Rev Calid Asist. 2013;28(3):188–192

Revista de Calidad Asistencial

www.elsevier.es/calasis

SPECIAL ARTICLE

On health literacy and health outcomes: Background, impact, and future directions

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Received 18 March 2013; accepted 20 March 2013
Available online 15 May 2013

KEYWORDS
Health literacy;
Health outcomes;
Accessibility of information;
Communication skills

Abstract This article presents an overview of an emerging area of research called health literacy. It draws attention to the undisputed relationship between literacy levels of the population, the complexity of health systems and health outcomes. Authors believe that instead of focusing on improving individual skills, health institutions and health care settings should concentrate their efforts on making their physical and social environment more accessible and easy to navigate for their users. A more balanced approach to health literacy action includes improving the quality and accessibility of information, professionals' communication skills, and eliminating structural barriers to healthful action.

PALABRAS CLAVE
Alfabetismo en salud;
Resultados en salud;
Accesibilidad de la información;
Habilidades de comunicación

Sobre alfabetismo y resultados en salud: antecedentes, impacto y tendencias

Resumen El artículo muestra una visión general de un área emergente en investigación sanitaria denominada alfabetismo o competencias en salud. Dicha área se centra en la relación indiscutible que existe entre los niveles de alfabetización de la población, la complejidad de los sistemas sanitarios y los resultados en salud. Según los autores es necesario que instituciones y centros sanitarios centren sus esfuerzos en crear un entorno físico y social de sus instalaciones que resulte más accesible y fácil de utilizar para sus usuarios, en lugar de centrarse únicamente en la mejora de las capacidades del paciente individual, como se viene haciendo tradicionalmente. Un enfoque más equilibrado y global sobre el alfabetismo en salud de la población incluye la mejora de la calidad y accesibilidad de la información, las habilidades de comunicación de los profesionales y la eliminación de las barreras estructurales que, en conjunto, se traduzcan en una acción saludable.

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1134-282X/$ – see front matter
http://dx.doi.org/10.1016/j.cali.2013.03.003

Health literacy: an emerging area of research

The social gradation in health and the links between social economic status and health status have been known to us for a long time. Decades of studies indicate that income and education are, together and independently, predictors of health outcomes.[1] Until recently, however, little inquiry has focused on the pathways between education and health outcomes. Literacy is emerging as an important pathway, offering insight into how education influences health and provides opportunities for efficacious change.

Health literacy, a relatively new area of research was spurred by the reports of the first international surveys of adult literacy in the 1990s[2] and the subsequent Adult Literacy and Lifeskills Surveys (ALLS) in the early part of this century.[3] These surveys, conducted in industrialized nations and focused on the use of commonly available print materials, indicated that a majority of adults in most nations have difficulty using these materials to accomplish everyday tasks with accuracy and consistency. Tasks included following directions on an over the counter medicine, figuring out a discount for a marketplace sale, or determining which bus to take to arrive at a specific location at a specific time. Shocked by these findings, health researchers began to explore possible health implications. In just over a decade researchers have established a strong link between literacy skills and health outcomes. A substantial body of research indicates that limited literacy (measured, at first, by reading skills) is associated with limited participation in health promotion and disease detection activities, with diminished management of long term chronic diseases, with increased hospitalization and re-hospitalization, and with increased morbidity and mortality.[4–8]

Definition of health literacy

Nutbeam notes that there are two coexisting and valid conceptualizations of the term health literacy: the clinical perspective that views health literacy as a risk factor and the public health view of health literacy as a personal asset.[9,10] In both instances, however, health literacy is viewed as an attribute or characteristic of individuals. In our research we embraced the Institute of Medicine's concept of health literacy, as discussed in 2004, as an interaction between skills of individuals and demands of our complex health systems.[6]

However, health literacy goes beyond the individual. It also depends upon the skills, preferences, and expectations of health information providers: our doctors, nurses, administrators, home health workers, the media and many others. Health literacy arises from a convergence of education, health services, and social and cultural factors, and brings together research and practice from diverse fields.[6] This focus on the interaction is relevant for researchers, clinicians, administrators, and policy makers as they seek to understand how to develop and test efficacious programs to eliminate barriers to health information, services, and care.

