Chapter 7

Literacy in the Adult Client Population

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CHAPTER HIGHLIGHTS

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KEY TERMS

- ❑ literacy
- ❑ literate
- ❑ illiterate
- ❑ functional illiteracy
- ❑ low literacy
- ❑ health literacy
- ❑ reading
- ❑ readability
- ❑ comprehension
- ❑ numeracy

OBJECTIVES

After completing this chapter, the reader will be able to

1. Define the terms literacy, illiteracy, health literacy, low literacy, functional illiteracy, reading, readability, comprehension, and *numeracy.*
2. Identify the magnitude of the literacy problem in the United States.
3. Describe the characteristics of those individuals at risk for having difficulty with reading and comprehension of written and oral language.
4. Discuss common myths and assumptions about people with illiteracy.
5. Identify clues that are indicators of reading and writing deficiencies.
6. Assess the impact of illiteracy and low literacy on client motivation and compliance with healthcare regimens.
7. Recognize the role of the nurse as educator in the assessment of clients' literacy skills.
8. Critically analyze the readability and comprehension levels of printed materials and the reading skills of clients using specific formulas and tests.
9. Describe specific guidelines for writing effective education materials.
10. Outline various teaching strategies useful in educating clients with low literacy skills.
11. Recognize the research and policy-making issues that must be addressed to solve the health literacy problem.

Over the past 2 decades, literacy in the U.S. population has been the subject of increasing interest and concern by educators as well as by government officials, employers, and media experts. Adult illiteracy continues to be a major problem in this country despite public and private efforts at all levels to address the issue through testing of literacy skills and development of literacy training programs.

Today, the fact remains that many individuals do not possess the basic literacy abilities to function effectively in our technologically complex society. Many adult citizens have difficulty reading and comprehending information well enough to be able to perform such common tasks as filling out job and insurance applications, interpreting bus schedules and road signs, completing tax forms, applying for a driver's

ED/? RH OK? No H1 head

license, registering to vote, or ordering from a restaurant menu (Weiss, 2003).

In the early 1980s, President Reagan launched the National Adult Literacy Initiative, which was followed by the United Nations' declaration of 1990 as the International Literacy Year (Belton, 1991; Wallerstein, 1992). In 1992, the National Adult Literacy Survey (NALS) was conducted by the U.S. Department of Education. The results of this survey revealed a shockingly high prevalence of illiteracy in this country (Weiss, 2003; Weiss et al., 2005; Zarcdoolas, Pleasant, & Greer, 2006). Since then, awareness about illiteracy, thought previously to be a problem mainly confined to developing countries, has taken on new meaning (Lasater & Mehler, 1998; Schwartzberg, VangGeest, & Wang, 2004).

However, in light of the relatively recent attention given to this problem in the last twenty years, it must be acknowledged that Literacy Volunteers of America, Inc. and Lauback Literacy International have for many decades served as advocates for the most marginalized adult population in this country and around the globe. Today, ProLiteracy Worldwide, recently formed from the merger of these two entities, is the world's largest organization for adult literacy. It operates 1,200 literacy programs across the United States. and partners with 120 other organizations in 62 countries worldwide. Syracuse, New York, has been the birthplace of all three of these organizations and central New York is now recognized as the capital of the literacy movement. America's literacy problem has become a national crisis because for too long this country has ignored those who are unseen and unheard (Wedgeworth, 2007).

Particularly in the past 10 years as a result of the NALS report, nursing and medical literature has focused significant attention on the effects of patient illiteracy on healthcare delivery and health outcomes. Today, the emphasis is on health literacy—that is, the extent to which Americans can read and comprehend health information well enough to function successfully in a healthcare environment and make appropriate decisions for themselves. Although a great deal more research needs to be done on the causes and effects associated with poor health literacy as well as the methods available to screen and teach patients, much has been learned about the magnitude and consequences of the health literacy problem (Gazmararian, Curran, Parker, Bernhardt, & DeBuono, 2005; Pignone, DeWalt, Sheridan, Berkman, & Lohr, 2005).

With respect to the subject of literacy, the nurse educator's attention specifically focuses on adult client populations. Literacy levels are not an issue in teaching staff nurses or nursing students because of their level of formal education. However, literacy levels remain a concern if the audience for in-service programs includes less educated, more culturally and socioeconomically diverse support staff (Hess, 1998), or if a member of the audience has been diagnosed with a learning disability, such as dyslexia.

What must be of particular concern to the healthcare industry are the numbers of consumers who are illiterate, functionally illiterate, or marginally literate. Researchers have discovered that people with poor reading and comprehension skills have disproportionately higher medical costs, increased number of hospitalizations and readmissions, and more perceived physical and psychosocial problems than do literate persons (Baker, Parker, Williams, & Clark, 1998; Baker, Williams, Parker, Gazmararian, & Nurss, 1999; Weiss, 2003; Weiss et al., 2005).

In today's world of managed care, the literacy problem is perceived to have grave consequences.

Clients are expected to assume greater responsibility for self-care and health promotion, yet this expanded role depends on increased knowledge and skills. If people with low literacy abilities cannot fully benefit from the type and amount of information they are typically given, then they cannot be expected to maintain health and manage independently. The result is a significant negative impact on the cost of health care and the quality of life (Kogut, 2004; Pignone et al., 2005; Williams, Davis, Parker, & Weiss, 2002; Wood, Kettinger, & Lessick, 2007).

Traditionally, healthcare professionals have relied heavily on printed education materials as a cost-effective and time-efficient means to communicate health messages. For years, nurses and physicians have assumed that the written materials commonly distributed to clients were sufficient to ensure informed consent for tests and procedures, to promote compliance with treatment regimens, and to guarantee adherence to discharge instructions.

Only recently have healthcare providers begun to recognize that the scientific and technical terminology inherent in the ubiquitous printed teaching aids is a bewildering set of written instructions little understood by the majority of people. Kessels (2003) pointed out that 40–80% of medical information provided by health professionals is forgotten immediately, not only because medical terminology is too difficult to understand, but too much information leads to poor recall. He also noted that half of the information remembered is incorrect. Unless education materials are written at a level and style appropriate for their intended audiences, clients cannot be expected to be able or willing to accept responsibility for self-care.

An essential prerequisite for implementing health education programs is to know the literacy skills of audiences for whom these programs are intended (Quirk, 2000). Yet calls for assessment of literacy and recommendations for appropriate interventions for clients with poor literacy skills have largely been ignored. Even though illiteracy and low literacy are quite prevalent in the U.S. population, problems with literacy frequently continue to go undiagnosed (Doak, Doak, & Root, 1996; Zarcadoolas et al., 2006).

This chapter examines the magnitude of the literacy problem, the myths associated with it, the factors that influence literacy levels, the important role nurses play in assessing clients' literacy skills, and the effects of illiteracy on the health and well-being of the public. In addition, the formulas and tests used to evaluate readability of printed tools and to assess clients' comprehension and reading skills are reviewed, specific guidelines are put forth for writing effective health education materials, and teaching strategies are recommended as a means for breaking down the barriers of illiteracy.

Definition of Terms

For many years, there was no clear agreement of what it has meant to be literate in our society. A literate person was loosely described as someone who possessed socially required and expected reading and writing abilities, such as being able to sign his or her name and read and write a simple sentence. Over time, performance on reading tests in school became the conventional method to measure grade-level achievement.

However, because it is difficult, if not impossible, to measure reading abilities on a population-wide basis, the U.S. Bureau of the Census still continues to this day to use the number of years of schooling attended to define literacy levels (Giorgianni, 1998). This remains, though, an imprecise estimation of someone's true reading

skills. Many researchers have found that the reported grade level achieved in school is an inadequate predictor of reading ability (Chew, Bradley, & Boyko, 2004; Doak et al., 1996; Weiss, 2003; Winslow, 2001).

In the United States, the term literacy is generally defined as the ability to read and speak English (Andrus & Roth, 2002). In the 1992 National Adult Literacy Survey (NALS), the U.S. Department of Education (1993) defined *literacy* as "the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (p. 6).

NALS categorized literacy into three general kinds of tasks (U.S. Department of Education, 1993):

- Prose tasks, which measure reading comprehension and the ability to extract themes from newspapers, magazines, poems, and books
- Document tasks, which assess the ability of readers to interpret documents such as insurance reports, consent forms, and transportation schedules
- Quantitative tasks, which assess the ability to work with numerical information embedded in written material such as computing restaurant menu bills, figuring out taxes, interpreting paycheck stubs, or calculating calories on a nutrition checklist

Although no precise cut-off point defines the difference between literacy and illiteracy, the commonly accepted working definition of what is meant to be *literate* is the ability to write and to read, understand, and interpret information written at the eighth-grade level or above. On the other end of the continuum, *illiterate* is defined as someone who is unable to read or write at all or whose reading and writing skills are at the fourth-grade level or below.

Low literacy, also termed marginally literate or marginally illiterate, refers to the ability of adults to read, write, and comprehend information between the fifth- and eighth-grade level of difficulty. Persons with low literacy have trouble using commonly printed and written information to meet their everyday needs such as reading a TV schedule, taking a telephone message, or filling out a relatively simple application form (Doak et al., 1996).

Functional illiteracy means that adults lack the fundamental reading, writing, and comprehension skills that are needed to operate effectively in today's society. Functional illiteracy is a relatively new term. People who are functionally illiterate have very limited competency to perform the tasks of everyday life (Giorgianni, 1998). They do not read well enough to understand and interpret what they have read or use the information as it was intended (Doak et al., 1996). For example, someone who is functionally illiterate may be able to read the simple words on a label of a can of soup that directs them to "Pour soup into pan. Add one can water. Heat until hot." However, they cannot comprehend the meaning and sequence of the words to carry through with these directions.

These operational definitions are, at best, approximations. Conventional grade-level definitions of literacy are considered conservative because even an adult with the ability to read at the eighth-grade level will encounter difficulties in functioning in our advanced society. However, although an individual may have poor reading skills, this does not necessarily imply a lack of intelligence. Low literacy or illiteracy cannot be equated with IQ level. A person can be illiterate or low literate, yet intellectually be within at least normal IQ range (Doak et al., 1996).

Health literacy refers to how well an individual can read, interpret, and comprehend health information for maintaining an optimal level of wellness. The Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs of the American Medical Association (1999) defined 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" (p. 553). This committee identified the scope and consequences of poor health literacy in the United States. They concluded that an individual's functional health literacy is likely to be significantly worse than his or her general literacy skills because of the complicated language (medicalese) used in the healthcare field.

The U.S. Department of Health and Human Services (2000) more explicitly defined 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." Health literacy potentially enables individuals to make informed choices, reduce their health risks, and increase their quality of life (Wood et al., 2007). The 2003 National Assessment of Adult Literacy (NAAL), which was a 10-year follow-up to the original NALS study, was the first national assessment designed specifically to measure the literacy skills of adults in understanding health-related information (National Center for Education Statistics, 2006).

With managed care requiring individuals to take more responsibility for self-care and symptom management, health literacy is becoming an important determinant of health status. Poor health literacy may lead to serious negative consequences, such as increased morbidity and mortality, when a person is unable to read and comprehend instructions for medications, follow-up appointments, diet, procedures, and other regimens. Patients cannot be expected to be compliant, autonomous, and self-directed in navigating the healthcare system if they do not have the ability to follow basic instructions (Fetter, 1999; Williams, Baker, Honig, Lee, & Nolan, 1998). Health knowledge, health status, and the use of health services are all related to health literacy levels.

Reading, readability, and comprehension also are terms frequently used when determining levels of literacy. Fisher (1999) defines *reading* or word recognition as "the process of transforming letters into words and being able to pronounce them correctly" (p. 57). Word recognition test scores, which can be misleading because they only indicate a person's ability to identify words, not understand them, are usually three grade levels higher than comprehension scores (Fisher, 1999). Hirsch (2001) addressed the public's confusion between reading in the sense of being able to decode words fluently and reading in the sense of being able to comprehend the meaning of words.

Readability is defined as the ease with which written or printed information can be read. It is based on a measure of a number of different elements within a given text of printed material that influence with what degree of success a group of readers will be able to read the style of writing of a selected printed passage (Fisher, 1999).

Comprehension, on the other hand, is the degree to which individuals understand what they have read (Fisher, 1999; Koo, Krass, & Aslani, 2005). It is the ability to grasp the meaning of a message—to get the gist of it. A healthcare professional can determine whether comprehension of health instruction has occurred by noting whether clients are able to correctly demonstrate or recall in their own words the message that was received.

