

## Is Higher Health Literacy Associated with Better Self-Care in the Elderly?

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### ABSTRACT

**Background and Objective:** The increase in the global elderly population has become a crisis. The elderly' population with low level of health literacy, introduced as a global issue in the 21st century, is considered as a common global problem. Health-promoting self-care behaviors are directly related to the health of the elderly and their quality of life by reducing the mortality and morbidity rates. Therefore, this study aimed to investigate the association between health literacy and self-care in the old elderly population in Yazd, Iran.

**Materials and Methods:** This cross-sectional study was conducted on 300 elderly people in Yazd. The participants were selected using a cluster sampling method. The data collection tools were conducted by a demographic questionnaire, a researcher-made questionnaire over self-care behaviors, and Health Literacy for Iranian Adults' questionnaire. Data were analyzed by SPSS20 (SPSS, Inc. Chicago, USA) using descriptive and inferential statistical tests.

**Results:** The participants' average age was 66 years. The studied elderly people achieved 79.5% and 65.7% of the maximum attainable levels of the health literacy and self-care scores, respectively. A direct correlation was observed between the health literacy and self-care scores.

**Conclusion:** Regarding the moderate level of self-care in the elderly people and its relationship with health literacy, appropriate educational interventions in the field of health literacy are needed for the elderly and their families. These training should be aimed to improve the old people's self-care and responsiveness with regard to various diseases by increasing their health literacy.

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## Introduction

In the third millennium, aging has become an unprecedented global reality (1). The increase in the global elderly population has turned into a crisis. According to Iran's demographic statistics in 2016, the elderly population was 7,414,091, accounting for 9.27% of the total population. In addition, a growth rate of 10.7% and 24% was predicted by 2021 and 2050 (a population of about 25912,000 people), respectively(2)

Although old age is not considered a disease, physiological changes of aging lead to a number of acute and chronic diseases, which increase the need for health care during the course of aging(3). The sensory and perceptual changes that occur with old age affect the elderly's people able to read and understand health information; therefore, health literacy decreases among this vulnerable group(4). Health literacy has been introduced as a global issue in the 21st century(5). As a result, the World Health Organization has recently highlighted that health literacy as one of the greatest determinants of health(1). Health literacy includes a set of reading, listening, analyzing, and decision-making skills in health situations, which is not necessarily associated with the education or general reading ability of the individuals(6). The low level of health literacy among the elderly group has introduced them as a vulnerable group of each community(7).

Limited functional health literacy is a major public health problem among adults(8). Studies showed that inadequate health literacy levels in individuals lead to less adherence to health-related guidelines, increased hospitalization rates, and organ failure in chronic diseases(9). Outcomes of limited health literacy among the elderly include misuse of the prescribed drugs, poor management of chronic disease, low use of preventive health services, and increased risk of mortality(8). Health literacy is used to judge

and decide on health care, disease prevention and health promotion in daily life to maintain or improve the quality of life(10).

In most societies, the elderly people are at the highest risk of low physical, psychological, and cognitive abilities. They also require formal and informal support to maintain health, performance, and self-sufficiency more than other individuals(11). A UK survey suggests that health promoting self-care behaviors are directly related to the elderly's health and quality of life, while reducing the mortality and morbidity rates (12).

Ghane et al. conducted a study on self-care and incidence of disability among elderly people in Yazd. They reported that participants achieved half of the attainable self-care score(13).

Furthermore, Montazeri conducted a survey on the health literacy of Iranian citizens aged 18-65 year and mentioned that the total health literacy rate was 68.32 (out of 100 scores). According to this study, health literacy was high in the three provinces of Bushehr (74.87), Hormozgan (72.50), and Tehran (71.52), whereas, it was low in the three provinces of Khuzestan (62.25), Yazd (62.48), and South Khorasan (63.58) (14).

