac{z^2_{1-\alpha/2}\, p\,(1-p)}{d^2}$, with the confidence level of 95%, which was 245 considering the margin of error estimated at 5%. However, the sample size was determined as 290 in order to increase the accuracy of the study. Data and information were collected through reviewing in retirement centers. The samples were selected by convenience sampling from a sample of elderly people referred to the Retirement Centers of Rasht. In order to reach the sample size, the researcher was present at the centers of the country''s retirement Center in Rasht, in which 11 centers were selected according to the population covered (i.e., Education, University of Medical Sciences, Guilan University, Natural Resources, The judiciary, Provincial Government, Regional Electricity, Sports and Youth, Tobacco, Telecommunications, and Urbanization). People who referred to these organizations (after asking the age and type of retirement center and explaining the field of research) were asked to complete the questionnaire if they wished. Before completing the questionnaire, was explained how to answer the questions. In this way, participants were first asked to answer the questions of understanding of the health literacy questionnaire. Next, the description of the computing part was placed in the form of cards and they were asked to answer the questions related to that explanation after reading each explanation. The response time was considered to be 20 minutes.

The inclusion criteria for this study are being aged 60 and above, being retired from Retirement Centers in Rasht city, settlement in Rasht, ability to communicate verbally to answer questions, reading and writing ability at the elementary level, desirable psychological status, and willingness to participate. On the other hand, the elderly who had acute visual and auditory problems, had mental and perceptual disorders, and were unable to complete the questionnaire, were excluded.

The information-gathering tool included a three-part questionnaire.

1-Socio-demographic information, which includes :age, gender, marital status, number of children, level of education, education level of the spouse and educational level of each child, monthly income, type of insurance, economic status, type of retirement center, previous job, current occupation, history of disease and duration of the disease.

2- Persian version of the General Health Questionnaire (GHQ--28) to, measure of emotional distress in medical settings:. The GHQ-28 consists of four subscales: somatic symptoms (items 1–-7); anxiety/insomnia (items 8–-14); social dysfunction (items 15–-21); and severe depression (items 22–-28). It is scored from 0 to 3 for each response with a total possible score on the of 23 is the threshold for the presence of distress. The validity and reliability of the Persian version were examined and approved in the study of Malakuti et al. (18).

3- To collect the health literacy data, the Persian version of the Test of Functional Health Literacy in Adults (TOFHLA) was used. This questionnaire, which was previously validated by Tehrani Banihashemi et al. (19) . consists of two parts of and reading comprehension and numeracy. The reading comprehension part has 50 items that examine patients'' _ability in reading authentic healthcare texts. The numeracy part evaluates patients''_ ability to understand and act based on the recommendations given to them by physicians and healthcare educators, which require computation. This part contains 10 health instructions or orders on prescribed drugs, time to go to the doctor, stages of use of grants, and an example of the result of a medical test. Each item in the reading comprehension part was given 1 point (a total of 50 points), and the items in the numeracy part (a total of 17) were given a total of 50 points by multiplying coefficients for an overall of 100 points for the items in the questionnaire. Based on the point of separation of 59 and 74, the participants'' health literacy level was, inadequate, marginal and adequate, respectively ((11) .

After obtaining permission from the Ethics Committee at Guilan University of Medical Sciences with number IR.GUMS.REC.1396.175, the researcher initiated the research study. The research goals and the confidentiality of the information were explained to the participants and, if they were willing to participate in the study, the questionnaires were completed by them. Data were analyzed using logistic regression statistical tests, Fischer''s exact test, and correlation coefficient Spearman and frequency distribution tables by in SPSS software, version 21. The significance level of the tests was considered to be P <0.05.

Results

The total number of participants was 290, which included 151 (52.1%) males and 139 (47.9%) females. The mean age of subjects was 65.38±4.96 years, which ranged between 60 and 83 years. About 89.3% of the subjects were married and 58.3% had an academic education. The mean number of children in the studied units was 2.64 ± 1.51, 44.1% of the subjects' spouse had a college education. Other demographic characteristics of the investigated samples are shown in Table 1. Using chi-square test showed a significant relationship between the level of health literacy and the level of education (P=0.001) and the level of education of the spouse (P=0.000), Also, Fisher's exact test revealed a significant relationship between the level of health literacy and the history of cancer (0.008).

There was no significant statistical relationship between health literacy and the history of other diseases as well as health literacy and the duration of the disease.

The mean scores of general health in the studied units was 20.67 ± 8.27, with the most disorder related to physical activity and the least was related to the field of major depression (Table 2). According to these results, 202 (69.7%) subjects had desirable general health and 88 (30.3%) had undesirable of general health. Also, chi-square test showed a significant relationship between general health and educational level (P=0.016) and Fisher's exact test revealed a significant relationship between general health and history of chronic diseases such as Joint pains (0.001), respiratory diseases (0.047), and diabetes (0.006).

