

The Relationship between Health Literacy and Rate of Receiving Integrated and Comprehensive Geriatric Care Program with Self-care Ability in Elderly Women

ABSTRACT

Background and Objective: Health literacy can be effective in the control and self-care in old age, how to receive care services, reduce the costs of the health system; therefore, we aimed to investigate the relationship between health literacy and the rate of geriatric care programs with self-care ability in elderly women.

Materials and Methods: This correlative study was conducted on 260 women aged ≥ 60 years covered by the health centers in Dezful who were selected by using randomized sampling method. Data were collected by HELIA, SASE questionnaire, and checklist of the care plan received. Data were analyzed by SPSS 21, descriptive statistics and statistical tests.

Results: The results showed that 247 (95%) women had poor health literacy levels and 223 (85.8%) women had low self-care ability and 77(29.6%) of them have a desirable care for the elderly. There was a significant relationship between health literacy and self-care ability ($P < 0.05$, $r = 0.4-0.7$) and the significant relationship was also found between health literacy and self-care ability in the two levels of desirable and undesirable receipt of care program ($P < 0.05$).

Conclusion: Health literacy and receiving integrated and comprehensive geriatric care programs can directly affect the self-care ability of older women. Considering the increase in the elderly population of Iran and the challenges arising from it, attention to the self-care ability and maintaining individual independence of the elderly in parallel with promoting health literacy with education in the field of health information of old age and specific problems of this period and strategies is required.

Paper Type: Research Article

Keywords: Health Literacy, Delivery of Health Care, Self-care, Elderly Women.

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Introduction

Aging is one of the biggest challenges of this century. Medical and health advances have increased human life expectancy leading to a larger elderly population and in turn, more individuals in need of health services (1). The elderly population in developing countries such as Iran will increase immensely, and the number of elderly people in the world will reach 1.2 and 2 billion people in 2025 and 2050, respectively (2). According to the results of the census in 2011 and 2016, 8.2% (2) and 9.3% (3) of the population of Iran comprise the elderly, respectively. According to the World Health Organization, this ratio will change significantly in the future, and the population of older women will increase (4), since the pattern of health and disease is different in men and women. Women's longer life expectancy makes them suffer from chronic diseases more than men (5). Self-care behaviors are determining and effective factors in maintaining health and preventing the aggravation of signs and symptoms of disease, especially in chronic diseases (6). The concept of "self-care" was first introduced by Orem and published in 1959 (7). According to this definition, self-care is a learned behavior that a person performs to maintain or improve life, health, well-being, and disease prevention and treatment (8). Self-care refers to maintaining good health through healthy, positive activities and managing illness or disorder (9-10). Self-care ability includes individuals' ability to perform self-care activities. Self-care ability refers to a set of information, self-care desire, and self-care skills, and the ability to understand and recognize these activities (4, 6-7, 11). Self-care ability is influenced by age, sex, developmental status, health status, life experiences, socio-cultural awareness, factors related to the care system such as medical diagnoses and treatments, lifestyle

patterns, family factors, environmental factors, and available resources (8). Self-care plays a key role in the clinical consequences associated with disease in old age. It improves the quality of life and increases life expectancy (10-17). Another study examined the role of self-care ability in predicting the quality of life of the elderly and showed that in addition to the effect of self-care ability on quality of life in the elderly, elderly men had high self-care ability (71%) and elderly women had lower self-care ability (55%). Since self-care behaviors are not desirable in the elderly and considering the low self-care ability of older women, it is recommended to plan to improve self-care ability in this population (18). A person's quality of life and well-being in old age depends to a large extent on his access to and use of geriatric health services, and the geriatric health program should focus on meeting the needs of the elderly by adopting a broad and integrated approach (19).

