

Health literacy: concept analysis

Carolyn Speros DNSc APRN

Assistant Professor, Loewenberg School of Nursing, University of Memphis, Memphis, Tennessee, USA

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Correspondence:

Carolyn Speros,
Loewenberg School of Nursing,
University of Memphis,
206 Newport Hall,
Memphis,
TN 38152-3740,
USA.
E-mail: csperos@memphis.edu

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Aim. This paper reports an analysis of the concept of health literacy in order to clarify its meaning, reduce ambiguities associated with references to it, and promote consistency in using the concept in nursing dialogue and research.

Background. Health literacy is a relatively new concept in health promotion research. Only within the last decade have researchers identified the problems associated with health literacy, the role it plays in an individual's ability to comprehend health and self-care information, and its relationship to health outcomes. Clarifying the concept is essential so that nurses develop an awareness of the phenomenon and its relationship to the outcomes of their communication and health education efforts.

Method. The method used for this concept analysis was that of Walker and Avant (1995).

Findings. Health literacy empowers people to act appropriately in new and changing health-related circumstances through the use of advanced cognitive and social skills. The defining attributes of health literacy are reading and numeracy skills, comprehension, the capacity to use information in health care decision-making, and successful functioning as a healthcare consumer. Antecedents of health literacy are literacy and a health-related experience. Consequences of health literacy include improved self-reported health status, lower health care costs, increased health knowledge, shorter hospitalizations, and less frequent use of health care services. Empirical referents of the concept are the Test of Functional Health Literacy in Adults and the health literacy component of the National Assessment of Adult Literacy.

Conclusions. An analysis of the concept of health literacy enhances nurses' ability to assess more accurately their clients' levels of health literacy, thus identifying those at risk for misunderstanding health care instructions, shame associated with inadequate reading skills, and inability to adhere to health care recommendations.

Keywords: concept analysis, health communication, health literacy, literature review, nursing, patient education

Introduction

Inadequate health literacy is pervasive in all segments of society. Improving the health literacy skills of individuals in the United States of America (USA) is an objective for the nation in *Healthy People 2010* (US Department of Health and Human Services 2000). Research suggests that health literacy is a stronger predictor of health status than socio-

economic status, age, or ethnic background (Williams *et al.* 1998, Lindau *et al.* 2002, Schillinger *et al.* 2002, Parker *et al.* 2003).

It has only been within the last decade that researchers have identified the problems associated with health literacy, the role it plays in ability to comprehend medical and self-care information, and its relationship to health outcomes. Because health literacy is a relatively new concept, it is

imperative for it to be clearly defined as nursing and other disciplines begin to observe the phenomenon and contribute to the research and knowledge base associated with it.

The increasingly complex health care system in the USA creates many barriers to health care delivery, especially for vulnerable populations such as frail elders and chronically ill people. Barriers related to access and cost have received a great deal of discussion in the literature, but little attention has been given to the more pervasive problem of inadequate health literacy as a barrier to navigating the system and functioning successfully in a health care consumer role (Nielsen-Bohlman *et al.* 2004). In 1993, the National Adult Literacy Survey (NALS) reported that 40–44 million Americans, or approximately one quarter of the population of the USA at that time, were functionally illiterate, with another 50 million having marginal literacy skills (Kirsch *et al.* 1993). These findings suggest that almost half of the adult population have difficulty reading, and are unable to perform simple mathematical computations. Inadequate literacy is especially prevalent among those over 65 years of age, with almost one half or 44% scoring in the lowest reading level (National Centre for Education Statistics 1992).