Health literacy and health outcomes

Limited health literacy is being recognized as a serious issue for industrialized nations with both health and financial consequences. Study findings have garnered a good deal of attention among health professional organizations, health agencies and institutions, and policy makers. As a result, faulty assumptions about the adequacy of adults literacy skills are being corrected and efforts are underway to determine efficacious action through education, program implementation, practice modification, and policy change. This increased interest in health literacy can be seen in the development and dissemination of focused reports and white papers,[11] in efforts to determine nationwide measures of adults' health literacy skills for policy considerations[12–16] and in policy and legislative change.[17,18]

The most obvious correction – improved literacy skills of adults is possible, but surely requires a substantial investment in education as well as in time. However, in the light of documented negative health outcomes, health practitioners are not content to wait for another generation of a more literate citizenry to emerge from school systems before health is improved. Action must be taken now, for this generation, and by the health sector.

In addition, patients also acknowledge the need to improve their literacy skills, working along with health professionals. In this context, different experiences from patients organizations across countries have shown an important change from the traditional model of patients to a more active one including participation in the health decision making process.[19] In patients' view, improved health knowledge and skills lead to empowerment and, therefore, a better quality of life. In order to share decision-making, there is a need for dialogue between and among patients, family members, and health providers.[20]

Improving health literacy

Unfortunately, early studies of the links between literacy and health outcomes were almost exclusively focused on the literacy skills of patients and related health outcomes and so did not did offer insight into action steps beyond improving literacy skills. The initial efforts to explore links between literacy and health outcomes neglected to explore factors controlled by the health sector – the quality and accessibility of information, professionals' communication skills, and structural barriers to healthful action. These factors constitute what educators call the 'demand side'. Educators, for example, measure text difficulty before determining reading skills and assess the clarity of a speaker and the complexity of the speech before determining a listener's skills. More recent health literacy studies factor in the difficulty of health materials in use, the clarity of the spoken communication skills of health professionals, and/or the complexity of the physical and social environment of health institutions and health care settings.[21] This more balanced approach in health literacy includes measure of skills, measures of demands, as well as measures of health outcomes (Fig. 1).

A rigorous examination of skills as well as demands resonates with a public health perspective and is modeled on epidemiology, the foundation science of public health. Epidemiology calls attention to the reciprocal relationship between persons and environments. Environmental factors for health literacy include the plethora of information available in print, on line, over the airwaves, and in

Results of a feasibility study to assess the health literacy environment: navigation, written, and oral communication in 10 hospitals in Catalonia, Spain[31]

Words in signs, postings, and forms within health care settings establish a physical literacy environment and reflect the demands and expectations of the institutions. We assessed the literacy environment of 10 hospitals in Catalonia, Spain and identified factors that hinder or support the ability of people to make their way to and within, a hospital. Participating hospitals were members of the Catalan Network of Health Promoting Hospitals (HPH Cat).

The assessment drew from the United States toolkit The Health Literacy Environment of Hospitals and Health Centers. Partners for Actions: Making Your Healthcare Facility Literacy-Friendly.14 This toolkit includes a series of preliminary activities and self-assessment questionnaires to evaluate five different aspects of the health literacy environment (navigation, written communication, oral communication, technology, and policies). For our study standardized rating tools were used for the evaluation of navigation, specific readability tools for the assessment of written communication (Flesch–Szigriszt readability formula), and a patient survey for the evaluation of patients' perception of written and oral communication.

The findings of the navigation exercise, of the written materials, and of the oral exchange all demonstrated that current communication needs improvement. The tools applied here helped to identify a substantial number of health literacy barriers, such as incomplete sign-posting, small or ineligible fonts, scientific terms and mismatch in terminology, lack of maps or visual elements, written communication requiring higher education degree, or lack of clarity in explanation provided by health professionals. These barriers can be acted upon to improve the health literacy environment. Given that the assessment itself required little resources and little to no interference with patient care, the tools used in this study offer a feasible way for professionals and administrators to begin the process of identifying and improving the health literacy environment of their facilities.

Figure 1 Assessment of the health literacy environment in Catalonia.

discussion as well as the physical and social environments of health and health care institutions.

