

## Investigating the Relationship between Health Literacy and Nutrition among middle-aged women

### ABSTRACT

**Background and Objective:** Health literacy refers to the individual's capacity to gain, interpret, understanding basic information and health services for the proper decision-making process. Nutrition behaviors are also health related issues, which are multi-factorial including important health implications. The aim of this study is to determine the relationship between health literacy and nutrition among middle-aged women.

**Materials and Methods:** This descriptive-analytical study was performed on 600 middle-aged women referring to comprehensive health centers in Dargaz in 2017. The available sampling method and a multi-faceted researcher-made questionnaire were used. Finally, after collecting the questionnaires, the data were analyzed and reported using SPSS-23 software, descriptive and analytical tests and linear regression tests.

**Results:** The mean and standard deviation of health literacy score was  $67.46 \pm 16.07$ . In this study, 16.7%, 27.8% and 55.5% of the subjects had inadequate, border line and adequate health literacy, respectively. According to one-way ANOVA test, there was a significant relationship between health literacy and educational level. The results showed that there was a positive and significant relationship between health literacy and nutrition behaviors.

**Conclusion:** Based on the findings of the study, increasing the level of health literacy can enhance the nutritional behaviors of people.

**Paper Type:** Research Article

**Keywords:** Health Literacy; Nutrition; Middle-aged Women; Dargaz

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## Introduction

Health literacy refers to the individual's capacity to gain, interpret, understanding basic information and health services for the proper decision-making process (1). The health literacy term has been used in health literature since the 1970s (2). Health literacy includes a set of reading, listening, analysis and decision-making skills and the ability to apply these skills in health situations that does not necessarily refer to years of study or general reading ability (3).

The term, especially in the United States, includes the relationship between patient literacy and its ability to interpret prescribed drug regimens (2). In the 21st century, health literacy is now introduced as a global issue (4). One way to prevent non-communicable diseases is to improve nutritional status (5). Nutrition behaviors are also health related issues, which are multi-factorial including important health implications (6). Promoting healthy nutrition behaviors will also be successful if effective factors are identified through appropriate models of health behavior change (7).

One of the most important causes of nutritional problems is the lack of nutritional knowledge and, consequently, inappropriate performance in this category, which causes problems such as malnutrition and the occurrence of various non-communicable diseases (8). The World Health Organization (WHO) estimates that about 1.7 million (8.2%) of deaths per year are related to the nutrition type and low consumption of fruits and vegetables. However, the average consumption of fruits and vegetables around the world is much lower than the WHO recommendation. In the United States only 6.8% of the people have reached the

recommended daily limit, and only about 5.6% of the Australians eat enough vegetables and fruits daily (9).

In recent years, the relationship between diet and disease outbreak has been highlighted, and as a result of dietary changes, it has been considered as an indicator of health promotion (10). Obesity, high blood pressure, anemia, osteoporosis, diabetes, cancer, and cardiac atherosclerosis are diseases in which nutrition is involved (11). Studies have shown that there is a relationship between health literacy and the inappropriate health outcomes; for example, the less knowledge about health conditions, the lower use of prevention services and lifestyle (12). Women play an important role in choosing the type and cooking household food. Understanding the nutritional status of women and convincing them to have a diet rich in fruits and vegetables and healthy foods can also affect the nutrition of other family members (13).

The first step in nutrition education is to raise individual's awareness about the importance of healthy nutrition behavior; since increasing nutritional awareness leads to behavioral changes, which means that correct behaviors replace false nutrition behaviors (14). One of the most suitable patterns for studying behavioral changes in health education and health promotion is the Trans-theoretical model (15). This model not only provides a way to understand behavior change, but also provides a basis for assessing people's readiness for change and interventions consistent with this readiness. This pattern is based on the assumption that people do not make a black and white decision to change their behavior, but it is a gradual process that is divided into different parts and has different stages that individuals

pass through to change from these stages. (16). stages of change in the TTM pattern consists of five stages: pre-contemplation, contemplation, preparation, action and maintenance. In the pre-contemplation stage, individuals do not intend to change behavior within the next six months, which can be due to lack of knowledge and information about the behavior or previous negative experiences that led to failure or lack of motivation (17). Despite the importance of health literacy and nutrition, this issue has not been addressed well in Iran. The need to address this issue, its dimensions and influential factors could be serve as an effective tool for planners, administrators and custodians. Therefore, the aim of this study is to determine the relationship between health literacy and nutrition among middle-aged women.

