

Evaluation of communication between healthcare workers and patients with chronic diseases according to their levels of health literacy

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Abstract

Health literacy can be defined as the ability to read, understand and act based on the healthcare recommendations. Today, inadequate health literacy is considered a global threat. Hence, the present study aimed to evaluate how healthcare workers communicate with patients with chronic diseases according to their health literacy level in health care centers. This cross sectional research was conducted among 240 patients with chronic diseases who were selected by multistage random sampling. Data collection tools included chew's health literacy questionnaire and adult primary care questionnaire to assess communication related health literacy. Data were analyzed by SPSS-16. Health literacy was inadequate, marginal and adequate in 50.4%, 11.7% and 37.9% of the subjects, respectively. The variable of communication health literacy in 76.7% of the subjects was weak and in others was evaluated acceptable. The findings showed that there was a statistically significant relationship between inadequate health literacy and communication health literacy. The subjects with inadequate health literacy reported that the major problems concerning communication health literacy included the use of specialized terminology, fast talking, inadequate attention to people talking, no use of visual and understandable media, no response to concerns, inadequate opportunities for asking questions and receiving no feedback. Then, the adequate training and information must be provided to healthcare workers in the field of health literacy assessment and using communication skills commensurate with health literacy level of people with chronic diseases that staff can communicate effectively with patients in health centers.

Keywords: Chronic Disease, Community Health Workers, Health Communication, Health Literacy

Introduction

Health literacy is the key determinant of community health and is the first priority to improve the quality of healthcare services [1]. Health literacy is the ability to understand, perceive and apply the information received from caregivers and health

centers. In other words, the ability to read and understand prescriptions and physician's orders, consents, pamphlets, pharmaceutical brochures, and ultimately to access medical care is defined as health literacy. It is not necessarily related to years of education or general reading ability [2,3].

According to studies conducted in the U.S.A. ,the prevalence of inadequate health literacy was 48 percent and it was reported that only 11 percent of adults had adequate health literacy [4]. The research conducted in five provinces of Iran showed that the health literacy was adequate, marginal and inadequate in 28.1%, 15.3% and 56.6%of the study subjects, respectively. Also, there was a significant relationship between low education, older age, low economic status and inadequate health literacy [5]. There is a relationship between inadequate health literacy and improper use of medications ,failure to follow doctor's orders, poor blood sugar control, low health knowledge, less participation in making decision about treatment, less expressed health concerns, poor communication with physicians, and poor self-care in patients. Also, people with inadequate health literacy receive less preventive services and use more emergency departments and hospital services [6].

People with chronic diseases such as type II diabetes and hypertension, the elderly, immigrants, the illiterate, low-income individuals and people with low mental health have less health literacy, so they are considered as high risk groups [7-9]. Patients with chronic diseases encounter new decisions about their disease management every day [10]. As during the short time of the visit, a large volume of self-care information is given to the patients, they may have incomplete or incorrect understanding of these large amounts of information [11]. Studies have shown that inadequate health literacy of patients and doctors' use of complex medical terms lead to low self-efficacy of patients and weak relationship between patient and the physician [12-14]. A complete, correct and understandable relationship is required for physicians and all employees of health care system and all people in health care system should learn effective communication [15]. Parker et al. suggest that during clinical visits, the physicians should communicate with their patients according to their real health literacy [16]. Few studies which have been conducted so far in Iran have generally estimated the prevalence of health literacy on different populations [1,5,15,17]. Despite the great importance of the possible results of health literacy in how the healthcare workers communicate and

the fact that they often are not aware of health literacy level of people with chronic diseases, unfortunately, this issue has not been studied well in Iran. Thus considering the abovementioned, this study was conducted in Mashhad in 2012 with the aim of evaluating communication between healthcare workers and patients with chronic diseases in terms of their health literacy.

Method

The current study was a cross sectional study conducted in Iran on patients with diabetes and hypertension admitted to healthcare centers affiliated to Mashhad University of Medical Sciences, Iran. The sample size was calculated as at least 213 people by a preliminary study based on the changes in communication health literacy scores conducted on 20 patients with chronic diseases admitted to health care centers, with 95% confidence intervals, accuracy of 1.5 and standard deviation of 11.2, but ultimately 240 people were considered to cover the possible dropout.

Multistage random sampling was conducted so that in the first stage of cluster sampling among 5 city health centers in Mashhad, two city health centers were randomly selected, which included city health centers #2 and #5. In the next stage a list of urban health centers covered by two city health centers was provided and three urban health centers of each city health center were selected by a simple random method. Based on the sample size formula and considering the inclusion and exclusion criteria, samples were selected from patients with diabetes and hypertension admitted to these centers and they had active medical records at least during the last three months and they were cared for by healthcare workers in the field of the mentioned disease at least twice. Therefore, 40 patients from each health center were entered into the study. In this study, patients with severe vision or hearing impairments and/or mental and cognitive disorders that were not able to complete the questionnaire were excluded from the study.