Given its importance for service utilization and health outcomes, it is crucial that health professionals are aware of the impact of health literacy as well as health literacy demands on health outcomes. Several recent studies on providers' awareness and perception of health literacy show that there is a general trend of physicians overestimating patient literacy and underutilizing enhanced communication techniques which are known to improve health outcomes.[22–24]

Research indicates that the market place of ideas and information does not allow easy access. Despite the wealth of materials available in print and on-line, health information is often not accessible to the majority of people. For example, over 2000 peer-reviewed studies in the U.S. indicate that health materials across a wide swath of content areas and formats (such as patient brochures, discharge instructions, directions for medicine, instructions for procedures, and even general forms, lists, and charts) have been poorly designed or awkwardly formatted, poorly written, and geared to a very sophisticated audience – limiting their usefulness. This strong body of evidence establishes a clear mismatch between the literacy demands of health materials and the literacy skills of adults with secondary school education.[7]

Recommendations related to print and on-line materials include calls for more rigor in the development and design of health information with attention to vocabulary, organization, and clarity.[25,26] The same scientific rigor applied to the testing of medicines and procedures are called for and suggestions include institutional review boards with well articulated minimum requirements for rigorous pilot testing with members of intended audiences, evidence of revisions related to ease of use and clarity, and reports of assessment processes and findings. A starting point for many institutions is the design and development of critical texts that can have serious life and death consequences as well as legal and financial outcomes. Such texts include directions on medicine labels, discharge instructions, as well as documents related to informed consent.

Furthermore, emerging studies indicate that this mismatch exists for the oral exchange as well – health efforts to alert and educate the public over the airwaves as well as discussions between patients and a wide variety of clinicians. Thus, research findings indicate that the problem identified in health literacy studies is not entirely located in the literacy deficits of patients or members of the public. Recommendations for 'talk', so essential for information exchange, problem identification, and action are drawn from studies of professional/patient communication. Plain language associations are encouraging health professionals to re-learn their first language, sometimes referred to as 'kitchen-talk' or 'living room language' for use with the public and patients.[26]

Professional organizations are considering plain language as a critical skill, along with other articulated communication competencies, for schooling and possibly for licensing examinations. In addition, current best practice guidelines in health literacy call for the use of critical communication checks such as teach-back where the professional avoids the question: ''do you understand'' and instead checks by asking for help: ''I want to be sure that I included all the important information about your medicine; tell me what you will do''.[27,28]

Math is also on the agenda and represents another literacy related area often taken for granted. Computational tasks are imbedded in many health activities and numerical concepts are important components of exchanges between health professionals and patients. These exchanges often include basic arithmetic (adding, subtracting, multiplication, and division) as well as use of percentage and higher level tasks such as estimation, problem-solving, and risk assessment.[29] The adult literacy surveys of the 1990s and the 2000s indicate that a large proportion of adults in most industrialized nations have difficulty with higher level mathematical tasks.[3]

Overall, health literacy recommendations to improve access to information call for all health professionals to improve the clarity and quality of their written and spoken health information. Although emerging studies of changes in text and in talk offer evidence of improved outcomes, additional efforts focused on the communication of complex information including risk, are called for. Rigorous evaluative studies are needed to establish gold standards. At the same time, consideration must be given to professional education and licensing and to opportunities for on-the-job workforce education and training.

The health literacy environment

But the burden of change cannot rest on the shoulders of health workers and professionals alone. Their practices and their time allocations are shaped by institutional norms, by established protocols, and by the physical environment within which they work. Institutional norms put a heavy burden on the shoulders of those working within as well as on those patients and family members entering for visits and stays. Health and health care institutions are complex structures and intense work places with multiple entrances, busy hallways, layered signs and postings, and with the sounds of the foreign languages of medicine, nursing, public health, and the varied allied health professionals.[30]

Initial studies conducted in health facilities to understand the barriers faced by patients have identified multiple issues that are similar across countries and locations. They include problematic web sites and phone interactions, incomplete navigation aides and poorly placed signs; unmarked entrances, passageways, and destination points; complex maps that do not match signs or place colors; as well as jargon-filled forms for health and family background information, for legal documents such as informed consent, and for critical directions such as those for test preparations or for discharge and home care. Recommendations point to the need for orientation booklets, staff training, way finding measures, and improved documents that have been rigorously developed and tested.[31]

Best practices call for shame free environments where patients and visitors feel comfortable asking for help, where people feel welcomed, where help is offered to all, where clear signs and postings ease the burden on patients and visitors, where materials are provided and are well-designed for use, and where talk is friendly and jargon free. Here attention must be paid to aspects of institutional culture including restrictions on professional time, procedural guidelines, and opportunities for skill building. Initial studies point to the need for awareness building, orientation for all staff, and plain language training. Change in institutional environments often requires policy regulations.

