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Correlation Between Health Literacy and Quality of Life Among the Elderly: The Community Versa Nursing Home

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ABSTRACT

Background: Enhancing health literacy may improve health-related quality of life. Given the more educational programs in nursing homes, this study aimed to determine the relationship between health literacy and the quality of life among the elderly living in nursing homes and those living with their families in Ahvaz, Iran.

Methods: This descriptive-analytical cross-sectional study was conducted in 2017. The research population was the elderly in Ahvaz city, Iran. This population consisted of two groups, those living in nursing homes and those who do not. There were 62 samples. Random cluster sampling was used to select the participants. The data collection tools included a demographic questionnaire as well as Test of Functional Health Literacy in Adults (TOFHLA) and LEIPAD questionnaires. The data were analyzed by independent t-test, Mann-Whitney test, Spearman correlation, and Chi-square test using SPSS $_{19}$.

Results: The mean health literacy of the elderly living in nursing homes estimated to be relatively desirable (3.60 ± 0.77) and the mean health literacy of the elderly not living in nursing homes was estimated to be relatively undesirable (2.30 ± 0.83). The quality of life was estimated to be moderate for both groups, the mean score for nursing homes was 2.65 ± 0.37 and for the community was 2.98 ± 0.52. Simple regression indicated that appraisal and decision, among the subscales of health literacy, are predicting factors for quality of life in the elderly.

Conclusion: Using self-help groups and the participation of the elderly in decision making as well as designing educational programs for identifying the accuracy of health information of the media and encouraging them to share health knowledge with others can ultimately improve quality of life in the elderly.

Key words: Elderly, Quality of life, Health literacy

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Introduction

Health objectives cannot be achieved only through providing clinical care. Rather, this calls for improving living conditions and having access to education (1). According to the World Health Organization (WHO), health literacy means cognitive and social skills of people in appraising, understanding, and implementing health information in order to maintain and improve well-being (2). The American Medical Association (AMA) has defined this concept as a set of skills, including reading and using health-related electronic facilities (3). The concept of quality of life involves satisfaction and well-being (4) and is usually as a multi-subscale parameter that includes physical, functional, sensual, social, and mental aspects (5) and includes an individual's mental perceptions of his/her physical and mental health as well as social performance (6). The concept of quality of life mainly consists of five subscales, including physical, psychological, social, and mental, as well as symptoms related to the disease or treatment-related changes. However, the quality of life of the elderly is described in terms of performance status, independence, and ability to participate in life activities (7).

People with lower health literacy have a poor understanding of the written and spoken information provided by health professionals and respond to instructions accordingly. They also pay more for medical expenses and have a poorer health status (8). Low levels of health literacy in the elderly are associated with increasing morbidity, lack of preventive behaviors, such as screening tests, some high-risk health behaviors and, in general, undesirable psychological and physical health (4-6). Most of the elderly in the Iranian society do not have a sufficient level of education, and a significant relationship has been observed between health literacy and education (9). Various studies have shown that the quality of life of the elderly is undesirable (10).

Given the population aging, more attention has to be paid to the elderly problems, including chronic diseases, the decline in their abilities, and neurological and psychological diseases (9, 11).

According to the Statistical Center of Iran, the literacy rate of the elderly is low in the Iranian society (12), and as a result, their health literacy is undesirable. It has been reported that only 8.80 % of the elderly in Iran have a desirable health literacy level (13). A study in Iran showed that inadequate health literacy is a contributing factor to poor physical performance in patients, and enhancing health literacy can improve health-related quality of life (11).

Therefore, investigating the relationship between the two variables of quality of life and health literacy and finding the effect of health literacy rate on quality of life can provide us with insights into promoting the elderly's quality of life. Given the more educational facilities in nursing homes, comparing the elderly living in nursing homes and those who do not live in nursing homes and have comparatively fewer educational resources can show the effect of health literacy on the quality of life of the elderly. The findings can lead to designing better interventions to improve the quality of life of the elderly. The elderly population in Ahvaz is increasing alongside the country. According to a study, the quality of life of elderly people in Ahvaz is undesirable (4). Given the population aging and the importance of health literacy and its impact on their quality of life, determining the relationship between these variables in the elderly can help develop programs to improve the quality of life of the elderly. However, there was no study in this regard in Ahvaz, Iran. Therefore, this study aimed to determine the association between health literacy and the elderly's quality of life in Ahvaz, Iran.

