Health literacy in type 2 diabetic women in Qom province in 2019

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ABSTRACT

Background and Objective: Diabetes is a multifactorial disorder and the most common endocrine disorder. One of the important factors in the control and treatment of diabetes is the health literacy of the person with diabetes. Health literacy is defined as the extent to which one is able to acquire, interpret, and understand basic health information and services needed to make appropriate decisions. This study was conducted to determine the health literacy of women with type 2 diabetes in Qom.

Materials and Methods: This study was a cross-sectional descriptive-analytical study of 300 diabetic women in Qom in 2019. Cluster sampling was performed randomly. Adult Functional Health Literacy Questionnaire was used to collect data. The overall health literacy score was calculated from 100. Data were performed using SPSS20 software, descriptive statistics (mean and standard deviation) and analytical statistics (Anova test, independent t-test and Pearson correlation coefficient).

Results: The study's findings show that the mean age and standard deviation of participants in the study was 44.4 ± 4.85 years. Computational health literacy was 51 percent of inadequate and borderline, 55 percent in reading comprehension, and overall health literacy was 53 percent of inadequate and borderline. There was a positive and significant relationship between health literacy, marital status, education and occupation, and a negative significant relationship between age and health literacy (r = -0.29, p = 0.00).

Conclusion: According to the findings, single, less educated, housewives and older people have lower health literacy. Consequently, these have been taken into account in the planning and measures taken to promote health literacy.

Paper Type: Research Article
Keywords: Health literacy, Type 2 diabetes, Diabetic women

Introduction

Diabetes is a multifactorial disorder and the most common endocrine disorder, which is caused by dysfunction of beta-pancreatic cells or insulin-resistance of the body cells. Its most important feature is an increase in blood sugar and is divided into two types of diabetes, type one and type two (1). Its complications include high blood pressure, retinopathy, nephropathy, peripheral neuropathy, diabetic foot and amputation. The high economic burden and cost for the individual and the health system, along with its complications, increase the importance of this disease. According to the World Health Organization prediction, the rate of incidence and prevalence of diabetes in all societies, especially in developing countries, is increasing for some reasons such as lifestyle change and overall population growth, life expectancy, increased diagnosis and behavioral and environmental factors (2).In 2013, according to the Atlas published by the International Diabetes Federation, 382 million people worldwide had diabetes (3). It is predicted that the number of people with diabetes between the ages of 20 to79 reach 642 million people worldwide by 2040 (4) and diabetes would be the fifth leading cause of death in 2030 (5). This disease has a high prevalence in Iran, so that the number of people with diabetes were reported 7.7% in Iran (6). According to estimations of the World Health Organization, Iran will become one of the most prevalent regions in the world in terms of diabetes by 2030 (7). According to the World Health Organization, the prevalence rate of diabetes in 2011 in the adults' population of Iran was equal to 10/3 %, which was announced 10% in men and 10.1% in women (8). According to conducted studies, the number of diabetic patients in Iran in 2010 was 2872000, which it will reach 5981000 by 2030(7).

One of the important factors in controlling and treating diabetes is the health literacy of a person with diabetes. Because the studies have shown that health literacy and self-efficacy of patient are particularly important in the successful implementation of complex recommendations related to diabetes care, including blood sugar monitoring, laboratory data interpretation, dietary change, and medication use (9). According to definition of the World Health Organization, health literacy represents cognitive and social skills that determine ability of persons to obtain, understand, and use from health-related information, such that it maintains and promotes ideal health (10). Ratzan defines health literacy as the rate of individual's capacity to acquire, interpret, and understand basic information and health services that are necessary for appropriate decision-making (11). Some researchers believe that health literacy is a stronger predictor related to health than variables such as age, income, employment status, level of education and race (12). According to studies, people with low health literacy are less likely to understand written and spoken information provided by health professionals and follow given instructions, and therefore they have a poorer health status and are more likely to be hospitalized and referred to a physician.

