

# A survey on health literacy of inpatient's educational hospitals of Isfahan University of Medical Sciences in 2012

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## ABSTRACT

**Background:** Health literacy is an individual's need in each Society. Health literacy is a set of skills in reading, listening, analysis, decision making and the ability to apply these skills to health situations. The purpose of this study was to assess health literacy level in Inpatients of educational Hospitals of Isfahan University of Medical Sciences in 2012. **Materials and Methods:** A navigational and analytical- applied survey of 384 Inpatients was conducted in educational hospitals of Isfahan University of Medical Sciences. Health literacy was measured by the Test of Functional Health Literacy in Adults (TOFHLA). Reliability of Questionnaire was obtained through Cronbach's alpha and it was 0/89 and its validity was confirmed by experts. The data were collected in clinical inquiry and were analyzed using SPSS (as Descriptive was Frequency distribution, mean, standard deviation and as analytical was Independent T-test, ANOVA and Pearson correlation test and Spearman correlation test). **Findings:** Results showed that the average of Health literacy scores in Inpatients was 35/31 in Numeracy test and 31/94 in Reading Comprehension test. The mean total score of health literacy was 29/63. Thus, the Most of these Inpatients were found to have inadequate health literacy. No significant association was found between health literacy level and gender, income, Occupation and residence. Health literacy was associated with age, marriage status and education. **Conclusion:** The results showed that most of Inpatients in of educational Hospitals of Isfahan University of Medical Sciences were marginal and inadequate health literacy. Therefore, they need to more help and details to understand and use health information.

**Key words:** Health literacy, inpatients, Isfahan university of medical sciences, teaching hospitals

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DOI:  
10.4103/2277-9531.134804

## INTRODUCTION

Literacy involves a complex set of abilities to understand and use symbolic systems of a culture for personal and social improvement, which are viewed as necessary for any grown up person in order to work and behave in the society.<sup>[1]</sup> One of these abilities is health literacy, which involves a series of reading, listening, analysis, and decision-making skills and the ability to use them in health situations. This type of literacy is a result of cooperation between personal and social factors and deals with aspects and concerns of health domain. The capacity of an individual (including the inherent potential and interpersonal skills), is an essential part of health

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This article may be cited as: Mollakhalili H, Papi A, Zare-Farashbandi F, Sharifirad G, HasanZadeh A. A survey on health literacy of inpatient's educational hospitals of Isfahan University of Medical Sciences in 2012. J Edu Health Promot 2014;3:66.

literacy, which can be adjusted with suitable training and its quality is affected but culture, language, and characteristics of health-related situations.<sup>[2]</sup> This type of literacy is an essential skill for all individuals and since the lack of health literacy can have severe economic repercussions and has a close relation with the economic health.<sup>[3]</sup> The World Health Organization (WHO) considers the health literacy as one of the most important factors in determining the health status of a sociality and urges the countries around the world to create a community for monitoring and coordination of strategic activities involving the promotion of health education.<sup>[4]</sup>

Since health literacy involves both learning the information regarding health issues and the ability to understand and use these information, there is a close relation between health literacy and quality of life.<sup>[5]</sup> People with low health literacy will have trouble understanding and following the instructions provided by health experts, incur additional medical costs, have poorer health, higher rates of hospitalization, and use of emergency service and use less preventive care.<sup>[2]</sup> Typically, lower health literacy causes repeated and unnecessary referrals to doctors and longer hospital stays, which in turn increases the medical costs and wastes a part of health budget.<sup>[5]</sup> Therefore health literacy is an important factor in the outcomes and cost of healthcare and its lack of improvement causes longer use of medical facilities. Patients with lower health literacy have more problems in the use of medicines. In other words improvement of health literacy is a way to tackle the inequalities in healthcare.<sup>[6]</sup> Given the importance of this issue, many national and international quantities studies have been conducted. Some of these studies are as follows:

Kohan *et al.* in a study called “The relation between mother’s health literacy and prenatal and delivery care” claimed that 18% of women had good, 48% of them had mediocre, and 34% of them had poor health literacy.<sup>[7]</sup>

The results of a study by Reisi *et al.* titled “The Relationship between Health Literacy, Health Status and Healthy Behaviors among Elderly in Isfahan” showed that the level of health literacy in the elderly was inadequate.<sup>[8]</sup>

The results of a study called “Evaluation of health literacy of pregnant women in urban health centers of Shahid Beheshti Medical University” by Ghanbari *et al.* showed that poor health literacy is a common problem in pregnant women that can cause misunderstanding in interpretation of health advices.<sup>[9]</sup>