The Joint Commission of Accreditation of Healthcare Organizations (2007) calls upon institutions to take action and responsibility for patient safety through attention to health literacy. The Health Literacy Roundtable of the Institute of Medicine has begun a process to promote more accessible institutions with enhanced workforce communication skills and environmental improvements.[32] Tools are readily available to help both clinical staff and administrators experience health care settings from the perspective of patients and visitors, to examine and assess the social and physical environments of health and health care settings, and to identify and remove barriers.[30,33,34]

This strategy to identify and remove literacy related barriers to services and care draws from Kurt Lewin's Force Field Theory.[35] Lewin calls for an identification of facilitating factors and barriers but urges attention to the removal of barriers as a first step. One cannot, for example, urge people to access information that is inaccessible or to ask questions in an environment that discourages interruptions. Attention to the physical and social environment of institutions and buildings, reducing the demands and expectations of health and health care systems, and improving communication skills of health professionals can reduce unnecessary literacy related barriers and burdens.

Implications for action

Since the late 1990s, researchers in health literacy have successfully documented the links between literacy skills of individuals and health outcomes. Furthermore, they have provided evidence that a good deal of critical health information is inaccessible and that health and health care environments are complex and difficult to navigate. More studies are needed to document the positive as well as negative contribution of new communication approaches and enhanced environments. Such actions would set the foundation for comparative analyses of change strategies and the development of gold standards.

While we must call on the education sector to improve the literacy skills of our populations, we in the health fields must take action to remove literacy-related barriers to information, to services, and to care. As we seek to improve health literacy, research attention and institutional resources must be provided for the removal of the barriers that constrain efficacious action and that enhance rather than inhibit patient partnerships and citizen activation for healthful change. Documented negative health outcomes as a result of the mismatch between skills and demands make a call to action imperative.

Conflicts of interest

The authors have no conflicts of interest to declare.