Materials and Methods

Study Design

This descriptive-analytic cross-sectional study was conducted in 2017. The research population was the elderly in Ahvaz which consisted of two groups, namely those living in nursing homes and those living with their families at their home or with their children and relatives.

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Inclusion and exclusion criteria

The inclusion criteria were: age over 60, the ability to interact for answering questions, and the lack of any refractory mental or physical disease that prevents answering to questions. The exclusion criterion was lack of residence in Ahvaz.

Data Collection

Sample size calculated 62 using the formula: $n = \frac{(Z_{1-\frac{\alpha}{2}}+Z_{1-\beta})^2}{(\frac{1}{2}\ln\frac{1+r}{1-r})^2} + 3$ (r = 0.6, CI = 0.95 and 0.95 power).

Random cluster sampling was used to collect the data. Considering high rate of illiteracy among participants, their answers were fulfilled in questionnaires by research team. Three questionnaires were used for data collection, including elderly's demographic information, as well as Test of Functional Health Literacy in Adults (TOFHLA) and LEIPAD (an acronym derived from the name of Leiden and Padua universities) QOL questionnaires. The demographic information questionnaire included age, gender, education level, marital status, monthly income, and the elderly's housing status.

TOFHLA was translated in Persian by Montazeri et al. (13), which included 33 items and five components. Its components included accessing, reading, comprehending, appraising health information, and decision making based on it. Scoring was done based on a 5 -point Likert scale, the mean score from 1 to 2 was weak, 2 to 3 relatively weak, 3 to 4 relatively good, and 4 to 5 good. Cronbach's alpha of this questionnaire was 0.27 - 0.98, indicating that it has the ability to measure the health literacy of the urban population of Iran (14). The Cronbach's alpha of this study was 0.97.

In LEIPAD questionnaire, scoring is based on a 4-point Likert scale; scores from 1 to 2 were estimated weak, 2 to 3 moderate, and 3 to 4 good. This questionnaire contains 31 questions which examine the quality of life of the elderly in seven subscales of physical performance, self-care, depression and anxiety, mental performance, social performance, sexual performance, and life satisfaction. Its Cronbach's alpha coefficient in Iran was calculated 0.83 % (14).

In the present study, the obtained Cronbach's alpha of this questionnaire was 0.96. After receiving the ethics code from the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences (IR.AJUMS.REC.1395.848), the questionnaires were completed. Informed consent was obtained from the elderly before completing the questionnaire. If the elderly could not sign, the consent was obtained from his/her older child or spouse.

Data analysis

Data analysis was performed using mean and standard deviation, independent t, Mann-Whitney, Spearman, and Chi-square tests. The significance level of 0.05 was considered for all analyses which were performed using SPSS software version 19.

Results

The questionnaire response rate was 100 %, Most of respondents were men and 68.85 % (19 respondents) of the nursing home residents had junior high school or diploma; and 58 % (36 respondents) of the elderly living in the community had junior high school or diploma. The elderly respondents' demographic characteristics in Ahvaz are shown in Table 1.

Mean scores of health literacy subscales are shown in Table 2.

For both groups, health decision making subscale showed the lowest mean score; however, the highest mean score was different in the two groups, including access subscale for the elderly living in nursing homes and appraisal subscale for elderly in community.

All health literacy subscales were estimated desirable in nursing homes, except for health decision making, which was estimated undesirable. While, in the community group all of these subscales were estimated undesirable and health decision making which was estimated completely undesirable. In the last part, total health literacy among the elderly was estimated desirable in nursing homes and undesirable in community.

The subscales of the quality of life questionnaire are shown in Table 3.