A study by Nekouei-Moghadam *et al.* titled “Health literacy and use of health service in the city of Kerman, 1390” claimed that the level of health literacy in city of Kerman is poor.<sup>[10]</sup>

The results provided in a study by Tol *et al.* called “Determination of knowledge and health literacy among women with type 2 diabetes in teaching hospitals of TUMS. Hospital Quarterly 1391” showed that the participants had mediocre health literacy.<sup>[11]</sup>

Also Tol *et al.* in a study titled “Assessing the effect of educational program based on small group on promoting knowledge and health literacy among women with type 2 diabetes referring to selected hospitals affiliated to Tehran University of Medical Sciences” showed that in the intervention group small group teaching strategies are more effective compared with conventional diabetes education.<sup>[12]</sup>

Williams *et al.* in their study titled “The Role of Health Literacy in Patients–physician Communication” showed that poor health literacy is especially common in elderly and sick people. He also claimed that the complex communication problems caused by this can affect the healthcare of these patients.<sup>[13]</sup>

The results provided by Chew *et al.* in a study called “Brief Questions to Identify Patients with Inadequate Health Literacy” showed that 4.5% of the participants had poor and 7.5% of them had marginal health literacy.<sup>[14]</sup>

The results of a study titled “Health Literacy and Anticoagulation-Related Outcomes among Patients Taking Warfarin” by Fang *et al.* showed that health literacy is related to lack of knowledge concerning Warfarin.<sup>[15]</sup>

Lee *et al.* in a study called “Health Literacy, Health Status, and Healthcare Utilization of Taiwanese Adults: Results from a National Survey” showed that almost 30% of the participants had poor health literacy.<sup>[16]</sup>

In a study titled “Health literacy in a Population of Primary Healthcare Patients in Belgrade, Serbia,” Jovic-Veranes *et al.*, showed that the patients do not have the necessary skills to act in healthcare environments.<sup>[17]</sup>

Edwards *et al.* in a study called “The Development of health Literacy in Patients with Long-term Health Condition: the Health Literacy Pathway Model” the patients with long-term problems can improve their health literacy through training and consulting.<sup>[18]</sup>

The current study aims to investigate the health literacy level of patients admitted to the hospitals under the supervision of Isfahan University of Medical Science in two domains of reading comprehension and numeracy.

## MATERIALS AND METHODS

The current study is a navigational- and analytical-applied survey. The data gathering tool is Test of Functional Health Literacy in Adults (TOFHLA). This questionnaire was previously translated by the institution of researchers without border in Tehran and has proven credibility. Cronbach’s alpha was used to test the stability of the questionnaire and the number of participants was 60. The stability was calculated to be 0.89% and the justifiability of the questionnaire was confirmed by related experts. This questionnaire has three sections. The first section involves the demographic

information and the second part is the numeracy part. This part contains 10 health explanation or advice about prescribed medicine, timing of visiting doctors, the stages of using financial assistances, and an example of the results of a medical examination. This section measures the participant's ability to understand and act according to the advice given by doctors and health educators that require numeracy. The third section includes three texts and measures the reading comprehension of participants of texts titled "Preparing for imaging of the upper gastrointestinal tract," "Rights and responsibilities of patients in insurance forms," and "Standard hospital consent form." Each of these sections has a mark from 0 to 50 and the total of these marks gives the total health literacy marks of the participant in a 0-100 scale. At the end the health literacy, marks of the participants is divided into three categories: poor (0-59), marginal (borderline, 60-74), and satisfactory (75-100).

The studied society is the patients admitted into teaching hospitals under the supervision of Isfahan University of Medical Science from September 2012 to March 2013 who are capable and willing to participate in this study and aged 20-65 years. These hospitals include Ayatollah Kashani Hospital, Al-Zahra Hospital, Amin Hospital, Farabi Hospital, Feiz Hospital, Imam Mousa Kazem Hospital, Isabn-e-Maryam Hospital, Noor and Hazrat-e-Ali Asghar Hospitals, Shahid Beheshti Hospital, Seyed-al-Shohada Hospital, Shahid Chamran Hospital. For the sake of this study Al-Zahra Hospital from south, Feiz Hospital from north, Shahid Chamran Hospital from east, Shahid Beheshti Hospital from west, and Ayatollah Kashani Hospital from central part of Isfahan were selected.

