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Health literacy of Iraqi immigrant adults: pilot study

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ABSTRACT

Objective: This study aimed to examine the effect of a 3- hour educational program on the health literacy of Iraqi immigrants in the U.S.

Methods: The pilot study was implemented using a Pretest-Posttest design. Iraqi immigrants (n = 30) who were 18 years or older, used English as a second language and lived in the U.S. for at least five months, participated in the study. Health literacy (functional, communicative and critical) was measured before and after an educational program by using the “Test of All Aspects of Health Literacy Scale (AAHLS)”.

Results: Based on the results of this pilot study, the mean of AAHLS total score for the pretest was 13.3, and the mean of total score for the posttest was 16.03. So, there is significant improvement in health literacy after the program.

Conclusions: Although the results indicated a significant improvement of PostTotal health literacy scores (M = 16.3, SD = 3.04) over PreTotal health literacy score (M = 13.13, SD = 3.13), $t(29) = 4.917, p < .001$, the functional literacy subscale did not show similar improvement.

Key Words: Health literacy, Iraqi immigrants, Communicative health literacy, Functional health literacy, Critical health literacy

1. INTRODUCTION

Individuals with low health literacy often have greater difficulty in navigating the health care system specifically among vulnerable population such as immigrants. As the population of the U.S. becomes more diverse, the number of individuals from different cultures also increases. Iraqi refugees are the largest group resettled in the U.S. and they are almost 21% of the total U.S. refugees.^[1] Refugees fled from the difficult situation in Iraq without having advance preparation for leading their lives in a Western country. Immigrants in need of services in health care faced many challenging barriers such as difficulty in scheduling appointments, finding transportation services, securing professional interpreters, and communicating with health care professionals presumably because of unfamiliarity of the health care system in the U.S. and low health literacy.^[2] There are several negative aspects

of low health literacy such as the potential for: 1) skipped appointments, 2) poor management of chronic diseases, 3) increased hospitalization rate, 4) frequent emergency room visits, 5) poor health status, 6) high health care costs due to increased hospitalization, and 7) negative psychological effects (shame, low self-confidence) due to inadequate health information.^[3] In addition to not knowing the health care system, Iraqi immigrant adults also face the challenge of possessing limited language skills in a new country.

Health literacy is defined as “the degree to which individuals have the capacity to obtain, understand, and process basic health information and services needed to make appropriate health decisions”.^[4] It includes critical and communicative skills that can motivate individuals to access, understand, and use available health information.^[5] Consequently, health

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literacy is contingent on two major interconnected skills: functional and complex (communicative and critical). The functional skill is the basic ability of reading and writing. The complex skill of communication is the ability to interact with the health educational care system to obtain the required information. The “critical” portion of the complex skill is the ability to critically analyze, manage, and use health information. Individuals with ULHL should become competent in these two skills (functional and complex) in order to make appropriate health decisions.^[6]

Health literacy, however, has been addressed more narrowly as the ability to read and write.^[3,6,7] Health literacy is more than the deficiency in reading instructions or writing. Individuals according to the definition of health literacy should be able to obtain available health information. They should be taught how to communicate, use, and process basic health information. Individuals who are unable to understand, or who partially understand basic health information, are more likely to misinterpret health information, use the emergency room for primary care, and struggle with management of chronic diseases.^[3] Taking into account the broader definition, health literacy programs should be designed to improve both functional and complex literacy which can affect individuals’ access to health information and their ability to use the information in an effective manner.^[3] Health information should also be presented in a preferred language using simple and plain medical terminology. As individuals with ULHL require critical and communicative skills to process the acquired information, it is important to master these skills to improve confidence in accessing available information.