The average scores of numeracy, reading comprehension, and health literacy were 36.11±11.60, 30.36 ±7.90, and 72.41±16.34, respectively (Table 2).

Using Spearman's correlation coefficient, the total general health score with the dimension of reading comprehension score (r=-0.223, p<0.0001) and total health literacy score (r=-0.163, P=0.005) had an inverse and low correlation. The study showed that although by increasing level of health literacy from insufficient to sufficient, the percentage of general health status also increases, based on the Chi-Square test, it is not meaningful (Table 3). Also, based on independent ANOVA and independent t-test, there was a significant statistical relationship between the number of children and health literacy (0.017) (Table 4). The findings showed that by adjusting the effects of demographic variables, there was a significant relationship between the health literacy status and the general health status (P=0.04) such that by improving each level in the health literacy status, the chance of a favorable general health status increases 1.4 times (Odds Ratio=1.4), Also, the level of health literacy in the retirement center of the University of Medical Sciences (P=0.015; OR=4.1), compared to other centers, had a higher chance of general health, no history of diseases such as arthritis (0.002), respiratory (0.05), and diabetes (0.014) and increases the chance of a desirable general health status as 2.3, 2.9 and 2.1 times. The findings, in addition to the relative chance, show a confidence level of 0.95 for variables related to general health (Table 5).

Table 1. Demographic characteristics of the investigated samples

Variable	status	Frequency	Percentage
Economic status	weak	45	15.5
	moderate	217	74.8
	good	28	9.7
monthly income (Rls)	<7000000	8	2.8
	7000000-10000000	60	20.7
	>10000000	222	76.6
previous job	employee	257	88.6
	Non-employee	33	11.4
current occupation	no	260	89.7
	yes	30	10.3
insurance status	does not have	9	3.1
	free	0	0
	Health-care	8	2.8
	Social security	272	93.8
	Health insurance	1	0.3
Type of retirement center	University of Medical	51	17.8

	Sciences		
	Education	218	75.2
	Others	21	7.2
History of Joint pains		147	50.7
History of hypertension		93	32.1
History of diabetes		63	21.7
History of cardiovascular disease		50	17.2
History of diseases of the stomach and intestines		45	15.5
History of respiratory diseases		15	5.2
Other diseases		76	26.1

Table 2: Statistical indices of total health literacy and total general health

Variable	Mean	SD	Min	Max
health literacy Score and its dimensions				
Numeracy	36.11	11.60	.00	50.00
Reading comprehension	36.30	7.90	.00	50.00
Total level of health literacy	72.41	16.34	.00	96.00
GHQ Score and its dimensions				
physical health	5.88	2.73	.00	15.00
anxiety and insomnia	5.92	3.27	.00	20.00
social dysfunction	7.41	2.50	.00	21.00
Severe depression	1.47	2.38	.00	17.00
Total general health	20.67	8.27	5.00	62.00

Table 3: Frequency distribution of general health according to the level of health literacy

Variable	State of	Frequency	general health status		Total	P-value
			Undesirable	desirable		
Level of health literacy status	inadequate	N	24	40	64	.164*
		%	37.5	62.5	100.0	
	marginal	N	23	44	67	
		%	34.3	65.7	100.0	
	adequate	N	41	118	159	
		%	25.8	74.2	100.0	
Total		N	88	202	290	
		%	30.3	69.7	100.0	

Chi-square

Table 4: Comparison of quantitative variables based on general health status and health literacy status

Variable	Mean, SD	general health status		p	Level of health literacy status			p
		Undesirable	desirable		inadequate	marginal	adequate	
Age	Mean	65.80	65.20	0.346	66.08	65.94	64.86	0.145
	SD	5.16	4.87		5.30	5.31	4.62	
Number of the children	Mean	2.67	2.63	0.802	2.88	2.84	2.47	0.017
	SD	1.18	1.13		1.08	1.43	1.01	
Number of the children(Primary)	Mean	.02	.01	0.489	.02	.00	.02	0.662
	SD	.15	.14		.13	.00	.18	
Number of the children(High school)	Mean	.14	.11	0.499	.11	.14	.11	0.871
	SD	.38	.37		.32	.43	.37	
Number of the children(Diploma)	Mean	.60	.38	0.07	.68	.48	.34	0.064
	SD	1.03	.97		1.25	1.26	.68	
Number of the children(Academic)	Mean	1.95	2.18	0.127	2.11	2.25	2.06	0.555

Table 5: Odds Ratio and Regression Coefficients The relationship between health literacy level and general health status in modulating the effects of individual and social variables studied