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The quality of life subscales had different scores among the elderly in nursing homes and community; however, they did not show significant differences (P-value > 0.05). For both groups, sexual performance subscale showed the lowest mean score; while mental performance and physical performance subscales had the highest scores in nursing home and community residents, respectively. Overall, the quality of life of the elderly living in both groups was estimated as moderate. The association between health literacy and quality of life in the two groups is presented in Table 4.

There was no significant correlation between health literacy and quality of life in the elderly living in nursing homes according to Spearman correlation. However, there was a significant correlation between health literacy and quality of life in the elderly living in community. Moreover, the subscales of physical performance, depression, life satisfaction, and social performance showed a significant and large negative correlation with health literacy. Self-care subscales and mental performance had a significant medium size association with health literacy. However, the sexual performance subscale showed no significant correlation.

Quality of life was estimated significantly different among male and female respondents in the two groups based on Mann-Whitney test (P-value = 0.001). In other words, the quality of life in men was estimated better (3.05 ± 0.39). However, health literacy was not significantly different between males and females (P-value = 0.31).

According to the Kruskal-Wallis test, quality of life showed no significant difference among people with different educational levels (P-value = 0.060); whereas health literacy had a significant difference in people with different educational levels (P-value = 0.023). Based on Chi-square test, health literacy had no significant difference among the elderly living in nursing homes with different marital status (P-value = 0.158), but this difference was observed in terms of quality of life (P-value = 0.045). Quality of life was estimated significantly higher in the elderly who were married (P-value = 0.01).

Table 1. The elderly respondents' demographic characteristics in Ahvaz

Variables	Groups	Frequency (Percent)
Age	65-75	41 (66.1)
	75 – 84	21 (33.9)
House Status	Nursing home	35(56.6)
	Community	27(43.4)
Gender	Male	37(59.7)
	Female	25(40.3)
Education	Illiterate	16(25.8)
	Junior High Diploma	36(58.0)
	Academic Degree	10(16.2)
Marital Status	Single	34(54.8)
	Married	28(45.2)

Table 2. Mean scores of health literacy subscales in community and nursing homes in Ahvaz

Health literacy	$\bar{x}$ ±SD		
	Nursing home	Community	Total
Access	3.22 ± 1.13	2.22 ± 1.01	2.65 ± 1.16
Reading	3.13 ± 1.13	2.45 ± 1.13	2.75 ± 1.17
Understanding	3.08 ± 1.03	2.13 ± 1.03	2.55 ± 1.13
Appraisal	3.36 ± 0.70	2.88 ± 0.95	3.09 ± 0.87
Decision	2.50 ± 0.59	1.84 ± 0.73	2.13 ± 0.74
Total	3.06 ± 0.77	2.30 ± 0.83	2.63 ± 0.88

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Table 3. Mean scores of quality of life subscales in community and nursing homes in Ahvaz

Quality of life	$\bar{x}$± SD		
	Nursing home	Community	Total
Physical Performance	2.82 ± 0.75	3.61 ± 0.67	3.26 ± 0.80
Self-care	2.85 ± 0.60	3.24 ± 0.62	3.07 ± 0.64
Depression and Anxiety	3.07 ± 0.51	3.26 ± 0.54	3.17 ± 0.53
Mental Performance	3.14 ± 0.79	3.10 ± 0.73	3.12 ± 0.75
Social Performance	2.72 ± 0.53	3.04 ± 0.70	2.90 ± 0.65
Sexual Performance	1.35 ± 0.27	2.07 ± 0.70	1.75 ± 0.66
Life Satisfaction	2.54 ± 0.44	2.76 ± 0.62	2.67 ± 0.56
Total	2.65 ± 0.37	2.98 ± 0.52	2.84 ± 0.49

Table 4. Correlation coefficient between quality of life and health literacy in community and nursing homes

