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Adapting Health Communication to Individuals' Health Literacy

Traditionally, research on health literacy concentrates on the knowledge and skills individuals should possess to enable health-conscious behavior. However, health literacy is a function of both the knowledge and skills of those requiring health information and services *and* the demands and complexity of information and services provided to them. This article investigates the dual nature of health literacy which needs to be considered by health communication. It focuses on the attempts that have been made to reduce the growing demands and complexity of information and services individuals encounter today. Such attempts can be found, for example, in promoting plain language for written health information and the emphasis on improving communication skills of healthcare providers. Both attempts are a promising way to adapt health communication to individuals' health literacy and thereby foster health-conscious behavior. At the same time, they are challenged by a range of individual as well as structural limitations involved in the production of written health information and of doctor-patient communication, which need to be overcome.

Keywords: adapting, health communication, health literacy.

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1. Introduction

“Adapting” health communication entails the fitting of content as well as the communication style of health issues to a specific use or situation (The American Heritage® Dictionary of the English Language 2003). More common terms to describe this technique are “tailoring” and “targeting.” While tailoring implies the adaptation of health communication to the requirements of a single person, targeting means an adaptation to the requirements of a specified population with shared characteristics (Kreuter & Skinner 2000). Both tailoring and targeting have proven to be successful techniques in promoting health behavior change (Noar et al. 2007; Forthofer & Bryant 2000). They are manifested in the adaptation of communication about health issues to different stages of behavior change (Rollnick et al. 1993), to cultural specificities (Kreuter et al. 2003), or to individuals’ health literacy, to name just a few.

Adapting health communication to individuals’ health literacy is the focus of this conceptual paper. I discuss the necessity of adapting health communication to individuals with low literacy. Furthermore, I present strategies on how to improve the comprehension of health information and the usability of healthcare services. Both have become increasingly complex nowadays as a result of the technological progress and a progressively consumer-oriented healthcare system. At the same time, I stress limitations associated with the adaptation of health communication, which must be overcome.

2. Health Literacy

Over the last years, much research has been devoted to defining health literacy and developing appropriate measures of the concept. Although the discussion of what constitutes health literacy is ongoing, researchers always agreed that it is a quality of the individual who receives health information and uses healthcare services. Ratzan & Parker (2000: ix), for example, define health literacy as the “[...] degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.” Their definition has been adopted by the U.S. Institute of Medicine (2004) and

the U.S. Department of Health and Human Services (2000). Another frequently cited definition of health literacy is Nutbeam's (2000) three-tiered concept in which he distinguishes between *functional* health literacy as basic reading and writing skills enabling a person to understand and use health information, *interactive* health literacy as more advanced cognitive and social skills enabling a person to interact with healthcare providers, and *critical* health literacy as more advanced skills enabling a person to critically analyze health information and thus to exert greater control over one's life. Some authors consider health knowledge to be a part of health literacy (Baker 2006). Schulz & Nakamoto (2005), for example, distinguish between *declarative* and *procedural* knowledge. Declarative knowledge, on one hand, comprises factual knowledge related to health issues such as knowledge about the symptoms of a disease and possible treatment options. Procedural knowledge, on the other hand, reflects the "know-how" of applying factual knowledge and using health information.

Because health literacy is regarded as a central determinant of health (Paasche-Orlow & Wolf 2007; Ishikawa & Yano 2008; Nutbeam 2008; Lee et al. 2004; Wagner et al. 2009), policy makers, researchers, and healthcare professionals repeatedly insist on improving individuals' health literacy through health education (e.g., U.S. Department of Health and Human Services 2010). According to the World Health Organization (1998: 4) health education represents "[...] consciously constructed opportunities for learning involving some form of communication to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health." As such, health literacy is not limited to patient education in the medical setting. It is also the education of laypeople about how to obtain and understand health information and engage in health promoting behavior in everyday life, as part of their curriculum (see, e.g., the School, Health and Education Programs of the American Public Health Association, www.apha.org) for example.

Although health education is necessary to increase individuals' health literacy, it is not the only method. Parker & Ratzan (2010: 28) point out that "health literacy occurs when the skills and ability of those requiring health information and services are aligned with the demand and

complexity of information and services.” Consequently, a health literate public can only be achieved through a combination of health education and a reduction of the growing demands and complexity of the healthcare system that are present today.