These findings were comparable with those of the International Adult Literacy Survey (IALS) conducted in 1995 in eight Western countries (Organisation for Economic Co-operation and Development and Statistics Canada 1995). This revealed that nearly half (48%) of the adult Canadian population have some difficulty reading materials necessary to function in society, with the prevalence of illiteracy being highest among Canadian elders (Centre for Literacy of Quebec 2001). However, because the NALS and IALS did not include health-related terms, it is unclear how many more individuals have problems reading such materials and understanding health related instructions. A person's ability to read and comprehend prescription bottle labels, appointment slips, and health instructions, or their *health literacy* level, may be significantly worse than their general literacy. A person may be literate within a context of familiar terms and content, but functionally illiterate when required to comprehend unfamiliar vocabulary and concepts such as those encountered in health care settings.

The largest study of the scope of health literacy published to date found that one-third of English-speaking patients at two public hospitals in the USA could not read and understand basic health-related materials (Williams *et al.* 1995). Sixty per cent could not understand a routine consent form, 26% could not understand information written on an appointment slip, and 42% failed to comprehend directions for taking medications. Inadequate health literacy was most

prevalent among elders and those reporting poor overall health, suggesting that those with the greatest need for health care had the least ability to read and understand information needed to function adequately in a health care consumer role. Increasing multicultural and multilingual diversity in the USA magnifies the problem (American Medical Association Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs 1999).

Methods

A review of nursing, medical, public health, and social science literature was conducted throughout the last decade to the present. Computer searches using the keyword 'health literacy', manual searches, tracking citations, and reviewing qualitative and quantitative studies of colleagues involved in health literacy dialogue and research were the methods used to review the literature associated with the concept.

The method used for this concept analysis was that of Walker and Avant (1995). This eight step process (Table 1) is particularly effective for analysing new concepts such as health literacy.

Findings

Origin of the concept

The history of literacy dates back to the shift from an oral to a written culture among the Egyptians and Greeks (Murray 2000). However, the concept of health literacy originated only in the last decade of the 20th century. Throughout the 1980s and 1990s, reading ability or literacy level was the focus of patient and health education research reported in the literature as it related to health education strategies and client comprehension. The earliest research demonstrating the gap between health education materials and people's inability to comprehend them was conducted by Leonard and Cecelia Doak and Jane Root in the early 1980s, and was described in their landmark book *Teaching Patients with Low Literacy Skills* (Doak *et al.* 1985). Numerous articles appeared in the

Table 1 Eight steps of concept analysis

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1. Select a concept
 2. Determine the purpose of the analysis
 3. Identify all uses of the concept
 4. Determine the defining attributes
 5. Construct a model case
 6. Construct a borderline and contrary case
 7. Identify antecedents and consequences
 8. Define empirical referents
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nursing, medical, and public health literature exploring the health-related learning needs of low literate populations, health education strategies that enhance comprehension among those who cannot read, and the relationship between illiteracy and health outcomes (Weiss *et al.* 1991, 1994, 1995, Mayeaux *et al.* 1996). All of these studies, however, used traditional educational measures of literacy, such as reading comprehension and word recognition tests. None referred to health literacy as a unique or distinct concept, or measured ability to read and compute basic health-related instructions.

The term 'health literacy' was first used in 1974 in a paper calling for minimum health education standards for all grade school levels in the USA (National Library of Medicine 2000). However, few references to health literacy can be found in the literature until 1992. Physicians affiliated with Emory University in Atlanta (USA) and UCLA Medical Centre in Los Angeles (USA) conducted the seminal work on health literacy in a 2-year study funded by the Robert Wood Johnson Foundation in 1992 (Williams *et al.* 1995). The study was designed to determine participants' ability to successfully complete basic reading and numeracy tasks required to function adequately in a health care setting. The Test of Functional Health Literacy in Adults (TOFHLA) was developed for this project to measure health literacy skills in both English- and Spanish-speaking adult patients (Parker *et al.* 1995). Health literacy was defined in the study as the ability to perform health-related tasks requiring reading and computational skills (Williams *et al.* 1995).