Quality of life	Statistical indicators	Subscales of health literacy					
		Access	Reading	Understanding	Appraisal	Decision	Total
Nursing Home	Spearman corr.	- 0.050	- 0.331	- 0.184	- 0.093	- 0.380	- 0.218
	P	0.804	0.920	0.360	0.644	0.050	0.274
Community	Spearman corr.	- 0.480**	- 0.563**	- 0.467**	0.634**	0.498**	- 0.620**
	P	0.001	0.001	0.001	0.001	0.001	0.001
Total	Spearman corr.	- 0.432**	- 0.531**	- 0.486**	- 0.505**	- 0.603**	- 0.584**
	P	0.001	0.001	0.001	0.001	0.001	0.001

**P_value ≤ 0.010

Discussion

Population aging in Iran is occurring rapidly in line with global change; therefore, it is important to pay attention to the elderly physical and mental needs and their quality of life (15).

In the present study, the quality of life in the elderly living in nursing homes and those who do not, was estimated moderate. Other studies, such as Ahmadi (16), Jafarzadeh (17), Rajabi (18), and Tehrani (19) estimated the quality of life in the elderly living in the nursing homes as unfavorable. Darvishpour (20) and Rezvani (21) reported that the quality of life of the studied elderly was average. In Sajjadi's study(15), in contrast to the results of the present study, it was shown that the quality of life was desirable. Quality of life is an acceptable measure to show the elderly status. Studies on the elderly's quality of life in different parts of Iran and comparing them with each other as well as other countries can show the big picture of quality of life and help to recommend interventions in order to promote quality of life.

However, it is believed that the quality of life among the elderly in community was higher than the quality of life of the elderly living in nursing homes (5, 15-18). Given that quality of life is a purely relative scale and depends on a person's perception of his/her situation, inability to make decisions leads to an unfavorable estimate of their quality of life. In the present study, 45 % of the elderly had at least academic degree, and they reported that their quality of life was more unfavorable than others. This difference might be due to the fact that the lifestyle of the elderly can affect their perception of their current quality of life. The elderly may not report a good quality of life; since they experienced many changes, such as loneliness, death of a loved one, illness, not having enough pensions, and so on.

The reason for average estimation of quality of life in nursing homes might be their lower scores in decision-making and application subscales. This means that when the elderly cannot make their own decisions and have to obey the nursing home rules; they do not report their quality of life as desirable. Furthermore, generally a high percentage of the elderly living in nursing homes in Iran have to live in nursing homes because they could not live in the community and with their families, leading to not reporting their quality of life as desirable. As a

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result, the elderly quality of life could be improved if day care centers were established like nursing homes, providing the elderly the chance to use their services every day and spend the night at the home with their families.

The elderly is one of the most important age groups at risk of adverse effects of health literacy low levels (19). In the present study, health literacy in nursing homes was higher than community. Mohseni (22), Javadzade (23), and Borji (24) reported in their observations that most of the elderly had inadequate health literacy. In a review study, Beheshtifar (20) stated that the majority of health literacy studies in the elderly have reported this subject as unfavorable. Behrouz (25) in his review study showed that in studies conducted outside Iran, the elderly have a high level of health literacy that is not consistent with the results of studies in Iran. It can be a direct result of high rate of illiteracy among the elderly in Iran or inadequate programs to develop health literacy. Perhaps the better health literacy of the elderly living in nursing homes than the elderly living in the community can be attributed to the availability of health education and health literacy in nursing homes. On the other hand, people living in nursing homes had a higher average literacy, which could be another factor for higher health literacy. Therefore, it is necessary to develop programs that educate the elderly to transfer this information to others after ensuring the accuracy of the information given in mass media, such as television, the Internet, and newspapers. Due to the low level of education of the elderly in Iran, careful investment in audio-visual media can lead to increased health literacy in the elderly. Also, activating integrated care for the elderly in health centers can improve health literacy; since education for the elderly is routinely included in such programs.

The illiteracy rate among Iranian elderly is high (21); therefore, they are expected to have low health literacy. The transfer of health information to the elderly also requires more planning and care. In fact, the reason for the weakness of this dimension in the present study is that most of the elderly in this study are either illiterate or have primary education, and if education is provided for them, they will need time to use it in daily life. Therefore, it is better to start health literacy education in younger ages. Learning in younger age may cause right attitude to the health subjects and it may finally lead to a healthy aging.