The ability to read does not alone guarantee reading comprehension. Comprehension is affected by the amount, clarity, and complexity of the information presented. If the elements of logic, language, and experience in health instruction are compatible with and culturally appropriate to the clients' background, the message likely will be clear and relevant to them (Doak et al., 1996). A mismatch will likely make the message confusing, incomprehensible, and useless to the individual.

Also, illness or other disruptive life situations, which cause stress and anxiety, have been found to significantly interfere with comprehension. The ability to take in medical information, store it in memory, and recall it when necessary is affected by many other factors as well, such as the length of time between information disclosure and the need to remember the information, the nature of the information (how threatening), and the method of presentation (Doak et al., 1996; Doak, Doak, Friedell, & Meade, 1998; Kessels, 2003; Ley, 1979).

Readability and comprehension, therefore, are particularly complex activities involving many variables with respect to both the reader and the actual written material (Doak et al., 1996; Fisher, 1999). Both are commonly determined by using one or more measurement formulas (see the later discussions of measurement tools in this chapter). **Table 7–1** shows examples of elements that affect readability and comprehension.

Another term used when discussing literacy is *numeracy*, which is the ability to read and interpret numbers. Overwhelmingly, those with limited literacy also have limited skills in numeracy (Andrus & Roth, 2002; Doak et al., 1996; Fisher, 1999; Williams et al., 1995).

Literacy Relative to Oral Instruction

To date, very little attention has been paid to the role of oral communication in the assessment of illiteracy. Certainly, inability to comprehend the spoken word or oral instruction above the level

Table 7–1 EXAMPLES OF ELEMENTS THAT AFFECT READABILITY AND COMPREHENSION

Material Variables	Reader Variables
Legibility (e.g., print size, spacing)	Health status
Organization and flow of content	Perceived threat of illness
Concept level	Effects of illness/stress
Length of text	Physical and mental energy
Sentence structure	Level of motivation
Level of vocabulary	Visual and auditory acuity
Relevance to the reader	Educational attainment
Jargon (medical terminology)	Background knowledge
Number of polysyllabic words	Ability to decipher language of message

of understanding simple words, phrases, and slang words should be considered an important element in the definition or assessment of literacy. Kessels (2003) pointed out that although most health information is spoken, oral instruction alone is not a very successful method of teaching. "Written information is better remembered and leads to better treatment adherence" (p. 221).

Doak, Doak, & Root (1985) addressed the fact that there is no universally accepted way to test the degree of difficulty with oral language. However, as these authors observed, "it is believed that some of the same characteristics that are critical for written materials will also affect the comprehensibility of spoken language" (p. 40). Much more research needs to be done on "iloralacy," or the inability to understand simple oral language, as a generic concept of illiteracy (Hirsch, 2001; Zarcadoolas et al., 2006).

Literacy Relative to Computer Instruction

The literacy issue has always been examined from the standpoint of readability and comprehension of printed materials. However, computer literacy is an increasingly popular concern as an important dimension of the literacy issue. More and more, educators and consumers are relying on computers as educational tools and the potential of this technology is transforming the way healthcare information is accessed and shared. Those clients who are well educated and career oriented are already likely to own a computer and be computer literate, but those with limited resources, literacy skills, and technological know-how are being left behind (Zarcadoolas et al., 2006).

As healthcare organizations and agencies continue to invest more resources in computer technology and software programs for educational purposes, computer literacy in the overall client population must be addressed. Computers not only are used to convey instructional messages, but also serve as a valuable tool for access to a wide array of additional sources of information (see Chapters 12 and 13).

The opportunity to expand clients' knowledge base through telecommunications requires nurse educators to attend to computer literacy levels of their audiences. In the same way that they now recognize the negative effects that illiteracy and low literacy have had in restricting the information base of consumers of health care when printed materials are relied upon, nurses must begin to advocate for computer literacy in the public they serve (Doak et al., 1996). Computer software programs can be made suitable for use by low-literate learners as long as these individuals have the basic capacity to access and operate computers, and if the information is simplified for readability and comprehension.

Scope and Incidence of the Problem

Literacy has been termed the "silent epidemic," the "silent barrier," the "silent disability," and "the dirty little secret" (Conlin & Schumann, 2002; Doak & Doak, 1987; Kefalides, 1999; Wedgeworth, 2007). Based on available statistics over the past 20 years, it is evident that the United States has significant literacy problems. In fact, this country only ranked among the middle of industrialized nations on most measures of adult literacy, and yet many of our educators, elected representatives, and social advocates have remained blind to this significant problem (Kogut, 2004).

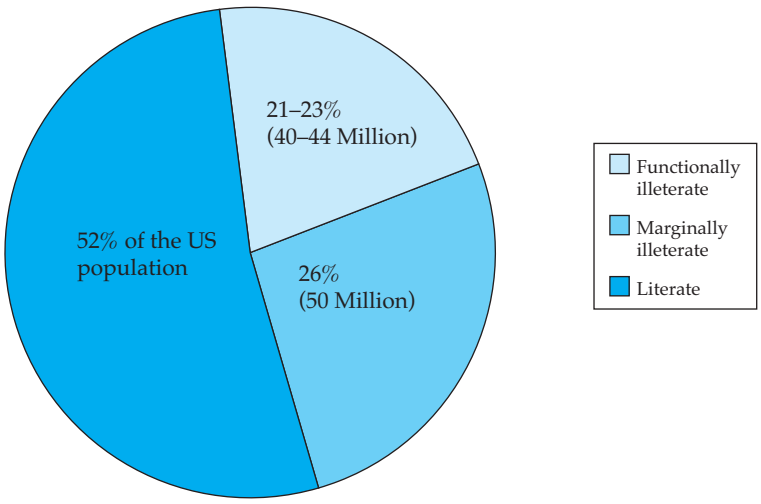
The first national assessment of adult literacy, known as the Young Adult Literacy Survey, was undertaken in 1985 by the U.S. Department of Education. Since then, two subsequent large-scale assessments have been conducted by the federal government (U.S. Department of Health and Human Services, 2003).

The 1992 National Adult Literacy Survey (NALS), considered to be a highly accurate and detailed profile on the condition of English language literacy in the United States, revealed surprising statistics. NALS interviewed and collected data from a representative sample of 26,000 individuals, aged 16 years and older. Based on the findings from an assessment of literacy skills in three areas (prose, document, and quantitative), literacy abilities were categorized into five levels, with Level 1 being the lowest and Level 5 being the highest.

About 21–23%, or approximately 40–44 million of the 191 million adults in the country at that time, scored in the lowest level of the three skill areas. They were considered to be functionally illiterate. Another 25–28%, or approximately 50 million adults, scored in the Level 2 category. That is, they were considered to have low literacy skills. Thus, the number of illiterate and low-literate adults in the United States conservatively was estimated to be approximately 90–94 million in total (**Figure 7–1**).

This figure represented about one half of the adult population in this country who had deficiencies in reading, writing, and math skills (Fisher, 1999; Weiss, 2003). The researchers

Figure 7–1 Literacy Levels in U.S. Adults.



Source: Bastable, L.C., Chojnowski, D., Goldberg, L., Mcgurl, P., & Riegel, B. (2005). Comparing heart failure patient literacy levels with available educational materials. Poster presented at the Heart Failure Society of America, 9th Annual Scientific Conference, September 18–21, 2005, Boca Raton, FL.

found that those individuals with poor literacy skills (Levels 1 and 2) were disproportionately more often from minority populations, from lower socioeconomic groups, and had poorer health status (Fisher, 1999; Andrus & Roth, 2002; Weiss, 2003).

In 2003, building on the NALS of 10 years earlier, the NAAL (National Assessment of Adult Literacy) was the first study to identify the literacy of America's adults in the 21st Century. New, more sensitive instruments were designed to enhance measurement of the literacy abilities of the least-literate adults. Most importantly, it included a health literacy component to assess adults' understanding of health-related materials and forms (National Center for Education Statistics, 2006).

The NAAL categorized literacy skills into four levels, and the findings revealed the following percentages and total numbers: below basic (14% or 30 million), basic (29% or 63 million), intermediate (44% or 95 million), and proficient (13% or 28 million). Of the overall 216 million adults in the U.S. population in 2003, 43% (93 million) fell into the lowest two categories (National Center for Education Statistics, 2006).

The average score results indicated no significant change in prose and document literacy and only a slight increase in quantitative literacy between 1992 and 2003. However, a higher proportionate percentage of several population groups such as those who did not graduate from high school, Hispanics, and those over 65 years of age fell into the below basic level of prose literacy (Kutner, Greenberg, Jin, & Paulsen, 2006). The NAAL's *Health Literacy Report* specifically found that 36% (47 million) of adults had basic or below basic health literacy and older adults (65 years and older) had the lowest health literacy levels (National Center for Education Statistics, 2006). For more detailed information on the NAAL survey, visit the National Center for Education Statistics at http://www.nces.ed.gov/NAAL.

In addition to the NAAL survey, in 2004, the Institute of Medicine (IOM), the Agency for Healthcare Research and Quality (AHRQ), and the American Medical Association (AMA) issued their own reports on the status of health literacy in this country. All three reports revealed that as many as 50% of all American adults lack the basic reading and numerical skills essential to function adequately in the healthcare environment (Aldridge, 2004; Institute of Medicine, 2004; Schwartzberg, et al., 2004; Weiss, et al., 2005). For more information on health literacy, see **Table 7–2** for Web sites.

Limited literacy leads to poor health outcomes. In fact, literacy skills are "a stronger predictor of an individual's health status than age, income, employment status, education level, and racial or ethnic group" (Weiss, 2003, p. 11). Individuals with limited literacy skills are less knowledgeable about their health problems, have higher hospitalization rates, higher healthcare costs, and poorer health status (Weiss et al., 2005). To obtain a CD with video entitled *Health Literacy: A Prescription to End Confusion,* go to The National Academies Press at http://www.nap.edu. Also see **Table 7–3** for a list of additional audiovisuals on health literacy.

Thus, according to the findings of NALS and NAAL reports, about 4 to 5 out of every 10 Americans lack the basic reading and comprehension skills to perform simple, everyday literacy tasks (U.S. Department of Education, 1993; National Center for Education Statistics, 2006). Because the mean reading level of the U.S. population is at or below the eighth grade

Table 7–2 Health literacy Web sites

The National Center for the Study of Adult Learning and Literacy (NCSALL). http://www.ncsall.net

Harvard School of Public Health, Health Literacy Studies. http://www.hsph.harvard.edu/healthliteracy

The National Library of Medicine, current Bibliographies in Medicine 2000–2001, Health Literacy. http://www.nlm.nih.gov/archive//20061214/pubs/cbm/hliteracy.html

American Medical Association, Health Literacy. http://www.ama-assn.org

National Health Council, Health Literacy Initiatives. http://www.nhcouncil.org/initiatives/health_literacy.htm

National Institute for Literacy. www.nifl.gov

Maine AHEC Health Literacy Center. www.une/com/ahec

World Education. www.worlded.org

Health Literacy Consulting. www.healthliteracy.com

Healthy People 2010. http://www.health.gov/healthypeople/

System for Adult Basic Education Support (SABES). http://www.sabes.org

Pfizer Health Literacy. www.pfizerhealthliteracy.com

Center for Health Care Strategies, Inc. http://www.chcs.org

Health Literacy Resources. http://www.mlanet.org

HHS/Office of Minority Health Resource Center. http://www.omhrc.gov

National Center for Education. http://nces.ed.gov/naal/

ProLiteracy Worldwide. http://www.proliteracy.org/downloads/proliteracystateofliteracy.pdf

America's Literacy Directory. http://www.literacydirectory.org

National Center for Family Literacy. http://www.famlit.org

and many people read two to four grades below their reported level of formal education achieved, millions are challenged by the demands of common, day-to-day activities (Winslow, 2001). For example, one needs to be able to read at the sixth-grade level to understand a driver's license manual, at the eighth-grade level to follow directions on a frozen dinner package, and at the tenth-grade level to read instructions on a bottle of aspirin (Doak et al., 1985). The literacy problem is so widespread that the government, in an effort to reduce traffic accidents, has replaced some conventional printed road signs with road signs using symbols (Loughrey, 1983).

Because of the difficulty inherent in defining and testing literacy, the lack of inclusion of unidentified illegal immigrants in the sample populations studied, and the fact that few people with limited reading skills admit to having any difficulty, the scope of the literacy problem is thought to be much greater than the estimates found in formal studies (Brownson, 1998; Doak et al., 1996; Weiss, 2003).