Following this original work, numerous studies related to health literacy were reported in the medical literature. Several of these explored the relationship of health literacy to health knowledge, health status, and the use of health care services (Baker *et al.* 1997, 1998, Gazmararian *et al.* 1999). The American Medical Association (AMA) Council on Scientific Affairs appointed an *ad hoc* committee of experts from the fields of clinical medicine, health services research, medical education, psychology, adult literacy, nursing, and health education to investigate the subject of health literacy in 1997. Their report was published in 1999 after an extensive review of the literature related to health literacy and consultation among the committee members (American Medical Association Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs 1999). To date, few references to health literacy research appear in the nursing literature, although several studies explore the relationship between reading ability and health education outcomes (Miller & Bodie 1994, Brez & Taylor 1997, Fisher 1999, French & Larrabee 1999).

Uses of the concept of health literacy

The concept of health literacy is used in health science literature and discussions as a variable that relates to health outcomes. Health literacy level has emerged as an outcome related to adherence to prescribed health care recommendations and patient empowerment (Nutbeam 2000). Three definitions of literacy currently appear most extensively in the literature.

The AMA defines health literacy as 'a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment' (American Medical Association Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs 1999, p. 553). This definition implies that health literacy means being able to apply basic skills of reading, writing, and numeracy to health-related materials and activities within a health care setting and medical context. It fails, however, to take into account the broader scope of health literacy beyond health care settings, such as in various community and work contexts. It also fails to address the concept's relation to verbal communication, social interaction, and capacity to act.

The scope of the concept is broadened in the definition cited in *Healthy People 2010* 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' (US Department of Health and Human Services 2000, p. 11–20). This definition was adopted by the US federal government for *Healthy People 2010* from the original definition proposed by the National Library of Medicine (National Library of Medicine 2000, p. vi). Health literacy in this context suggests that an individual uses a more complex level of thinking or 'understanding' to make informed decisions about health. However, this definition limits the problem of literacy to the competence and capacity of individuals, failing to acknowledge health system contributors.

Finally, the World Health Organization (WHO) offers a definition that encompasses the elements of personal empowerment and action: 'Health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways that promote and maintain good health' (WHO 1998, p. 10). In this broader perspective, health literacy is viewed as an outcome of health promotion and health education efforts and as having both personal and social benefits. Advanced cognitive skills of critical thinking, analysis, decision-making, and problem-solving in a health-related context combine with social skills of communication and questioning to empower individuals to improve their

personal health status and the health of the communities in which they live.

Defining attributes

According to Walker and Avant (1995), defining attributes are those characteristics of a concept that are most frequently associated with the concept, and appear repeatedly in references to the concept. The defining attributes of health literacy that appear consistently in the literature are reading and numeracy skills, comprehension, the capacity to use information in health care decision-making, and successful functioning in the role of health care consumer.

Reading skills include a complex array of meta-cognitive behaviours, such as focusing attention, using contextual analysis to understand new terms, using text structure to assist in comprehension, word recognition, and organizing and integrating new information (Centre for Advancement of Learning 2000). The ability to read and understand numbers and perform basic mathematical computations is referred to as 'numeracy' skill. Numeracy is defined by experts as 'the knowledge and skills required to apply arithmetic operations, either alone or sequentially, to numbers embedded in printed materials' (Human Resources Development Canada (HRDC) 1997, p. 14). Some authors suggest that numeracy, or quantitative literacy, may be the most important element of health literacy (Nielsen-Bohlman *et al.* 2004). Comprehension is the ability to use context and prior knowledge to aid in the reading process and to make sense of what is read. Comprehension is often used synonymously with understanding, and is based on the logic of the content or the knowledge that the content makes sense to readers, familiarity with the language, and the previous experiences that readers have had with similar content (Doak *et al.* 1996).