Elderly care and prevention services include services in the fields of medicine, nursing, rehabilitation, screening, prevention, and training caregivers. The Deputy Minister of Health of the Ministry of Health provides public education to the elderly under the title "Healthy Lifestyle". This program was created to control the problems caused by aging in the elderly. In this program, individuals aged 60 and older are first called to health centers and are taught about issues related to old age (20). Individuals are expected to have a high level of health literacy to enjoy adequate self-care (21). The term health literacy (hygiene) is conceptualized as a cognitive skill and is an important and influential issue in the health care system. It was first introduced in 1974 in an educational panel on health education (22). Learning and understanding new health information requires

high skills in reading, calculating, and making decisions (23). The results of various studies in Iran have reported a wide range of inadequate health literacy in the elderly (24- 25). Studies have shown that low levels of health literacy in the elderly are associated with increased mortality (26), decreased cognitive ability (27), decreased physical health (28), increased risk of dementia (29), and risk factors for chronic diseases (30), and the adoption of some high-risk health behaviors (31). Therefore, for reasons such as increasing trend of the number of elderly women, increased life expectancy of women after 50, the positive attitude of communities to the health of the elderly as people who can be a source of effective services for the family and society (32). Health literacy can be effective in the control self-care skills in old age, how to receive comprehensive geriatric care services, reducing the load of referrals to health centers, and reducing the costs of the health system. Therefore, we aimed to investigate the relationship between health literacy and the rate of receiving integrated and comprehensive geriatric care programs with self-care ability in elderly women.

Participants and Methods

This study was a descriptive-analytical study conducted in Dezful health centers. After obtaining the necessary permits and code of ethics (IR. AJUMS.REC.1399.653) a list of all health centers (N=21) in Dezful was prepared and considering the number of samples (N=21) assigned to each center, 260 women aged ≥ 60 years covered by the health centers in Dezful from January to July 2021 were included in the study using a random sampling method. The inclusion criteria were as follows: receiving at least two rounds of care with a maximum interval of one year during the case review, ability to communicate, ability to read

and write, ability to complete a questionnaire, and cognitive test (AMT)¹ results of six or higher. We excluded participants with incomplete questionnaires. The questionnaires were completed in person or by calling the elderly person or with the participation of the accompanying person. In this regard, first, the self-care and health literacy questionnaires were completed, and then by referring to the health care file received by the same elderly person in the electronic system, the information about the checklist was completed using the information in the file. It should be noted that elderly women were informed about the purpose of the study and participated after completing the consent form. Coded, confidential and anonymous questionnaires were used to observe ethical issues. Data collection tools included a demographic questionnaire, standard elderly Self-care Ability Scale for the Elderly (SASE), Health Literacy for Iranian Adults (HELIA), and a checklist for monitoring the implementation of the integrated and comprehensive care plan received by the researcher based on standard comprehensive care services for the elderly. HELIA was designed and analyzed for its psychometric properties by Montazeri and colleagues in Iran. It has 33 items in the areas of access (6 items), reading (4 items), understanding (7 items), appraisal (4 items), and decision (12 items). It is scored on a five-point Likert scale. Total scores range from 33 to 165 and can be calculated separately for each dimension. Health literacy is interpreted as inadequate (score: 0-50), moderately adequate (score: 51-66), adequate (score: 67-84) and high (score: 85-100). In general, a score of less than 66 is considered as poor health literacy, and a score of 67 or higher is considered as good health literacy (33). Montazeri and colleagues reported good validity and acceptable reliability (0.72-0.89) (34). The SASE consists of 17 questions scored

1. Abbreviated Mental Test

on a five-point Likert scale. Total scores range from 17-85. A score less than 69 indicates low self-care ability, and a score equal to and more than 69 indicates high self-care ability (18). The questionnaire was first designed by Soderham and co-workers (1996, 2000) in Sweden, and the reliability of the questionnaire was obtained using Cronbach's alpha coefficient (0.68-0.88) (35). Tamizkar and co-workers (2017) also obtained the reliability of the questionnaire using Cronbach's alpha coefficient (0.80) in a study of the self-care ability of the elderly (36). Checklist for evaluating and monitoring the rate of receiving integrated health care for the elderly includes 16 types of care that are standard in accordance with the booklet of integrated health care approved by the Ministry of Health and Medical Education and the periodic care form of modern elderly health services approved by the Ministry of Health (17). Using the checklist, the mentioned care is measured in two rounds of consecutive care received by the elderly. Registered care is scored as 1, and unregistered care is scored as 0. If all 16 types of care are recorded for a person in two assessments, then the integrated and comprehensive care of the elderly is desirable for that person; otherwise, even if one care is not registered at a time, the care status is undesirable. Data were entered in SPSS software, version 21. Independent t-test, Mann-Whitney test, analysis of variance (ANOVA), Kruskal-Wallis test, correlation coefficient test, and regression analysis were performed as appropriate. $P < 0.05$ was considered statistically significant.