### Materials and Methods

This descriptive-analytical study was performed on 600 middle-aged women referring to comprehensive health centers. The Sample size based on a similar study (18), with 95% confidence and accuracy of 0.31, and using the formula for calculating the comparison of two means was 600. Participants were included if they: were 30 to 59 years old, lack of physical and mental illness, lack of education in the studied field during the last year, willingness to participate in the study, full vigilance and the ability to communicate. The exclusion criteria was abstaining from more than one session. The instruments used included two researcher-made multi-faceted questionnaires. The first questionnaire assesses health literacy and the second questionnaire evaluates people's diet. The demographic information section with 16 questions examined the variables such as age, level of education, occupation, number

of household members, income, place of residence, housing situation, physical activity status, height, weight, manner and method of gaining information about health and disease, specific disease, and the current consumption of medication.

The dietary questionnaire with 12 questions investigated the daily intake of the main food groups including: bread and cereals, fruits, vegetables, dairy products, meat and eggs, legumes and dietary habits, such as cooking, oil, inappropriate food habits, like fast food Foods and carbonated beverages and the frequency of fish consumption per week. The range of questions were from 0 to 1. The questions of this tool were extracted from the Ministry of Health through the guidelines of the care of the middle aged women and the latest version of the Health Development Plan submitted to the health departments of universities across the country under the supervision of professors from the nutrition and health department.

The health literacy questionnaire was also extracted from the TAFLA short-list questionnaire by the members of Health Education Faculty of Mashhad University of Medical Sciences. A standardization questionnaire was used after localization and validity and reliability verification. The health literacy questionnaire had a five-point Likert (always, more often, sometimes, rarely and at all). The lowest score (1 = rarely) and the highest score (5 = always) were determined. Cutting points were determined according to Baghaei et al., so that 0 to 53 were considered inadequate literacy, 54 to 66 borderline and 67-100 were considered adequate (19). The researcher conducted the re-test method, and the validity and reliability of the questionnaire was evaluated by six faculty members of

Mashhad University of Medical Sciences. Based on the results of the Cronbach's Alpha test, the alpha of the questionnaire ( $\alpha = .81$ ) was obtained.

After obtaining the necessary certification, the study process began. At first, by referring to health centers among the existing records, the eligible subjects were randomly selected. Then, after explaining the goals of the study and obtaining informed consent from participants, they completed self-report questionnaires.

After collecting the questionnaires, the data were analyzed using SPSS-23 software and Kolmogorov-Smirnov tests for normal distribution. Age, body mass index and diet had non-normal distribution and health literacy had normal distribution. Data were analyzed using descriptive tests, one-way ANOVA, independent t-test and linear regression correlation at a significant level of 0.05.

## Results

In this research, 600 middle-aged women were studied. The mean and standard deviation of the participants in the study were  $39.3 \pm 7.2$  years. In education degrees,

Associate's Degree were the highest (25.9%) and diploma were the least frequent (8.2%) among the participants. Housewives were the most frequent (57.6%) and students (2.9%) had the lowest frequency in research units. Also, most of the subjects (65.9%) were city residents. The lowest health literacy score was 9.9 and the highest health literacy score was 100, and the mean and standard deviation of the health literacy score of the subjects were  $67.46 \pm 16.07$ . According to the cutting point used for health literacy, 16.7% had inadequate health literacy, 27.8% had borderline health literacy and 55.5% had adequate health literacy. According to the findings, there was a significant relationship between health literacy and education level ( $P = 0.001$ ). Also, there was a significant correlation between the results of regression between health literacy with the structures (decision balance, awareness raising, environmental assessment and stimulus control) and between nutritional behavior with structures (decision balance, awareness raising and stimulus control) (Table 1 and 2). Also, there was a positive and significant relationship between health literacy and nutrition behaviors (Table 3).