Virtually all of the papers reviewed include some mention of people with adequate health literacy skills being informed and capable of decision-making. This has long been a goal of health education efforts, and it appears to be an essential attribute of those with adequate health literacy skills. A recurring theme emerging from the proceedings of three US symposia on health literacy is the successful functioning of people with adequate health literacy skills in health care consumer roles (Centre for Health Care Strategies 1997, Pfizer 1998, American College of Physicians Foundation 2003). Those with adequate health literacy skills are able to solve problems and apply new information to changing circumstances in order to navigate the health care system and function successfully as health care consumers (Centre for Health Care Strategies 1997, Rudd 2000, Council of State Governments 2002).

Model case

A model case includes all the defining attributes of the concept, and is an actual and realistic example of the use of the concept (Walker & Avant 1995). The following case includes all of the defining attributes associated with the concept of health literacy. LP is an 82-year-old white woman who is active and functions at a high level cognitively. She completed high school and 2 years of college education. Although her vision is failing, she reads a great deal, with the help of glasses. She had one hospitalization for a fractured pelvis 2 years ago. During that time, she was told that she had osteoporosis. She has since read about this and understands that, although her condition is chronic, its progression is preventable. She talks with a nurse practitioner, and tells her that she has read that she needs 1500 mg of calcium and 800 U of Vitamin D daily. With the help of the nurse practitioner, she calculates that she should take four Tums® (GlaxoSmithKline, Pittsburg, PA, USA) and two 400 U Vitamin D capsules a day. She exercises 5 days a week, doing low impact aerobics with a home exercise video and takes Tums® and Vitamin D exactly as advised. At follow-up visits with the nurse practitioner, she actively participates in discussions about her health status, asking appropriate questions, and informing her of her progress.

LP has functional reading and numeracy skills, as evidenced by her taking calcium and vitamin D supplements correctly and exercising as advised. She has made an informed decision to change her behaviour by adopting the recommended preventive actions. Finally, she is functioning successfully as a health care consumer by adopting the healthy behaviours and keeping her health provider informed of her actions.

Borderline case

In concept analysis, a borderline case is constructed as another example of the concept's use, but several of the defining attributes are purposefully excluded. Borderline cases allow readers to begin understanding what the concept is *not* (Walker & Avant 1995). MS is a 55 year old African American male attorney who presents to his primary health care provider with complaints of fever, chest pain, and shortness of breath for 3 days. He is a voracious reader, reading for professional growth and pleasure. He has never been hospitalized, and sees his health care provider only rarely for routine physical examinations. He is told during his annual physical examination that he must be hospitalized for a 'cardiac workup' because a 'myocardial infarction' is suspected. He is asked by the nurse in the clinic to sign a

consent form for a 'cardiac catheterization'. He refuses because he does not understand what is going to be done to him and the risks of the procedure as they are set forth in the consent document. He does not understand most of the medical terms used in the verbal or written treatment plans. Against his physician's advice, he declines the procedure. He is told to take two propranolol 80 mg a day and return for follow-up in 2 weeks. He interprets his instructions as taking two pills one time each day when, in fact, he is to take one pill twice a day. He does not return for follow-up.

Although MS is highly literate, he demonstrates inadequate health literacy skills. He is able to read the consent form, but does not comprehend the meaning or significance of his possible diagnosis or necessary tests. He does not adequately comprehend his medication instructions, and therefore takes his medications incorrectly. His decision to ignore the problem and need for follow-up is based on inadequate understanding of the severity of his condition. Thus, he fails to function successfully as a health care consumer.

Contrary case

The following case does not reflect health literacy because it contains none of the defining attributes of the concept. BJ is a 26-year old white female from a small rural community who completed high school, but reads at fifth grade level. She speaks softly and slowly, and many of her words are not discernible. She prints when writing, with letters often reversed and in inappropriate sequence. She smokes 30 cigarettes a day. She brings her 6-year old child to the clinic because of shortness of breath and wheezing. The child is diagnosed with asthma, and sent home with a nebulizer with albuterol and saline, steroid inhalers, spacers, oral medications, and a peak flow meter. Before leaving the clinic she reassures the nurse that she understands his instructions. She is also advised to stop smoking around the child, which she says that she will do, and is asked to bring the child back for follow-up in 1 week. Three days after her clinic visit, she brings her child to the emergency room in acute respiratory distress. She admits that she did not use the nebulizer with albuterol because she could not 'make it work'. She gave the child two oral medications twice a day rather than each medication once a day. The child's clothing smells strongly of cigarettes. BJ has no record of peak flow results because she did not use this with the child, thinking that it was more like a toy and not important to the asthma management.

