Med Clin (Barc). 2016;147(4):171–175

MEDICINA CLINICA

www.elsevier.es/medicinaclinica

Special article

Health literacy: Implications for the health system☆

Alfabetización en salud: implicación en el sistema sanitario

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ARTICLE INFO

Article history:
Received 6 January 2016
Accepted 18 February 2016
Available online 18 October 2016

Introduction

Health has always been a favourite subject for people. This phenomenon may be due to the importance given by the individual to enjoying good health and its relationship with being able to exercise his/her capabilities to the full. Over time, people in the Western world have adapted to the society in which it is immersed, gaining increased control in the various areas of their daily lives. People today are able to participate in different areas of society, such as politics, education, culture and also in regard to their health. However, in order to participate in the decision-making process related to health issues, either individually, as regards their own self-care, or collectively, intervening in the development of health policies nationwide, people need training. The level of knowledge and skills regarding health issues is essential to the involvement of patients and the general population on these issues.

In recent years, both health professionals as well as researchers and educators have paid particular attention to the relationship between knowledge about health issues and people's capabilities and skills to look after themselves, and their health status. The results of several studies have shown an association between these skills and participation in activities and behaviours of health promotion and disease prevention, approach of the disease itself, hospital admissions and readmissions, as well as general morbidity and mortality.[1] However, although a link has been found between a low level of knowledge and a poor health status, the need to evaluate the work of healthcare professionals and the way they communicate with the patient, the physical environment of health centres which hinder easy patient movement within their facilities or the excessive demands and responsibilities that the system exerts on the patient[1] also merit our consideration.

This new area of research helps in terms of understanding health determinants and point out to the importance of some results, for professionals and patients as well as for healthcare managers and politicians. This article presents an overview of the subject, from its inception to the present time, with the aim of highlighting actions to improve population health outcomes.

Definition: what is meant by health literacy?

The term health literacy (HL) has been studied extensively in the Anglo-Saxon world and it refers to the set of knowledge, skills and experience related to health that make an individual (non-health professional) knowledgeable about his own health and how to care for himself/herself. This "training" enables the individual subject to work along other stakeholders (health professionals, scientific societies and administration), providing the views of the patient, the family or the citizen, on equal footing with the other participants.

HL began to be the focus of attention for researchers 2 decades ago, after the results of the first population literacy survey in a total of 22 industrialized countries were published.[2] The results indicated that most of the adult population of these countries had difficulty using printed materials of everyday life and their indications correctly.

From that moment, the definition of HL has been extensively studied and defined by different authors as a compendium of

☆ Please cite this article as: Navarro-Rubio MD, Rudd R, Rosenfeld L, Arrighi E. Alfabetización en salud: implicación en el sistema sanitario. Med Clin (Barc). 2016;147:171–175.

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health-related knowledge and skills to interpret, read and write documents, perform mathematical calculations, listen and express themselves effectively within the healthcare environment.[1] The way and the degree to which the patient masters all these skills will determine how the information is assimilated and the actions to be undertaken for a smooth daily operation.

Areas of literacy applied to healthcare

People with a good *reading* ability can review texts, instructions or quotations easily, which allows them to assimilate that information with virtually no effort. However, people with limited reading skills, even if they are able to read a text, have difficulty assimilating the meaning of that reading and, therefore, to act accordingly; for example, to prepare a syrup or follow instructions before performing a diagnostic test.

Writing is another of the essential component of HL. In the healthcare environment, the patient has to express his/her thoughts in writing, ideas or wills, respond to questionnaires or surveys, filling in forms with his/her data or sign documents, for example, informed consent to take part in a clinical trial, perform a diagnostic test or undergo surgery. In this sense, the patient must not only know how to write, but must be able to assimilate the meaning of the previous reading and use his/her own resources in terms of language, vocabulary, knowledge of the context and environment, so as to generate different types of documents.

Mathematical calculation refers not only to the ability to perform simple operations (sums, subtraction, multiplication or division), but also to decide, when given a set of instructions, which is the necessary operation is to be performed in each case. This group of skills includes being able to use different measurement scales, depending on what is being valued, or mathematical concepts such as range, probability or risk. Table 1 shows some examples in this regard.