Since during this study, some patients are repeatedly admitted and discharged, the statistical population is large and somewhat uncertain. Therefore the patient sampling was carried out based on large, unlimited population and the number of samples was calculated to be 384 using the following equation  $n = z^2 * s^2 / d^2$ . The sampling was done using convenient (accessible) method. Before the beginning of data gathering, the necessary correspondence and coordination were carried out with deputy director of research in the faculty of the researcher, directors of each hospital, the head of each department in the hospital, and hospital security staff and the necessary permits were obtained. Then the data in the two sections of numeracy and reading comprehension was gathered from each patient by personally visiting them and after gaining their consent. During the data gathering procedure, the patients could refuse further cooperation at any given time; in this case another patient would replace the previous one. Therefore all ethical guild lines concerning dealing with patients were followed in this study.

For the descriptive data analysis, mean, standard deviation, and frequency distribution was used and statistical tests of independent *t*-test, ANOVA, Pearson's correlation, and Spearman were used for deductive statistical analysis. All data analysis was carried out using SPSS 20 software.

## FINDINGS

- **Demographic data**  
Among the investigated patients, 44.5% were from Al-Zahra Hospital, 13.5% from Feiz Hospital, 13% from Shahid Chamran Hospital, 13.3% from Shahid Beheshti Hospital, and 15.6% were from Ayatollah Kashani Hospital. Among the investigated patients, 45.6% of the investigated patients were female and 54.4% of them were male; 47.7% of the patients were in the age group of 20-30, 24.2% in the 31-40, 19% in the 41-50, and 9.1% of them were aged over 50 years. Also 26.3% of the patients had elementary school level education, 32.3% of them had high school diploma, 4.4% of them had associate degree, 10.4% of them had bachelor degree, and 1.2% of them had master's degree or higher. A total of 25.3% of the investigated patients were single and others were married.  
A total of 31.5% of the patients were self-employed, 10.4% of them were office workers, 4.7% of them were laborers, 9.4% of them were unemployed, 36.5% of them were housewives, 3.4% of them were retired, and 4.2% of them were students. Also 50.3% of them were without income, 46.1% of them had a monthly income of less than 10,000,000 rials, and 3.6% of them had a monthly income greater than 10,000,000 rials. Finally 47.7% of the patients were from the city of Isfahan, 38.5% of them were from surrounding cities, and 13.8% of them were from other towns and provenances.
- **Patients' health literacy mark**  
The average health literacy mark of the patients was 31.35 in numeracy and 31.94 in reading comprehension section from a range of 0-50 for each section. The total health literacy mark of the patient is in range of 0-100 and in this study the average total health literacy mark of the patients were 63.29. As mentioned earlier, health literacy is divided into three categories of poor, marginal (borderline), and satisfactory. According to this, 41.1% of the patients (158 patients) had poor health literacy, 25% of them (92 patients) had marginal and only 33.9% of them (130 patients) had satisfactory health literacy.
- **The Relation between patient health literacy mark and demographic factors**  
As seen in Table 1 and independent *t*-test, there were no meaningful relation between the health literacy mark of the patients and their gender ( $P > 0.05$ ).

Also *t*-test showed that the average health literacy mark and the marital status of the patients had a meaningful relation ( $P < 0.05$ ) and that married patients had lower health literacy marks.

Table 2 shows the relation between the health literacy mark of the patients with their age and monthly income. Pearson's correlation showed that the average health literacy mark and the marks of the different sections are reversely proportional to the age of the patients. However, no relation existed

**Table 1: The average health literacy mark of the patients admitted in hospitals supervised by Isfahan University of Medical Science divided based on gender and marital status**

Factor	Numeracy section	Reading comprehension section	Total
Female			
Average	31.4	32.08	63.48
Standard deviation	9.48	10.15	18.01
Male			
Average	31.3	31.82	63.14
Standard deviation	9.54	10.12	18.26
Test results			
T	0.083	0.08	0.58
P value	0.935	0.800	0.854
Single			
Average	34.06	34.20	68.26
Standard deviation	9.28	8.99	16.55
Married			
Average	30.44	31.17	61.62
Standard deviation	9.47	10.38	18.35
Test results			
T	3.26	2.56	3.15
P value	0.001	0.011	0.002

**Table 2: Pearson's correlation between age and monthly income with average health literacy mark of patients admitted in hospitals supervised by Isfahan University of Medical Science**

Health literacy sections	Age		Monthly income	
	R	P value	R	P value
Numeracy mark	-0.404	<0.001	0.25	0.62
Reading comprehension mark	-0.369	<0.001	0.02	0.67
Total mark	-0.419	<0.001	0.03	0.62

between average health literacy mark and monthly income of patients.

Table 3 shows the relation between average health literacy mark of the patients and their education level. It can be seen that there is a direct relation between the health literacy mark of the patients and their education level ( $P < 0.001$ ) and the higher their education, the higher their health literacy mark will be.