Table 7–3 HEALTH LITERACY AUDIOVISUALS

Health Literacy: A Prescription to End Confusion. (2004). CD-ROM. Institute of Medicine (IOM) of The National Academies. Includes an executive summary of the report *Health Literacy* and video clips of patients discussing their health literacy experiences. Requires a Windows Media Player, Adobe Acrobat Reader, and a Web browser. For more information contact ORAC@NAS.edu.

Providing Patient Education to Meet JCAHO Standards. (2003). DVD. MedCom, Cypress, California (23 minutes in length).

Patient Education Takes Center Stage. (1999). VHS tape. *Creative Health Care Management.* Underscores the value of helping patients and families learn. Expands perspectives on patient education as the central aspect of health care by providing a real-life example of a person with a kidney transplant (28 minutes in length).

Low Health Literacy: You Can't Tell by Looking. (2000). VHS tape. American Medical Association, Chicago. Case studies of four patients with low health literacy (20 minutes in length).

Teaching Patients With Low Literacy Skills. (2001). VHS tape. Concept Media, Inc. Irvine, California ISBN 1564376524 (26 minutes in length).

Reading Between the Lines. (2003). VHS tape. Medical Library Association. Chicago. Concepts of health information literacy to enhance knowledge of information professionals in the provision of quality consumer health with patient education information services.

Overcoming Patient Language Barriers: Caring for Patients With Limited English Proficiency. (2001). VHS tape. Concept Media. ISBN 156437653-2 (25 minutes in length).

Health Literacy: Help Your Patients Understand. (2003). VHS tape. American Medical Association. Chicago (20 minutes in length).

The rates of illiteracy and low literacy in general and health literacy in particular continue to pose a major threat to many segments of our society. The problem is expected to grow worse in light of the many forces operating in our country and worldwide unless specific measures are taken to curb the tide. To be literate 100 years ago meant that people could read and write their own name. Today, being literate means that one is able to learn new skills, think critically, problem solve, and apply general knowledge to various situations (Weiss, 2003).

Trends Associated with Literacy Problems

The trend toward an increased proportion of Americans with literacy levels that are inadequate for active participation in our advanced society is due to such factors as the following (Gazmararian et al., 1999; Giorgianni, 1998; Hayes, 2000; Hirsch, 2001; Kogut, 2004; Weiss, 2003):

- A rise in the number of immigrants
- The aging of the population

- The increasing amount and complexity of information
- The increasing sophistication of technology
- More people living in poverty
- Changes in policies and funding for public education
- Disparities between minority versus nonminority populations

All of these factors correlate significantly with the level of formal schooling attained and the level of literacy ability. Although research indicates the number of years of schooling is not a good predictor of literacy level, there remains a correlation between someone's educational background and the ability to read. As our society becomes more and more high tech, with new products and more complicated functions to perform, the basic language requirements needed for survival will continue to rise. Many more people are beginning to fall behind, unable to keep up with our increasingly sophisticated world.

In cases of both illiteracy and low literacy, the level of readability is measured in terms of performance, not years of school attendance. The mean literacy level of the U.S. population is at or below eighth grade. Medicaid enrollees, on average, read at the fifth-grade level (Andrus & Roth, 2002; Giorgianni, 1998; Winslow, 2001). Many people read at least two to four grade levels below their reported level of formal education. For those in poverty, the gap between grade level completed and actual reading level was even greater (Andrus & Roth, 2002). This deficiency persists because schools have a tendency to promote students for social and age-related reasons rather than for academic achievement alone (Feldman, 1997), because clients may report inaccurate histories of years of school attended, and because reading skills may be lost over time through lack of practice (Davidhizar & Brownson, 1999; Miller & Bodie, 1994; Weiss, 2003; Williams et al., 2002).

Levels of literacy are often seen as indicators of the well-being of individuals, and the literacy problem has greater implications for the social and economic status of the country as a whole (Kogut, 2004). Low levels of literacy have been associated with marginal productivity, high unemployment, minimum earnings, high costs of health care, and high rates of welfare dependency (Andrus & Roth, 2002; Giorgianni, 1998; Winslow, 2001; Ziegler, 1998).

Also, illiteracy is considered to be an element that is contributing to many of the grave social issues confronting the United States today, such as homelessness, teen pregnancy, unemployment, delinquency, crime, and drug abuse (Fleener & Scholl, 1992; Kogut, 2004). Deficiencies in basic literacy skills compound to create devastating cumulative effects on individuals, which creates a social burden that is extremely costly for the American people. Illiteracy and low literacy are not necessarily the reasons for these ills, but the high correlation between literacy levels and social problems is a marker for disconnectedness from society in general (Kogut, 2004; U.S. Department of Health and Human Services, 2003).

Those at Risk

Illiteracy has been portrayed "as an invisible handicap that affects all classes, ethnic groups, and ages" (Fleener & Scholl, 1992, p. 740). It is a silent disability. Illiteracy knows no boundaries and exists among persons of every race and ethnic background, socioeconomic class, and age category (Duffy & Snyder, 1999; Weiss, 2003).

It is true, however, that illiteracy is rare in the higher socioeconomic classes, for example, and that certain segments of the U.S. population are more likely to be affected than others by lack of literacy skills.

According to Cole (2000); Winslow (2001); Hayes (2000); Wood (2005); Kogut (2004); Schultz (2002); Nath, Sylvester, Yasek, & Gunel (2001); Schillinger et al. (2002); Montalto & Spiegler (2001); Williams, Baker, Parker, & Nurss (1998); and Rothman et al. (2004), populations that have been identified as having poorer reading and comprehension skills than the average American include the following:

- The economically disadvantaged
- Older adults
- Immigrants (particularly illegal ones)
- Racial minorities
- High school dropouts
- The unemployed
- Prisoners
- Inner-city and rural residents
- Those with poor health status due to chronic mental and physical problems

With respect to demographics, statistics indicate that 34 million Americans are presently living in poverty and that nearly half (43%) of all adults with low literacy live in poverty (Darling, 2004). Although the disadvantaged represent many diverse cultural and ethnic groups, including millions of poor White people, one third of the disadvantaged in this country are minorities, and a larger percentage of minorities fall into the disadvantaged category (Giorgianni, 1998; Weiss, et al., 2005).

In this twenty-first century, the major growth in the population will come from the ranks of minority groups. By 2010, one out of every three people in the United States is projected to belong to a racial or ethnic minority (Robinson, 2000); in 53 of the 100 largest cities, minorities will be in the majority. In 2000, the U.S. Bureau of the Census reported that approximately 31 million immigrants reside in this country, more than triple the number in 1970. One third of the foreign-born population has arrived since 1990, one in five children is from an immigrant family, and 30% of immigrants do not have a high school diploma (3.5 times the rate for native Americans). Of the 1,200 community-based adult literacy programs run by ProLiteracy of America, 90% are teaching English as a second language (ESL) (Kogut, 2004). Nurse educators must recognize how these demographic changes will affect the way in which services need to be rendered, educational materials need to be developed, and information needs to be marketed (Andrus & Roth, 2002; Borrayo, 2004; Nurss et al., 1997; Robinson, 2000).

Many minority and economically disadvantaged people, as well as the prison population—which has the highest concentration of adult illiteracy (Duffy & Snyder, 1999)—are not benefactors of mainstream health education activities, which often fail to reach them. Overall, they are not active seekers of health information because they tend to have weaker communication skills and inadequate foundational knowledge on which to better understand their needs. Many lack enough fluency to make good use of written health education materials. Also, not only are the majority of printed education materials written in English, but fluency in verbal skills in another language does not guarantee functional literacy in that native language (Horner, Surratt, & Juliusson, 2000). Areas with the highest percentage of minorities and high rates of poverty and immigration also have the highest percent-

age of functionally illiterate people. When these people need medical care, they tend to require more resources, have longer hospital stays, and have a greater number of readmissions (Weiss, 2003). The challenge now and in the future will be to find improved ways of communicating with these population groups and to develop innovative strategies in the delivery of medical and nursing care.

Of the Americans older than 65 years of age, two out of five adults (approximately 40%) are considered functionally illiterate (Davidhizar & Brownson, 1999; Gazmararian et al., 1999; Willams et al., 2002). In 2003, the population of older adults was approximately 36 million (more than 12% of the total population) and the individuals older than 85 years of age make up the fastest-growing age group in the country. At the turn of the century, they numbered 4.2 million people, but it is projected that by 2050 that number could reach 21 million. Children born today can expect to live to an average age of at least 80. Statistics indicate that the U.S. population is growing older as people live longer. By 2030, it is expected that the 65-and-older population will double from what it was at the beginning of the 21st century (Santrock, 2006; Vander Zanden, Crandell, & Crandell, 2007).

As time goes on, the older population will be more educated and demand more services. In 1960, only 20% of older people were high school graduates, whereas by the beginning of the 21st century, 64% were educated at the high school level. Although these statistical trends indicate there will be a more highly educated group of older adults in the future, the information explosion and rapid technological advances may cause them to fall behind relative to future standards of education. Today, the illiteracy problem in the aged is due to the facts that not only did these individuals have less education in the past, but also that their reading skills have declined over time because of disuse. If a person does not use a skill, he or she loses the skill. Reading ability can deteriorate over time if not exercised regularly (Brownson, 1998).

In addition, cognition and some types of intellectual functioning are affected by aging (Kessels, 2003; Santrock, 2006; Vander Zanden, et al., 2007). The vast majority of older people have some degree of cognitive changes and sensory impairments, such as vision and hearing loss. About one fourth of people aged 65 and one half over 75 years of age have serious hearing impairment (Vander Zanden et al., 2007). Along with these normal physiological changes, many suffer from chronic diseases, and large numbers are taking prescribed medications. All of these conditions can interfere with the ability to learn or negatively affect thought processes, which contributes to the high incidence of illiteracy in this population group.

Beyond the issue of prevalence, illiteracy also presents unique psychosocial problems for the older adult. Because older persons tend to process information more slowly than do young adults, they may become more easily frustrated in a learning situation (Kessels, 2003; Vander Zanden et al., 2007). Furthermore, many older individuals have developed ways to compensate for missing skills through their support network. Lifetime patterns of behavior have been set such that they may lack the motivation to improve their literacy skills. Today and in the years to come, those involved with providing health education will be challenged to overcome these obstacles to learning in the older adult.

Cultural diversity, although not considered to be directly related to illiteracy, may also serve as a barrier to effective client education. According

to Davidhizar and Brownson (1999) and backed up by the NAAL's 2003 statistics, most adults with illiteracy problems in this country are White, native-born, English-speaking Americans. However, when examining the proportion of the population that has poor literacy skills, minority ethnic groups are at a disproportionately higher risk (Andrus & Roth, 2002).

When healthcare providers are communicating with clients from cultures different than those of their own, it is important to be aware that their clients may not be fluent in English. Furthermore, even if people speak the English language, the meanings of words and the understanding of facts may vary significantly based on life experiences, family background, and culture of origin, especially if English is the client's second language (Purnell & Paulanka, 2003). In conversation, an individual must be able to understand undertones, voice intonations, and in what context (slang, terminology, or customs) the message is being delivered.

Purnell and Paulanka (2003) stress the importance of assessing other elements of verbal and nonverbal communication, such as emotional tone of speech, gestures, eye contact, touch, voice volume, and stance, between persons of different cultures that may affect the interpretation of behavior and the validating of information received or sent (see Chapter 8). Educators must be aware of these potential barriers to communication when interacting with clients from other cultures whose literacy skills may be limited. Given the increasing diversity of the U.S. population, most currently available written materials are inadequate based on the literacy level of minority groups and the fact that the majority of printed education materials are available only in English.

Thus, individuals with less education, which often includes the groups of low-income persons, older adults, racial minorities, and people with ethnic origins for whom English is a second language, are likely to have more difficulty with reading and comprehending written materials as well as understanding oral instruction (Winslow, 2001). This profile is not intended to stereotype illiterate people but rather to give a broad picture of who most likely lacks literacy skills. It is essential that nurses and other healthcare providers be aware of those susceptible to having literacy problems when carrying out assessments on their patient populations.

Myths, Stereotypes, and Assumptions

Rarely do people voluntarily admit that they are illiterate. Illiteracy is a stigma that creates feelings of shame, inadequacy, fear, and low self-esteem (Weiss, 2003; Williams et al., 2002). Most individuals with poor literacy skills have learned that it is dangerous to reveal their illiteracy because of fear that others such as family, strangers, friends, or employers would consider them dumb or incapable of functioning responsibly. In fact, the majority of people with literacy problems have never told their spouse or children of their disability (Quirk, 2000; Williams et al., 2002).