Results

In this study, 260 elderly women were studied to investigate the relationship between health literacy and the rate of receiving integrated and comprehensive care program for the elderly with self-care ability. 214 (82.3%) elderly women were 65-61 years. 95 (36.5%) were

literate, 196 (75.4%) were housewives, 189 (72.7%) were married, 241 (92.7%) had chronic diseases such as diabetes mellitus, hypertension, hyperlipidemia, and cardiovascular, cerebral, or renal complications. 188 (72.3%) patients received the first care when they were 61-60 years (table1).

Table 1: Frequency distribution of demographic variables in elderly women

Demographic variable		Number	percentage	cumulative percentages
Elderly age	65-61	214	82/3	82/3
	70-66	24	9/2	91/5
	70>	22	8/5	100/0
Elderly education	illiterate	84	32/3	32/3
	reading and writing	95	36/5	68/8
	High school	38	14/6	83/5
	Diploma	35	13/5	96/9
	University	8	3/1	100/0
	Housewife	196	75/4	75/4
occupation	RetiredElderly	58	22/3	97/7
	Employed	6	2/3	100/0
marital status	Spouse	189	72/7	72/7
	Widow Single	63	24/2	96/9
	Divorced	8	3/1	100/0
Employee	Unemployed	34	18/0	18/0
	Retired	39	20/6	38/6
	Spouse's job	7	3/7	42/3
	Free	68	36/0	78/3
	out of service	41	21/7	100/0
	unanswered	71	27/3	
Spouse's education	illiterate	91	48/1	48/1
	reading and writing	84	44/4	92/6
	High school	11	5/8	98/4
	Diploma	3	1/6	100/0
	unanswered	71	27/3	

Start receiving care	60-61	188	72/3	72/3
	62-63	56	21/5	93/8
	64-65	9	3/5	97/3
	65>	7	2/7	100/0
Income	Low	241	92/7	92/7
	medium	5	1/9	94/6
	Good	14	5/4	100/0
Smoking	Yes	14	13/8	13/8
	No	36	86/2	100/0
Quit smoking	Yes	224	1/2	1/2
	No	3	98/8	100/0
	Total	257	100/0	

The results showed that 247 (95%) women (the total number of people with inadequate and moderately adequate health literacy) had poor health literacy levels. Also, 223 (85.8%) had low self-care ability (table 2).

Table 2: Level of Health literacy and self-care ability in elderly women

variable	favorable		Undesirable	
	Excellent	enough	not so much	Insufficient
Health literacy rate	84-100	66-84	50-66	50>
Number (percent)	2 (0/8%)	11 (4/2%)	29 (11/2%)	218 (83/8%)
Self-care Ability	High level		Low level	
	>69		69>	
Number (percent)	37 (14/2%)		223 (85/8%)	

183(70.4%) of elderly women have an unfavorable integrated and comprehensive care for the elderly and 77(29.6%) have a desirable integrated and comprehensive care for the elderly (Table 3).

Table 3: Receiving integrated and comprehensive geriatric care in elderly women

care	status	First	Second
Blood pressure	Registered	220 (84/6)	224 (86/2)
	not registered	40 (15/4)	36 (13/8)
Height	Registered	256 (98/5)	256 (98/5)
	not registered	4 (1/5)	4 (1/5)
Weight	Registered	256 (98/5)	256 (98/5)
	not registered	4 (1/5)	4 (1/5)
Body Mass Index	Registered	256 (98/5)	256 (98/5)
	not registered	4 (1/5)	4 (1/5)
Food pattern	Registered	155 (59/6)	159 (61/2)
	not registered	105 (40/4)	101 (38/8)
Blood sugar	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Blood lipid disorders	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Balance / Fall	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Mental health assessment	Registered	146 (56/2)	149 (57/3)
	not registered	114 (43/8)	111 (42/7)
Depression	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Daily activities	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Vitamin D supplement	Registered	187 (71/9)	189 (72/7)
	not registered	73 (28/1)	71 (27/3)
Calcium supplement	Registered	168 (64/6)	170 (65/4)
	not registered	92 (35/4)	90 (34/6)
Cardiac disease risk assessment	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Stroke risk assessment	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
Self-breast examination	Registered	260 (100/0)	260 (100/0)
	not registered	0 (0/0)	0 (0/0)
General care status	Optimal	77(29.6%)	
	Undesirable	183(70.4%)	