1.1 Literature review

Patients with low health literacy report poor hospital communication and difficulty in understanding health-related information.^[8] Effective communication with a health care team can assist patients in understanding their own care, and with better understanding of self-management; a number of hospitalizations can decrease. Immigrants have been identified as a vulnerable population due to numerous factors, such as economic background, immigrant’s status, limited English proficiency, and local policies on access to health care.^[9] Describing the post-2003 situation in Iraq, the comment was written, that “Human resource development fails to link needs, strategic plans, and training programs together. As the public sector loses its monopoly on the employment of doctors, major changes loom in the health system, for which there are as yet no policies”.^[10] The health care system and many health facilities were destroyed. Smoking, chronic diseases, and obesity are not fully addressed by the current health system in Iraq. More challenges emerged due

to communicable diseases such as tuberculosis and varicella infection. Mental and psychological health problems such as depression, anxiety, and post-traumatic stress syndrome also escalated.^[10] Due to the shortage in physicians and staff, waiting time increased, which affected the quality of health care provided. So, Iraqi immigrants came to the U.S. with several health issues and concerns such as chronic diseases management due to difficult situation in their country.

Research about addressing needs of Arab immigrants is still limited and there is a need for: 1) more research on Arab immigrants’ health in the U.S.; 2) health services that are appropriate to new Arab immigrants in the U.S.; 3) more health education materials in the Arabic language; 4) health-care professionals to attend cultural competency training programs; and 5) more culturally appropriate programs to address mental health issues, such as post-traumatic stress syndrome among this population.^[11] Kimbrough^[12] stated, that “Immigrants in particular are at risk for misunderstanding instructions from their health care providers. Instituting multiple teaching formats along with routine checks for understanding could greatly improve outcomes and treatment compliance.” Immigrants’ low health literacy is accompanied by a lack of accessibility of written resources in their primary language and with difficulty in using and navigating health services. Health literacy has two aspects: functional skills and complex skills (communicative and critical). Obtaining health information is considered a functional skill, meaning that basic reading skills are needed to understand health information. However, this functional skill is only one aspect in terms of an individual’s ability to read, as by itself it is not enough to reach a good health decisions. Fully utilizing obtained information requires complex skills to interact with health care providers. In addition, and within the broader context, addressing low health literacy is a shared responsibility between individuals and health care providers. Hence, the problem of health literacy is not due to a deficiency of functional literacy of individuals only. It is a shared responsibility between those who seek health care and those who provide health care. One aspect of care from the providers includes identification of individuals with low health literacy. This assessment provides a starting point for educators. Thus, it is within this context that both the individual and the health care provider share common responsibility for achieving a successful outcome to a health care need.^[13]

The ability to process and manage health information can help individuals with low health literacy to reach an informed health care decision. The health care decision, which is the optimal goal of health literacy, is more complicated and requires critical expertise such as skills in analysis, problem solving, and decision making. These critical skills are impor-

tant for understanding acquired health information because they increase the ability of individuals to act on the well-being of their personal health. Literacy that is necessary to make informed health care decisions (critical health literacy), is the higher order process of evaluating available health information to reach health care decisions.^[14] Critical health literacy is also interrelated with health status, public health, and health promotion. Informed health decisions can enhance an individual's health status by improving chronic disease management by properly using health services. Additionally, critical health literacy and confidence can add to the ability of individuals to navigate the health care systems and manage educational information. Individuals should have the critical skills to understand health information, which could be achieved by improving health knowledge and familiarity with health terminology. Health literate individuals can be further empowered through the use of critical literacy such as managing health information, sharing health decisions, and applying it to one's own situation.^[12]

1.2 Purpose

Previous research has explained the difficulties encountered by Iraqi immigrants in navigating the U.S. health care system. Health literacy has been discussed as a narrow vision of reading and writing skills. The definition of health literacy emphasized on the importance of complex skills of communicating and critically managing health information. The purpose of this study was to examine the effect of a 3-hour educational program on health literacy of Iraqi immigrants in the U.S. Participants were enrolled in the health care educational program to enhance their health literacy skills.

2. METHODS

This pilot study examined the effectiveness of a health care program. The design for this study was pretest-posttest single group design. Health literacy was measured as baseline before the program (pretest) and after the program (posttest). Data were collected by objective testing and analyzed statistically. This design was used to measure the level of health literacy before and after the program.