**Table 1. Results of multiple regression about the effect of structures of Trans-theoretical model on health literacy in the subjects**

variables	ratio	Standard factor	T	p-value	Confidence interval 95% coefficient	
					Lower Bound	Upper Bound
Fixed coefficient	092/24		708/5	001/0>	797/15	388/32
Self- Efficacy	028/0	038/0	755/0	450/0	044/0-	099/0
Decision balance	165/0	185/0	915/3	001/0>	082/0	248/0
Awareness raising	082/0	111/0	049/2	041/0	003/0	160/0
Dramatic relief	049/0-	078/0-	151/1-	250/0	133/0-	035/0
Environment reassessment	104/0	179/0	291/2	022/0	015/0	194/0
Self-assessment	012/0	020/0	278/0	781/0	072/0-	095/0
Social freedom	076/0	104/0	841/1	066/0	005/0-	158/0
Communications	070/0	091/0	758/1	079/0	008/0-	149/0
Helper	023/0-	029/0-	553/0-	580/0	107/0-	060/0
Reinforcement management	033/0-	028/0-	548/0-	584/0	151/0-	085/0
Self-release	094/0	113/0	882/1	060/0	004/0-	191/0
Motive control	104/0	124/0	222/2	027/0	012/0	195/0

**Table 2. Results of multiple regression about the effect of structures of Trans-theoretical model on nutrition in the subjects**

variables	ratio	Standard factor	T	p-value	Confidence interval 95% coefficient	
					Lower Bound	Upper Bound
Fixed coefficient	103/1		790/1	074/0	108/0-	315/2
Self- Efficacy	001/0-	008/0-	145/0-	885/0	011/0-	010/0
Decision balance	020/0	168/0	298/3	001/0	008/0	032/0
Awareness raising	015/0	150/0	551/2	011/0	003/0	026/0
Dramatic relief	006/0-	071/0-	982/0-	327/0	018/0-	006/0
Environment reassessment	009/0	111/0	302/1	194/0	004/0-	022/0
Self-assessment	003/0	041/0	529/0	597/0	009/0-	015/0
Social freedom	002/0	016/0	254/0	800/0	010/0-	014/0
Communications	008/0	077/0	372/1	171/0	003/0-	019/0
Helper	001/0-	009/0-	166/0-	868/0	013/0-	011/0
Reinforcement management	004/0-	024/0-	438/0-	661/0	021/0-	013/0
Self-release	000/0	003/0	041/0	967/0	014/0-	015/0
Motive control	017/0	148/0	460/2	014/0	003/0	030/0

**Table 3. Relationship between Health Literacy with Nutrition Behavior Score in the subjects**

Predictive variables	B	SE	Beta	T	P	Lower Bound	Upper Bound
Fixed amount	78/18	68/2	-	99/6	00/0	51/13	05/24
Health literacy	309/0	039/0	345/0	002/8	00/0	23/0	38/0
	345/0=R		119/0=R2		117/0=ADJ.R		
Spearman's Rank Correlation Coefficient	345/0=		Nutrition Behavior 1=		Health Literacy 000/0=P		

## Discussion

According to the findings, the mean of women's health literacy was 67.46 with a standard deviation of 16.07. This results showed that the average of patients had borderline health literacy. People with this level of health literacy often have an inaccurate understanding of information (20). It should be noted that low levels of health literacy are associated with issues such as inadequate understanding of health information, less involvement in preventive behaviors, late diagnosis of illness, inability to self-care skills, and non-compliance with healthy lifestyle behaviors.