To illustrate the growing demands and complexity of health information and the healthcare system, two examples are given:

Since the rise of the Internet as a medium for the general public in the 1990s, a greater body of information about health issues has become available to everyone (Cline & Haynes 2001). The Internet has vast potential: It offers answers to nearly all health question at any time, it provides access to peer and emotional support, and it can help to promote self-care and healthy behaviors (Eng et al. 1998). But gatekeepers like healthcare providers, who filter correct from incorrect or necessary from unnecessary information, are often not involved in the production of online content. Thus, the Internet demands sufficient knowledge and skills in navigating and evaluating websites and their content in order to make use of its potential. Health literacy allows one to effectively use health information on the Internet and contributes to the diminishing of misuse. But due to the dual nature of health literacy, which is a function of both the knowledge and skills of those requiring health information and services *and* the demands and complexity of information and services provided to them, this can only be achieved through health education and user-friendly websites.

Another example of growing demands on laypeople can be seen in the shifting role of patients towards that of consumers who wish to engage in shared decision-making about health (Frosch & Kaplan 1999; Coulter 1999; Charles, Gafni & Whelan 1999) and who must consider the costs of healthcare services (Herzlinger 2004; Schulz 2008). The consumer-orientation in healthcare is noticeable, for example, in direct-to-consumer advertising, which is legal in the United States and in New Zealand. It is the advertising of prescription drugs to the general public via the mass media and Internet with the aim of mobilizing laypeople to consult healthcare providers and request the advertised drugs. The pros and cons of direct-to-consumer advertising have been heavily discussed (Donohue 2006), especially with regard to the limited critical literacy of laypeople who may not realize the promotional aspect of the ads (Wolfe 2002) and

misinterpret their content (Hoek 2008). Negative consequences are the denigration of the doctor-patient relationship and the augmentation of healthcare costs when doctors prescribe the advertised drugs instead of equivalent generics. Health education is one way to avoid these negative consequences. Additionally, guidelines and regulations like the Federal Food, Drug, and Cosmetic Act released by the U.S. Food and Drug Administration exist to protect consumers by making sure that information presented in direct-to-consumer advertising is balanced and correct.

3. Adapting Health Communication

Both the rise of the Internet as a source of health information as well as recent developments toward a consumer-driven healthcare system highlight the growing demands and complexity of health information and services laypeople, especially those with limited literacy, face today. Thus, several suggestions have been made to reduce – or better adapt – the demands and complexity of health information and services to individuals' health literacy (Paasche-Orlow et al. 2006). Two areas where adapting health communication has been considered a major issue are written health information and doctor-patient communication. While the first is an example of mediated communication, the latter represents direct communication. Both will be discussed in more detail.

3.1. Written Health Information

Written health information includes any type of text, chart, map, table, graph, or number which may be included in package inserts, patient rights and informed-consent documents, booklets, pamphlets, and instructional as well as patient education materials. A review of medical and public health literature by Rudd et al. (1999) revealed that much of the health information provided is not understood by most laypeople, because too often the literacy demands of the material exceed the literacy abilities of the reader. According to the findings of the Health Activities Literacy Scale (HALS) (Rudd, Kirsch, & Yamamoto 2004), the average overall functional literacy score of the U.S. population is just below the average proficiencies of adults who graduated from high school. At the same time,

health information is written at levels of complexity that go beyond the skills of average high school graduates (Rudd et al. 2007; Green 2007).

The mismatch between individuals' functional health literacy and the complexity of health information has called for an adaptation of the latter, which can be achieved by the use of plain language. Plain language is defined as communication laypeople can understand the first time they read it (<http://www.plainlanguage.gov>). More precisely, it is "the writing and setting out of essential information in a way that gives a co-operative, motivated person a good chance of understanding it at first reading, and in the same sense that the writer meant it to be understood" (Cutts 2009: xi). Plain language requires the provider of written information to first identify the audience and then adapt to their needs and abilities. The adaptation considers the organization of information, language, sentence length and structure, tone, and layout/design (Shohet & Renaud 2006). Plain language has received considerable attention in the past 20 years not only in the context of health but also in other contexts like law, business and journalism. Support for plain language, especially in the healthcare context, is evident in the United States, Canada, and Europe (Stableford & Mettger 2007). Many countries are members of the Plain Language Association International (<http://www.plainlanguage-network.org>), which offers guidelines on how to write in plain language. In addition, the biennial international PLAIN conference is a platform to exchange research or training experiences regarding plain language in different domains.