The low level of health literacy among the elderly puts them at risk as a vulnerable group. In addition, due to the lack of understanding of the disease, treatment methods and self-care strategies in the elderly, they experience more physical and mental disabilities(15). Considering the importance of health literacy in quality of life and health as well as the fact that Yazd is one of the cities with the lowest scores of health literacy in the country, we decided to conduct this study. The aim was to assess the level of health literacy and its relationship with self-care among the elderly in Yazd, Iran.

## Methods

This cross-sectional study was conducted among elderly people over 60 years old in Yazd. The sample size was estimated as 265 according to a similar study, but a total of 300 participants entered the study to ensure sufficiency of data (16) by considering 95% of confidence level, power of 80%, and correlation coefficient of 0.187. The cluster sampling method was applied over 6 health centers of Yazd City.

In this study, health centers, considered as cluster head, were randomly selected. Samples were also selected randomly from each cluster. In this regard, the researcher moved to the right at the exit of each health center, interviewed 50 participants from each cluster, and completed the questionnaires. Given that the data were collected using the interview method, the research objectives were clearly explained to the participants. Ultimately, the elderlies who volunteered to participate in the study were examined. People with mental and physical disabilities who could not take care of themselves were not included in the study.

The data collection tool in this study had three parts: The first part was the demographic questionnaire and consisted of 11 questions dealing with the participants' age, marital status, occupation, level of education, residential area, monthly income, number of household members of households, living condition (living alone, living with their spouse, living with their children), house ownership, history of a specific disease, and insurance coverage.

The second part was a researcher-made questionnaire about the self-care behavior and its six domains. The reliability of this questionnaire was determined using Cronbach's alpha coefficient: physical activity ( $n = 5$  items;  $\alpha = 0.70$ ), nutrition ( $n = 8$  items;  $\alpha = 0.75$ ), spiritual growth ( $n = 6$  items;  $\alpha =$

$0.82$ ), stress management ( $n = 8$  items;  $\alpha = 0.84$ ), interpersonal relationships ( $n = 8$  items;  $\alpha = 0.81$ ), and responsiveness ( $n = 24$  items;  $\alpha = 0.87$ ). The validity and reliability of this questionnaire were confirmed in another research (17).

The third part included Health Literacy for Iranian Adults (HELIA) by Montazeri (18). This questionnaire contains 33 items of 5 options, which measure health literacy in 5 dimensions of access, reading, understanding, appraisal, and decision. After completing the questionnaires, the data were entered into SPSS 20 and analyzed by Kruskal-Wallis, Mann-Whitney, and Spearman. The significance level in all tests was considered at  $p \leq 0.05$ .

## Results

Most participants were male (58.7%), married (82.3%), and retired (53.7%). Regarding the educational level, most of the elderlies had elementary-school education (29.3%). Moreover, 98% of them were under insurance coverage (Table 1).

**Table 1. Distribution of absolute and relative frequencies of demographic variables in the elderly**

	Variable	Frequency	Percent
Gender	Male	176	58.7
	Female	124	41.3
Occupation	Housewife	98	32.7
	Farmer	21	7
	Self-employed	20	6.7
	Retired	161	53.7
Education	Illiterate	77	25.7
	Elementary school	88	29.3
	Secondary school and high school	21	7
	Diploma	53	17.7
Marital status	Bachelor's degree	61	20.3
	Married	247	82.3
Insurance coverage	Widow	53	17.7
	No	6	2
	Yes	294	98

The participants' mean age was  $65.71 \pm 6.46$  years and they mostly had an average number of 3 children. Considering the prevalence of various diseases, the highest percentage rates were attributed to high blood pressure (27%), bone problems (17%), and diabetes (16.3%), respectively. Very few elderlies (0.3%) had hearing problems.

The studied elderlies attained more than half of the attainable health literacy score. Among the health literacy subscales, decision-making and behavior received the highest scores; whereas, reading achieved the lowest scores (Table 2). Among the self-care sub-scales, spiritual growth had the highest score, while physical activity got the lowest score (Table 3).