To collect data, the standard questionnaire of Chew's Screening Questions and Adult Primary Care Questionnaire were used to assess health

literacy level and communication health-literacy "friendliness" [19-18]. At first, the objectives of the study were explained to subjects and their consent to participate in the study was obtained. Then the questionnaires were completed by interview after the subjects received health care services in health mediators' room or training room.

To determine the face and content validity, content validity index (CVI) and content validity ratio (CVR) were used. The questionnaires were translated by researcher and then they were translated again by some experienced health science professors. Independent translations were reviewed in a common discussion and after the challenges were removed, they were transformed into a single form. Then, they were reviewed, edited and compared to the original sample. After translation, they were localized, and then were delivered to the professors, senior experts and health education authorities and were reviewed and modified by them. In this research, the mean CVI of Chew's 3 health literacy screening questions and adult primary care questionnaire were 87% and 86.2%, respectively. The mean CVR of Chew's 3 health literacy screening questions and adult primary care questionnaire were 88.4% and 82%, respectively. Cronbach's alpha coefficient was used to assess the reliability of the questionnaires. Reliability coefficients of Chew's 3 health literacy screening questions and adult primary care questionnaire were obtained 0.78 and 0.80, respectively.

The standard questionnaire of Chew's 3 health literacy screening questions that was used to review patients' health literacy level was developed for practitioners based on the test of functional health literacy in adult (TOFHLA) and rapid estimation of health literacy [20]. Question response scale for the first question was from 1 (I'm not sure at all) to 5 (I'm pretty sure) and for two other questions was from 1 (never) to 5 (always). Ultimately, health literacy score of the subjects were divided into three levels of inadequate (≤ 6), marginal (7-8) and adequate ($9 \geq$).

Adult primary care questionnaire had 29 items that examined the quality and clarity of the subjects' relationship with health service providers. Response scale for 5 questions with 2 options was 2 for yes and 1 for no and for other questions included 4-point Likert scale, the scores of three

questions were from 1 (always) to 4 (never) and the other from 1 (never) to 4 (always). The maximum score was 116 and the minimum was 17 and the evaluation was performed so that the score between 112-116 represented the excellent score of communication health literacy, the scores 100-111 represented good score of communication health literacy, the scores 88-99 represented acceptable communication health literacy and the scores less than 87 were considered poor.

Information on subjects' demographic characteristics included age, gender, marital status, employment status, education level, household income, self-care status, the way of using health services and information about the subject's chronic disease.

Data collected were analyzed by SPSS-16, descriptive statistics (determination of mean, standard deviation, percent) and statistical analysis (Chi-square, Kruskal-Wallis, Mann-Whitney, ANOVA). After this study was approved by the Research Deputy of Mashhad University of Medical Sciences and received authorization, it was conducted by considering all phases of research ethical values.

Results

The mean age of participants was 52.7 ± 10.5 years (range: 18-85 years old). Approximately 79% of the subjects were female and the rest were male. Most subjects (83.3%) were married. About 71% of the subjects went to health centers more than twice during the last three months for their chronic diseases care. Mean health literacy score of the subjects was 7.3 ± 3.9 of 15. Health literacy was inadequate in 50.4% of subjects and marginal in 11.7% of subjects, and adequate in 37.9% of subjects. Of the subjects, 61.3% had difficulty in completing medical health forms, 48.4% in understanding written media and 60% in reading written material.

Also the result of Chi-square test showed that there was a significant difference between groups under study in terms of age, sex, education and household income. As it can be observed, inadequate health literacy level was more common in older people, low education level, low income, as well as in women (Table 1).

Table 1 The relationship between personal characteristics and health literacy level in patients under study

Cases	N	%	Inadequate health literacy		Marginal health literacy		Adequate health literacy		P-value*
			N	%	N	%	N	%	
Age (year): Less than 50	91	37.9	37	40.7	11	12.1	43	47.3	0.01 (X ² =11.8)
50-59	81	33.8	41	50.6	7	8.6	33	40.6	
60 and more	68	28.3	43	63.2	10	14.7	15	22.1	
Gender: Female	190	79.2	103	54.2	17	8.9	70	36.8	0.01 (X ² =8.66)
Male	50	20.8	18	36.0	11	22.0	21	42.0	
Education level: Illiterate	99	41.2	82	82.8	9	9.1	8	8.1	0.001 (X ² =81.1)
Primary and middle school	98	40.8	34	34.7	14	14.3	50	51.0	
High school and more	43	17.9	5	11.6	5	11.6	33	76.7	
Household income less than 300,000 tomans	68	26.7	38	59.4	9	14.1	17	28.7	0.001 (X ² =27.6)
300,000 to 500,000 tomans	125	52.1	73	58.4	12	9.6	40	32.0	
500,000 tomans and more	51	21.2	10	19.6	7	13.7	34	66.7	
Total	240	100.0	121	50.4	28	11.7	91	37.9	