Adapting written health information to individuals' health literacy has also been discussed in conjunction with the risks and benefits of the Internet as an increasingly popular source of health information (Cline & Haynes 2001). According to the Pew Internet Project survey (Fox 2008), one in four Internet users in the United States searches online for health information. The Internet provides an opportunity to obtain more in-depth information, and it allows to adapt information to lower literacy levels by including pictures or video and audio materials. However, the search for health information via search engines can already be an obstacle for individuals with low literacy (Crane Cutilli 2010; Lynch 1997; Birru et al. 2004). Furthermore, the Internet requires sufficient critical literacy in order to evaluate the accuracy of online content and deal with con-

flicting information (Berland et al. 2001). To improve the accessibility, quality, and readability of online content, the American Medical Association published guidelines for medical and health information sites on the Internet (Winker et al. 2000). Together with plain language guidelines they offer a fruitful solution for reducing the demands of written health information from traditional as well as new sources.

Despite awareness of the need for improvement concerning the readability of written health information and the existence of plain language guidelines, Gal & Prigat (2005) point out that written patient information continues to be produced at a reading level above the level of functional literacy of patients. After conducting qualitative interviews with people involved in the production of patient information leaflets, they argue that too often the writing style of information leaflets is determined by the necessity to address more than one audience (e.g., patients and health professionals), the necessity to satisfy a range of goals (e.g., transmission of health information, marketing, and administrative goals), and insufficient knowledge about the literacy levels of patients as well as a lack of adequate pilot-testing. Thus, adapting written health information is an ongoing challenge that requires changes beyond raising awareness and establishing guidelines.

3.2. Doctor-Patient Communication

Another area where health communication tends to demand a higher literacy level than the one of most individuals is the encounter between doctor and patient. Patients are often challenged by the medical jargon used by their doctors (Ong et al. 1995; Willaims et al. 2002). At first sight, comprehension problems during the medical encounter seem less meaningful: Since the visit at the doctor is mainly characterized by oral synchronous communication, insufficient reading and writing skills are not an issue. Any comprehension problem can be addressed and resolved immediately. However, health literacy is more than reading and writing skills in the health domain. It includes oral comprehension and communication skills, too (see, e.g., Nutbeam's interactive health literacy). When patients lack these skills in the medical encounter, they are less likely to describe their symptoms accurately, to ask the doctor questions, to

remember doctor's instructions, or to engage in shared decision-making (Davis et al. 2002; Schillinger et al. 2004; Kim et al. 2001). These short-term consequences may result in negative long-term effects such as inefficient or even harmful treatment, non-adherence, increasing costs, and poor health outcomes (Bartlett et al. 1984; Stewart et al. 1999).

For these reasons, considerable work has been done to establish guidelines for improving the communication between patients and their healthcare providers (e.g., Travaline et al. 2005; Frymoyer & Frymoyer 2002; Mauksch et al. 2008). It is recommended to first assess the literacy skills of patients, which can be done with the help of literacy tests like the Rapid Estimate of Adult Literacy in Medicine (REALM) test (Davis et al. 1991) or the Test of Functional Health Literacy in Adults (TOFHLA) (Parker et al. 1995). Alternatively, screening questions based on patients' self-report (e.g., Chew et al. 2004; Wallace et al. 2006; Ishikawa et al. 2008) can be used to reduce the likelihood of patients feeling ashamed or embarrassed when directly tested for health literacy abilities (Parikh et al. 1996). When confronted with low literacy patients, doctors should use plain language and avoid technical details, limit the advice to the key information, and provide visual or verbal images while explaining. To assure that patients understood their instructions, doctors can use a "teach back" or "show me" approach, where patients are asked to explain in their own words or demonstrate what they have been told (Doak et al. 1998; Williams et al. 2002).

Healthcare providers can learn communication skills that are required when dealing with low literacy patients. The literature offers books on learning about communication skills in the medical setting and guidelines for developing a health literacy workshop (e.g., Kripalani & Weiss 2006; Maguire & Pitceathly 2002). Today there is a vast range of courses dedicated to communication skills in the medical encounter either as part of the curriculum of medical students or as stand-alone versions to allow for on-the-job training. Yet most physicians receive limited training in communication skills (Levinson et al. 2010). Reasons believed to be time restrictions, the workload of healthcare providers or a simple lack of interest. Thus, further effort is necessary in order to raise awareness of the importance of appropriate communication with low literacy patients and to facilitate training in communication skills.