In self-care skills, they perform poorly, they have less preventative care and therefore incur higher medical costs, they use drugs improperly, and they do not follow physician prescriptions. In addition, poorer blood sugar control, and lower health knowledge in decision making in terms of treatment, less expression of health concerns and worse communication with physicians are other health problems of low health literacy. Also, patients with lower level of health literacy are more likely exposed to misunderstand treatment recommendations. As a result, they have more difficulty in precise use of prescription drugs. The

patient may not ask his/her questions and sign a text that he or she does not understand (13). Improving health literacy leads to consequences such as increasing patients' potential ability for making informed decisions, reducing health-threatening risks, increasing diseases' prevention, improving safety, increasing quality of life, and increasing the quality of care from individuals (14).

Studies carried out around the world show that most people do not have good health literacy (12). The results of a meta-analysis on 85 studies estimated the percentage of health literacy in the world to be inadequate and limited (15). A study of health literacy, which was conducted in Europe, found that 59% of people had inadequate and limited health literacy (16). A systematic review showed that health literacy in Iranians was inadequate and border (17). A study in five Iranian provinces showed that 56.6 percent of people have inadequate health literacy (18). Studies have shown that adults, diabetics, and chronic patients have low level of health literacy, and as a result, these persons are considered as groups at risk of unpleasant effects of low level of health literacy (19).

With regard to the importance of health literacy in chronic patients, especially diabetes, which has a complex treatment and care process, and with regard to the prevalence of type 2 diabetes in Qom, on the other hand, with regard to the sensitivity and problems of middle-aged women and especially women who have diabetes, we decided to conduct a study aimed to evaluate the health literacy of women with type 2 diabetes in Qom.

Materials and methods

This study was a cross-sectional descriptive-analytical study which was carried out on diabetic women of 30 to 50 years in Qom province. The sample size (volume) was obtained equal to 300 people based on the Cochran's formula with an assumption of p = 0.5 and an accuracy about d = 0.06, as well as percentage of confidence of 0.95(32).

Inclination criteria to the study included the age from 30 to 50, female gender, type 2 diabetes, having a health file at the health center, ability to read and write, not taking insulin, no cardiovascular disease or advanced complications of diabetes. Exclusion criteria from the study included dissatisfaction with participating in the study and incomplete completion of the questionnaire.

Sampling was performed as a cluster, in such a way that the areas of Qom municipality were considered as clusters and a community health center was randomly selected from inside of every cluster. With regard to the population covered by each of the centers, the number of samples was assigned in proportion to that center and the samples were randomly selected in each center. Ethical considerations included patient satisfaction to participate in the study, anonymity and confidentiality of questionnaires. Both the demographic questionnaire and the adults' functional health literacy questionnaire TOFHLA (Test of Functional Health Literacy in Adults) were used to collect data. This questionnaire became validate and reliable in Iran by Banihashemi et al. This questionnaire has two parts: reading comprehension and computations. Its reliability through the Cronbach's alphabet test was obtained 79% for the computational section and 88% for the reading section (18).

The adults' functional health literacy questionnaire in the computational section has 10 explanations or health instructions on prescribed medications, the time to refer the doctor, the steps to use financial aids, and an example about the result of a medical test, and assesses a person's ability to comprehend and act based on the recommendations given to him by doctors and health educators, which

need the computation. In the comprehension section, the reading included 3 texts, in which the participants' ability was assessed in terms of reading and comprehension. These three texts were assessed under the heading of instructions of preparing for upper gastrointestinal imaging, rights and responsibilities of in insurance forms and standard form of hospital consent. To score the questionnaire, each correct question was given a score of one and each question of error was given a score of zero, and then it was calculated based on the percentage, and the total score of health literacy was calculated from 100. Finally, the data were categorized by dividing the functional health literacy score of the subjects into three levels of inadequate (0-59), borderline (60-74) and adequate (75-100), (20). The questionnaires were completed by the patients themselves and after the necessary coordination with the health centers and coordination with the diabetic patients who had a file in that health center.