People also tend to underreport their limited reading abilities because of embarrassment or lack of insight about the extent of their limitation. The NALS report revealed that the majority of adults performing at the two lowest levels of literacy skill describe themselves as proficient in being able to read and/or write English (Ad Hoc Committee on Health Literacy, 1999). Because self-reporting is so unreliable and because illiteracy and low literacy are so common, many experts suggest that screening of all pa-

tients should be done to identify clients who have reading difficulty to determine the extent of their impairment (Andrus & Roth, 2002; Weiss, 2003; Weiss et al., 2005).

Most people with limited literacy abilities are masters at concealment. Typically, they are ashamed by their limitation and attempt to hide the problem in clever ways. Often, they are resourceful and intelligent about trying to conceal their illiteracy and have developed remarkable memories to help them cope with family and career situations (Doak et al., 1996; Kanonowicz, 1993). Many have discovered ways to function quite well in society without being able to read by memorizing signs and instructions, by making intelligent guesses, or by finding employment opportunities that are not heavily dependent on reading and writing skills.

An important thing to remember is that there are many myths about illiteracy. It is very easy for healthcare providers to fall into the trap of wrongly labeling someone as illiterate or, for that matter, assuming that they are literate based on stereotypical images. Some of the most common myths about people who struggle with literacy skills are outlined next (Andrus & Roth, 2002; Doak et al., 1996; Weiss, 2003; Williams et al., 2002; Winslow, 2001):

Myth No. 1: They are intellectually slow learners or incapable of learning at all. (In fact, many have average or above-average IQs.)

Myth No. 2: They can be recognized by their appearance. (In fact, appearance alone is an unreliable basis for judgment; some very articulate, well-dressed people have no visible signs of a literacy disability.)

Myth No. 3: The number of years of schooling completed correlates with literacy skills. (In fact, grade-level achievement does not correspond well to reading ability. The number of years of schooling completed overestimates reading levels by four to five grade levels)

Myth No. 4: Most are foreign-born, poor, and of ethnic or racial minority. (In fact, they come from very diverse backgrounds and the majority are White, native-born Americans.)

Myth No. 5: Most will freely admit that they do not know how to read or do not understand. (In fact, most try to hide their reading deficiencies and will go to great lengths to avoid discovery, even when directly asked about their possible limitations.)

Assessment: Clues to Look For

So the question remains: How does one recognize an illiterate person? Identifying illiteracy is not easy because there is no stereotypical pattern. It is an impairment easily overlooked because illiteracy has no particular face, age, socioeconomic status, or nationality (Cole, 2000; Hayes, 2000).

Nurses, because of their highly developed assessment skills and frequent contact with clients, are in an ideal position to determine the literacy levels of individuals (Cutilli, 2005; Monsivais & Reynolds, 2003). Because of the prevalence of illiteracy, nurses should never assume that their clients are literate. Knowing a person's ability to read and comprehend is critical in providing teaching–learning encounters that are beneficial, efficient, and cost effective.

There are a number of informal clues or red flags to watch out for that indicate reading and writing deficiencies. The caveat is: do not rely on the obvious but look for the unexpected. In so many instances when someone does not fit the stereotypical image, nurses and physicians

have never even considered the possibility that an illiteracy problem exists.

Overlooking the problem has the potential for grave consequences in treatment outcomes and has resulted in frustration for both the client and the caregiver (Cole, 2000; Weiss, 2003). Unfortunately, healthcare providers are often hesitant to infer that a patient may have low literacy skills because there is an implication of personal inadequacy associated with the failure to have learned to read (Quirk, 2000).

Because people with illiteracy or marginal literacy skills often have had many years of practice at disguising the problem, they will go to elaborate lengths to hide the fact that they do not possess a skill already acquired by most elementary schoolchildren. The observant practitioner should always be on the lookout for possible signs of poor reading abilities. If healthcare providers become aware of a client's literacy problem, they must convey sensitivity and maintain confidentiality to prevent increased feelings of shame (Quirk, 2000).

During assessment, the nurse educator should take note of the following clues that clients with illiteracy or low literacy may demonstrate (Andrus & Roth, 2002; Davis, Michielutte, Askov, Williams, & Weiss, 1998; Weiss, 2003):

- Reacting to complex learning situations by withdrawal, complete avoidance, or being repeatedly noncompliant
- Using the excuse that they were too busy, too tired, too sick, or too sedated with medication to maintain their attention span when given a booklet or instruction sheet to read
- Claiming that they just did not feel like reading, that they gave the information to their spouse to take home, or that they lost, forgot, or broke their glasses
- Camouflaging their problem by surrounding themselves with books, magazines, and newspapers to give the impression they are able to read
- Circumventing their inability by insisting on taking the information home to read or having a family member or friend with them when written information is presented
- Asking you to read the information for them under the guise that their eyes are bothersome, they lack interest, or they do not have the energy to devote to the task of learning
- Showing nervousness as a result of feeling stressed by the threat of the possibility of getting caught or having to confess to illiteracy
- Acting confused, talking out of context, holding reading materials upside down, or expressing thoughts that may seem totally irrelevant to the topic of conversation
- Showing a great deal of frustration and restlessness when attempting to read, often mouthing words aloud (vocalization) or silently (subvocalization), substituting words they cannot decipher (decode) with meaningless words, pointing to words or phrases on a page, or exhibiting facial signs of bewilderment or defeat
- Standing in a location clearly designated for authorized personnel only
- Listening and watching very attentively to observe and memorize how things work
- Demonstrating difficulty with following instructions about relatively simple activities such as breathing exercises or with operating the TV, electric bed, call

light, and other simple equipment, even when the operating instructions are clearly printed on them
- Failing to ask any questions about the information they received
- Revealing a discrepancy between what is understood by listening and what is understood by reading

In summary, although it has been clearly pointed out that the level of completed formal education is an inaccurate presumption by which to predict reading level, it is certainly one estimate that nurses should incorporate into their methods of assessment. Also, negative feedback and clues from the client in the form of puzzled looks, inappropriate behaviors, excuses, or irrelevant statements may give the nurse the intuitive feeling that the message being communicated has neither been received nor understood. Not only do illiterate people become confused and frustrated in their attempts to deal with the complex system of health care, which is so dependent on written and verbal information, but they also become stressed in their efforts to cover up their disability.

Nurses, in turn, can feel frustrated when those who have undiagnosed literacy problems seem at face value to be unmotivated and noncompliant in following self-care instructions. Many times nurses wonder why clients make caregiving so difficult for themselves as well as for the provider. It is not unusual for nurses to conclude, "He's too proud to bend," "She's in denial," or "He's just being stubborn—it's a control issue."

Nurses in their role as educators must go beyond their own assumptions, look beyond a client's appearance and behavior, and seek out the less than obvious by conducting a thorough initial assessment of variables to uncover the possibility that a literacy problem exists. An awareness of this possibility and good skills at observation are key to diagnosing illiteracy or low literacy in learners. Early diagnosis will enable nurses to intervene appropriately to avoid disservice to those who do not need condemnation but nurses' support and encouragement.

Impact of Illiteracy on Motivation and Compliance

In addition to the fact that poor literacy skills affect the ability to read as well as to understand and interpret the meaning of written and verbal instructions, a person with illiteracy or semiliteracy struggles with other significant interrelated limitations with communication that negatively influence healthcare teaching (Doak et al., 1998; Kalichman, Ramachandran, & Catz, 1999). The person's organization of thought, perception, vocabulary and language/fluency development, and problem-solving skills are adversely affected, too (Giorgianni, 1998).

Fleener and Scholl (1992) investigated characteristics of those who had self-identified themselves as literacy disabled. For the functionally illiterate, the most common deficiencies found were in phonics, comprehension, and perception. Difficulties in perception were evident in the reversal of letters and words, miscalling letters, and adding and omitting letters. Also, a major problem was comprehension, identification of words without knowing their meaning. Some individuals needed to read aloud to understand, and others read so slowly that they lost the meaning of a paragraph before they had finished it. Still other subjects perceived difficulty in remembering as a factor in their lack of reading skill.

People with poor reading skills have difficulty analyzing instructions, assimilating and

correlating new information, and formulating questions (Giorgianni, 1998). They may be reluctant to ask questions because of concerns that their inquiries will be regarded as incomprehensible or irrelevant. Often they do not even know what to ask, but they also fear if they try others will think of them as ignorant or lacking in intelligence.

Hussey and Guilliland (1989) provided a poignant example, which remains as relevant today as it was then, of a young pregnant girl prescribed antiemetic suppositories to control her nausea. When she had no relief of symptoms, questioning by the nurse revealed that she was swallowing the medication. Obviously, not only did she not understand how to take the medicine, but she also likely had never seen a suppository and was not even able to read or understand the word. She did not ask what it was, probably because she did not know what to ask in the first place, and she may have been reluctant to question the treatment out of fear that she would be regarded as ignorant.

If past experiences with learning have been less than positive, some people may prefer not knowing the answers to questions and may withdraw altogether to avoid awkward or embarrassing learning situations. Also, they may react to complicated, fast-paced instruction with discouragement, low self-esteem, and refusal to participate because their process of interpretation is so slow. Even when questioned about their understanding, persons with low literacy skills will most likely claim that the information was understood even when it was not (Doak et al., 1996).

Another characteristic of illiterate individuals is that they have difficulty synthesizing information in a way that fits into their behavior patterns. If they are unable to comprehend a required behavior change or cannot understand why it is needed, then any health teaching will be disregarded (Weiss, 2003). For example, cardiac patients who are told via verbal and written instructions to lose weight, increase exercise, decrease dietary fat, and begin taking medications may fail to comply with this regimen because of lack of understanding of the information and how to go about incorporating these changes into their lifestyle (Schultz, 2002).

Persons with poor literacy skills may also think in only concrete, specific, and literal terms. An example of this limitation is the diabetic patient whose glucose levels were out of control even when the patient insisted he was taking his insulin as instructed—injecting the orange and then eating the fruit (Hussey & Guilliland, 1989).

The person with limited literacy also may experience difficulty handling large amounts of information and classifying it into categories. Older adults, in particular, who need to take several different medications at various times and in different dosages may either become confused with the schedule or ignore the instruction. If asked to change their daily medication routine, a great deal of retraining may be needed to convince them of the benefits of the new regimen (Kessels, 2003).

Another major factor in noncompliance is the lack of adequate and specific instructions about prescribed treatment regimens. Unfortunately, poor literacy skills are seldom assessed by healthcare personnel when, for example, teaching a patient about medications. Literacy problems tend to limit the patient's ability to understand the array of instructions regarding medication labels, dosage scheduling, adverse reactions, drug interactions, and complications (Williams et al., 2002). No wonder those who

lack the required vocabulary, organized thinking skills, and the ability to formulate questions, coupled with inadequate instruction, become confused and easily frustrated to the point of taking medications incorrectly or refusing to take them at all.

Thus, illiteracy, functional illiteracy, and low literacy significantly affect both motivation and compliance levels (see Chapter 6). What is often mistaken for noncompliance is, instead, the simple inability to comply. Although almost one half of the adult population is functionally illiterate, this statistic is overlooked by many healthcare professionals as a major factor in noncompliance with prescribed regimens, follow-up appointments, and measures to prevent medical complications (Andrus & Roth, 2002; Doak et al., 1996; Weiss, 2003; Williams et al., 2002).

A number of studies have correlated literacy levels with noncompliance (Doak et al., 1998; Kalichman et al., 1999; Mayeaux et al., 1996; Weiss, 2003). Individuals with poor literacy skills that coincide with inadequate language skills have difficulty following instructions and providing accurate and complete health histories, which are vital to the delivery of good health care. The burden of illiteracy leads patients into noncompliance not because they do not want to comply, but rather because they are unable to do so (Hayes, 2000; Williams, Counselman, & Caggiano, 1996).

Numerous research studies indicate that the impact of illiteracy is broader than just the inability to read; it alters the way a person organizes, interprets, analyzes, and summarizes information (Giorgianni, 1998). Caregivers often overestimate an individual's ability to understand instructions and are quick to label someone as uncooperative. In reality, the underlying problem may be limited cognitive processing that impedes comprehending and following written and oral communication.

Ethical, Financial, and Legal Concerns

Sources of printed education materials (PEMs) include healthcare facilities, commercial vendors, government services, voluntary health agencies, nonprofit charitable organizations, pharmaceutical firms, and medical equipment supply companies. These materials are distributed primarily by nurses and physicians and are the major sources of information for clients participating in health programs in many settings.

Written health information materials are intended to reinforce learning about health promotion, disease prevention, illness management, diagnostic procedures, drug and treatment modalities, rehabilitative course, and self-care regimens. Unfortunately, many of these sources fail to take into account the educational level, preexisting knowledge base, cultural influences, language barriers, or socioeconomic backgrounds of persons with limited literacy skills.