4. Conclusion

This paper considers health literacy to be a function of both the knowledge and skills of those requiring health information and services and the demands and complexity of information and services provided to them. With the rise of the Internet and an increasingly consumer-oriented healthcare system, individuals have the chance and often the obligation to get involved in decisions about their health. At the same time, they are confronted with health information and services that are more and more complex and difficult to understand. This has called for an adaptation of health communication to individuals' health literacy. Regarding written health information, for example, plain language guidelines have been developed to improve the readability of patient information leaflets or informed consent. Furthermore, the American Medical Association published guidelines for medical and health information sites on the Internet to improve the accessibility, quality, and readability of online content. In the area of doctor-patient communication, emphasis has been placed on enhancement of the communication skills of healthcare providers. Through the adaptation of their communication styles to the literacy levels of their patients, doctors and other healthcare providers can positively influence the relationship with patients, the comprehension of medical advice, and the adherence to medical regimens. However, the adaptation of written health information and doctors' communication styles in the medical encounter are challenged by a range of individual as well as structural limitations (e.g., lack of interest, competing goals, or time pressures). These limitations must be overcome in order to facilitate the use of health information and services that are available today.

References

- ADAPT (n.d.) (2003, 4th ed.). The American Heritage® Dictionary of the English Language (last retrieved 02.12.2010 from: <http://www.thefreedictionary.com/adapt>).
- BAKER, D. (2006). The Meaning and Measure of Health Literacy. *Journal of General Internal Medicine* 21: 878–883.
- BERLAND, G.K. et al. (2001). Health Information on the Internet: Accessibility, Quality, and Readability in English and Spanish. *Journal of the American Medical Association* 285: 2612–2621.

- BIRRU, M.S. et al. (2004). Internet Usage by Low-literacy Adults seeking Health Information: An Observational Analysis. *Journal of Medical Internet Research* 6: 25.
- BARTLETT, E.E. et al. (1984). The Effects of Physician Communication Skills on Patient Satisfaction; Recall, and Adherence. *Journal of Chronic Diseases* 37: 755–764.
- CHARLES, C.; GAFNI, A. & WHELAN, T. (1999). Decision-making in the Physician-patient Encounter : Revisiting the Shared Treatment Decision-making Model. *Social Science & Medicine* 49: 651–661.
- CHEW, L.D.; BRADLEY, K.A. & BOYKO, E.J. (2004). Brief Questions to identify Patients with Inadequate Health Literacy. *Family Medicine* 36: 588–594.
- CLINE, R.J. & HAYNES, K.M. (2001). Consumer Health Information seeking on the Internet: The State of the Art. *Health Education Research* 16: 671–692.
- COULTER, A. (1999). Paternalism or Partnership? Patients have grown up – and there's no going back. *British Medical Journal* 319: 719–720.
- CRANE CUTILLI, C. (2010). Seeking Health Information: What Sources do your Patients use? *Orthopaedic Nursing* 29: 214–219.
- CUTTS, M. (2009, 3rd ed.). Oxford Guide to Plain English. Oxford: Oxford University Press.
- DAVIS, T.C. et al. (1991). Rapid Assessment of Literacy Levels of Adult Primary Care Patients. *Family Medicine* 23: 433–435.
- DAVIS, T.C. et al. (2002). Health Literacy and Cancer Communication. *CA: A Cancer Journal for Clinicians* 52: 134–149.
- DOAK, C.C. et al. (1998). Improving Comprehension for Cancer Patients with Low Literacy Skills: Strategies for Clinicians. *CA: A Cancer Journal for Clinicians* 48: 151–162.
- DONOHUE, J. (2006). A History of Drug Advertising: The Evolving Roles of Consumers and Consumer Protection. *Milbank Quarterly* 84: 659–699.
- ENG, T.R. et al. (1998). Access to Health Information and Support: A Public Highway or a Private Road? *Journal of the American Medical Association* 280: 1371–1375.
- FORTHOFER, M.S. & BRYANT, C.A. (2000). Using Audience-segmentation Techniques to tailor Health Behavior Change Strategies. *American Journal of Health Behavior* 24: 36–43.
- FOX, S. (2008). The engaged E-patient Population. Report of the Pew Internet and American Life Project, Washington, DC (last retrieved on 26.05.2011 from: <http://www.pewinternet.org/Reports/2008/The-Engaged-Epatient-Population.aspx>).
- FROSCH, D.L. & KAPLAN, R.M. (1999). Shared Decision Making in Clinical Medicine: Past Research and Future Directions. *American Journal of Preventive Medicine* 17: 285–294.
- FRYMOYER, J.W. & FRYMOYER, N.P. (2002). Physician-patient Communication: A Lost Art? *Journal of the American Academy of Orthopaedic Surgeons* 10: 95–105.
- GAL, I. & PRIGAT, A. (2005). Why Organizations continue to create Patient Information Leaflets with Readability and Usability Problems: An Exploratory Study. *Health Education Research* 20: 485–493.
- GREEN, J. (2007). Health Literacy: Terminology and Trends in making and communicating Health-related Information. *Health Issues* 92: 11–14.