**Table 2: Distribution of mean and standard deviation of the health literacy subscales among the studied elderlies**

Health literacy subscales	Minimum	Maximum	Mean	Standard deviation	Attainable limits	Average percentage of the maximum score
Reading dimension	4	20	10.11	4.7	0-16	63.1
Access dimension	6	30	17.71	6.13	0-24	73.7
Understanding dimension	9	35	23.88	6.47	0-28	85.2
Appraisal dimension	4	20	11.56	4.1	0-16	72.2
Decision dimension	22	60	41.01	8.29	0-48	85.4
Total health literacy score	50	159	104.99	24.23	0-132	79.5

The level of health literacy and self-care had a significant correlation with the level of education ( $p=0.0001$  and  $p=0.01$ ) and income ( $p=0.01$ ,  $r=0.33$  and  $p=0.01$ ,  $r=0.2$ ), Therefore, higher level of education and income lead to improve the level of health literacy and self-care

among the elderlies. Moreover, the participants' age had a significant negative correlation with their health literacy ( $p=0.01$ ,  $r=0.2$ ) and self-care ( $p=0.01$ ,  $r=0.15$ ) scores. In other words, the self-care literacy scores was low in participants with higher ages.

**Table 3: Distribution of mean and standard deviation of self-care subscales among the studied elderlies**

Self-care behaviors subscales	Minimum	Maximum	Mean	Standard deviation	Attainable limits	Average percentage of the maximum score
Physical activity	0	10	3.63	2.47	0-10	36.3
Nutrition	5	16	11.31	2.6	0-16	70.6
Spiritual growth	4	12	9.78	1.8	0-12	81.5
Stress management	3	16	10.72	2.58	0-16	67
Interpersonal relationships	0	16	10.9	2.9	0-16	68.1
Responsiveness	0	46	31.21	5.94	0-48	65
Total score of self-care	28	109	77.56	11.69	0-118	65.7

According to the present results, the average score of health literacy had a significant direct

correlation with occupation ( $p=0.0001$ ) and living condition ( $p=0.0001$ ); the average score

of health literacy was higher in people who lived with their family members. In addition, the average health literacy score was higher among the retired people. A significant direct correlation was observed between the number of children and level of health literacy ( $p=0.01$ ,  $r=0.18$ ). Participants' health literacy improved if they had more children.

According to the results, health literacy ( $p=0.001$ ) and self-care ( $p=0.009$ ) had a significant

relationship with high blood pressure in the elderly, so that the mean scores of health literacy and self-care literacy were lower in the elderly with high blood pressure.

According to Table 4, a significant correlation was observed between the total scores of health literacy and self-care. Moreover, the subscales of health literacy had a significant correlation with self-care subscales.

**Table 4: Correlation of health literacy with self-care in the studied participants**

Correlation	Physical activity	Nutrition	Spiritual growth	Stress management	Interpersonal relationships	Responsiveness	self-care	
Health literacy sub-scales	Reading dimension	**0.44	0.05	-0.02	**0.17	0.06	**0.2	**0.25
	Access dimension	**0.33	**0.19	0.008	**0.17	**0.1	**0.24	**0.3
	Understanding dimension	**0.25	*0.11	0.1	**0.13	0.05	**0.33	**0.2
	Appraisal dimension	**0.36	**0.19	0.02	**0.18	**0.1	**0.21	**0.3
	Decision dimension	0.07	**0.36	**0.3	**0.29	**0.2	**0.5	**0.5
	Total score of health literacy	**0.34	**0.22	**0.1	**0.24	**0.1	**0.39	**0.4