As compared with people who have adequate health literacy, it is estimated that expenditures for health care for those with limited literacy cost our country between $32 billion and $58 billion in 2001 (Center for Heath Care Strategies, 2003; Wood, 2005). Unless patients are competent in reading and comprehending the literature given to them, these tools are useless as adjuncts for health education. They are neither a cost-effective nor a time-efficient means for teaching and learning. Materials that are widely distributed, but little or not at all understood, pose not only a health hazard for clients but also an ethical, financial, and legal liability for healthcare providers (Ad

Hoc Committee, 1999; French & Larrabee, 1999; Gazmararian et al., 2005; Giorgianni, 1998; Schultz, 2002).

Materials that are too difficult to read or comprehend serve little purpose. Health education cannot be considered to have taken place if the written information that has been distributed to clients does not enhance their knowledge and requisite skills necessary for self-care. Ultimately, indiscriminate or nonselective use of PEMs can result in complete or partial lack of communication between healthcare providers and consumers (Andrus & Roth, 2002; Fisher, 1999; Weiss, 2003; Winslow, 2001).

Initial standards for health education put forth in 1993 by the Joint Commission for Accreditation of Healthcare Organizations (JCAHO)—now known as the Joint Commission (JC)—still remain as a current standard requiring "the patient and/or, when appropriate, his/her significant other(s) are provided with education that can enhance their knowledge, skills, and those behaviors necessary to fully benefit from the health care interventions provided by the organization" (JCAHO, 1993, p. 1030).

In 1996, JCAHO identified additional standards necessary for client care to meet accreditation mandates. Not only is patient and family (or significant other) instruction required, but education must be provided by all relevant members of the interdisciplinary healthcare team, with special consideration being given to the client's literacy level, educational level, and language. All clients must have an assessment of their readiness to learn and an identification of any obstacles to learning.

Emphasis on such standards has prompted healthcare agencies and providers to reexamine their teaching practices, educational materials, and systems of documenting evidence of teaching interventions to better match the reading levels and cultural diversity of the clients being served. These JC standards further specify that education relevant to a person's healthcare needs must be understandable and culturally appropriate to the patient and/or significant others. Therefore, PEMs must be written in ways that assist clients in comprehending their health needs and problems to undertake self-care regimens such as medications, diet, exercise therapies, and use of medical equipment (Fisher, 1999; Weiss, 2003).

Furthermore, the federally mandated Patient's Bill of Rights has established the rights of patients to receive complete and current information regarding their diagnoses, treatments, and prognoses in terms they can understand (Duffy & Snyder, 1999). It is imperative that the reading levels of PEMs match the patients' reading abilities and vice versa. Compounding the need for appropriately written materials is the fact that research reveals that people forget almost immediately about one half of any instruction they receive orally (Kessels, 2003). Failure to retain information combined with inappropriate reading levels of materials used to reinforce or supplement verbal teaching methods decreases compliance, increases morbidity, and results in misuse of healthcare facilities (Weiss et al., 2005).

Encouraging self-care through client education for purposes of health promotion, disease prevention, health maintenance, and rehabilitation is not a new concept to either consumers or providers of health care. However, the trends in the current healthcare system in the United States have impinged on the professional ability of nurses to provide needed information to ensure self-care that is both safe and effective. Patient education has assumed an even more vital role in assisting clients to independently manage their own healthcare needs given such factors as:

- Early discharge
- Decreased reimbursement for direct care
- Increased emphasis on delivery of care in the community and home setting
- Greater demands on nursing personnel time
- Increased technological complexity of treatment
- Assumption by caregivers that printed information is an adequate substitute for direct instruction of patients

These constraints do not allow for sufficient opportunities for clients in various healthcare settings to receive the necessary education they need for self-management after discharge. Most outpatient care, such as that given in clinics, doctors' offices, and same-day surgery centers, requires patients and their families to understand both written and oral instruction (Wood, 2005). Consequently, professional nurses are relying to a greater extent than ever before on PEMs to supplement their teaching (Horner et al., 2000).

Thus, the burden of becoming adequately educated falls on the shoulders of patients, their families, and significant others. Often unprepared because of shortened hospital stays or limited contact with healthcare providers, consumers have to assume a greater role in their own recovery and the maximization of their health potential (Weiss, 2003; Wood, 2005).

The burden also falls on nurses to safeguard the lives of their clients by becoming better, more effective communicators of written health information. Since 1990, the Maine Area Health Education Center (AHEC) Literacy Center at the University of New England has been holding summer institutes for healthcare professionals to learn about literacy issues, to share resources with colleagues from around the world, and to acquire skills in writing and critiquing health information documents (Andrus & Roth, 2002; Osborne, 1999).

It is only recently that research in the area of written health education materials in relation to clients' literacy skills has examined and attempted to answer even the most basic questions, such as the following:

- Do consumers read the health education literature provided them?
- Are they capable of reading it?
- Can they comprehend what they read?
- Are written materials appropriate and sufficient for the intended target audience?

In our increasingly litigious and ethically conscious society, growing attention is being paid by health professionals to informed consent and teaching for self-care via both verbal and written healthcare instruction (Gazmararian et al., 2005). The potential for misinterpretation of instructions not only can adversely affect treatment but also raises serious concerns about the ethical and legal implications with respect to professional responsibility and liability when information is written at a level incomprehensible to many patients (French & Larrabee, 1999; Weiss, 2003). A properly informed consumer is not only a legal concern in health care today but an ethical one as well (see Chapter 2).

Readability of Printed Education Materials

Many studies on literacy have attempted to document the disparity between the reading levels of consumers and the estimated readability demand of printed health information. Given that

the health of people depends in part on their ability to understand information contained in food labeling, over-the-counter and prescription medication instructions, environmental safety warnings, discharge instructions, health promotion and disease prevention flyers, and the like, the focus of attention on identifying this discrepancy is more than warranted.

A substantial body of evidence in the literature indicates that there is a significant gap between patients' reading and comprehension levels and the level of reading difficulty of printed education materials (PEMs) (Andrus & Roth, 2002; Weiss, 2003; Winslow, 2001). A variety of education materials available from sources such as the government, health agencies, professional associations, health insurance companies, and industries are written beyond the reading ability of the majority of clients.

Healthcare providers are beginning to recognize that the reams of written materials relied on by so many of them to convey health information to consumers are essentially closed to those with illiteracy and low-literacy problems. For example, look at the text below on information about colonoscopy:

> *Your naicisyhp has dednemmocer that you have a ypocsonoloc. A ypocsonoloc is a test for noloc recnac. It sevlovni gnitresni a elbixelf gniweiv epocs into your mutcer. You must drink a laiceps diuqil the thgin erofeb the noitanimaxe to naelc out your noloc.*

Does it make sense, or are you confused? If the words appear unreadable, that is exactly what written teaching instructions look like to someone who cannot read (Weiss, 2003).

Many researchers have assessed specific population groups in a variety of healthcare settings based on the ability of clients to meet the literacy demands of written materials related to their care. All of these investigators used commonly accepted readability formulas to test consumers' understanding of printed health information. Their findings revealed:

- Emergency department instructional materials (average 10th-grade readability) are written at a level of difficulty out of the readable range for most patients (Duffy & Snyder, 1999; Lerner, Jehle, Janicke, & Moscati, 2000; Williams et al., 1996).
- A significant mismatch exists between the reading ability of older adults and the readability levels of documents essential to their gaining access to health-related services offered through local, state, and federal government programs (Winslow, 2001).
- A large discrepancy exists between clients' average reading comprehension levels and the readability demand of PEMs used in ambulatory care settings (Lerner et al., 2000; Schillinger et al., 2002; Wood, 2005).
- Standard consent forms used in hospitals, private physician offices, and clinics, as well as by institutional review boards (IRBs) to protect potential research subjects require high school-to college-level reading comprehension (Doak et al., 1998; Paasche-Orlow, Taylor, & Brancati, 2003).
- Physicians' letters to their patients required an average of 16th–17th-grade reading ability, and, likewise, health articles in newspapers ranged from 12th to 14th-grade level (Conlin & Schumann, 2002)

- The reading grade levels of 15 psychotropic medication handouts for patient education ranged from 12th to 14th grade, well above the 5th-grade level recommended by the National Cancer Institute guidelines (Myers & Shephard-White, 2004)

Thus, numerous investigators have demonstrated that PEMs for the purpose of disseminating health information are written at grade levels that far exceed the reading ability of the majority of consumers. Results from these studies reveal that most health education literature is written above the 8th-grade level, with the average level falling between the 10th and 12th grade. Many PEMs exceed this upper range, even though the average reading level of adults falls at the 8th-grade level. Millions of people in our population read at considerably lower levels and need materials written at the 5th-grade level or lower (Bastable, Chojnowski, Goldberg, McGurl, & Riegel, 2005; Brownson, 1998; Doak et al., 1998; Davis, Williams, Marin, Parker, & Glass, 2002).

Furthermore, the health education literature indicates that people typically read at least two grade levels below their highest level of schooling and prefer materials that are written below their literacy abilities. In fact, contrary to popular belief, sophisticated readers also prefer simplified PEMs when ill due to low energy and concentration levels, and even when they are well due to the demands of their busy schedules and the fact that even highly educated people do not know the vocabulary of medicine, known as medicalese (Giorgianni, 1998; Lasater & Mehler, 1998; Winslow, 2001).

The conclusion to be drawn is that complex and lengthy PEMs serve no useful teaching purpose if healthcare consumers are unable to understand them or unwilling to read them. Literacy levels of clients compared with literacy demands of PEMs, whether in hospital or community-based settings, are an important factor in the rehabilitation and recidivism of those who are recipients of healthcare services.

The Internet is an excellent resource for nurse educators to locate easy-to-read PEMs. See **Table 7–4** for sources of low-literacy education materials.

Measurement Tools to Test Literacy Levels

Healthcare professionals continually struggle with the task of effectively communicating highly complex and technical information to their consumers, who often lack sufficient background knowledge to understand the sophisticated content of instruction relevant to their care. Whether they author or merely distribute printed education information, nursing and other healthcare practitioners are responsible for ensuring the appropriate literacy level of the materials given to their clients.

If the literacy of education materials matches the readers' literacy skills, consumers may be better able to understand and comply with healthcare regimens, thereby reducing the costs of care and improving their quality of life (Ad Hoc Committee, 1999). Because nurses rely heavily on PEMs to convey necessary information to their clients, the usefulness and efficacy of these materials must be determined in relation to the readers' abilities to decipher information.

To objectively evaluate the difficulty of written materials, two basic measurement methods exist: formulas and tests. Various formulas measure

Table 7-4 SOURCES OF LOW LITERACY EDUCATION MATERIALS

Agency for Healthcare Research and Quality (AHRQ). Web site: www.ahcpr.gov; phone: (315) 594-1364

National Institutes of Health (NIH). Web site: www.nih.gov

National Heart, Lung, and Blood Institute (NHLBI). Web site: www.nhlbi.nih.gov; phone: (301) 251-1222

United States Pharmacopeia (Library of Pictograms). Web site: www.usp.org; phone: (800) 227-8772

The Indian Health Service. Available at: www.ihs.gov

National Cancer Institute, Cancer Information Services. Web site: www.nci.nih.gov; phone: (800) 4-CANCER

American Cancer Society. Web site: www.cancer.org; phone: (800) ACS-2345

American Heart Association. Web site: www.americanheart.org; phone: (800) 242-1793

National Institute for Literacy. Web site: www.nifl.gov; phone: (202) 632-1500

American Dietetic Association. Web site: www.eatright.org; phone: (312) 899-0400

Office of Minority Health. Web site: www.omhrc.gov; phone: (800) 444-6472

Channing L. Bete Company, Inc. Web site: www. channing-bete.com; phone: (800) 477-4776

Krames Communication. Web site: www.krames.com; phone: (800) 333-3032

Mosby Consumer Health. Web site: www.mosby.com; phone: (800) 325-4177

Ask me 3. http://www.askme3.org

Executive Secretariat: The Plain Language Initiative. http://execsec.od.nih.gov/plainlang/guidelines/index.html

National Cancer Institute. http://cancer.gov/cancerinformation/clearandsimple

readability of PEMs and are based on ascertaining the average length of sentences and words (vocabulary difficulty) to determine the grade level at which they are written. Standardized tests, which measure actual comprehension and reading skills, involve readers' responses to instructional materials or the ability to decode and pronounce words to determine their grade level (see Appendix A).