- HERZLINGER, R.E. (ed.) (2004). *Consumer-driven Health Care: Implications for Providers, Payers, and Policymakers*. San Francisco, CA: Jossey-Bass.
- HOEK, J. (2008). Ethical and Practical Implications of Pharmaceutical Direct-to-consumer Advertising. *International Journal of Nonprofit and Voluntary Sector Marketing* 13: 73–87.
- ISHIKAWA, H. & YANO, E. (2008). Patient Health Literacy and Participation in the Health-care Process. *Health Expectations* 11: 113–122.
- ISHIKAWA, H. et al. (2008). Developing a Measure of Communicative and Critical Health Literacy: A Pilot Study of Japanese Office Workers. *Health Promotion International* 23: 269–274.
- KIM, S.P. et al. (2001). Health Literacy and Shared Decision Making for Prostate Cancer Patients with Low Socioeconomic Status. *Cancer Investigation* 19: 684–691.
- KREUTER, M.W. et al. (2003). Achieving Cultural Appropriateness in Health Promotion Programs: Targeted and Tailored Approaches. *Health Education & Behavior* 30: 133–146.
- KREUTER, M.W. & SKINNER, C.S. (2000). Tailoring: What's in a Name? *Health Education Research* 15: 1–4.
- KRIPALANI, S. & WEISS, B.D. (2006). Teaching about Health Literacy and Clear Communication. *Journal of General Internal Medicine* 21: 888–890.
- LEE, S.Y.; AROZULLAH, A.M. & CHO, Y.I. (2004). Health Literacy, Social Support, and Health: A Research Agenda. *Social Science & Medicine* 58: 1309–1321.
- LEVINSON, W.; LESSER C.S. & EPSTEIN, R.M. (2010). Developing Physician Communication Skills for Patient-centered Care. *Health Affairs* 29: 1310–1318.
- LYNCH, C. (1997). Searching the Internet. *Scientific American* 276: 52–56.
- MAGUIRE, P. & PITCEATHLY, C. (2002). Key Communication Skills and how to acquire them. *British Medical Journal* 325: 697–700.
- MAUSCH, L.B. et al. (2008). Relationship, Communication, and Efficiency in the Medical Encounter: Creating a Clinical Model from a Literature Review. *Archives of Internal Medicine* 168: 1387–1395.
- NOAR, S.M.; BENEK, C.N. & HARRIS, M.S. (2007). Does Tailoring Matter? Meta-analytic Review of Tailored Print Health Behavior Change Interventions. *Psychological Bulletin* 133: 673–693.
- NUTBEAM, D. (2000). Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century. *Health Promotion International* 15: 259–267.
- NUTBEAM, D. (2008). The Evolving Concept of Health Literacy. *Social Science & Medicine* 67: 2072–2078.
- ONG, L.M. et al. (1995). Doctor-patient Communication: A Review of the Literature. *Social Science & Medicine* 40: 903–981.
- PAASCHE-ORLOW, M.K. et al. (2006). How Health Care Systems can begin to address the Challenge of Limited Literacy. *Journal of General Internal Medicine* 21: 884–887.
- PAASCHE-ORLOW, M.K. & WOLF, M.S. (2007). The Causal Pathways linking Health Literacy to Health Outcomes. *American Journal of Health Behavior* 31: 19–26.