The relationship between different dimensions of health literacy with each other and self-care ability using Pearson's correlation test showed that all relationships were significant ($P < 0.001$). Also, according to the positive correlation coefficients,

all variables were directly related to each other (as one variable increased, the other increased as well). The relationship between self-care ability and each dimension of health literacy was moderate to strong. ($r = 0.4-0.7$, table 4).

Table 4: The relationship between health literacy and self-care ability in elderly women

variable		Self-care ability	Total health literacy	Decision-making and behavior	Assessment	Understand	Access	Read
Read	The correlation coefficient	0/503	0/763	0/676	0/691	0/696	0/673	1
	P-value	< 0/001	< 0/001	< 0/001	< 0/001	< 0/001	< 0/001	
access	The correlation coefficient	0/448	0/917	0/814	0/847	0/880	1	
	P-value	< 0/001	< 0/001	< 0/001	< 0/001	< 0/001		
Understand	The correlation coefficient	0/521	0/968	0/907	0/920	1		
	P-value	< 0/001	< 0/001	< 0/001	< 0/001			
assessment	The correlation coefficient	0/521	0/948	0/897	1			
	P-value	< 0/001	< 0/001	< 0/001				
decision-making and behavior	The correlation coefficient	0/492	0/962	1				
	P-value	< 0/001	< 0/001					
levels of total health literacy	The correlation coefficient	0/529	1					
	P-value	< 0/001						
self-care ability	The correlation coefficient	1						
	P-value							

There were significant differences between different dimensions of health literacy and self-care ability in the two levels of desirable and undesirable receipt of integrated and comprehensive care program for the elderly

using the independent t test ($P < 0.05$). The mean scores of different dimensions of health literacy and self-care ability were higher at the desired level (table 5).

Table 5: Relationship between health literacy and self-care ability with integrated and Comprehensive Geriatric Care Program in elderly women

variable		Number (percent)	Mean	standard deviation	Test statistic	P-value
Read	Undesirable	183 (70/4)	14/21	16/58	-5/62	< 0/001
	Optimal	77 (29/6)	28/41	22/73		
access	Undesirable	183 (70/4)	19/12	25/55	-4/95	< 0/001
	Optimal	77 (29/6)	34/95	28/44		
Understand	Undesirable	183 (70/4)	17/75	23/28	-5/81	< 0/001
	Optimal	77 (29/6)	37/66	29/31		
assessment	Undesirable	183 (70/4)	15/06	22/37	-5/89	< 0/001
	Optimal	77 (29/6)	34/57	28/65		
decision-making and behavior	Undesirable	183 (70/4)	17/05	21/79	-5/72	< 0/001
	Optimal	77 (29/6)	35/31	27/12		
levels of total health literacy	Undesirable	183 (70/4)	16/99	20/39	-5/92	< 0/001
	Optimal	77 (29/6)	34/81	25/87		
self-care ability	Undesirable	183 (70/4)	51.32	14.12	-7.785	< 0/001
	Optimal	77 (29/6)	64.62	7.71		

Discussion

The current study aimed to examine the relationship between health literacy and the rate of receiving integrated and comprehensive geriatric care programs with self-care ability in elderly women. We found that 95% of the elderly women had poor health literacy. In another study (37), only 8.8% had adequate health literacy, and one other study reported adequate health literacy in only 9.7% of the participants (38). In another study, 10% of the participants had low health literacy, 46% moderate, and 44% high health literacy (35). Of course, the division of health literacy levels in the two studies and also

the age of the participants in the two studies were different; in the mentioned study, the age range was 15-65 years, but we studied only elderly individuals. The reason for the difference between the results of the two studies can be attributed to different communities. In some of the various studies conducted in other countries, the level of health literacy has been reported to be insufficient.