Lastly, *listening and expressing themselves*, what is known as *verbal exchange*, these two components of the HL are closely related. Oral comprehension means understanding what other people say (given that, for the patient, the health professional's medical vocabulary or jargon is not easy to understand in most cases), follow the logical sequence of that which is explained, assimilate the information, make inferences and think about possible questions. For the patients, speaking represents finding the right words to express what they mean, translate feelings and what they think is happening to them into words, use an appropriate descriptive language, explain everything in the correct sequence and be able to communicate their thoughts and ask questions.

Taking these variables into account, the level of literacy of the adult population in industrialized countries is low, and between 7 and 47% of the population lack the skills already mentioned, preventing these people to fully participate in society.[3,4] The OECD report results must be added to these data, where the Spanish population also shows a poor command in reading comprehension or calculation.[4]

Table 1
Example of mathematical calculations to be performed by patients at different stages of their care process.

Mathematical calculation
Reduce your current weight by 10%
Increase your caloric intake by 5%
Calculate the units of insulin you need based on their blood glucose level determination
Assess the weight and height percentile of your child
Calculate the kilometres to be run or walked each day

Literacy and health

Numerous studies have evaluated the role of a limited HL in people. A low level of HL is usually associated with a poor understanding of concepts related to health, a worse management of the disease itself and self-care activities, less use of preventive services, difficulty understanding instructions, errors when taking medication, poor compliance or adherence to treatment or increased hospital readmissions, among other situations which, in turn, will result in worse outcomes at health level.[1,5,6]

There is a significant relationship between greater use of emergency services and hospitalization among people with a lower level of HL, both older and younger people and less use of preventive services such as regular *screenings* (mammograms) or immunizations. Adherence to treatment is also affected, so that people with a low level of HL have worse skills in monitoring drug treatment and show more difficulties in identifying prescription drugs. On the other hand, a low level of HL is associated with a worse interpretation of health indications in written form, such as drug prescriptions or educational materials. Low levels of HL are also associated with poorer health status and higher mortality among the elderly.[1,5,6]

In this sense, the first analysis of health issues literacy among the US adult population[7] served as basis for similar work in other countries like Canada,[8] Australia[9] and also in Europe.[10] A 2008 report by the *European Patients' Forum* after a conference held in Brussels on HL highlights the importance of this issue in all member states (http://www.eu-patient.eu).

Various programs and models of care have been gradually developed in Spain that emphasize the importance of patient HL in the decision-making process. Thus, from different initiatives carried out by the former Josep Laporte Library Foundation of the Autonomous University of Barcelona, led by Dr. Albert J. Jovell a decade ago (http://www.fbjoseplaporte.org/epec/docs/conclusions_epec_jan08.pdf) Expert Patient Program ICS (http://pub.bsalut.net/risai/vol1/iss1/3s), The Department of Health Promotion at the University of Girona (http://www.udg.edu/catedres/Promoci%C3%B3delaSalut/Publicacions), including HL guide for professionals (https://www.documentauniversitaria.cat/botiga.php?a=llibre&id=742), The Spanish Health Literacy Council of the Ministry of Health, Social Services and Equality, as well as different experiences of participation in European projects (dialnet.unirioja.es/descarga/articulo/4500264.pdf; http://ec.europa.eu/health/patient_safety/docs/empathie_frep_en.pdf) among other actions, Spanish health professionals and researchers are increasingly incorporating the meaning of HL in their activities. Specifically, a line of research in HL has been developed by the Albert J. Jovell Public Health and Patients Institute of the International University of Catalonia, that includes information and dissemination activities, training and research in HL both in terms of patient associations as well as in health administrations, professionals, institutions and the academy (http://www.uic.es/es/ajj).

In general, in all these experiences, the activities of health promotion and health education of the population are related to social factors and conditions experienced by the most vulnerable groups, with few economic resources, no education or with a low educational level and living in deprived areas. Additionally, these groups are more likely to have limited health knowledge.[11]

Measuring the degree of health literacy

There are various tools and indicators used to measure the level of HL in a population. In general, we are talking about tools that objectively assess the advantages and limitations of measuring a person's competencies and skills regarding their health care.

Skills at population level

Table 2 shows the tools used to measure skills in communicative exchange at individual level in order to explore possible links between these skills and health outcomes. One such tool is the *Rapid Estimate of Adult Literacy in Medicine* – REALM developed to estimate the level of adult literacy. This tool provides an approximation of the skills based on the ability of people to pronounce medical words arranged in order of reading difficulty.[12] Another tool is the *Test of Functional Health Literacy in Adults* – TOFHLA developed to assess the level of functional health literacy in adults through reading and arithmetic comprehension.[13] In practice, abridged versions of this tool are used and a unique exercise that evaluates reading comprehension skills is performed. These approximations of the reading skills are considered relatively limited in their ability to measure HL, but are useful to distinguish the situation of patients in terms of reading and arithmetic comprehension.