Data analysis was performed using SPSS20 software and descriptive statistics (central and frequency indicators) and analytical statistics (AVOVA tests, Pearson correlation coefficient and independent t-test).

Results

Results of the study show that the mean and standard deviation of participants in the study was 44. 4 ± 4.85 years, mean and standard deviation of weight equal to 76/2 ± 12.00 kg and the mean and standard deviation of the duration of disease among patients were 5.52 ± 7.4 years. In terms of marital status, 92% were married and the rest were single, divorced and widowed. In terms of education, 41% people had primary education and the rest had middle, high school and academic education. In terms of employment, 85% of the people were in the pharmacy and the rest were employed in various sectors.

Table 1 shows that most women with diabetes participating in the study have primary education and most of them are housewives.

Table 1: Frequency distribution of demographic characteristics of study participants

Variable	Groups	Frequency	Percentage
Marital status	Single	12	4.00
	Married	276	92.00
	divorced	6	2.00
	Widow	6	2.00
	Total	300	100
Level of Education	Primary education	123	41.00
	Intermediate education	87	29.00
	High school	48	16.00
	College education	42	14.00
	Total	300	100
Job	Housewife	225	85
	Professional (teacher, doctor, etc.)	36	12
	Legislator (high-ranking employee, manager, etc.)	3	1
	Service job	3	1
	Others	3	1
	Total	300	100

The results of Table 2 showed that almost half of the diabetic women participating in the study had border and inadequate computational health literacy in the computational section, and the other half had desirable computational health literacy. More women with diabetes had desirable score of health literacy in reading comprehension section. The results of the above table show that more than half of diabetic women are in the range of border and inadequate in terms of total health literacy.

Table 2: Frequency distribution of health literacy levels in different dimensions (reading, Computation and total)

Health Literacy	Reading comprehension Health literacy		Computational Health Literacy		Total Health Literacy	
	N	%	N	%	N	%
0-59(inadequate)	48	16	120	40	99	33
60-74(border)	87	29	33	11	60	20
75-100(adequate)	165	55	147	49	141	47

The results of Table 3 showed that the mean score of functional health literacy in the computational section in diabetic women was 64. The table above showed that the mean score of functional health literacy in the reading section was 74.17. The mean total health literacy score is equal to 69.09 and indicates that diabetic women are in the border range in terms of health literacy.

Table 3: Mean of the health literacy in different dimensions (reading, Computation and total)

Health Literacy	Mean	SD
Reading comprehension Health literacy	64	35.15
Computational Health Literacy	74.18	16.62
Total Health Literacy	69.09	21.13

Table 4 indicates that Pearson correlation coefficient test showed that there is a negative and significant relationship between age and computational, reading and total health literacy. This means that with increasing the age, reading health literacy, computational health literacy and total health literacy would increase, and whatever the age of individuals is lower, their health literacy is higher.

Table 4: Relationship between different dimensions of health literacy with age

Health Literacy	Age	
	r	p
Reading comprehension Health literacy	-0.27	0.00
Computational Health Literacy	-0.17	0.00
Total Health Literacy	-0.29	0.00

The results of table 5 indicate that the one-way ANOVA test showed that there is a significant relationship between computational health literacy and marital status, education and occupation. There is also a positive and significant relationship between reading health literacy and marital status, education and occupation. There was also a positive and significant relationship between total health literacy and marital status, education and occupation.

Table 5: Relationship between computational, reading and total health literacy with marital, education and job status

Health Literacy	Marital (p value)	Education (p value)	Job (p value)
Reading comprehension Health literacy	0.04	0.00	0.00
Computational Health Literacy	0.00	0.00	0.00
Total Health Literacy	0.00	0.00	0.00

Discussion

In the present study, the mean score of total health literacy was in the border range. A study by Rafiezadeh et al (21) also showed that health literacy in the research units was border. In the study of Karimi et al (22), the health literacy was moderate or border. A study of Rezaee Esfahrood et al (23) showed that among the patients examined, most of the people had inadequate and border health literacy and only a small percentage of them had adequate health literacy. These findings are consistent with studies of Banihashemi et al (18), Reisi et al (24), Ghanbari et al (25), Nekouei Moghadam et al (13) and Gambling T (26). It seems that the difference in the use of the measurement tool or the target group and age of the samples may affect the results of the health literacy score.