References

1. Pamuk ER, Makuc DM, Heck KE, Reuben C, Lochner K. Socioeconomic status & health chartbook. Health, 1998. Hyattsville, MD: National Center for Health Statistics; 1998.
2. Jones S, Kirsch I, Murray S. Literacy, economy, and society: results of the first international adult literacy survey. Washington, DC: OECD Publications and Information Centre; 1995.
3. Murray TS, Owen G, McGaw B, editors. Learning a living: first results of the adult literacy and life skills survey. Ottawa: Statistics Canada & OECD; 2005.
4. Rudd RE, Moeykens BA, Colton TC. Health and literacy: a review of medical and public health literature. In: Comings JP, Garner B, Smith C, editors. The annual review of adult learning and literacy. San Francisco: Jossey-Bass Publishers; 2000. p. 158–99.
5. Berkman ND, DeWalt DA, Pignone MP, Sheridan SL, Lohr KN, Lux L, et al. Literacy and health outcomes. Evid Rep Technol Assess. 2004;87:1–8.
6. Nielsen-Bohlman L, Panzer AM, Kindig DA, editors. Health literacy: a prescription to end confusion. Committee on Health Literacy, Board on Neuroscience and Behavioral Health, Institute of Medicine. Washington, DC: The National Academy Press; 2004.
7. Rudd RE, Anderson JE, Oppenheimer S, Nath C. Health literacy: an update of public health and medical literature. In: Comings JP, Garner B, Smith C, editors. The annual review of adult learning and literacy. Mahway, NJ: Lawrence Erlbaum Associates; 2007. p. 175–204.
8. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low health literacy and health outcomes: an updated systematic review. Ann Intern Med. 2011;155:97–107.
9. Nutbeam D. The evolving concept of health literacy. Soc Sci Med. 2008;67:2072–8.
10. Sorensen K, Broucke SV, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: a systematic review and integration of definitions and models. BMC Public Health. 2012;12:80.
11. Joint Commission International. What did the doctor say? Improving health literacy to protect patient safety. Oackbridge Terrace, IL: JACO; 2007. Available online at: http://www.jointcommission.org [accessed 14.12.12].
12. Rudd RE, Kirsch I, Yamamoto K. Literacy and health in America. Princeton, NJ: Educational Testing Service; 2004.
13. Kutner M, Greenburg E, Jin Y, Paulsen C. National Center for Educational Statistics, W.D.C., & American Institutes for Research, K.M.D. The health literacy of America's adults: results from the 2003 national assessment of adult literacy. NCES 2006-483: National Center for Education Statistics; 2006.
14. Murray TS, Rudd RE, Kirsch I, Yamamoto K, Grenier S. Health literacy in Canada: initial results from the international adult literacy and skills survey. Ottawa: Canadian Council on Learning; 2007.
15. Australian Bureau of Statistics. A directory of education and training statistics. Adult literacy and life skills survey; 2009. Available online at: http://www.abs.gov.au/ [accessed 09.01.13].
16. Health Literacy Consortium, Maastricht University Press Release. Almost half of Europeans possess limited health literacy; 2011. Available online at: http://www.maastrichtuniversity.nl/web/Main/Sitewide/PressRelease/AlmostHalfOfEuropeansPossessLimitedHealthLiteracy.htm [accessed 10.01.13].
17. Office of Disease Prevention and Health Promotion. National action plan to improve health literacy. Washington, DC: Department of Health and Human Services; 2010. Available online at: http://www.health.gov/communication/HLActionPlan [accessed 09.01.13].
18. Congress of the United States. Plain Writing Act of 2010 (the Act). Public Law 111-274. Washington, DC: Congress of the United States; 2010. Available online at: http://www.gpo.gov/fdsys/pkg/PLAW-111pub1274/pdf [accessed 09.01.13].
19. Navarro Rubio MD, Gabriele Muñiz G, Jovell Fernández A. Los derechos del paciente en perspectiva. Aten Primaria. 2008;40:367–9.
20. European Patients' Forum (EPF) Spring Conference. Health literacy, Brussels, April 8–9, 2008. Available online at: http://www.eu-patient.eu [accessed 10.01.13].
21. Joram E, Roberts-Dobie S, Mattison SJ, Devlin M, Herbrandson K, Hansen K, et al. The numeracy demands of health education information: an examination of numerical concepts in written diabetes materials. Health Commun. 2012;27:344–55.
22. Jukkala A, Deupree JP, Graham S. Knowledge of limited health literacy at an academic health center. J Contin Educ Nurs. 2009;40:298–302.
23. Macabasco-O'Connell A, Fry-Bowers EK. Knowledge and perceptions of health literacy among nursing professionals. J Health Commun. 2011;16 Suppl. 3:295–307.
24. Kelly PA, Haidet P. Physician overestimation of patient literacy: a potential source of health care disparities. Patient Educ Couns. 2007;66:119–22.
25. Rudd RE, Comings JP, Hyde J. Leave no one behind: improving health and risk communication through attention to literacy. J Health Commun. 2003;8 Suppl. 1:104–15.
26. Stableford S, Mettger W. Plain language: a strategic response to the health literacy challenge. J Public Health Policy. 2007;28:71–93.
27. Schillinger D, Piette J, Grumbach K, Wang F, Wilson C, Daher C, et al. Closing the loop: physician communication with diabetic patients who have low health literacy. Arch Intern Med. 2003;163:83–90.
28. Harper W, Cook S, Makoul G. Teaching medical students about health literacy: 2 Chicago initiatives. Am J Health Behav. 2007;31 Suppl. 1:S111–4.
29. Apter AJ, Paasche-Orlow MK, Remillard JT, Bennett IM, Ben-Joseph EP, Batista RM, et al. Numeracy and communication with patients: they are counting on us. J Gen Int Med. 2008;23:2117.
30. Rudd RE, Rezulli D, Pereira A, Daltroy L. The patient health experience. In: Schwartzberg JG, VanGeest JB, Want CC, et al., editors. Understanding health literacy: implications for medicine and public health. Chicago, IL: AMA Press; 2004.
31. Groene RO, Rudd RE. Results of a feasibility study to assess the health literacy environment: navigation, written, and oral communication in ten hospitals in Catalonia, Spain. JCIH. 2011;4:227–37.
32. Brach C, Keller D, Hernandez LM, Parker R, Dreyer B, Schyve P, et al. Ten attributes of a health literate health care organization. Discussion paper. Institute of Medicine Roundtable on Health Literacy. Washington DC: National Academies of Science; 2012.
33. Rudd RE, Anderson JE. The Health Literacy Environment of Hospitals and Health Centers. Partners for action: making your healthcare facility literacy-friendly. Cambridge, MA: National Center for the Study of Adult Learning and Literacy; 2007.
34. DeWalt DA, Callahan LF, Hawk VH, Broucksou KA, Hink A, Rudd R, et al. Health literacy universal precautions toolkit. Rockville, MD: Agency for Healthcare Research and Quality, US Department of Health and Human Services; 2010. Available online at: http://www.ahrq.gov/qual/literacy/healthliteracytoolkit.pdf [accessed 15.12.12].
35. Lewin K. Resolving social conflicts and field theory in social science. Washington, DC: American Psychological Association; 1948.