BJ represents a clear example of an individual who is *not* health literate. She has inadequate reading and numeracy skills, and told the nurse that she understood his instructions when in fact she was embarrassed to admit that she

did not. She chose to ignore the peak flow meter, and lacked the decision-making skill to call for help in assembling the nebulizer. She failed to function in a safe caregiving role when she continued to smoke in the child's presence.

Antecedents and consequences

Walker and Avant (1995) describe antecedents as events or incidents that must precede the occurrence of the concept. The antecedents of health literacy are literacy and a health-related experience. Literacy is defined as 'using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential' (National Centre for Education Statistics 1992, p. 2). It includes the meta-cognitive skills associated with reading, comprehension, and numeracy.

In addition to literacy, some prior experience with illness and the healthcare delivery system or exposure to medical vernacular are needed, described here as a health-related experience. There must also be some logical context of health care information within the individual's cognitive framework. More simply put, individuals with adequate health literacy skills must have had a health-related experience where they were exposed to the language of health care, and a cognitive framework that makes the health care information that was received seem logical.

Walker and Avant (1995) define consequences as events or incidents that occur as a result of the occurrence of the concept. The consequences of health literacy that have been demonstrated by research include improved self-reported health status, lower health care costs, increased health knowledge, shorter hospitalizations, and less frequent use of health care services (Davis *et al.* 1996, Marwick 1997, Baker *et al.* 2002, Lindau *et al.* 2002).

Empirical referents

According to Walker and Avant (1995), 'Empirical referents are classes or categories of actual phenomena that by their existence or presence demonstrate the occurrence of the concept itself' (p. 46). Empirical referents provide nurses and others with observable phenomena by which to measure levels of health literacy in specific patients or to identify high risk segments of the population. The Test of Functional Health Literacy in Adults (TOFHLA) was developed in 1995 to be used by health care providers and researchers to measure health literacy in adults (Nurss *et al.* 2001). An empirical referent of health literacy is a score of 75–100 on the TOFHLA. The TOFHLA is considered to be the most

valid and reliable measure of health literacy currently available (Davis *et al.* 1998).

A second empirical referent of the concept is the health literacy component of the National Assessment of Adult Literacy (NAAL), developed by the National Centre for Education Statistics (2004) of the US Department of Education. Three clusters of health literacy are measured, specifically understanding of 'clinical' information (e.g. filling out a patient information form), understanding of 'prevention' information (e.g. deciding to get a cancer screening), and 'navigation of the health care system' information (e.g. coping with the intricacies of completing claims documentation for health insurance). The assessment produces health literacy index scores that reflect the ability of US population groups to comprehend basic health-related information (National Centre for Education Statistics 2004).

Discussion

A limitation of this concept analysis is that it is based on the research literature to date, the majority of which is generated from disciplines outside nursing. Since the concept is new and evolving at a fast pace, its empirical referents are subject to change. There is also no substantive body of literature about nurses' knowledge of health literacy and its relationship to outcomes of nursing care.

This concept analysis reveals a unique set of attributes, antecedents, consequences and empirical referents associated with health literacy (Table 2). Health literacy should become a variable assessed by nurses at the initiation of any client encounter, as is mental status, past medical history, and socio-economic status, so that recommendations and the plan of care can be adapted accordingly.

Conclusions

This concept analysis was undertaken to clarify the meaning of health literacy, reduce ambiguities associated with references to it, and promote consistency in using the concept in nursing dialogue and research.