Both methods, although not ideal, are considered to have a sufficient relationship to literacy ability to justify their use. The most widely used readability formulas and standardized tests for comprehension and reading skill rate high on reliability and predictive validity. They also do not require elaborate training to use, but they do vary in the amount of time required to administer. In addition, the advent of computerized readability analysis (nearly all word-processing programs, such as Microsoft Word, will produce readability statistics with just a click of the mouse) has made evaluating the reading grade level of written materials much easier and quicker. All of these methods are most useful to nurse educators for designing and evaluating PEMs.

Formulas to Measure Readability of PEMS

Readability is not a new concept and has been a concern of primary and secondary school educators and educational psychologists for years. In the 1940s, there was a great upswing in attempts by educators and reading specialists to develop systematic procedures by which to objectively evaluate reading materials. Readability is defined as "characteristics of reading materials that make material 'easy' or 'difficult' to read" (Aldridge, 2004). Today, more than 40 formulas are available to measure the readability levels of PEMs.

Readability indices have been devised to determine the grade level demand of specific written information. Although they can predict a level of reading difficulty of material based on an analysis of sentence structure and word length, they do not take into account the within or inherent individual variables that affect the reader, such as interest in or familiarity with the subject itself or the actual content of the materials (Doak et al., 1996).

Even though materials may have similar readability levels as measured by some formula, not all readers will have equal competence in reading them. For example, a patient with a long-standing chronic illness may already be familiar with vocabulary related to the disease and, therefore, may be able to read similar grade-level materials much more easily than a newly diagnosed patient, even though both individuals may have equal literacy skill with other types of material (Doak et al., 1985).

As assessment tools, readability formulas are useful but must be employed with caution, because the match between reader and material does not necessarily guarantee comprehension (Aldridge, 2004; Davis et al., 1998). Readability formulas originally were designed as predictive averages to rank the difficulty of books used in specific grades of school—not to determine exactly which factors contribute to the difficulty of a text. Educators should be careful in assuming that people can or cannot read instructional material simply because a formula-based readability score does or does not match their educational level.

Even though these simple instruments are practical for assessment of literacy, they are limited in that they cannot determine the cause or type of reading and learning problems (Davis et al., 1998). Therefore, while readability formulas are easily applied and have proved useful in determining the reading grade level of a text, when used alone they are not an adequate index of readability (Davis et al., 1998; Doak et al., 1996).

Readability formulas are merely one useful step in determining reading ease of a document. Many researchers suggest using a multi-method approach to ascertain readability—that is, they suggest applying a number of readability formulas to any given piece of written material as well as taking into consideration the reader and other material variables (Doak et al., 1996; Ley & Florio, 1996). Formula scores are simply rough approximations of text difficulty. Human judgment is always needed in conjunction with formula-based estimates to determine the quality of PEMs.

Readability formulas are mathematical equations derived from multiple regression analysis that describe the correlation between an author's style of writing and a reader's ability at identifying words as printed symbols within a context (Doak et al., 1996). Most of them provide fairly accurate grade-level estimates, give or take one

grade level with 68% confidence. In many respects, a readability formula is like a reading test, except that it does not test people but rather written material (Fry, 1977).

The first guideline to remember is that readability formulas should not be the only tool used for assessing PEMs. The second rule is to select readability formulas that have been validated on the reader population for whom the PEM is intended. Several formulas are geared to specific types of materials or population groups.

Ley and Florio (1996) and Meade and Smith (1991) conducted extensive studies of the most commonly used formulas and reported on their reliability and validity when used to measure health-related information. In particular, the Flesch, Fog, and Fry formulas showed strong correlations with health-based literature (Horner et al., 2000). Since so many readability formulas are available for assessment of reading levels of PEMs, only those that are relatively simple to work with are accepted as reliable and valid and are in widespread use have been chosen for review here.

Spache Grade-Level Score

What is unique about the Spache grade-level formula (Spache, 1953) is that, unlike the other leading formulas that focus largely on the evaluation of materials written for adults, this score is specifically designed to judge materials written for children at grade levels below fourth grade (elementary grades one through three). The Spache grade-level score should not be used to assess adult reading materials (Spache, 1953). The elements used to estimate reading difficulty using the Spache formula are sentence length and the number of words outside the Dale easy word list of 769 words required for formula calculation. See Appendix A for the method of formula analysis.

Flesch-Kincaid Scale

The Flesch-Kincaid formula was developed as an objective measurement of readability of materials between grade five and college level. Its use has been validated repeatedly over more than 50 years for assessing news reports, adult education materials, and government publications. The Flesch formula is based on a count of two basic language elements: average sentence length (in words) of selected samples and average word length measured as syllables per 100 words of sample. The reading ease (RE) score is calculated by combining these two variables (Flesch, 1948; Spadero, 1983; Spadero, Robinson, & Smith, 1980). See Appendix A for the method of formula analysis.

Fog Index

The Fog formula developed by Gunning (1968) is appropriate for use in determining readability of materials from fourth grade to college level. It is calculated based on average sentence length and the percentage of multisyllabic words in a 100-word passage. The Fog index is considered one of the simpler methods because it is based on a short sample of words (100), it does not require counting syllables of all words, and the rules are easy to follow (Spadero, 1983; Spadero et al., 1980). See Appendix A for the method of formula analysis.

Fry Readability Graph—Extended

The contribution of the Fry formula comes from the simplicity of its use without sacrificing accuracy, as well as its wide and continuous range of testing readability of materials (especially books, pamphlets, and brochures) at the

level of grade one through college (grade 17). It is well accepted by literature and reading specialists and is not copyrighted (Doak et al., 1996). A series of simple rules can be applied to plot two language elements—the number of syllables and the number of sentences in three 100-word selections (Fry, 1968; Fry, 1977; Spadero et al., 1980). If a very long text is being analyzed, such as a 50-page or more book, one should use six 100-word samples rather than three (Doak et al., 1996). With some practice, this formula takes only about 10 minutes to determine the readability level of a document. See Appendix A for directions on how to use the Fry readability graph.

SMOG Formula

The SMOG (simplified measure of gobbledygook) formula by formula by McLaughlin (1969) is recommended not only because it offers relatively easy computation (simple and fast) but also because it is one of the most valid tests of readability. The SMOG formula measures readability of PEMs from grade four to college level based on the number of polysyllabic words within a set number of sentences. (Doak et al., 1996). It evaluates the readability grade level of PEMs to within 1.5 grades of accuracy (Myers & Shepard-White, 2004). Thus, when using the SMOG formula to calculate the grade level of material, the SMOG results are usually about two grades higher than the grade levels calculated by the other methods (Spadero, 1983).

The SMOG formula has been used extensively to judge grade-level readability of patient education materials. It is one of the most popular measurement tools because of its reputation for reading-level accuracy, its simple directions, and its speed of use, which is a particularly important factor if computerized resources for analysis of test samples are not available (Meade & Smith, 1991). See Appendix A for the method of formula analysis and for an example of how to apply the SMOG formula to a short passage.

In summary, Doak et al. (1996) state that it is critically important to determine the readability of all written materials at the time they are drafted or adopted by using one or more of the many available formulas. They contend that you cannot afford to fly blind by using health materials that are untested for readability difficulty. Pretesting PEMs before distribution is the way to be sure they fit the literacy level of the audience for which they are intended. It is imperative that the formulas used to measure grade-level readability of PEMs are appropriate for the type of material being tested (see **Table 7–5**).

Computerized Readability Software Programs

Computerized programs have helped tremendously in facilitating the use of readability formulas. Some software programs are capable of applying a number of formulas to analyze one text selection. In addition, some packages are able to identify difficult words in written passages that may not be understood by patients. Dozens of user-friendly, menu-driven commercial software packages can automatically calculate reading levels as well as provide advice on how to simplify text (Aldridge, 2004; Doak et al., 1996).

Computerized assessment of readability is fast and easy, and it provides a high degree of reliability, especially when several formulas are used. Determining readability by computer programs rather than doing so manually is also

Table 7–5 APPROPRIATE READABILITY FORMULA CHOICE

Formula	Selection Shorter Than 300 Words	Selection Longer Than 300 Words	Entire Piece	Grade Level
Spache score	Yes	Yes	Yes	1–3
Flesch formula	Yes	Yes	Yes	5 to college
Fog formula	Yes (minimum of 100 words)	Yes	Yes	4 to college
Fry graph	Not recommended	Yes	Yes	1 to college
SMOG formula	Yes	Yes	Yes	4 to college

Source: Adapted from Spadero, Robinson, & Smith (1980), p. 216.

more accurate in calculating reading levels because it eliminates human error in scoring and because entire articles, pamphlets, or books can be scanned (Duffy & Snyder, 1999). It is advisable to take an average across several pieces of literature, using several different formulas and software programs, when calculating estimates of readability.

Tests to Measure Comprehension of PEMS

A number of standardized tests have proved reliable and valid to measure comprehension of readers, a relatively new concept in health education (Doak et al., 1996). Usually pretests and posttests used in institutional settings measure recall of knowledge rather than comprehension. However, the determination of readers' abilities to comprehend information is essential. Health education materials must serve a useful purpose, both from the standpoint of assisting patients to assume self-care and for protecting the health professional from legal liability.

Comprehension implies that the reader has internalized the information found in PEMs (Aldridge, 2004). The two most popular standardized methods to measure comprehension of written materials are the cloze test and the listening test. These tests can be used to assess how much someone understands from reading or listening to a passage of text.

Cloze Procedure

The cloze test (derived from the term *closure*) has been specifically recommended for assessing understanding of health education literature. Although it takes more time and resources to compute than do readability formulas, the cloze procedure has been validated for its adequacy in ranking reading difficulty of medical literature, which typically has a high concept load. This procedure is not a formula that provides a school grade-type level of readability like the formulas already described, but rather takes into consideration the context of a written passage (Doak et al., 1996).

The cloze test can be administered to individual clients who demonstrate difficulty com-

prehending health materials used for instruction. Nevertheless, it is suggested that this test not be administered to every client in a particular health setting but rather to a representative sample of consumers. The cloze test should be used only with those individuals whose reading skills are at sixth grade or higher (approximately Level 1 on the NALS scale); otherwise, it is likely that the test will prove too difficult (Doak et al., 1996).

The cloze test is best used when reviewing the appropriateness of several texts of the same content for a particular audience. The reader may or may not be familiar with the material being tested. This procedure is designed so that every fifth word is systematically deleted from a portion of a text. The reader is asked to fill in the blanks with the *exact* word replacements. One point is scored for every missing word guessed correctly by the reader. The final cloze score is the total number of blanks filled in correctly by the reader.

To be successful, the reader must demonstrate sensitivity to clues related to grammar, syntax, and semantics. If the reader is able to fill in the blanks with appropriate words, this process is an indication of how well the material has been comprehended—that is, how much knowledge was obtained from the set surrounding the blank spaces and how well the information was used to supply the additional information (Dale & Chall, 1978; Doak et al., 1996). The underlying theory is that the more readable a passage is, the better it will be understood even when words are omitted. The resulting score can be converted to a percentage for ease in interpreting and analyzing the data (Pichert & Elam, 1985).

A score for the cloze test is obtained by dividing the number of exact word replacements by the total number of blanks. A score of 60% or better indicates that the passage was sufficiently understood by the patient. A score of 40–59% indicates a moderate level of difficulty, where supplemental teaching is required for the patient to understand the message. A score of less than 40% indicates the material is too difficult to be understood and is not suitable to be used for teaching (Doak et al., 1996).

Instead of using packaged cloze tests available from commercial sources, it is suggested that educators devise their own tests so that the resultant scores will indicate a client's comprehension of their own instructions. Then problem words or sentences within these PEMs can be revised accordingly to make them more understandable. See Appendix A for an outline of the steps for constructing a cloze test, test scoring methodology, and a sample test.

Because the cloze procedure is a test of learners' ability to understand what they have read, be sure to be honest about the purpose of the test. For example, you might state that it is important for them to understand what they are to do when on their own after discharge, so you want to be sure they understand the written instructions they will need to follow. Doak et al. (1985) found that most people are willing to participate in the testing activity. They suggest that the following guidelines should be used before taking the cloze test:

1. Encourage participants to read through the entire test passage before attempting to fill in the blanks.
2. Tell them that only one word should be written in each blank.
3. Let them know that it is all right to guess, but that they should try to fill in every blank as accurately as possible.

4. Reassure them that spelling errors are all right just as long as the word they have put in the blank can be recognized.
5. Explain to them that this exercise is not a timed test. (If readers struggle to complete the test, tell them not to worry, that it is not necessary for them to fill in all the blanks, and set the test aside to go on to something else less frustrating or less threatening.)