Variable	B	S.E	P-value	OR	95% C.I .for OR	
					Lower	Upper
Level of health literacy status	.339	.168	.044	1.403	1.008	1.952
The type of retirement Center			.052			
University of Medical Sciences retirement center compared to other center	1.419	.584	.015	4.134	1.315	12.998
Education retirement compared to other center	.908	.490	.064	2.480	.950	6.476
History of Joint pains	.850	.280	.002	2.340	1.352	4.048
History of respiratory disease	1.081	.554	.051	2.948	.996	8.730
History of diabetes	.778	.317	.014	2.176	1.170	4.048
Constant	-2.875	.887	.001	.056		

Discussion

The results of the health literacy study showed that more than half of the samples have adequate health literacy, In the study by Ghanbari, Lee et al, 57% and 69.7% of the subjects studied had adequate health literacy, respectively(20, 21). The results of the present study showed that the highest score of health literacy of the samples was in the domain of reading comprehension and then in the domain of numeracy, these results were also found in the study by Mollakhalili and Borji(22, 23). Also, according to the findings, there is a significant relationship between the level of health literacy and education level (P=0.001), so that people with academic education as expected, have high literacy level than those with primary, secondary level and diploma. Liu et al, indicated observed higher levels of health literacy in people with academic education compared to other levels of education (24). This finding was observed in many studies conducted abroad and inside the country(10-12, 19-23, 25). The cause of this significant relationship which has been found in most of the studies in this area, is the higher learning skills in people with higher education and more involvement in health issues, which makes them more informed in various fields, such as healthcare-related areas.

In this study, a significant statistical relationship was found between the level of health literacy and the education of the spouse (P=0.000). This finding was also reported by

Ansari et al . who investigated the health literacy in the elderly and its related factors(25). It seems that the presence of a higher-educated spouse, in addition to causing more elderly involvement in health issues, can play a decisive role in improving their health literacy. The findings of this study also showed a significant relationship between health literacy status and the history of cancer (P=0.008). Song and Amalraj et al. also obtained similar results in this regard(26, 27). It seems that low level of health literacy in these patients with limited knowledge about cancer screening, lack of willingness to do so, less access to treatment, inappropriate use of drugs, and failure to follow doctor's orders lead; increased hospitalization, increased financial burden Individual, family and community. There was no significant relationship between health literacy and the history of other chronic diseases. Also, according to the findings, there was a significant relationship between the number of children and the status of health literacy in the subjects (P=0.017). The results of Simon et al. are also highly consistent with the present study, in their study, there was a negative relationship between having more children and the level of health literacy (28). According to the findings of this study, the most common disorder on general health was physical impairment while the minimal disorder was related to the major depression. Rezaeipandari et al. also achieved similar results in their study (29). They showed a statistically significant relationship between the level of education and the general health of the samples (P=0.016). Heide and Zhang, also, reported such a significant relationship (30, 31). It seems that education at higher levels improves the learning, communication, and motivation skills of people, so the likelihood of literate people getting involved in healthy lifestyles is much higher. In this study, there was a significant relationship between general health and the history of chronic diseases such as arthritis pain (0.001), respiratory diseases (0.04) and diabetes (0.006). The findings of the present study are consistent with the results of the Westaway, who made an effort to determine the impact of Chronic Illness on Elderly Health in South Africa. He reported a mean overall health score in older people with a history of illness higher than those without a history of illness (32). The findings of this study showed that although by improving the level of health literacy from insufficient to sufficient the percentage of general health status also increases, based on the Chi-square test, it is not statistically significant. In the studies done by Ghanbari, Karimi, Simon et al., this relationship was not significant(20, 28, 33). However, in study by Cho and Saydshohadai there was a significant relationship between health literacy and general health(34, 35).The results also showed that by modulating the effects of demographic variables, a significant relationship was found among health literacy status of people and desirable general health status, such that by improving each level in the health literacy status, the chances of a desirable general health status would increase by 1.4 times. These results were found in studies by Howard et al (36). However, the results of this study are opposed to the studies of Guerra and Lee et al, these authors, after adjusting individual-social variables, found no significant relationship between functional health literacy and physical and mental health status(21, 37).

The results of this study show the important role of physicians, health providers, TV and radio in providing population health information. People need to be able to

understand and use the information they provide in their proprietary healthcare environment to make appropriate health decisions. The limitations of this study, considering the nature of the health literacy tool, in the present study, only the reading and computing skills of individuals were considered, which are only part of the overall concept of health literacy, while for success in dealing with the health system, it is necessary to examine other skills as well, and the results of this study are obtained in a cross-sectional manner. Therefore, via studies with a longer period of time one can better understand the causal relationships between the variables. Other limitations of this study are related to the population studied and sampling, which cannot be generalized to other population groups and age groups.

Conclusion

This study approved that the level of education was the most important determinant of health literacy and general health. So, by planning and designing useful educational programs in the field of health literacy tailored to the elderly, one can take effective steps to develop health literacy skills in the community and promote the health status of the elderly. Also, considering the importance of two areas of health literacy and general health in the elderly, the need to address this issue and the dimensions and factors affecting can help planners and authorities.

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