\*\*  $p=0.01$

## Discussion

The aim of this study was to determine the relationship between health literacy and self-care among elderly people in Yazd, Iran. The total score of health literacy was 79.5%, which is in fact more than three-quarters of the maximum health literacy score. The average score of health literacy in the studied population was  $104.99 \pm 24.23$  (79.5% of the average maximum score), which indicates a good level of health literacy. However, this score is better than the one reported by Montazeri et al., who examined the health literacy in the adult population (age: 18-65 years) in Iran(19). Montazeri et al. reported that the average total health literacy score was  $68.32 \pm 15.16$  (of 100 scores). Considering the health literacy subscales, the highest score was related to the deciding and behaving dimension (85.4%);

whereas, the lowest score was attributed to the reading dimension (63.1%). However, Montazeri et al. reported that the highest score was related to the understanding and perceiving dimension (74%), while the lowest score was associated with the dimension of health literacy assessment (64.11%) (19).

According to the Chicago Study, approximately half of the elderly (48.2%) had marginally (25.5%) or low (22.7%) health literacy(20). Furthermore, research conducted in Myanmar reported that 40.3% and 28.2% of the participants had moderate and poor health literacy levels, respectively(21). A study by Słońska et al. in the Netherlands also showed that health literacy was low in half of the elderly (22). In fact, the findings of these studies show that appropriate planning and training in

the field of health literacy is needed to improve health literacy in seniors.

In examining the demographic variables, a significant negative correlation was observed between the participants' age and their level of health literacy, which was consistent with the results reported by Montazeri et al(19). In other words, increasing in age is associated with physical, emotional, and self-care constraints in the elderly, which are partly caused by poor health literacy.

According to the findings, a positive and significant relationship was observed between education and health literacy; participants with higher levels of education had better health literacy. This finding was also confirmed in the literature (18, 23, 24) that show individuals with low education, difficulty in written communication, or limited familiarity with medical terms, and have less ability to interact successfully with the health care systems. As a result, health system providers are required to fit their relationship with the old people on the basis of their true health literacy level.

We found that health literacy also had a significant relationship with the participants' income level. Raici et al. also reported a direct relationship between the income level and health literacy among patients with diabetes (23). People from higher socioeconomic groups easily ask their questions from their physicians. However, adults from lower socioeconomic groups accept the physicians' advice to show their respect; they find it difficult to ask questions from physicians, and feel that physicians do not listen to them (25).

In addition, a significant relationship was found between individuals' health literacy and occupation, which is in line with the literature(18, 23, 24). It seems that the physical, mental, and psychological abilities, environmental conditions,

economic and social status of the individuals depend on their occupational role. Consequently, it is assumed that having a suitable job creates more opportunities for establishing social interactions, which can affect people's health literacy.

In the present study, a number of children significantly influences elderly' health literacy. In other words, the health literacy scores were higher in people who lived with their spouse and children. Furthermore, individuals with a higher number of children had better health literacy scores. This suggests that living with family members has a significant impact on the elderly' health literacy. In particular, living within the family improves reading, understanding, and perceiving skills, as well as accessing health issues in the elderly population. As a result, they can make decisions and behave appropriately with regard to the health and treatment materials of the elderly. Health literacy also can play a very important role to improve the health behaviors among elderly population.

As the results show, a significant reverse relationship was found between the individuals' health literacy and high blood pressure. Considering the prevalence of chronic diseases, subsequent needs for self-care skills, the existence of the specific needs such as screening tests, and adoption of the healthy behaviors, the issue of "health literacy" has received much importance among old people(23). Furthermore, patients require adequate health literacy to participate in health care systems and make appropriate health decisions. This process empowers people to use health information and instructions.

### **Self-care**

The self-care mean score was  $77.56 \pm 11.69$  (65.7% of the average maximum score), which indicates a moderate level of self-care among the studied participants. This finding was also

confirmed by other researchers(17, 26). The same situation was observed for almost all sub-scales; only the physical activity sub-scale (with 36.3% of the average maximum score) was placed at the lowest level. These findings are in line with the results reported by Ghane et al(17). The observed difference in the sub-scales' mean scores can be justified by the fact that in the developing countries, factors such as developing the sport culture during the aging period, creating appropriate sport facilities in the cities, and addressing the elderly people transportation problems have a lower level than the developed countries.