2.1 Sample

A convenience sample of Iraqi immigrant adults was recruited from a midwestern nonprofit agency. Eligibility criteria for this study included Iraqi immigrants who: (1) were 18 years of age or older, (2) used English as a second language, and (3) lived in the U.S. for at least five months. Exclusion criteria included adults who: (1) were born in the U.S. and/or (2) who have previous medical knowledge/education. Previous medical education/knowledge can interfere with the study's health literacy intervention. Using a priori G* Power

analysis (difference between two dependent means) with a power of .80, an alpha of .05, and a medium effect size of .15, a total sample size of 40 was yielded for the pre-posttest design.^[15]

2.2 Variables and measurements

Health literacy was measured by the Test of All Aspects of Health Literacy Scale (AAHLS) before and after the intervention.^[6] The scale was constructed to reflect three aspects of health literacy: functional (4 items), communicative (3 items), and critical health literacy (7 items). Empowerment Questions (Emp) in critical health literacy items address empowerment of participants (community and social engagement). AAHLS is a quick scale with adequate reliability (Cronbach's alpha = 0.74). For construct validity, scores of functional subscale were significantly associated with communicative subscale ($r = .393, p < .001$) and critical subscale items ($r = .59, p = .036$) and significant association between communicative and critical subscale ($r = .186, p = .017$). It is a 3-point Likert scale ranging from "rarely" (0), "sometimes" (1), and "often" (2). Questions in functional literacy subscale items only ranged as "rarely" (2), "sometimes" (1) and "often" (0). This step was constructed in this way by the primary investigator of this pilot study to keep the consistency of the scale and for easy data enclosure in SPSS. The critical subscale consists of 4 CRQ and 3 EmpQ. Scores for each literacy items (functional, communicative, and critical) and total score from all 12 items were summed (except Emp2 and Emp3 in critical health literacy) as these are yes/no and a/b questions. Empowerment questions (Emp2 and Emp3) were analyzed separately. The higher the score, the higher level of health literacy the person has. AAHLS was translated from English into Arabic (semantic translation).

2.3 Conceptual framework

The conceptual framework (see Figure 1) for this study was developed using the work of several researchers.^[3,4,6,16,17] Functional literacy skills consist of two major parts: obtaining and understanding basic health information. The lower right box lists a number of methods that one should incorporate in helping individuals make appropriate health decisions such as 1) using plain/primary language, 2) incorporating a teach-back method, and 3) avoiding jargons. Complex health literacy takes into account both communicative and critical skills which consist of processing and communicating basic health information.^[13] The lower left box lists a number of methods that one should incorporate to improve complex health literacy such as 1) enhancing verbal motivation, 2) creating a shame-free environment, 3) improving health knowledge, 4) developing familiarity with medical terms, 5) motivating shared decision with health professionals, and 6) managing available information.