- PARIKH, N.S. et al. (1996). Shame and Health Literacy: The Unspoken Connection. *Patient Education and Counseling* 27: 33–39.
- PARKER, P. & RATZAN, S.C. (2010). Health Literacy: A Second Decade of Distinction for Americans. *Journal of Health Communication* 15: 20–33.
- PARKER, R.M. et al. (1995). The Test of Functional Health Literacy in Adults: A New Instrument for measuring Patients' Literacy Skills. *Journal of General Internal Medicine* 10: 537–541.
- RATZAN, S.C. & PARKER, R.M. (2000). Introduction. In: C. SELDEN et al. (eds.). National Library of Medicine Current Bibliographies in Medicine: Health Literacy. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services.
- ROLLNICK, S.; KINNERSLEY, P. & STOTT, N. (1993). Methods of helping Patients with Behavior Change. *British Medical Journal* 307: 188–190.
- RUDD, R.E. et al. (2007). Health Literacy: An Update of Medical and Public Health Literature. In: J. COMINGS; B. GARNER & C. SMITH (eds.). Review of Adult Learning and Literacy 7: Connecting Research, Policy, and Practice. Mahwah, NJ: Lawrence Erlbaum Associates.
- RUDD, R.E.; KIRSCH, I. & YAMAMOTO, K. (2004). Literacy and Health in America, Princeton, NJ: Educational Testing Service.
- RUDD, R.E.; MOEYKENS, B.A. & COLTON, T.C. (1999). Health and Literacy: A Review of Medical and Public Health Literature. In: J. COMINGS; B. GARNER & C. SMITH (eds.). Annual Review of Adult Learning and Literacy 1. New York, NY: Jossey-Bass.
- SCHILLINGER, D. et al. (2004). Functional Health Literacy and the Quality of Physician-patient Communication among Diabetes Patients. *Patient Education and Counseling* 52: 315–323.
- SCHULZ, P.J. & NAKAMOTO, K. (2005). Emerging Themes in Health Literacy. *Studies in Communication Sciences* 5: 1–10.
- SCHULZ, P.J. (2008). Communication and Health. *Studies in Communication Sciences* 8: 379–385.
- SHOHET, L. & RENAUD, L. (2006). Critical Analysis on Best Practices in Health Literacy. *Canadian Journal of Public Health* 97: 10–13.
- STABLEFORD, S. & METTGER, W. (2007). Plain Language: A Strategic Response to the Health Literacy Challenge. *Journal of Public Health* 28: 71–93.
- STEWART, M. et al. (1999). Evidence on Patient-doctor Communication. *Cancer Prevention & Control* 3: 25–30.
- TRAVALINE, J.M.; RUCHINSKAS, R. & D'ALONZO G.E. (2005). Patient-physician Communication: Why and how. *JAOA Clinical Practice* 105: 13–18.
- U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (2000, 2nd ed.). Healthy People 2010 – Understanding and Improving Health. Washington, DC: U.S. Government Printing Office.
- U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, OFFICE OF DISEASE PREVENTION AND HEALTH PROMOTION (2010). National Action Plan to improve Health Literacy. Washington, DC: Government Printing Office.

- U.S. INSTITUTE OF MEDICINE (2004). *Health Literacy: A Prescription to end Confusion*. Washington, DC: The National Academies Press.
- WAGNER, C. et al. (2009). Health Literacy and Health Actions: A Review and a Framework from Health Psychology. *Health Education & Behavior* 36: 860–877.
- WALLACE, L.S. et al. (2006) Brief Report: Screening Items to identify Patients with Limited Health Literacy Skills. *Journal of General Internal Medicine* 21: 874–877.
- WILLIAMS, M.V. et al. (2002). The Role of Health Literacy in Patient-physician Communication. *Family Medicine* 34: 383–389.
- WINKER, M.A. et al. (2000). Guidelines for Medical and Health Information Sites on the Internet: Principles Governing AMA Web Sites. *Journal of the American Medical Association* 283: 1600–1606.
- WOLFE, S.M. (2002). Direct-to-consumer Advertising: Education or Emotion Promotion? *New England Journal of Medicine* 346: 524–526.
- WORLD HEALTH ORGANIZATION (1998). *Health Promotion Glossary*. WHO: Geneva, Switzerland.

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