Listening Test

Unlike the cloze test, which may be too difficult for clients who read below the sixth-grade level—that is, those who likely lack fluency and read with hesitancy—the listening test is a good approach to determining what a low-literate person understands and remembers when listening to oral instruction (Doak et al., 1996). Although it may take a couple of hours to develop this test, it takes only about 10–20 minutes to administer.

The procedure for administering the listening test is to select a passage from instructional materials that takes about 3 minutes to read aloud and is written at approximately the fifth-grade level. Formulate 5–10 short questions relevant to the content of the passage by selecting key points of the text. Read the passage to the person at a normal rate. Ask the listener the questions orally and record the answers (Doak et al., 1996).

To determine the percentage score, divide the number of questions answered correctly by the total number of questions. The instructional material will be appropriate for the client's comprehension level if the score is approximately 75–89% (some additional assistance when teaching the material may be necessary for full comprehension). A score of 90% or higher indicates that the material is easy for the client and can be fully comprehended independently. A score of less than 75% means that the material is too difficult and simpler instructional material will need to be used when teaching the individual. Doak et al. (1996) provide an example of a sample passage and questions for a listening comprehension test.

Tests to Measure Reading Skills of Clients

The three most popular standardized methods to measure reading skill are the wide range achievement test (WRAT), the rapid estimate of adult literacy in medicine (REALM), and the test of functional heath literacy in adults (TOFHLA). The literacy assessment for diabetes (LAD) is a relatively new instrument specific to clients with diabetes.

WRAT (Wide Range Achievement Test)

The WRAT is a word recognition screening test. It is used to assess a learner's ability to recognize and pronounce a list of words out of context as a criterion for measuring reading skills. There are a number of word recognition tests available, but the WRAT requires the least time to administer (approximately 5 minutes as compared with 30 minutes or more for the other tests).

Although it is limited to measuring only word recognition and does not test other aspects of reading such as vocabulary and comprehension of text material, this test is nevertheless useful for determining an appropriate level of instruction and for establishing a client's level of literacy. It is based on the belief that reading skill is associated with the ability to look at written words and

put them into oral language, a necessary first step in comprehension (Doak et al., 1996).

As designed, it should be used only to test people whose native language is English. The WRAT tests on two levels: Level I is designed for children 5 to 12 years of age, and Level II is intended for testing persons older than age 12. The WRAT scores are normed on age but can be converted to grade levels.

The WRAT consists of a graduated list of 42 words. Starting with the most easy and ending with the most difficult, the person taking the test is asked to pronounce the words from the list, starting from the top where the easiest words are located. The individual administering the test listens carefully to the patient's responses and scores those responses on a master score sheet. Next to those words that are mispronounced, a checkmark should be placed. When five words are mispronounced, indicating that the patient has reached his or her limit, the test is stopped.

To score the test, the number of words missed or not tried is subtracted from the list of words on the master score sheet to get a raw score. Then a table of raw scores is used to find the equivalent grade rating (GR). For more information on this test, see Doak et al. (1996), Davis et al. (1998), and Quirk (2000).

REALM (Rapid Estimate of Adult Literacy in Medicine)

The REALM test has advantages over the WRAT and other word tests because it measures a patient's ability to read medical and health-related vocabulary, it takes less time to administer, the scoring is simpler, and is well received by most clients (Davis et al., 1998; Duffy & Snyder, 1999; Foltz & Sullivan, 1998). This instrument has been field tested on large populations in public health and primary care settings (Davis et al., 1993). Although it has established validity, this test offers less precision than other word tests (Hayes, 2000). The raw score is converted to a range of grade levels rather than an exact grade level, but this result correlates well with the WRAT reading scores.

The procedure for administering the test is to ask patients to read aloud words from three word lists. Sixty-six medical and health-related words are arranged in three columns of 22 words each, beginning with short, easy words such as fat, flu, pill, and dose, and ending with more difficult words such as anemia, obesity, osteoporosis, and impetigo. Clients are asked to begin at the top of the first column and read down, pronouncing all the words that they can from the three lists. If they come upon a word they cannot pronounce, they are told to skip it and proceed to the next word. There is no time limit. The examiner keeps score on a separate copy of the list and places a plus sign next to words correctly pronounced and a minus next to those mispronounced or skipped (Davis et al., 1993). The total number of words pronounced correctly is the client's raw score, which is converted to a grade ranging from third grade and below (score of 0–18) to ninth grade and above (score of 61–66). Those whose scores fall at sixth grade or below have literacy skills equivalent to NALS levels 1 and 2 (Weiss, 2003; Schultz, 2002).

TOFHLA (Test of Functional Health Literacy in Adults)

The TOFHLA is a relatively new instrument developed in the mid-1990s for measuring patients' literacy skills using actual hospital materials, such as prescription labels, appointment slips, and informed consent documents. The test consists of two parts: reading comprehension and

numeracy. It has demonstrated reliability and validity, requires approximately 20 minutes to administer, and is available in a Spanish version (TOFHLA-S) as well as an English version (Parker, Baker, Williams, & Nurss, 1995; Quirk, 2000; Williams et al., 1995). A more recent abbreviated version, known as the S-TOFHLA, was developed in 1999; it takes only 12 minutes to administer. Not only has it been tested for reliability and validity, but it is a more practical measure of functional health literacy to determine who needs assistance with achieving learning goals (Baker et al. 1999). A copy of the TOFHLA instrument and directions can be accessed at http://www.peppercornbooks.com/catalog/information.php?info_id=5

Readability formulas and standardized tests for comprehension and reading skills were never designed for the purpose of serving as writing guides. Patient educators may be tempted to write PEMs to fit the formulas and tests, but they should be aware that doing so places emphasis on structure, not content, and that comprehensibility of a written message may be greatly compromised. Pichert and Elam (1985) recommend that readability formulas should be used solely to judge material written without formulas in mind. Formulas are merely methods to check readability, and standardized tests are merely methods to check comprehension and word recognition. Neither method guarantees good style in the form of direct, conversational writing.

LAD (Literacy Assessment for Diabetes)

The LAD was specifically developed in 2001 to measure word recognition in adult patients with diabetes. This readings skills test, compared with WRAT3 (3rd version) and the REALM, was assessed to have strong reliability and validity. It consists of three word lists presented in ascending order of difficulty. The majority of terms are at the fourth-grade reading level, but the remaining words range from sixth- through sixteenth-grade levels. The LAD can be administered in 3 minutes or less. It was tested on a group of 200 people at a primary care clinic, a senior center, and three prisons. The subjects ranged in age from 20 to 85 years (mean age = 43.5). This standardized test was modeled after the REALM but emphasizes common words used when teaching self-care management of diabetes. The LAD instrument is copyrighted but is available with permission from Robert C. Byrd Health Sciences Center, Department of Family Medicine, PO Box 9152, Morgantown, WV 26505-9152, attn. Charlotte Nath, Ed.D., (Nath et al., 2001) or via the Internet at http://tde.sagepub.com

SAM (Instrument for Suitability Assessment of Materials)

In addition to using formulas and tests to measure readability, comprehension, and reading skills, Doak et al. (1996) designed a tool to rapidly and systematically assess the suitability of instructional materials for a given population of learners. Ideally, instructional tools should be evaluated with a sample of the intended audience, but limited time and resources may preclude such an approach. In response to this dilemma, these literacy experts developed the (suitability assessment of materials) SAM instrument. Not only can the SAM be used with print material and illustrations, but it has also been designed to be applied to video- and audiotaped instructions.

The SAM yields a numerical (percent) score, with materials tested falling into one of three categories: superior (70–100%), adequate (40–69%), or not suitable (0–39%). The application of the SAM can identify specific deficiencies in instructional materials that reduce their suitability. The SAM includes 22 factors to assess the content, literacy demand, graphics, layout and typography, learning stimulation and motivation, and cultural appropriateness of instructional materials being developed or already in use. The maximum score possible is 44 points (equals 100%). If one or more SAM factors do not apply to the material being tested, the test administrator should subtract two points each for every not applicable factor. For example, if the material tests at 36 but two factors did not apply, the maximum possible score would be 40. Thus, 36/40 = 90% (Doak et al., 1996). See Appendix A for the SAM instrument and directions for scoring.

Simplifying the Readability of PEMS

The suitability of written materials for different audiences depends not only on actual grade-level demand, which can be measured by readability formulas, but also on those elements within a text such as technical format, concept density, and accuracy and clarity of the message. It must never be forgotten that knowing the target audience in terms of the members' level of motivation, reading abilities, experiential factors, and cultural background is also of crucial importance in determining the appropriateness of printed health information as effective communication tools (Meade & Smith, 1991; Weiss, 2003). Even good readers may fail to respond to important health education literature if they lack the motivation to do so or if the material is not appealing to them.

Despite the well-documented potential of written materials to increase knowledge, compliance, and satisfaction with care, PEMs are often too difficult for even motivated clients to read. Clearly, the technical nature of health education literature lends itself to high readability levels, often requiring college-level reading skills to fully comprehend (Winslow, 2001).

Even though printed materials are the most commonly used form of media, as currently written, they remain the least effective means for reaching a large proportion of the adult population who have marginal literacy skills (Monsivais & Reynolds, 2003). What the nurse in the role of educator must strive to achieve when designing or selecting health-based literature is a good and proper fit between the material and the reader. Choosing and designing PEMs is a difficult, time-consuming, and challenging task that often becomes the responsibility of the nurse (Winslow, 2001).

Certainly the best solution for improving the overall comprehension and reading skills of clients would be to strengthen their basic general education, but this process will require decades to accomplish. What is needed now are ways in which to write or rewrite educational materials commensurate with the current comprehension and reading skills of learners. Nathaniel Hawthorne was once reported to have said, "Easy reading is damned hard writing" (Pichert & Elam, 1985, p. 181). He was correct in his perception that clear and concise writing is a task that takes effort and practice.

It is possible, though, to reduce the disparity between the literacy demand of written instructional materials and the actual reading level of

clients by attending to some basic linguistic, motivational, organizational, and content principles. *Linguistics* refers to the type of language and grammatical style used. *Motivation principles* focus on those elements that stimulate the reader, such as relevance and appeal of the material. *Organizational factors* deal with layout and clarity. *Content principles* relate to load and concept density of information (Bernier, 1993). Wood et al. (2007) describe the language, information, and design (LID) method to create easy-to-read materials. These elements will be examined as they relate to designing or revising instructional materials for the marginally literate reader.

Prior to writing or rewriting a text for easier reading, however, some preliminary planning steps need to be taken to ensure that the final written material will be geared to the target audience (Davis et al, 1998; Doak et al., 1996; Kessels, 2003). The steps are:

1. Decide what the client should do or know. In other words, what is the purpose of the instruction? What outcomes do you hope learners will achieve?
2. Choose information that is relevant and needed by the client to achieve the behavioral objectives. Limit or cut out altogether extraneous and nice to know information such as the history or detailed physiological processes of a disease. Include only survival skills and essential main ideas of who, what, where, and when, with new information related to what the reader already knows. Remember: a person does not have to know how an engine works to drive a car.
3. Select other media to supplement the written information, such as pictures, demonstrations, models, audiotapes, and videotapes. Even poor readers will benefit from written material if it is combined with other forms of delivering a message. Consider the field of advertising, for example. Advertisers get their message across with words but often in combination with strong, action-packed visuals.
4. Organize topics into chunks that follow a logical sequence. Prioritize to present the most important information first. If topics are of equal importance, proceed from the more general as a basis on which to build to the more specific. Begin with a statement of purpose. In a list of items, place key facts at the top and bottom, because readers best remember information presented first and last in a series.
5. Determine the preferred reading level of the material. If the readers have been tested, preferably write two to four grades below the reading grade-level score. If the audience has not been tested, the group is likely to display a wide range of reading skills. When in doubt, write instructional materials at the fifth-grade level, which is the lowest common denominator, keeping in mind that the average reading level of the population is approximately eighth grade, that more than 20% read below the fifth-grade level, and that fewer than 50% read above the tenth-grade level.

To cover a wide range of reading skills, it is also possible to develop two sets of instructions—one at a higher grade level and one at a lower

grade level—and allow patients to select the one they prefer (**Table 7–6**). Once the reading grade level of a piece of written material is determined, it should be printed on the back of the document in coded form as, for example, RL = 7 (reading level = seventh grade), for easy reference.