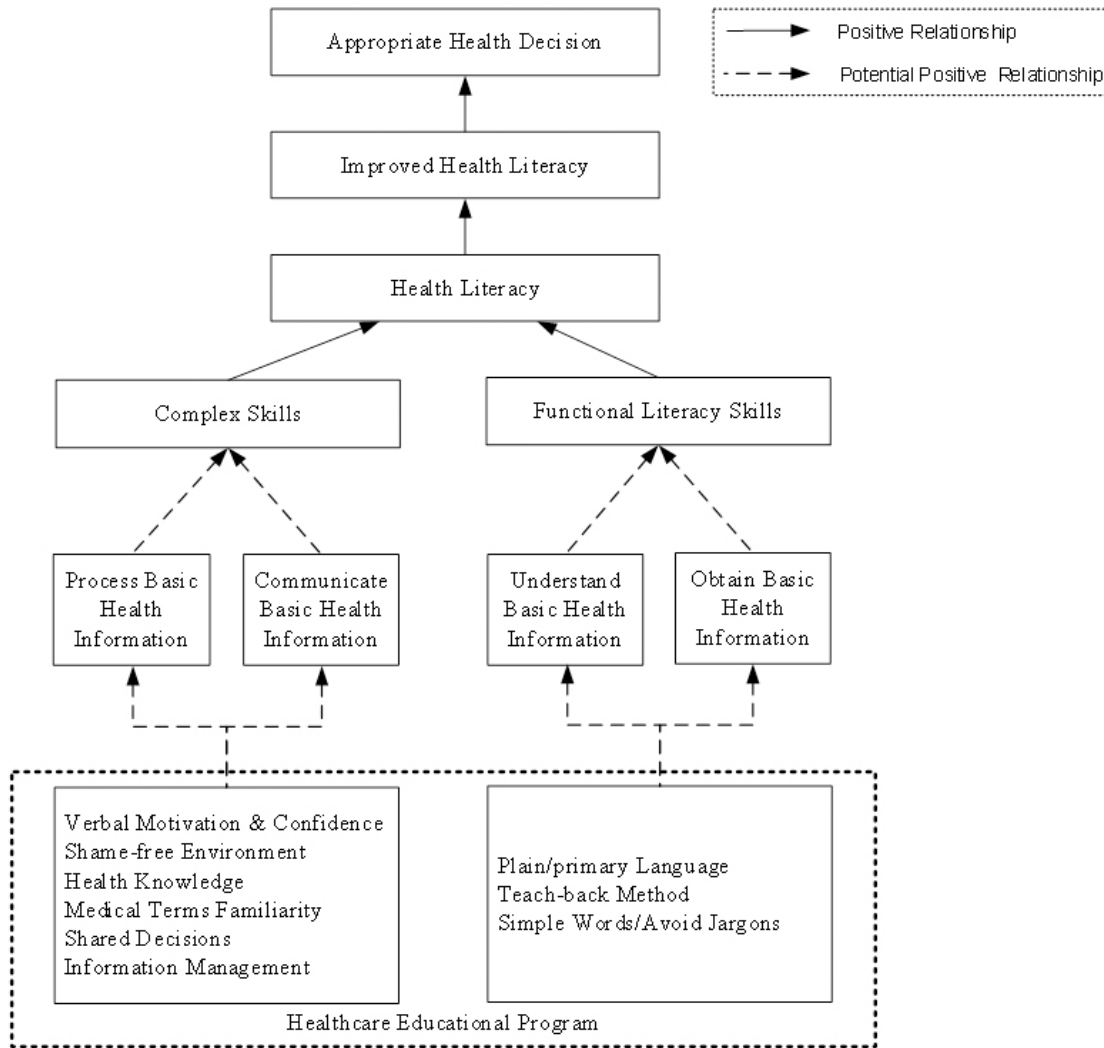


Figure 1. Health literacy conceptual framework

The definition of health literacy was adapted from “Health literacy: A second decade of distinction for Americans” by Parker and Ratzan, 2010, *Journal of Health Communication*. 15(2): 20-33.

2.4 Educational program

The primary investigator welcomed the 30 participants who agreed to participate in the program and they were reminded of the program goal and their right to withdraw from the program at any time without any consequences. Participants completed pretest (AAHLS). The primary investigator then collected all sheets to initiate the program. The program was planned and structured as modules with different goals for each module. During the program, the primary investigator approached participants in a respected manner, using eye contact, culturally appropriate words, images, and video content. The content of the program included general health information that individuals with low health literacy can use to reach health decisions (consent forms, insurance, medication, etc.). The primary objectives of the educational materials in the program were to improve health knowledge in the five

major areas: (1) communication with health care providers, (2) self-management of diseases, and communication on (3) medications, (4) diagnostic tests, and (5) medical forms. The materials were written below fifth grade level and in the primary language of participants. Methods of education included short presentation, discussion, picture story, audio-visual and handouts. To increase complex health literacy skills, covered information included over-the-counter medication, setting up appointments, patient’s rights, and selected common medical terms. Increasing their confidence and motivation to ask questions was one of the foci in order to enhance participants’ interactive communicative skills. The teach-back method was applied and participants were asked to restate required information in their own words. Following the program, participants completed a posttest (AAHLS).