Also, people with inadequate health

literacy incur more high medical expenses because the cost of hospitalization and doctor visit (21). Muir et al. in a study on national adult literacy assessment in the United States, found that 36 % of adults do not have adequate health literacy in the United States (22), which is consistent with the results of this study. Also, Tehrani Bani Hashemi (23) and Raeesi (4) also reported low levels of health literacy in Iran, which is consistent with the findings of the present study. A study was conducted on adults in Isfahan. 53.5% of the population had borderline and inadequate health literacy (24). Also, the findings of the study indicated a positive and

significant effect of balance decision-making on nutrition behaviors, since with increasing each unit of decision-making score, nutrition score was increased around 0.02. The decision balance influence the benefits and barriers that affect behavior change for the individual (25). The high decision-making balance in a particular behavioral context actually means person's willingness to change that behavior to a more favorable behavior; the more one understands the benefits and barriers of changing, the likelihood of a change in that particular behavior increases (26). These findings are consistent with the results of the researches by Ma et al. (27) on young adults and study by Horwath et al. (28) on adults. These results are consistent with other studies using the Trans-theoretical model, they reported increasing benefits and decreasing the barriers and costs of proper diet can lead to an individual's lifespan, as well as the stability of the individual's behavior. Of course, it should be noted that the reason for the difference in the results of various studies can be due to differences in factors affecting the use of health services in communities, including the awareness level of people, provided education, characteristics of the health system and the economic-social situation of individuals as well as the type of instrument used in other studies (20). One of the limitations of this study is to ignore other people's literacy skills and cultural backgrounds. Also, this study has been included with some limitations such as evaluating the final behavior based on self-reporting by women, which could show bias in data presentation. Of course, future studies it is essential to conduct more studies in future based on observation and reporting by other members of the family. Only literate

women were included in this study, so the results cannot be reliably generalized to all women referred to the comprehensive health service centers.

### Conclusion

Given that the level of health literacy has a significant impact on people's behavioral patterns, including nutrition behavior and other behaviors, it is suggested that policies and programs to strengthen these factors should be considered to promote a suitable diet for women's demographic groups.

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### References:

1. Bohlman LN, Panzer AM, Kindig DA. Health literacy: a prescription to end confusion. Washington (DC):National Academies Press; 2004.
2. Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association. Health literacy: report of the Council on Scientific Affairs. The Journal of American Medical Association 1999; 281: 552-7.
3. Sihota S, Lennard L. Health literacy: being able to make the most of health. London: National Consumer Council; 2004.
4. Reisi M, Mostafavi F, Hasanzade A, G R Sharifirad. The Relationship between Health Literacy, Health Status and Healthy Behaviors among Elderly in Isfahan, Iran. Health Research Journal. 2011;7(4).469-480. [Persian]
5. Dunneram Y, Ramasawmy D, Pugo-Gunsam P, Jeewon R. Determinants of eating habits among pre-retired and post-retired Mauritians. Int J Food Sci Nutr. 2013; 2(3):109-15.
6. Matlabi M, Sharifirad G, Mostavafi F, Mohebi S, Azadbakht L. Factors affecting fish consumption based on structures of health education. Journal of Health System Research 2012;8:523-36. [Persian]
7. Salehi L, Eftekhari H, Mohammad K, Tavafian SS, Jazayeri A, Montazeri A. Consumption of fruit and vegetables among elderly people: a cross sectional study from Iran. Nutrition Journal 2010; 9: 2. [Persian]
8. Farivar F, Ramin H, Azemati B, Abbaszadeh SH, Keshtkar A,