The results of this study showed that more than half of diabetic women referring to Qom health centers are in the border and inadequate range (53%) and 47% are in the adequate range in terms of health literacy. A study of Ghaffari et al (27), who examined the health literacy of women referring to health centers in Zanjan, found that about half of the individuals under study had adequate health literacy. These findings are consistent with the results of a study by Ghanbari et.al, in which health literacy of 45.4%

of the individuals under study were reported in adequate level (28). In this regard, in the study of Tavousi et al, health literacy of 56% of people was reported at the desired level (29).The results of Mohammadi Farah's study (30) were also similar. This is while in the study of Banihashemi et al, only 28.1% of the individuals under study had adequate health literacy (18). In the study of Ghaedi et al, in Bastak city, 51.7% of patients had low health literacy (31).In the study of Reisi et al, most of the diabetic patients under study had inadequate health literacy (24). Kooshyar et.al also reported inadequate health literacy for 70% of diabetic patients (32). A study of Mahmoodi et al (33) showed that the level of health literacy in people with type 2 diabetes is very inadequate. The results of study by Bakhshzadeh et.al also reported that health literacy level in patients with type 2 diabetes in Ardabil was inadequate (34). However, contrary to most studies, the results of Pourreza et al's study showed that the level of health literacy of diabetic patients has been desirable (35). The present study examined only diabetic women, while some conducted studies on diabetic patients were examined both women and men. On the other hand, the women at the age of 30 to 50 years were studied in the present study. The elderly age group were studied in some studies and some others were not considered a specific age group and adults were studied at any age. Some studies have been done on diabetic patients, but some have been done on normal people and measured health literacy in healthy adults.

Other causes of differences in results include time. Perhaps it can be assumed that in older studies, health literacy has been very inadequate and over time, health literacy has improved in recent years, and passing the time and the changes in communications and technology have changed people's access to resources and

information and it has reached from inadequate to border condition. Cultural differences in different societies can also be effective on the results of studies. Other factors affecting public health literacy include the performance of a region's healthcare personnel, that how much effort they have done and what measures they have done in this regard. One of the other factor affecting this issue is rate of prevalence and incidence of diabetes in that region. The higher prevalence and incidence of diabetes in an area may affect the sensitivity of the authorities and the greater awareness of the people about this disease.

The results of the study showed that there is a negative and significant relationship between age and health literacy. A study of Pourreza et al showed that there was a significant negative relationship between age and health literacy (35). In a study by Ghaffari et al (27), the age of the women in the study was inversely related to the dimension of reading comprehension of health literacy. Such that with increasing the age of women, the literacy of reading comprehension was declined among them. In this regard, in the study of Ghanbari et al, a significant relationship has been reported between age and health literacy. In particular, the level of inadequate health literacy was significantly increased with the increase in the age of the studied people over 30 years (28), which was consistent with the studies of Banihashemi et al (29) and Tol et al (36). Findings from the Sharifirad et al's study (37) showed that patients with older age had lower health literacy, while the study of Rezaee Esfahrood et al showed a direct relationship between health literacy and age, so that in diabetic patients, health literacy rate was also increased with increasing age (23). Young people seem to have better literacy for reading and writing than middle-aged and older people, which this issue can affect health literacy. On the other hand, the differences observed in some studies can be due to the fact that diabetics people gain more ability to use information and health instructions with increasing the age, and their behaviors evolve in this field, and that naturally mean age of studied group is important, so that these results may be different in the age group of young people, middle-aged and age group of elderly people. Findings from the study by Barasteh et al (38) showed that there was a significant relationship between health literacy and age of patients with diabetes, so that these results were consistent with the studies of Paasche-Orlow (39) and Reisi et al (24). However, in the study of Rafiezadeh et al, there was no significant relationship between age and health literacy (21).