* Chi-square

Almost 53.8% of the patients did not know their drug name and 56.7% of them did not know their daily drug intake. Approximately 22.5% of the subjects had a history of hospitalization due to poor control of their disease. Health literacy

level in patients with inadequate information and a history of hospitalization was lower than patients with adequate information and without history of hospitalization (Table 2).

Table 2 The relationship between knowledge, use of health services and health literacy level of patients under study

		Inadequate health literacy		Marginal health literacy		Adequate health literacy		P-value*
		N	%	N	%	N	%	
Information about the disease	Adequate	52	43.0	17	60.7	60	65.9	X ² =11.63 <0.003
	inadequate	69	57.0	11	39.3	31	34.1	
Hospitalization History	No	79	65.3	23	82.1	84	92.3	X ² =22.13 <0.001
	Yes	42	34.7	5	9.3	7	13.0	

*Chi-square

Communication health literacy was weak in 76.7% of the subjects, was moderate in 16.7% and was good in the rest. According to findings of this study, Chi-square test showed that there was a statistically significant relationship between the variables of communication health literacy and health literacy (Table 3).

Using ANOVA, a significant difference was observed between the mean scores of communication health literacy in different levels of health literacy of the subjects (Table 4).

The result of Turkey's test suggested that there

was a significant mean difference between individuals in terms of having adequate health literacy. So the mean of communication health literacy in patients with inadequate health literacy was less than in patients with adequate health literacy. Generally, based on the standard questionnaire of adults' self-care and since the score less than 87 indicates inadequate communication health literacy, communication health literacy was low in all three health literacy levels.

The results of Kruskal-Wallis test showed a

Table 3 The relationship between communication health literacy and health literacy levels in patients (N=240)

		Inadequate health literacy		Marginal health literacy		Adequate health literacy		P-value*
		N	%	N	%	N	%	
Communication health literacy	Acceptable	16	28.6	5	17.9	35	38.5	<0.001* (X ² =19.02)
	Weak	105	86.8	23	82.1	56	61.5	

*Chi-square

Table 4 Comparison between the mean of communication health literacy in patients with chronic disease and different levels of health literacy in patients under study

Variable	Individuals with inadequate health literacy	Individuals with marginal health literacy	Individuals with adequate health literacy	Total	P-value
	Mean±SD (N=121)	Mean±SD (N=28)	Mean±SD (N=91)	Mean±SD (N=240)	
Communication health literacy	74.1 ±10.9	78.8 ±11.7	86.1±11.3	79.2±12.4	<0.001*

*ANOVA

statistically significant difference between the health literacy level and subjects' response to adult primary care questionnaire in cases such as: use of specialized terminology by healthcare workers (P<0.001), fast talking (P<0.001), inadequate attention to talks of people with chronic disease (P<0.001), inadequate use of visual and understandable explanations (P<0.001), no response to subjects' concerns (P<0.001), lack of encouragement to ask questions (P<0.001), and receiving no feedback from the people with chronic disease (P<0.001). So the problems of communication health literacy in patients with inadequate health literacy were reported more than those with adequate health literacy. It should be noted that all subjects felt dissatisfaction for understanding prescription, results of experiments and radiography but their

response level in people with adequate health literacy level was more than response of people in two other levels (P<0.001).

Discussion

The results of the study showed that health literacy level in patients was very low and about 50.4% of patients had inadequate health literacy. Meanwhile, patients with chronic disease may need to understand how to take various medications correctly and how to modify their lifestyle to control the disease [21]. The results of different studies in other countries also showed a wide range of inadequate health literacy, so that based on the study of Williams Mv *et al.*, 49% of patients with hypertension and 44% of patients with diabetes and also according

to Sarang Kim et al., 23% of patients with diabetes had inadequate health literacy [21,22]. The difference observed in levels of inadequate health literacy between Williams and Sarang Kim's studies could be due to difference in the type of questionnaire used and higher education level of the participants in the studies.