- Sheikholeslam R, et al. Comparison of Knowledge, Attitude and Practice of Urban families toward Principles of Applied Nutrition. *Iran J Epidemiol* 2009; 5(2): 11-18. [Persian]
9. Rekhy R, McConchie R. Promoting consumption of fruit and vegetables for better health. Have campaigns delivered on the goals? *Appetite* 2014;79:113-23.
  10. Flier JS, Morator E, Kasper DL. *Harrison's principles of internal medicine*. Mc Grow Hill 2010, 1: 422-429.
  11. Hommond K, Mahan LA, Escott-Stump S. *Krause's food & nutrition therapy*. Elsevier Saunders 2008, 383-410.
  12. Tavousi M, Ebadi M, Azin A, Shakerineja GH, Hashemi A, Fattahi A, Montazeri A. Definitions of health literacy: a review of the literature. *Journal of the Iranian Institute for Health Sciences*. *Payesh* 2014; 13: 119-124. [Persian]
  13. Mohammad Matlabi GS, Firoozeh Mostavafi, Siamak Mohebi, Leila Azadbakht. Factors Affecting Fish Consumption Based on Structures of Health Education. *Health System Research*. 2012. [Persian]
  14. Croll JK, Neamark-Sztainer D, and Story M. Healthy eating: What does it mean to adolescents? *J Nutr Educ* 2001; 33(4): 193-198.
  15. Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *American Journal of Health Promotion*. 1997;12(1):38-48.
  16. Charkazi A, Fazli L, Alizadeh F, et al. Regular Physical activity Based on transtheoretical Model among Health and Paramedic Schools of Golestan University of Medical Sciences. *Iranian Journal of Health Education and Health Promotion*. 2014;1(4):57-68.
  17. Hekmatpoue Davood OMA, Shamsi Mohsen. Effectiveness of educational program on smoking cessation consistence based on trans-theoretical model. *Daneshvar(medicine) shahed University*. 2013;20(104):39-59. [Persian]
  18. Mohammadi Zeidi Aisa PA. Effect of using the transtheoretical model for breakfast and healthy snacks on education for elementary students in Qazvin. *Iranian Journal of Nutrition Sciences & Food Technology*. 2013;8(2):201-10. [Persian]
  19. Baghaei R, Najarzadeh M, Saei M, Mohamadi N. FUNCTIONAL HEALTH LITERACY IN PREGNANT WOMEN IN HEALTH CENTERS OF URMIA CITY- 2015. *The J Urmia Nurs Midwifery Fac*.2017;15(5):368-375. [Persian]
  20. Khosravi A, Ahmadzadeh Kh, Arastoopoor Sh, Tahmasbi R. Health Literacy Levels of Diabetic Patients Referred to Shiraz Health Centers and Its Effective Factors. *Health Inf Manage* 2015; 12(2):205. [Persian]
  21. Izadirad H, Zareban I. The Relationship of Health Literacy with Health Status, Preventive Behaviors and Health Services Utilization in Baluchistan, Iran. *J Educ Community Health*. 2016;2(3):43-50. [Persian] DOI: 10.20286/jech-02036
  22. Muir KW, Lee PP. Health literacy and ophthalmic patient education. *Surv Ophthalmol* 2010; 55(5): 454-9.
  23. Tehrani BaniHashemi SA, Amirkhani MA, Alavian SM, Asgharifard H, Baradaran H, Barghamdi M, et al. Health literacy and the influencing factors: A study in five provinces of Iran. *Trides in Development of Medical Education* 2007;4(1): 1-9. [Persian]
  24. Javadzade H, Sharifirad Gh, Reisi M, Tavassoli E, Rajati F. [Health Literacy among Adults of Is-fahan, Iran]. *Journal of Health System Re-search*.2013; 9(5): 540-9. [Persian]
  25. Agah B, Aghamolaei T, Alizadeh A, Rafati S, Hossaini F A. Consumption of Fruits and Vegetables based on Constructs of Transtheoretical Model in Women Referred to Health Centers of Bandar Abbas. 3. 2016; 2 (4) :1-13. [Persian]
  26. Pirasteh A, Davati A, Jouhari Z, Mohamadi L. Prediction physical activity behavior among Iranian medical college students using the transtheoretical model. *Daneshvar*.2012;19(100)1-11. [Persian]
  27. Ma J, Betts NM, Horacek T Georgiou C, White A, Nitzke S. the importance of decisional balance and self-efficacy in relation to stages of change for fruit and vegetable intakes by young adults. *American Journal of Health Promotion*.2002;16(3)157-66.
  28. Horwath CC, Nigg CR, Motl RW, Wong KT, Dishman RK. Investigating fruit and vegetable consumption using the transtheoretical model. *American Journal of health*.