3. RESULTS

The sample (n = 30) was predominantly females (76%), with a college degree (53%), were married (53%), and migrated in 2014 to the U.S. (56%). As indicated in Table 1, 23 females and 7 men participated in the study. This could be due to a cultural issue since the primary investigator, who recruited them into the study was a female.

Table 1. Demographic characteristics

	n	M	SD	Percent
Participants' Age	25-34	9		
	35-44	14		
	45-54	4	38.9	11.7
	55-64	2		
	65 and Over	1		
Gender	Male	7		23.3
	Female	23		76.7
Marital Status	Single	11		36.7
	Married	16		53.3
	Divorced	1		3.3
	Widowed	2		6.7
Education Level	High School	12		40
	College	16		53.3
	Graduate	2		6.7

Note. Standard Deviation = SD. Mean (M) average for age in this sample was 38.9 with minimum age of 23 years.

3.1 Pretest-posttest single group

The significance in Shapiro-Wilk test for normality was .335 (PreTotal) and .053 (PostTotal) which is > .05. Therefore, the null hypothesis of normal distribution was accepted. To-

tal scores from Pretest and Posttest met the assumption of normality as indicated also in the visual inspection of Q-Q Plot of PreTotal (dots are approximately on the line). Data are expected to have some skewness and kurtosis as long as they are not large compared to their standard error. Dependent t-test was computed to measure the difference between the pretest and posttest AAHLS scores. The mean AAHLS score for the pretest was 13.3, and the mean score for posttest was 16.03. The standard deviation (SD) for each group was approximately 3.0. The mean differences between pre- and posttest for FQ, ComQ, CrQ were .667, -.767, and -2.467, respectively. According to the paired sample t-test, the mean difference between PreTotal and PostTotal was -2.9, which indicates that on average participants scored 2.9 points higher than same participants at pretest. Results indicate a significant improvement of PostTotal health literacy scores (M = 16.3, SD = 3.04) over PreTotal health literacy score (M = 13.13, SD = 3.13), $t(29) = 4.917, p < .001$. AAHLS total score at the posttest was 16.03 (SD = 3.048), while the average score at pretesting was 13.13 (SD = 3.135). The data indicate there was also significant growth from pre- to posttest on the ComQ subscale ($p = .007$) and CrQ subscale with ($p < .001$). For the FQ subscale, the posttest mean score M = 4.10 was less than the pretest mean score M = 4.77. Despite the decrease in the mean (mean difference .667), the p value was .001 which is < .05 (see Table 2). So, improvement of functional literacy scale was not similar to the other subscales. Overall, respondents showed significantly different responses on the AAHLS domains between pre- and posttest. The total score reflects the largest amount of difference between pre- and posttest.

Table 2. Paired sample t-test

		Paired Differences					t	df	p-value
		M	SD	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	PreFQ-PostFQ	.667	1.348	.246	.163	1.170	2.710	29	.011*
Pair2	PreComQ-PostComQ	-.767	1.455	.266	-1.310	-.223	-2.887	29	.007**
Pair3	PreCrQ-PostCrQ	-2.467	2.285	.417	-3.320	-1.613	-5.912	29	.000***
Pair4	PreTotal-PostTotal	-2.900	3.231	.590	-4.106	-1.694	-4.916	29	.000***

Note. (Dependent t-test for total score where $t(29) = -4.917, p < .001$). * $p < .05$. ** $p < .01$. *** $p < .001$.

3.2 Emp

Emp in critical health literacy items (Emp) addressed the ability to empower participants to the level of community and social engagement. The authors who created this tool added these two questions as part of empowerment measurements.^[6] This empowerment is assumed to be evolved in critical literacy after enhancing the previous two aspects

of health literacy (functional and communicative). In the PreEmp Q2, only (40%) of the participants compared with (47%) in PostEmp took action toward health issues in the past. This finding indicates that 14 participants had the ability to advocate for health issues. This advocacy is considered as a measure of the participants' empowerment which is part of critical health literacy. In posttest two participants changed

their response that they took action in the past toward health issues. The educational program should not impact the response to this question because the question asked about past experience and the two participants potentially misinterpreted the question. Information and encouragement take the priority in leading to a healthy life style for (73%) of participants in PreEmp compared with (60%) in PostEmp. The importance of other factors of good housing, education, decent jobs and good local facilities were recognized by (27%) of the participants in PreEmp compared with (40%) participants in PostEmp. This finding indicated that participating in the health care program improved the critical health literacy skills of recognizing the influence of these factors on their health.