In Kutnur and colleagues' study (40), only 3% of the subjects had a high level of health literacy. Other studies have reported inadequate health literacy rates of 30% (41), 24.5% (42), and 26%

(43). The results of these studies are somewhat consistent with our study. The elderly do not have sufficient health literacy. However, because of the higher prevalence of chronic diseases and the consequent need for self-care abilities and performing screening tests in the elderly, the discussion of health literacy in this group of people is very important. Inadequate health literacy in the elderly is therefore a warning to officials, health policymakers, and health care providers. 183 (70.4%) women had an unfavorable integrated and comprehensive care status, and 77 (29.6%) had a desirable status. The only similar study that was reviewed was the study of LotfaliNejad and colleagues (44), in which health indicators (blood pressure and depression index) were recorded three times. In this study, according to the interpretation, which was based on the complete record of care in two stages of elderly referral, the result was unfavorable. In the health service centers, if the elderly come to the hospital for the first time, there was no follow-up for the second time despite providing a date for the referral. On the other hand, since the elderly do not receive full services such as supplement pills in the first visit, they do not feel the need to visit in a timely manner. According to the results, the need for regular and timely referral of the elderly to receive services by the staff of health centers is felt.

85.8% of the elderly women had low self-care ability, and 14.2% had high self-care ability. Alizadeh and colleagues found that 5.5% of the subjects had low, 32.5% had moderate, and 62% had high self-care ability (30). In another study, 25% of the elderly had high self-care ability (18). In Tamizkar (36), Avazeh (8), and Soderham's studies (35), more than 50% of people had low self-care ability, which is consistent with our study. However, a study on the elderly living

in retirement homes in Sari city showed that the level of self-care of most elderly people was at a desirable level (45). The relationships between the dimensions of health literacy levels as well as with the variable of self-care ability were all significant. All variables were directly related to each other, which indicates that as one increases, so does the other. Regarding the relationship between the dimensions of health literacy and self-care ability, according to the reported correlations, the intensity of the relationship between self-care and each dimension of health literacy was moderate to strong. As the level of health literacy increased, the self-care ability in the elderly also increased. In one study (36), a significant relationship was observed between self-care ability and health literacy, and this relationship was weak, which is consistent with our study. Considering the low level of self-care ability and moderate relationship with the level of health literacy in older women, it seems that planning to improve health literacy in this group is important to increase their self-care ability. There is a significant difference in the level of health literacy (and its various dimensions) and self-care ability between the two desirable and undesirable levels of receiving integrated and comprehensive care for the elderly. The reported means for all variables were higher than the desired level. In line with this result, a study on the relationship between receiving aging care programs and mental and physical health indicators showed that the integrated and comprehensive care program of the Ministry of Health has been effective in the field of screening and physical health of the elderly but not in the field of mental health (46). The limitations of the study is, only elderly women covered by Dezfoul health center and should be carefully generalized to all elderly (male-female). Some elderly may not be covered by health centers. It is suggested

that studies be performed to determine the predictors of health literacy and self-care in the elderly, comparison of health literacy and self-care in the elderly (male-female) Also, interventions to promote health literacy and self-care ability in this group should be designed

Conclusion: In general, from the findings of this study, it can be concluded that the level of health literacy in older women is insufficient. Also, health literacy and receiving integrated and comprehensive geriatric care programs can directly affect the self-care ability of older women. Meanwhile, health literacy can be effective in controlling and self-managing diseases in the elderly, reducing the burden of referring to health

centers, and reducing the costs of the health system. However, promoting health literacy in the elderly requires culture building, codified and continuous education, intra- and inter-sectoral cooperation. On the other hand, considering the increasing population of the elderly in Iran and the challenges arising from it, it is very important to pay attention to the elderly's functional ability and individual independence while promoting their health literacy.