In this study, no association was observed in the elderly living in nursing homes, but a strong and negative correlation was observed between health literacy and quality of life in the elderly living in the community. However, in other studies, the correlation between health literacy and quality of life has been positive. Al Sayah et al. (26) stated that the relationship between health literacy and health-related quality of life changes is moderate. In the study of Jalali et al. (14), there was a significant positive relationship between health literacy and general health. González-Chica indicated that increasing health literacy could improve health-related quality of life (10).

In the present study, the reason for the negative correlation between health literacy and quality of life was that the elderly living in nursing homes had more access to a variety of education. Also, the continuous use of television networks in these nursing homes can increase their health literacy. However, they estimated their estimated quality of life lower than community. It seems inadequate family relationship and regular daily activities could be result in lower QOL.

The results of various studies that examined the relationship between health literacy and quality of life have shown that health literacy is not the only factor promoting adequate quality of life in the elderly. In their research, Fernandez et al. (9) showed a significant relationship between health literacy and health behaviors, and also showed a significant relationship between health literacy and perceptions of health control and perceptions of social status. The González-Chica et al. (10) reported that increasing health literacy may improve health-related quality of life. Castro-Sánchez et al. (27) stated that low health literacy was associated with reduced caring behaviors. A study by Wolf et al. (28) showed that inadequate

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health literacy was directly related to poor physical and mental health. It is difficult to change or improve factors related to health literacy. According to research studies, health literature is one of the several social and economic factors which may affect quality of life in the elderly. Therefore, it seems useful to estimate the effect size of effective factors in the elderly's quality of life via meta-analysis or path analysis studies. Then, the interventions for promoting the elderly's quality of life may be effectively designed.

Among the elderly living in the community, the quality of life and health literacy were estimated as relatively undesirable. Some previous studies suggested that increasing health literacy may improve health-related quality of life (14). However, the results of the current study were not quite similar to the results of previous studies. Quite a lot of research has been conducted around quality of life and health literacy. Kazemi et al. (29) in their review study concluded that educational, nutritional and sports interventions, marriage, higher education, home living, internal religious orientation, social participation, social support, physical health, and good socio-economic status and employment will increase the quality of life of the elderly. Alipour et al. (30) in their study showed that married people with higher education and personal housing had a higher quality of life. Azadi et al. (31) demonstrated a significant relationship between quality of life and literacy level. Kooshyar et al. (32) showed that people with sufficient health literacy had a higher quality of life and there was a significant relationship between health literacy and physical and mental quality of life. Sharifnia (33) and Lee (11) showed that health literacy was significantly higher among the educated elderly than other groups. Lee found that self-care activities were directly related to quality of life, while health literacy was only indirectly related to quality of life. Therefore, it is suggested that in future research, self-care behaviors and factors that affect quality of life be studied considering health literacy as a mediator.

One of the limitations of this study was the unwillingness of the elderly to respond to the questionnaire due to the high number of questions and physical problems; therefore, the questionnaires were completed by the questioner.

Conclusion

Health literacy subscales can predict the quality of life of the elderly. Of these subscales, appraisal and decision making are of greater importance to improve the quality of life of the elderly. The use of self-help groups, attraction of the elderly coordinators, and participation of the elderly in their own decision-making processes could be useful in this regard. Educational programs for those living in the community need to be developed in order to increase the ability to diagnose the accuracy of health information provided in the mass media. Finally, it is important to encourage them to share their health information with others and resolve issues with expert advice in health centers.

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Conflict of interests

The authors declared that there is no conflict of interests.

Authors' contributions

Faraji-Khiavi F, Amiri E, and Zargar N designed research; Amiri E and Zagar N conducted data; Faraji-Khiavi F, Amiri E, and Zahiri M analyzed data; and Faraji-Khiavi F, Zahiri M, Amiri E, and Zagar N wrote the manuscript. All authors read and approved the final manuscript.

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