The spiritual growth subscale (with 81.5% of the average maximum score) was at the highest level compared with other dimensions of the self-care behaviors, which is probably due to the religious and Islamic culture in Iran. Religion and spirituality can have a positive effect on mental and physical health. Likewise, adherence to religious beliefs and precepts increases an individual's motivation to develop and reinforce self-care behaviors(27).

In examining the participants' demographic variables, we found that the self-care behaviors decreased among the elderly people with an increase of age, which was confirmed in similar studies(28, 29). In this regard, Vosoghi et al. introduced age as an effective factor on the level of self-care ability, and participants with lower age had better self-care abilities(30). This is normal due to the continuous changes in this issue, including visual, hearing, and motor impairments.

According to the findings of our research, a positive and significant relationship was found between education and self-care; higher levels of the participants' education increased their self-care. Similarly, Ghane et al. found that higher levels of education in elderly people increased

their self-care (17). Furthermore, high education levels were associated with better job positions and higher income, which affected people's self-care ability.

As the results indicate, self-care has a positive and significant relationship with monthly income, and the self-care ability improved in elderly people with higher monthly incomes. Azadbakht et al. reported that the economic status of the elderly was directly related to the health-promoting self-care behaviors (28).

Based on the results, a significant negative correlation was found between self-care and hypertension, so that people with high blood pressure were less likely to conduct self-care behaviors. Hypertension causes a lot of dietary restrictions such as constraints on consuming salt and saturated fats. It also changes the way of performing daily routines and exercise-recreational activities. In addition to these limitations, lack of a definitive treatment for this disease and the need for regular and long-lasting diets cause mental stress on the patients, which can affect the quality of life and self-care negatively in the elderly population (31).

### **The relationship between health literacy and self-care**

As the results showed, a significant correlation was found between the total scores of self-care and health literacy. Furthermore, health literacy was found to have a direct correlation with self-care behaviors such as physical activity, appropriate diet, stress management and control, appropriate interpersonal communication, and responsiveness towards health.

In the same vein, Raici et al. reported a direct and positive association between self-care and health literacy(32).Williams et al. also indicated that inadequate health literacy was a serious obstacle to self-care behaviors in patients with diabetes (33). A significant relationship was

observed between self-care and health literacy by Alizadeh et al. (34).

Despite the many studies consistent with the results of this research, Ghaedi et al. reported (35) insignificant relationship between self-care and health literacy. Moreover, Peyman et al., (31), reported no significant relationship between self-care and health literacy. This discrepancy can be due to the fact that Peyman et al.'s study was limited to patients and most of their participants included women. Furthermore, cultural and geographical differences can be considered as other reasons for the observed differences between the results.

#### Study limitations and strengths

One of the limitations of this study was its self-reporting nature, because self-reporting tools are subject to response errors. In addition, no clinical tests or examinations exist for diagnosis of the comorbidities. Considering that this study was conducted among seniors, its findings cannot be generalized to other age groups.

With regard to the strengths, accurate sampling method was conducted in this study; so that the elderly who entered the research were selected from all areas of the city and from different social classes.

### Conclusion

Regarding the results of this study, a positive and strong correlation was observed between health literacy and self-care in the elderly people. Therefore, more attention should be paid to health literacy in the health promotion and self-care programs among the old people. Increase of the health literacy can be effective in controlling and self-managing the diseases. It also reduces the treatment and health system costs. Considering the growing population of the elderly in Iran and its consequent challenges, such as the weakness of the care institutions, the

elderlies' functional ability should be considered and their individual autonomy must be observed along with improving their health literacy. Lack of appropriate planning and policy making in this area will cause many social, economic, and health problems.

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