Table 4 shows the relation between health literacy mark and employment and the place of residence of the patients. ANOVA test showed that there is a meaningful relation between the patients' health literacy mark and their employment ( $P < 0.001$ ) and that the highest health literacy mark belonged to the students and the lowest marks belonged to retired patients and laborers. In contrast, no meaningful relation was observed between the place of residence and the health literacy mark of the patients ( $P < 0.05$ ).

**Table 3: Spearman correlation between education level and health literacy mark of the patients admitted in hospitals supervised by Isfahan University of Medical Science**

Health literacy sections	Average	Standard deviation	Test result	
			P value	R
Numeracy mark	31.35	9.54	0.571	<0.001
Reading comprehension mark	31.94	10.12	0.606	<0.001
Total mark	63.29	18.12	0.614	<0.001

## DISCUSSION

The findings of this study show that among the investigated patients, most had poor or marginal health literacy while only a few had satisfactory levels of health literacy. This is in agreement with most of the previous studies such as Kohan *et al.*,<sup>[7]</sup> Tehrani Banihashemi *et al.*,<sup>[2]</sup> Reisi *et al.*,<sup>[4]</sup> Ghanbari *et al.*,<sup>[9]</sup> Nekouei-Moghadam *et al.*<sup>[10]</sup> inside Iran and international studies conducted by Williams *et al.*,<sup>[13]</sup> Chew *et al.*,<sup>[14]</sup> Shouu-Yih Lee *et al.*,<sup>[16]</sup> and Jovic-Veranes.<sup>[17]</sup> This is the case even though enough health literacy is necessary in order for the patient to participate in healthcare systems and for making proper health-related decisions and increases the ability of the populace in using health advices and information.

The results also show that there is a meaningful relation between the education of the patient and the average health literacy. This is similar to the findings by Tehrani Banihashemi *et al.*,<sup>[2]</sup> Nekouei-Moghadam *et al.*,<sup>[10]</sup> Lee *et al.*,<sup>[16]</sup> Fang *et al.*,<sup>[15]</sup> Sun *et al.*,<sup>[19]</sup> and the research findings of Center for Health Care Strategies for America. Patients with higher education have better health literacy and better understand and use health information and advices. However, patients with lower education also have lower health literacy and have problems in understanding and using medical information, application, and methods of using medicines and understanding the orders of doctors and therefore need special attention.

Findings showed that health literacy is reversely proportional with the age of the patients and younger patients have higher health literacy. These findings is in agreement with studies conducted by Tehrani Banihashemi *et al.*,<sup>[2]</sup> Tol *et al.*,<sup>[12]</sup> Lee *et al.*,<sup>[16]</sup> Fang *et al.*,<sup>[15]</sup> Sun *et al.*,<sup>[19]</sup> and findings of Center for Health Care Strategies for America. Younger patients have fewer problems in understanding and comprehension of medical and health information and as was mentioned previously, have more concentration compared to the elderly. It is necessary to note that age, education and marital status affect each other. Therefore healthcare officials must endeavor to develop ways of provide the elderly with easy to understand health and medical information.

One of the other findings of this study is a meaningful relation between health literacy and marital status and occupation of



**Table 4: The average health literacy mark of the patients admitted in hospitals supervised by Isfahan University of Medical Science divided based on employment and place of residence**

Employment	Numeracy mark		Reading comprehension mark		Total mark	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
Self-employment	30.53	9.62	30.76	9.89	61.29	17.92
Office worker	35.77	7.62	39.67	7.79	75.45	14.25
Laborer	28.83	6.75	26.77	8.58	55.61	14.57
Unemployed	32.52	10.43	32.55	8.79	65.13	17.60
Housewife	30.32	9.23	30.92	10.11	61.24	17.56
Retired	24.07	10.16	24.46	7.46	48.53	15.92
Student	41.58	4.92	41.00	8.39	82.56	11.66
ANOVA test						
F	7.08		9.67		9.77	
P value	<0.001		<0.001		<0.001	
<b>Place of residence</b>						
City of Isfahan	32.08	9.42	32.28	10.51	64.36	18.65
Subsidiary towns	30.42	9.62	31.85	9.64	62.27	17.34
Other cities	31.45	9.71	31.01	10.20	62.47	18.52
ANOVA test						
F	1.23		0.329		0.606	
P value	0.292		0.719		0.564	

the patients, which is similar to the findings by Tol *et al.*<sup>[12]</sup> The relation between health literacy and occupation and marital status is rarely explored. Married people have lower health literacy compared with single individuals. This difference can be due to the effect of age and education of the patients. In other words, most single individuals are young and have higher education compared with married people. Also usually younger people have better concentration and attention compared with older ones, which can help them to answer the questionnaire more accurately. Therefore, according to the current study, in health-related situations, single individuals act better and more effectively compared with married people. Another reason behind this difference can be the fact that married people have more responsibilities in taking care of their family and children and the problems of everyday life and therefore spend less time learning about correct information and actions and this lack of attention is also true for health-related situations. As a result married people have less attention in filling medical forms, following medical instructions and in using other information regarding healthcare situations.