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References

- 1- Abusalehi A, Vahedian-Shahroodi M, Esmaily H, Jafari A, Tehrani H. Mental health promotion of the elderly in nursing homes: a social-cognitive intervention. *International Journal of Gerontology*. 2021;15(3):221-7.
- 2- Safavi SR, Bakhshi F, kasmaei P, Omid S. Social determinants of health and lifestyle in the elderly. *Iranian Journal of Health Education and Health Promotion*. 2021;9(4):372-82. <https://doi.org/10.52547/ijhehp.9.4.372>
- 3- Iran SCo. The Statistical Yearbook of Iran 2016 [18 July]. Available from: <https://www.amar.org.ir/english/Iran-Statistical-Yearbook>.
- 4- Nayeri ND, Abazari F, Pouraboli B. Challenges in caring for the elderly in Iran: A systematic review. *Ethiopian Medical Journal*. 2018;56(2)
- 5- Montgomery KS. Health promotion with adolescents: examining theoretical perspectives to guide research. *Res theory nurspract*. 2002; 16(2): 119-134. <https://doi.org/10.1891/rtnp.16.2.119.53001> PMID:12371430
- 6- Gholian-Aval M, Tehrani H, Esmaily H. Evaluation of Self-Care Status and Its Relationship with Self-Efficacy of Patients with Hypertension. *Iranian Journal of Health Education and Health Promotion*. 2020;8(4):336-47
- 7- Ovayolu OU, Ovayolu N, Karadag G. The relationship between self-care agency, disability levels and factors regarding these situations among patients with rheumatoid arthritis. *Journal of Clinical Nursing*. 2012; 21(1-2):101-10. <https://doi.org/10.1111/j.1365-2702.2011.03710.x> PMID:21371146
- 8- Iovino P, Lyons KS, De Maria M, Vellone E, Ausili D, Lee CS, et al. Patient and caregiver contributions to self-care in multiple chronic conditions: a multilevel modelling analysis. *International Journal of Nursing Studies*. 2021;116:103574. <https://doi.org/10.1016/j.ijnurstu.2020.103574> PMID:32276720
- 9- Barkhordari-Sharifabad M, Saberinejad K, Nasiriani K. The effect of health literacy promotion through virtual education on the self-care behaviors in patients with heart failure: A Clinical Trial. *Journal of Health Literacy*. 2021;6(1):51-60
- 10- Oraki M, Mehdizadeh A, DortajAfsaneh. 2019. The Effectiveness of Self-care Empowerment Training on Life Expectancy Hap pines and Quality of the Elderly in Iranian Elderly in Iranian Elderly Care Centers in Dubai. *Iranian Journal Ageing*.14(3):320-331.
- 11- Ebrahimi M, Moghadamnia M, Farmanbar R, Zayeni SH, Kazem Nejad Leili E. Status of self-care ability of patients with Rheumatoid Arthritis. *Journal of Holistic Nursing and Midwifery*. 2015;25(4):9-18.
- 12- Stys AM, Kulkarni K. Identification of self-care behaviors and adoption of lifestyle changes result in sustained glucose control and reduction of comorbidities in type 2 diabetes. *Diabetes Spectrum*. 2007;20(1):55-8 <https://doi.org/10.2337/diaspect.20.1.55>
- 13- Gohar F, Greenfield SM, Beevers DG, Lip GYH, Jolly K. Self-care and adherence to medication: a survey in the hypertension outpatient clinic. *BMC Complementary and Alternative Medicine*. 2008; 8(1):4. <https://doi.org/10.1186/1472-6882-8-4> PMID:18261219 PMID:PMC2259297
- 14- Soodmand M, Ghasemzadeh G, Mirzaei Dahka S, Mohammadi M, Amoozadeh Lichaei N, Monfared A. Self-care agency and its influential factors in hemodialysis patients. *Iran Journal of Nursing*. 2019;32(118):93-103. <https://doi.org/10.29252/ijn.32.118.86>
- 15- Azadbakht M, Garmaroodi G, Tanjani PT, Sahaf R, Shojaeizade D, Gheivandi E. Health promoting self-care behaviors and its