In the present study, a statistically significant relationship was observed between health literacy level and age, education and income. Inadequate health literacy was more common in patients with older age, lower income, lower educational level, and in women. These results were also reported in other studies [8,17,23,24]. Based on the results of this research, the prevalence of inadequate health literacy is more in women than in men which is consistent with the results of a number of studies [17,25]. Contrary to findings of this research in a number of studies no relationship was observed between health literacy level and gender [5,26] or even health literacy level among women was reported more than men [23]. In the current study, having lower levels of health literacy in women may be due to lower levels of their education.

In this study, a significant relationship was observed between health literacy level and hospitalization due to complications of the disease that was consistent with findings of other studies [17,27,28]. Therefore, it can be concluded that people with chronic diseases and inadequate health literacy, due to poor understanding of disease control, are hospitalized more and this leads to increase in costs and waste of some parts of health resources. Also between inadequate health literacy and inadequate information and knowledge of the disease and how to use drugs, a significant relationship was observed which was consistent with other studies [7,21]. According to these results, people with chronic disease have not a thorough understanding of the medical information given during visits in health centers and thus this will lead to lack of adherence to recommended treatment programs and reducing health outcomes.

The mean score of health literacy in the people under study was 7.3 ± 3.9 of 15. Based on this

study, 61.3% of patients had difficulty in completing medical health forms, 48.4% in understanding written media and 60% in reading written material. These results were consistent with findings of Sand-Jecklin [20]. Because people should understand the information presented to them in specific health care settings for appropriate decision making about their health and use them, service providers must be aware of patients' ability to process health information to improve their disease outcomes and also should be able to transfer the information to patients with different levels of health literacy [15]. However, many physicians and healthcare center workers use written materials like brochures or pamphlets which are given to patients for reading at home to reinforce information or provide further explanation during patient visits. Mean while, in most cases this information is far beyond most patients' understanding level. Hence it is recommended that educational materials be short, clear, simple and with pictures and images [29].

Also the findings of this study showed that communication health literacy in 78.3% of the subjects was inadequate and there was a statistically significant relationship between the mean of communication health literacy and health literacy levels that were consistent with the results of other studies [30,31]. The subjects' responses to the adult primary care questionnaire in this study indicated that adequate opportunity was not provided for patients to ask their questions and they did not receive the required and understandable trainings at the time of leaving the health centers or educations and explanations provided by the healthcare workers did not have the necessary clarity and sufficiency for the clients. This weakness particularly was observed in the areas such as how to follow and explain the process of self-care, problems with used drugs, experiments' results and prescriptions which in most cases they were consistent with the results of studies by Schillinger, Sudore and other researchers [30,32,36]. Because health literacy has a direct impact on these factors, a wide range

of inadequate health literacy in patients with chronic diseases can be considered as a warning for the officials, policy makers and health care administrators. In this study, communication health literacy in all subjects with any health literacy level was low that perhaps older age and lower educational level of patients admitted to the health centers could be considered the most common reasons for that. Although pondering the root causes of the problem was not the main objective of the present study, different factors and reasons such as lack of sufficient knowledge and skills in healthcare workers to evaluate clients' health literacy and develop good communication with them, the lack of personnel in the healthcare centers, inadequate facilities, necessary and appropriate educational resources and other cases might have led to development of the current situation. Based on the responses to the questions, educational and skills needs for people with chronic disease in various fields while leaving health centers, it was found that many of them needed more knowledge and skills so that in addition to preventing later possible complications, they could control better their disease.

Because this study was the first one in Iran which examined how health center staff communicate with people with chronic disease, these findings provide an opportunity to improve healthcare quality especially among people with chronic diseases and with inadequate health literacy.

The strength points of this study were a relatively good response rate (96%) and using a validated measure to evaluate the degree of quality of physician relationship with patients with chronic diseases which were previously used in the field of health literacy [19]. The relatively similar results of the studies showed that effective communication between patients–healthcare workers need to be improved in patients with inadequate health literacy [37].

A specific limitation of this study was that due to the working hours of healthcare centers, patients with chronic diseases who were employed or student had less chance to participate in this study. Another problem was that we had no way to verify the responses the

participants gave to the questions.

Based on the findings of this study, it is suggested that officials and other researchers and practitioners detect and root the main and effective causes of poor communication health literacy in view of staff and patients and then attempt to study the effect of interventions such as learning how to evaluate people's health literacy level and make good relationship with them in healthcare centers.

Conclusion

Based on the findings of this study, patients with inadequate health literacy have experienced poor communication health literacy in different areas of healthcare centers. Hence, it is recommended that adequate training and information to healthcare workers be given in the field of health literacy evaluation and using appropriate communication skills with their health literacy level.

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Contributions

Study design: NP

Data collection and analysis: FB, HE, AT

Manuscript preparation: FB, AT

Conflict of interest

"The authors declare that they have no competing interests."

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