There is a significant relationship between health literacy and marital status. The study of Rezaee Esfahrood et al showed a significant relationship between marital status and health literacy of people, so that single people have less health literacy than married people (23). In a study in Turkey, health literacy was higher in married people (40), which this case is not consistent with the findings of the study by Tol et al (36) and -Mollakhalili et al (41). However, a study by Adib-Hajbaghery et al (61) showed that there was no significant relationship between health literacy and marriage. In the Gonzalez Chica's study, it was not observed any significant relationship between health literacy and marital status (43). Different cases may affect the results of various studies on health literacy and marriage, such as that in sick people, psychological and social support from the spouse may be effective in this regard, or that life expectancy and greater responsibility in married people may lead to more motivation to try to control and treat the disease, and health literacy will increase more. Of course, other variables such as life satisfaction,

depression and differences in married people should also be considered, which may be effective on the significance of results. As a result, further reviews and more carefully is needed for this discussion, and perhaps this tool alone not be enough to make a decision.

There was a significant relationship between health literacy and education. A study of Ghaffari et al showed that there is significant relationship between education level and health literacy (27). In other words, with the increase in the level of education of the women studied, their level of health literacy increased. In this regard, in the study of Ghanbari et al, the academic years had the most correlation with health literacy (28). Khosravi et al also emphasized on this relationship in considering the health literacy of patients referred to hospitals in Bushehr city (44). In the study of Rezaee Esfahrood et al (23), the rate of health literacy increased significantly with increasing level of education, which these results are consistent with the studies of Banihashemi et al (24) and Nekouei Moghadam et al (13). On the other hand. Banihashemi et.al in considering the health literacy in five provinces of the country, stated that the level of education had the strongest relationship with health literacy and the highest jump in health literacy was related to people who had education of more than eight years (18).

In Rafiezadeh et al's study, there was a significant relationship between health literacy and education level. A study by Toci et al (45) found that health literacy increased significantly among the educated people. The results of a study by Sharifirad et al (37) showed that patients with lower level of education had lower health literacy. People with higher education degree have higher health literacy and they understand health information and instructions better and use them more accurately. Patients with lower

levels of education also have lower levels of health literacy and have difficulty in comprehension and using health information, applying and how to use medications, and understanding medical instructions. Therefore, they need special attention and training (41).

In the present study, a significant relationship was observed between health literacy and occupation. Findings of the study by Ghaffari et al (27) showed that there is a significant relationship between people's occupations and health literacy, and the level of health literacy of employed people is higher than housewives. The results of the study by Tavousi et al, like present study, show that health literacy is higher in employed people than in housewives (29). Rezaee Esfahrood's study (23) found a significant relationship between employment status and health literacy of people, such that unemployed people have lower health literacy than employed and retired people. This case can depend on both the level of education and the age of the individuals, which is consistent with the study of Mollakhalili (41). A study by Rafiezadeh et al (21) showed that there is a significant relationship between health literacy and employment, so that unemployed people had lower health literacy than students. The results of a study by Kooshyar et al (32) showed that there was a significant relationship between health literacy and employment. While, it was not observed any significant relationship between health literacy and occupation in the studies of Adib-Hajbaghery et al (42) and Ghanbari et al (28), Various factors may affect the results, including that working women may have higher education and be in a better position to understand and receive health information than other women. On the other hand, housewives may have more time and look more for health programs and referring to the health center. On the other hand,

the number of working and housewives' women in most studies is not equal, and this can affect the results of the study.

Conclusion

According to the obtained results, it is essential to carried out necessary plans and interventions to improve the level of health literacy of diabetic people, especially single people, with lower education and older age and housewives. On the other hand, it is suggested that additional and qualitative studies is conducted to investigate the factors affecting health literacy, and with regard to dynamics of health literacy, it is recommended to review health literacy periodically (intervals of 3 or 5 years) and is a basis for making decisions and determining the progresses made in this field. It is also recommended that studies is done on chronic diseases such as blood pressure, obesity and hyperlipidemia.

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