An easy to use tool, *The Newest Vital Sign*, assesses how people use printed materials for everyday tasks related to health, for example, understanding food labels.[14] However, this tool is based entirely on a model applicable to the USA and perhaps not entirely suited to European countries. For this reason, other assessment tools have been designed, more appropriate for use in clinical encounters in other geographical areas.[15] More recently, a specific tool has been developed for assessing HL skills in primary care patients.[16]

Assessment of materials on health

From the 60 s, health professionals and educators in the USA have focused their attention on the characteristics of the written materials on health. The assessment of the materials includes printed information, Internet publications, oral exchange of information and physical and social environment characteristics. Currently, more than a thousand of these studies have been published indicating a mismatch between the materials designed for patients and general public and the reading skills of the adult population.[11]

Most studies in this area have focused on the written word and in calculating readability levels according to formulas based on English text such as the *Simplified Measure of Gobbledygook* – SMOG[17] or the *Fry Readability Graph* – FRY.[18] Tools have also been used to examine other features of the text, such as structure, graphs and tables, using the PMOSE/IKIRSCH tool (Mosenthal and Kirsch)[19] and a wide variety of contextual elements, both organizational as well as design, through the tool *Sustainability Assessment of Materials* – SAM, or to assess the suitability of materials[20] (Table 2).

Overall, the results are consistent, indicating that health materials require sophisticated reading skills. Studies indicate that many materials currently available are not appropriate for the public to whom they are intended.

In addition to assessing the characteristics of the printed word, other studies have focused on the analysis of materials in *web* pages as well as pictograms, videos, *software* and interactive multimedia comic books.[11] Also, in this case, the results indicate a mismatch between the essential characteristics of the materials and the comprehension skills of the audience they target.

Professionals and health system

The research developed in this field has encouraged professionals to be more attentive, day after day, to the obstacles involved in the use of certain words, phrases, jargon, numerical concepts, etc. and, therefore, part of the research carried out nowadays focuses on the skills of health professionals to communicate. Several medical schools belonging to universities in the USA and Canada have included the candidate's communication skills as part of the interview process, showing special attention in the case of communication with low literacy patients.[21]

The emerging approach regarding the characteristics of the environment in which patient care takes place and healthcare organizations, in general, is related to the emerging interest in the professionals' communication skills. The health sector is complex; therefore, sophisticated literacy skills are needed to improve patient care, as well as to "navigate" through the healthcare system. New advances in HL research have drawn attention to the complexity that health institutions may present. Thus, different studies have provided mechanisms to assess the environment of health education in hospitals and health centres, assessing the characteristics of health centres and adequate signage, use of colour, luminosity, words used on signs or informative documentation, etc.[22] They have thus developed specific assessment tools[23] or tools to improve existing deficiencies in health centres.[24,25] This approach also serves to reduce disease burden and prevents the load of the same falling entirely on the patient.

How to act: action implications

In the beginning, studies on HL and its impact on health focused on two areas: firstly, on competencies (knowledge, skills and attitude related to health), and secondly, the characteristics of materials designed for patients. With the passage of time and the development of new tools for measuring the relationship between the characteristics of these materials and the reading skills of patients was calculated. In turn, the skills of patients were related with different health outcomes, including knowledge, behaviour and mortality. The objective of these two areas of research focused almost exclusively on how to increase the level of HL in people in order to improve their health. However, the role that communication skills of professionals could have or the characteristics and "navigability" of health centres were not studied in-depth.[26]

Many of the approaches used to address HL focus on Internet use. However, as health systems incorporate Internet-based technology, it is possible that some patients at risk would not receive the information, as Internet may be less accessible to those with fewer resources.

Table 2
Health literacy (HL) measurement tools.