- related factors in elderly: application of health belief model. *Journal of Education And Community Health*. 2022;1(2):20-9. <https://doi.org/10.20286/jech-010220>
- 16- Shrivastava SRBL, Shrivastava PS, Ramasamy J. Health care of elderly: Determinants, needs and services. *International journal of preventive medicine*. 2013;1(1):1224-5.
- 17- Olyani S, Gholian Aval M, Tehrani H, Mahdiadeh M. School-based mental health literacy educational interventions in adolescents: A systematic review. *Journal of Health Literacy*. 2021;6(2):69-77.
- 18- angSefidi S, Ghanbari Moghaddam A, Mohamadzadeh M, Karbalaee Z, Mohammadi M. Self-care and its predictive role in the quality of life of the elderly living in the community. *Journal of Gerontology*. 2018;2(4):64-70. <https://doi.org/10.29252/joge.2.4.64>
- 19- Kwan C-W, Chi I, Lam T-P, Lam K-F, Chou K-L. Validation of minimum data set for home care assessment instrument (MDS-HC) for Hong Kong Chinese elders. *Clinical Gerontologist*. 2000;21(4):35-48. https://doi.org/10.1300/J018v21n04_04
- 20- Li C, Chi I, Zhang X, Cheng Z, Zhang L, Chen G. Urban and rural factors associated with life satisfaction among older Chinese adults. *Aging & Mental Health*. 2015;19(10):947-54. <https://doi.org/10.1080/13607863.2014.977767> PMID:25407598
- 21- Javadzade H, Mahmoodi M, Sharifirad G, Fakhraee M, Reisi M. Investigation of psychological factors based on health belief model and health literacy on adult Self-Medication in Bushehr province. *Journal of Health Literacy*. 2020;5(1):39-49.
- 22- Delavar F, Pashaeypoor S, Negarandeh R. Health literacy index: A new tool for health literacy assessment. *Journal of Hayat*. 2018;24(1):1-6.
- 23- Wengryn MI, Hester EJ. Pragmatic Skills Used by Older Adults in Social Communication Health Care Contexts: Precursors to Health Literacy. *Contemporary Issues in Communication Science and Disorders*. 2011;38(Spring):41-52. https://doi.org/10.1044/cicsd_38_S_41
- 24- Borji M, Tarjoman A, Otaghi M, Salimi E, Naseri A. Health literacy level and its related factors among the elderly in Ilam in 2015. *Iran Journal of Nursing*. 2017;30(108):33-43. <https://doi.org/10.29252/ijn.30.108.33>
- 25- Mohseni M, Khanjani N, Iranpour A, Tabe R, Borhaninejad VR. The relationship between health literacy and health status among elderly people in Kerman. *Iranian Journal of Ageing*. 2015;10(2):146-55.
- 26- Bostock S, Steptoe A. Association between low functional health literacy and mortality in older adults: longitudinal cohort study. *Bmj*. 2012;344. <https://doi.org/10.1136/bmj.e1602> PMID:22422872 PMID:PMC3307807
- 27- Serper M, Patzer RE, Curtis LM, Smith SG, O'Connor R, Baker DW, et al. Health literacy, cognitive ability, and functional health status among older adults. *Health services research*. 2014;49(4):1249-67. <https://doi.org/10.1111/1475-6773.12154> PMID:24476068 PMID:PMC4111764
- 28- Möttus R, Johnson W, Murray C, Wolf MS, Starr JM, Deary IJ. Towards understanding the links between health literacy and physical health. *Health Psychology*. 2014;33(2):164. <https://doi.org/10.1037/a0031439> PMID:23437854
- 29- Kaup AR, Simonsick EM, Harris TB, Satterfield S, Metti AL, Ayonayon HN, et al. Older adults with limited literacy are at increased risk for likely dementia. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences*. 2014;69(7):900-6. <https://doi.org/10.1093/gerona/glt176> PMID:24158765 PMID:PMC4067115
- 30- Taggart J, Williams A, Dennis S, Newall A, Shortus T, Zwar N, et al. A systematic review of interventions in primary care to improve health literacy for chronic disease behavioral risk factors. *BMC family practice*. 2014;13(1):49. <https://doi.org/10.1186/1471-2296-13-49> PMID:22656188 PMID:PMC3444864
- 31- Wolf MS, Gazmararian JA, Baker DW. Health literacy and health risk behaviors among older adults. *Am J PrevMed*. 2007; 32(1): 19-24. <https://doi.org/10.1016/j.amepre.2006.08.024> PMID:17184964
- 32- Suls J, Bunde J. Anger, anxiety, and depression as risk factors for cardiovascular disease: the problem and implications of overlapping affective dispositions. *Psycho bull*. 2005; 131(2): 260-300. <https://doi.org/10.1037/0033-2909.131.2.260> PMID:15740422
- 33- Panahi R, Osmani F, Sahraei M, Ebrahimi S, ShamsizadehNehadghashti M, Javanmardi E. Relationship of Health Literacy and Quality of Life in Adults Residing in Karaj, Iran. *J Educ Community Health*. 2018; 4 (4): 13-19. <https://doi.org/10.21859/jech.4.4.13>
- 34- Montazeri A, Tavousi M, Rakhshani F, Azin SA, Jahangiri K, Ebadi M, et al. Health Literacy for Iranian Adults (HELIA): development and psychometric properties. *Payesh*. 2014; 13(5): 589-599.
- 35- Soderhamn U, Bachrach-Lindstrom M, Ek A-C. Self-care ability and sense of coherence in older nutritional at-risk patients. *European Journal of Clinical Nutrition*. 2008;62(1):96-103. <https://doi.org/10.1038/sj.ejcn.1602691> PMID:17327868
- 36- tamizkar p, mohammadi M, Fathnezhad-kazemi a, marami s. The relationship between health literacy level and self-care ability in the elderly. *Journal of Gerontology*. 2019;4(3):54-62. <https://doi.org/10.29252/joge.4.2.54>
- 37- Reisi M, Javadzade SH, Mostafavi F, Sharifirad G, Radjati F, Hasanzade A. Relationship between health literacy, health status, and healthy behaviors among older adults in Isfahan, Iran. *Journal of education and health promotion*. 2012;1(1):31. <https://doi.org/10.4103/2277-9531.100160> PMID:23555134 PMID:PMC3577376
- 38- Javadzade SH, Sharifirad G, Radjati F, Mostafavi F, Reisi M, Hasanzade A. Relationship between health literacy, health status, and healthy behaviors among older adults in Isfahan, Iran. *Health System Research*. 2012; 7(4):1-11.