About the difference in health literacy level of different occupations, one can say that the difference originates from the difference in age and education of people. Therefore, the results show that the best health literacy level belonged to office workers and students while laborers and retired people had the lowest health literacy level. In other words, compared with younger, single people of higher occupation levels, married and elderly people, laborers, and people of lower education need more training, information provided in simple and easily understandable terms and spending more time for establishing health-related communications and also require more aid about medical systems and information such as how to use drugs.

Furthermore, the results show that there is no meaningful relation between health literacy and gender and place of residence of the patients. Findings provided by Tehrani Banihashemi *et al.*<sup>[2]</sup> shows that women and rural people have lower health literacy, which points to a relation between place of residence and health literacy and is the opposite of the findings in this study. The reason can be that in this study, the place of residence was not clearly divided between rural and urban areas but instead were divided by the city of Isfahan, its suburban area, and other cities or rural areas. Therefore the investigated patients were from different cities and not rural areas and had no marked difference in their health literacy. In the previous studies like the one by Tehrani Banihashemi *et al.*, the place of residence differentiated between urban and rural areas and it is expected for the health literacy of rural people to be lower than that of urban residents. Tehrani Banihashemi *et al.* also points out that the reason behind the lack of health literacy in women and in rural people is their lower education level.

The results also show that the monthly income and education of the participants are not meaningfully related, which is in agreement with the findings of Nekouei-Moghadam *et al.*<sup>[10]</sup> and is the opposite of the results reported by Lee *et al.*<sup>[16]</sup> and Sun *et al.*<sup>[19]</sup> and Center for Health Care Strategies for America. For the reason behind these results can be due to the fact that the income is divided into three categories of no income, lower than 10,000,000 rials, and higher than 10,000,000 rials. However, students that have the highest education and health literacy, belong to the no income category but the laborers that have lower education and health literacy have some in come mostly in the lower than 10,000,000 category. The no income category in this study represents house wives, students, jobless young people, and the people that are unable to work for whatever reason.

## CONCLUSION

The results of the current study showed that most of the patients have poor or marginal health literacy and therefore need more explanation from medical staff in order to understand and use the health and medical instructions. They also need to spend more time to communicate with their doctor or nurse and other medical staff, and learn the needed information in a simpler and easier to understand language. The officials and medical staff also need to understand this fact and spend more time communicating and explaining medical and health instructions to these patients. Health literacy increases the patients' ability in understanding and using health and medical instructions.

Since based on the results of this study, patients' education directly affects their health literacy, it is necessary to pay great attention to education, specially the health education of the sociality as a whole. Also since based on the results, the health literacy of the patients had no relation to their gender, officials must tend to the education of both genders equally. Creating useful health programs, producing simple and easy to understand educational materials and encouraging doctors and medical staff to spending more time and talk slower when communicating with patients are some of the ways of helping patients with lower health literacy and increasing their knowledge. The results of this study also highlight the necessity of increasing the medical knowledge of people in general and admitted patients specially.

Suggesting ways of increasing the health literacy of patients to the related officials, identifying the patients with lower health literacy, and conducting this type of research among admitted patients, which had not been attempted before, are some of the strong points of this study. There have been a total of seven studies regarding health literacy, three of which were conducted at the same time as this study. It is necessary to note that due to the importance of health literacy, there are various studies in this area internationally but health literacy still needs a lot of work in Iran.

## Suggestions

- It is necessary for the officials of healthcare areas to provide facilities in order to increase the health literacy of people that have unsatisfactory health literacy levels
- It is necessary to devise suitable learning programs for married and elderly people, laborers, and those of lower educational backgrounds
- It is advised for those responsible for healthcare (doctors, nurses, medical librarians, etc.) to distribute leaflets containing elementary medical and healthcare information to people and patients
- It is necessary to train healthcare experts and medical staff about the importance of communication with admitted patients and to teach them to spend more time and effort explaining medical procedures to the patients with lower educational backgrounds.

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**Source of Support:** This article is extracted from a grant research funded by Isfahan University of Medical Sciences with number 391462.  
**Conflict of Interest:** Nil.