Characteristics	Tool	Function	Reference
Related to the person	Rapid Estimate of Adult Literacy in Medicine	Medical words pronunciation	Davis et al.[12], 1993
	Test of Functional Health Literacy in Adults	Approach to reading and arithmetic comprehension	Parker et al.[13], 1995
	The Newest Vital Sign	Comprehension when using a food label	Weiss et al.[14], 2005
Related to materials	Simplified Measure of Gobbledygook	Calculating the level of document readability	McLaughlin[17], 1969
	Fry Readability Graph	Calculating the level of document readability	Fry[18], 1977
	Sustainability Assessment of Materials	Assessment of suitability of materials, context, organization and design	Doak et al.[20], 1996
	PMOSE-IKIRSCH	Text structure assessment	Mosenthal and Kirsch[19], 1998
	All Aspects of Health Literacy Scale	Measurement of *health literacy* or HL level in primary care	Chinn and McCarthy[16], 2013

Table 3
Actions specific to the clinical encounter between health professionals and patients.

Actions to be taken by the health professional:
Provide materials to facilitate the understanding of information (brochures, videos, diagrams, drawings, photographs, etc.)
Ask questions that begin with "how" and "what"
Avoid closed questions whose answer is 'yes' or 'no'
Organize and repeat key information to remember
Highlight the most important points of the information provided
Take into account patient characteristics (age, language, cultural, ethnic and racial, socioeconomic status, etc.)
Offer help to complete forms
Encourage patient to express him/her self and ask questions
Offering a phone or contact address in case of doubts

Adapted from Weiss[29] (2007).

Table 4
Multilevel interventions to improve communication between health professional and patient.

Level	Interventions
Clinical encounter	Patient-centred communication Clear communication techniques Teaching methods for achieving a goal
Health system	Clear health education materials Visual aids Clear labelling of drugs Self-help programs Friendly healthcare environments
Community	Adult Education Health educators who are not healthcare professionals Communication media

Adapted from Sudore and Schillinger[28] (2007).

In this situation, other researchers have recommended specific HL actions to improve the oral exchange that occurs in the clinical encounter; thus, for example, health professionals recommend the use of the *teach back* method (this method has been used to evaluate the clarity of the information and to check whether the patient actively follows the information exchange. This method encourages the professional to go beyond the typical question "did you understand me?" and, instead, takes responsibility for communication by asking "do you think that is clear enough?" "have I explained it well? "or" have I answered all your questions?"), reduce medical jargon and use plain language in communicating with patients. It is also recommended that materials designed for patient use related to care, monitoring or medication adherence use simple language with clear graphics or symbols.[27] Table 3 shows some of the recommendations made by the *American Medical Association* and *The Health Services Research and Administration* of the USA on aspects to consider regarding patient-physician encounter, in order to improve communication and information exchange. Although these are logical recommendations, they have not yet been studied in depth. It is recommended that health care providers use general rules that reduce pressure on patients, making them feel comfortable, encouraging them to ask questions.

Another aspect to assess in this regard are multilevel interventions. Such actions are needed to improve the communication of health professionals with patients.[28] Table 4 shows examples of intervention at different levels: clinical, health system and community level. To achieve these and other objectives, various researchers have highlighted the need to consider education and training of professionals during degree studies.[21]

Conclusions

Competencies, knowledge and skills in population health are related to health outcomes and self-care. People with lower levels of HL have worse health indicators. Thus, the level of HL can be understood as a clinical risk if it lacks a sufficient and appropriate level of knowledge and skills, or as a potential factor that will allow the individual full participation in decision-making.

The diversity of tools developed for the study and evaluation of HL and materials for patients denotes the present lack of consensus regarding the definition and measurement of the population's HL level. Although new tools are still being developed, there is a concern about the extent of HL in the clinical setting. While there is consensus about the fact that such measures are necessary for use in research, there appears to be sufficient justification for use in everyday clinical practice.

It is essential to consider the training of health professionals interacting with patients. Further studies are required to test the efficacy of innovations in health communication and explore how the unique characteristics of health centres and their professionals could inhibit or enhance communication objectives.

In this context it is necessary to study how organizations and health institutions, hospitals and health centres are tailored to the needs of the patient and create a less complex and more easily navigable environment. These organizations can become centres that integrate HL among its priorities as part of their action both on behalf of and with the patient. To achieve this, both patients and professionals have to change their attitude and expectations regarding the traditional model of relationship so as to establish a more deliberative exchange, adapted to today's world, between patient and health professional.

Conflict of interests

The authors declare no conflict of interest.

Acknowledgements

We would like to thank Monserrat Virumbrales and Pau Galvez for their comments on earlier versions of the manuscript.

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