- <https://doi.org/10.4103/2277-9531.100160>
PMid:23555134 PMCID:PMC3577376
- 39- Alizadeh Aghdam M B, Koohi K, Gholizadeh M. The relationship of Self-care and Health Literacy with Mental Health among Citizens of Tabriz City. *Health_Based Research*. 2017; 2 (4):381-394.
- 40- Kutner MA, Greenberg E, Yin J, Paulsen C, White S. The health literacy of America's adults: results from the 2003 National Assessment of Adult Literacy. Washington (DC): United States Department of Education; 2006.
- 41- von WC, Knight K, Steptoe A, Wardle J. Functional health literacy and health-promoting sample of British adults. *J Epidemiol Community Health* 2007; 61(12): 1086-90. <https://doi.org/10.1136/jech.2006.053967>
PMid:18000132 PMCID:PMC2465677
- 42- Baker DW, Wolf MS, Feinglass J, Thompson JA, Gazmararian JA, Huang J. Health literacy and mortality among elderly persons. *Arch Intern Med* 2007; 167(14): 1503-9. <https://doi.org/10.1001/archinte.167.14.1503>
PMid:17646604
- 43- Paasche-Orlow MK, Parker RM, Gazmararian JA, Nielsen-Bohlman LT, Rudd RR. The health literacy. *J Gen Intern Med* 2005; 20(2): 175-84. <https://doi.org/10.1111/j.1525-1497.2005.40245.x>
PMid:15836552 PMCID:PMC1490053
- 44- Mirmohammadkhani M, Ziari A, Momeni M. [Systematic Review and Meta-analysis of Health Literacy in Iranian Older Adults (Persian)]. *Iranian Journal of Ageing*. 2020; 15(1):2-13. <https://doi.org/10.32598/sija.2020.3.210>
- 45- Bagheri Nesami M, Ardeshiri M, Holari B. Self-care behavior and its related factors in the community-dwelling elderly in Sari, 2014. *Journal of Clinical Nursing and Midwifery*. 2014;4(4):48-56
- 46- Lotfalinezhad E, Abolfathi Momtaz Y, Sadat Nazari Panah N, Honarvar MR, Arab Ameri F, Sadat Azimi M. Effectiveness of Integrated and Comprehensive Geriatric Care Program of Ministry of Health on Physical and Mental Health of Older Adults in Golestan Province, 2019. *Salmad: Iranian Journal of Ageing*. 2019; 3-18