Clarifying the concept is essential so that nurses can assess more accurately their clients' health literacy, and identify those at risk for misunderstanding, shame associated with inadequate reading skills, and inability to adhere to health care recommendations. Nurses need to be aware that social and educational levels have little relationship to health literacy. Clues to a client's health literacy relate more directly to observed behaviours, such as failing to complete written forms, frequently missing appointments, and non-adherence with medication prescriptions. Other clues include an

Table 2 Attributes, antecedents, consequences, and empirical referents of health literacy

Attributes

- Reading skills
- Numeracy skills
- Comprehension
- Capacity to use health information in decision-making
- Successful functioning in the patient role

Antecedents

- Literacy
 - Ability to read
 - Ability to comprehend written words
 - Numeracy skills
- Health related experience
 - Exposure to medical vernacular
 - Logical context within cognitive framework

Consequences

- Improved self-reported health status
- Lower health care costs
- Increased health knowledge
- Shorter hospitalizations
- Decreased use of health services

Empirical referents

- Test of Functional Health Literacy (TOFHLA)
 - Health literacy component of the National Assessment of Adult Literacy (NAAL)
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inability to name medications, explain their purpose, or the timing of their administration, and comments related to forgetting glasses or taking written instructions home for family members to read.

By assessing the presence of the antecedents of health literacy, nurses can enhance their ability to identify those patients at risk of misunderstanding and non-adherence. Studies show that patients at risk for limited health literacy include elders, those with low incomes and/or who are unemployed, and immigrants who do not speak the language of their health care providers (Weiss *et al.* 2003). Nurses can increase the likelihood of comprehension among those at risk by using plain, lay language and avoiding medical jargon, speaking slowly, using pictures and visual images, limiting the amount of information communicated in one encounter, asking clients to recall essential information, and creating a trusting and shame-free therapeutic environment. Culturally competent nurses can promote health literacy among patients who speak a second language by translating essential written and oral health information into the person's first language, while ensuring that the message has an appropriate cultural context and literacy level.

Nurses should be educated about health literacy, its prevalence across all segments of society, and its relationship to health outcomes. Few curricular standards for nursing education currently address the need for health literacy

What is already known about this topic

- Health literacy is a relatively new concept, emerging in the medical and public health literature only within the last decade.
- Problems associated with inadequate health literacy are pervasive across all segments of society.
- Research suggests that inadequate health literacy causes negative health outcomes.

What this paper adds

- Antecedents of health literacy are literacy (reading comprehension and computational ability) and a health-related experience.
- Consequences of health literacy are less frequent visits to care providers, shorter hospital stays, and lower healthcare costs.
- Nurses should identify people at high risk of inadequate health literacy skills and adapt their counselling and teaching methods accordingly.

training. Health literacy definitions, means of assessing it, strategies to reach high risk individuals and groups, and interventions that limit the negative effects of inadequate health literacy are topics that are essential to include in nursing curricula. Competency-based programmes with continuing education credit units should incorporate health literacy topics and be made available to all nursing specialists. Educating non-nursing staff and other healthcare providers in effective communication strategies for people with inadequate health literacy skills is an essential part of quality nursing practice.

On a broader level, nurses should take a more active role in policymaking to break down health care communication structures and procedures that create barriers to access and understanding of information for vulnerable groups. Simplifying enrolment forms, informed consent documents, and government-mandated patient information documents and procedures should be an integral part of every nurse's role as a consumer advocate.

Finally, nurses must participate in and contribute to health literacy research. Very little substantive research exists in the nursing literature about health literacy and its components. Clarifying the concept of health literacy is a first step in facilitating research endeavours within the discipline of nursing. As the knowledge base related to health literacy grows, research efforts of nurses and the various disciplines focusing on the effectiveness of health communication and

education methods among vulnerable groups can be more precise and in concert with one another.

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