4. DISCUSSION

It is imperative to be attentive to the full definition of health literacy as the ability of patients to obtain understanding and process health information in order to reach appropriate health decisions. Educational programs should be based on the needs of the patients and within acceptable contexts of linguistics and culture. Cultural differences such as language, religion, misconceptions, traditional remedies, and health beliefs impinge on patient's adherence to health information.

The program in this pilot study included several activities to improve the three aspects (functional, communicative, and critical) of health literacy. It was presented in a shame-free environment by using clear, simple words and avoiding medical terminology. Health materials in the program, either verbal or visual, were presented in Arabic. The findings of this study indicated that the total score of health literacy was improved following the educational program. The improvement in the functional subscale was not similar to the improvements in the other subscales. Lower corrected item-total correlation of PreFQ (.389) is a potential explanation. But, Cronbach's Alpha of deleted item deleted is .796 compared with initial Cronbach alpha .801 so there is an added benefit by adding it to the scale. This finding did not impact the goal of the pilot study which was to test the effectiveness of the educational program on health literacy of Iraqi immigrants that was significantly improved after the program. Furthermore, there was an improvement in communicative health literacy scale (mean differences between pre- and posttest is -.767). There was an improvement in critical health literacy after being introduced to the program (mean differences between pre- and posttest is -2.467).

The pilot study had some limitations, such as sample size, which was relatively small ($n = 30$). The sample cannot be representative for all populations. It is recommended that this study be duplicated with a larger sample. Further research

is strongly recommended on the effect of communicative and critical health literacy and its correlation between the aspects of health literacy. More research is recommended using a large sample of different populations, especially among immigrants to the U. S. This study did not test the effectiveness of similar programs among non-Arab immigrants in the U.S. Semantic translation was used to translate the tool to Arabic language which is considered as a limitation. So, back-to-back translation is highly recommended.

5. CONCLUSION

Health literacy is defined as the ability to obtain, understand, and process health information to reach appropriate health decisions. Functional health literacy is the ability to read and understand basic health information to complete official documents such as consent forms. The functional skills could be improved by providing health information in the patient's native language. Although functional skills are important to enable patients to read documents in their language, it is not enough. Individuals need to have the communication skills (communicative health literacy) to express their need and concerns. They need to be motivated to ask questions and to make sure that the health information is clear.

Individuals should be their own advocate and should process the available health information (critical health literacy). There are some friendly resources that can provide different health information in several languages such as MedlinePlus. Health literacy is a process that needs to be followed to reach the final goal of improving health literacy. Health care teams should be aware of this process when they design health care programs to improve health literacy. The health literacy program in this pilot was structured to include the three aspects (functional, communicative, and critical) of health literacy. The effect of the program was apparent in the findings and there was an improvement in health literacy total score after the program. The findings of this pilot study were not representative due to small size but it was the first study that addressed the three aspects of health literacy among Iraqi immigrants in the U.S. More research is recommended on the effect of each aspect of health literacy separately. This could be accomplished by conducting three experimental studies to examine the effect of each aspect. Further research is recommended on the effect of the three aspects of health literacy with a larger sample and among different populations. Individuals with limited health literacy are considered at risk for serious health problems and improper use of health facilities. This can cost money and time, be staff consuming, and most importantly, be a health hazard. Providing similar programs to improve health literacy of patients is important to minimize these risk factors. Immigrants and minorities are

at a greater risk not only because of language obstacles but also due to experiences with different health systems. Immigrants to the U.S. with low health literacy cannot navigate the health care system properly which can lead to improper use of health resources. Education programs to improve health literacy can improve the health care of Americans and immigrants.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare no conflicts of interest.

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