The literature contains numerous references related to techniques for writing effective educational materials (Aldridge, 2004; Andrus & Roth, 2002; Buxton, 1999; Doak et al., 1996; Doak et al., 1998; Duffy & Snyder, 1999; Horner et al., 2000; Mayer & Rushton, 2002; Monsivais & Reynolds, 2003; Pignone et al., 2005; Weiss, 2003). Recommendations have been put forth for developing written instructions that can be more easily understood by a wide audience.

The strategies described in this section are specific with regard to simplifying written health information for clients with low literacy skills. The key factor in accommodating low-literate readers is to write in plain, familiar language using an easy visual format. The following general guidelines are some basic linguistic,

Table 7–6 Example of lowered readability level

NINTH-GRADE LEVEL

Smoking contributes to heart disease in the following ways:

1. When you smoke, you inhale carbon monoxide and nicotine, which causes your blood vessels to narrow, your heart rate to increase, and your blood pressure to go up. All of these factors increase the workload for your heart.
2. Carbon monoxide stimulates your body to produce more red blood cells. The presence of more red cells means that your blood will clot more readily, leading to increased risk of coronary artery disease and stroke.
3. Carbon monoxide and nicotine may also increase your risk of atherosclerotic buildup by causing damage to your artery walls.
4. Smoking raises blood cholesterol level and has been known to cause irregular heartbeats.

FOURTH-GRADE LEVEL

Smoking hurts your heart in many ways:

1. Smoking makes your heart beat faster, raises your blood pressure, and makes your blood vessels smaller. All these things cause your heart to work harder.
2. Smoking makes your blood clot easier. This increases your chance of having a heart attack or a stroke.
3. Smoking makes your cholesterol level go up. It may also damage your blood vessels.
4. Smoking may make your heartbeat less regular.

Source: From Wong, M., (1992, Feb.) "Self-care instructions: Do patients understand educational materials?" *Focus on Critical Care, 19,*(1), 47–49. Reprinted with permission of American Association of Critical-Care Nurses.

motivational, organizational, and content principles to adhere to when writing effective PEMs:

1. Write in a conversational style using the personal pronoun *you* and the possessive pronoun *your*. Use an active voice in the present tense rather than a passive voice in the past or future tense. The message is more personalized, more imperative, more interesting, and easier to understand if instruction is written as "Take your medicine . . ." instead of "Medicine should be taken . . ." This rule is considered to be the most important technique to reduce the level of reading difficulty and to improve comprehension of what is read. Directly addressing the reader through personal words and sentences engages the reader. For example:

   LESS EFFECTIVE
   People who sunburn easily and have fair skin with red or blond hair are most prone to develop skin cancer. The amount of time spent in the sun affects a person's risk of skin cancer.[1]

   MORE EFFECTIVE
   If you sunburn easily and have fair skin with red or blond hair, you are more likely to get skin cancer. How much time you spend in the sun affects your risk of skin cancer.

2. Use short words and common vocabulary with only one or two syllables as much as possible. Rely on sight words, known as high-frequency words, which are recognized by almost everyone. The key is to choose words that sound familiar and natural and are easy to read and understand, such as *shot* rather than *injection* and *use* instead of *utilize*. Avoid compound words, such as *lifesaver*, and words with prefixes or suffixes, such as *reoccur* or *emptying*, that create multisyllable words.

   Also, try to avoid technical words and medical terms (medicalese), and substitute common, nontechnical, lay terms such as *stroke* instead of *cardiovascular accident*. Be sure to select substitutions carefully, because they may have a different meaning for some people than for others or in one context versus another. For example, if the word *medicine* is replaced with the word *drug*, the latter may be interpreted as the illegal variety. Using modest words is not considered talking down to readers; it is considered talking to them at a more comfortable level.
3. Spell words out rather than using abbreviations or acronyms. *That is* should be used instead of *i.e.* and *for example* instead of *e.g.* Abbreviations for the months of the year (such as Sept.) or the days of the week (Wed., for example) are a real problem for clients with limited vocabulary. Also do not use acronyms, such as CVA or NPO, unless these medical abbreviations are clearly defined beforehand in the text.
4. Organize information into chunks, which improves recall. Also, use numbers sparingly and only when absolutely necessary. Statistics are usually mean-

[1] Fry Now, Pay Laten, American Cancer Society pamphlet, No. 2611, 1985.

ingless and are another source of confusion for the low-literate reader. Limit the number of items in any list to no more than seven. People have a difficult time remembering more than seven consecutive items (Baddeley, 1994).

5. Keep sentences short, preferably not longer than 20 words and fewer if possible, because they are easier to read and understand for clients with short-term memories or who struggle decoding words of a sentence. Avoid subordinate (dependent) clauses that make the reading more difficult. The use of commas, colons, or dashes result in long, complex sentences that turn off the reader. Titles also should be short and convey the purpose and meaning of the material that follows.
6. Clearly define any technical or unfamiliar words by using parentheses that include simple terms after difficult words—for example, "bacteria (germ)." A glossary that provides definitions of each difficult term is a helpful tool, but it is highly recommended to phonetically spell out terms immediately following the unfamiliar word within the text; for example, "Alzheimer's (pronounced Alts-hi-merz)." If a new technical vocabulary word needs to be introduced, such as diabetes or hypertension, it should be used and repeated frequently (Byrne & Edeani, 1984; Spees, 1991). Standal's (1981) method suggests identifying words whose meanings should be taught to the reader prior to introducing the instructional material to increase reader comprehension and to avoid having to make major revisions to a printed piece.
7. Use words consistently throughout the text and avoid interchanging words. For example, if discussing *diet*, adhere to the word diet rather than substituting other terms for it, such as *meal plan, menu, food schedule,* and *dietary prescription*, which merely confuse readers and can lead to misunderstanding of instruction.
8. Avoid value judgment words with many interpretations, such as *excessive*, *regularly*, and *frequently.* How much pain or bleeding is excessive? How often is regularly or frequently? Use exact terms to describe what you mean by using, for example, a scale of 1–5 or explaining frequency in terms of minutes, hours, or days. Instead of saying, "drink milk frequently," you should be more specific by stating, "drink three full glasses of milk every day."
9. Put the most important information first by prioritizing the need to know. Place essential messages up front and get rid of extraneous details.
10. Use advance organizers (topic headings or headers) and subheadings. They clue the reader in to what is going to be presented and help focus the reader's attention on the message.
11. Limit the use of connectives such as *however*, *consequently*, *even though*, and *in spite of* that lengthen sentences and make them more complex. Also, avoid *and* if it connects two different ideas; instead break the ideas into two sentences.
12. Make the first sentence of a paragraph the topic sentence, and, if possible, make the first word the topic of the sentence. For example:

LESS EFFECTIVE
Even though overexposure to the sun is the leading cause, it isn't necessary to give up the outdoors in order to reduce your chances of developing skin cancer.[1]

MORE EFFECTIVE
Enjoying the outdoors is still possible if you take steps to reduce your risk of skin cancer when in the sun.

OR
Your chance of skin cancer can be reduced even when enjoying the outdoors.

13. Reduce concept density by limiting each paragraph to a simple message or action and include only one idea per sentence. In the following example, the original paragraph contains at least six concepts. As rewritten, the revised paragraph has been reduced to four concepts (and is written using the second person pronoun, which is a much more personalized approach):

ORIGINAL PARAGRAPH
A person who has had a stroke may or may not be able to return to his or her former level of functioning, depending on the extent and location of brain damage. Mental attitude, efforts of the rehabilitation team and the understanding of family and friends also affect the patient's progress. Recovery must be gradual, but it should begin the moment the patient is hospitalized. After the patient is tested to determine the extent of brain damage, rehabilitation such as physical, speech, and occupational therapy should begin. Family and friends should be told how to handle special problems the stroke victim may have, such as irrational behavior or difficulty communicating.[2]

REVISED PARAGRAPH
Getting back to your normal life after a stroke is an important part of your recovery. Each stroke patient is different. Your progress depends on where and how much your brain is damaged. Getting better will take time. The care you get will begin while you are in the hospital. How you think and feel about what happened to you will help you handle special problems. Also helpful to you is the care given by the nurses, doctors, and others. The support you get from your family and friends is important, too.

14. Keep density of words low by not exceeding 30–40 characters (letters) per line. The number of words in each line is influenced by the size of the font.
15. Allow for plenty of white space in margins, and use generous spacing between paragraphs and double spacing within paragraphs to reduce density. Pages that are not crowded seem less overwhelming to the reader with low-literacy skills.
16. Keep right margins unjustified because the jagged right margins help the reader distinguish one line from another. In this way, the eye does not have to adjust

[1] Fry Now, Pay Laten, American Cancer Society pamphlet, No. 2611, 1985.

[2] Adapted from American Heart Association (1983). *An Older Person's Guide to Cardiovascular Heath,* National Center, 732; Greenville Avenue, Dallas TX: 75321. The information from this book is not current and is used for illustration purposes only.

to different spacing between letters and words as it does with justified type.

17. Design layouts that encourage eye movement from left to right, as in normal reading. In simple drawings and diagrams, using arrows or circles that give direction is helpful, but do not add too many elements to a schematic.
18. Select a simple type style (serif, Times New Roman, or Courier) and a large font (14 or 16 print size) in the body of the text for ease of reading and to increase motivation to read. A sans serif font (without little hooks at the top and bottom of letters) or other type of clean style should be used only for titles to give style to the page. Avoid *italics,* *fancy lettering,* and ALL CAPITAL letters. Low-literate readers are not fluent with the alphabet and need to look at each letter to recognize a word. To facilitate their decoding of words in titles, headings, and subheadings, use uppercase and lowercase letters, which provide reading cues given by tall and short letters on the type line. Avoid using a large stylized letter to begin a new paragraph, such as:

    This looks attractive, but it is confusing to a poor reader who cannot decode the word minus the first letter.
19. Highlight important ideas or key terms with bold type or underlining, but never use all capital letters.
20. If using color, employ it consistently throughout the text to emphasize key points or to organize topics. Color, if applied appropriately, attracts the reader. Red, yellow, and orange are warm colors that are more eye-catching and easier to read than cold colors such as violet, blue, and green. Use bold, solid colors and avoid pastel colors that all look gray to older adults with vision problems, such as cataracts.
21. Create a simple cover page with a title (in uppercase and lowercase lettering) that clearly and succinctly states the topic to be addressed. The title should ideally be one to four words in length.
22. Limit the entire length of a document—the shorter, the better. It should be long enough just to cover the essential, need-to-know information. Too many pages with nice-to-know information will turn off even the most eager and capable reader.
23. Select paper that is attractive and on which the typeface is easy to read. Black print on white paper is most easily read and most economical. Dull finishes reduce the glare of light. Avoid high-gloss paper, which reflects light into the eyes of the reader and is usually too formal and not in harmony with the purpose and informal tone of your message.
24. Use bold line drawings and simple, realistic pictures and diagrams. Basic visuals aid the reader to better understand the text information. Use cartoons judiciously, however, because they can trivialize the message and make it less credible.

    Graphic designs that are strictly decorative should never be used because they are distracting and confusing. Also, never superimpose words on a background design because it makes reading the letters of the words very difficult. Only illustrations that enhance under-

standing of the text and that relate specifically to the message should be used.

Be careful to use pictures that portray the messages intended. For example, avoid using a picture of a pregnant woman smoking or drinking alcohol because this negative message is dependent on careful reading of the text to correct a faulty impression. The visuals should clearly show only those actions that you want the reader to do and remember. Be sure that visuals do not communicate cultural bias.

Use simple subtitles and captions for each picture. Also, be sure drawings are recognizable to the audience. For instance, if you draw a picture of the lungs, be certain they are within the outline of the person's body to accurately depict the location of the organs. The person with low literacy may not know what they are looking at if the lungs are not put in context with the body's torso. However, pictures do not necessarily make the text easier to read if the readability level remains high.

25. Include a summary section using bullet points or a numbered list to review what has already been presented. A question-and-answer format using the client's point of view is an effective way to summarize information in single units using a conversational style. The following example is adapted from an American Cancer Society pamphlet.[1]

Q: Am I likely to get skin cancer?

A: If you have spent a lot of time in the sun, you have a greater chance of getting skin cancer than people who have stayed out of the strong sunlight. If you sunburn easily, you are at more risk for skin cancer. If you have fair skin with red or blond hair, you are more likely to get skin cancer than people with dark skin.

Q: How can I tell if I have skin cancer?

A: The only way to know for certain is to see your doctor. Your doctor may want to take a sample of skin to test for cancer. If you have a red, scaly patch, a mole that has changed, or an area of the skin that does not heal, see your doctor right away.

Q: How can I prevent skin cancer?

A: Stay out of direct sunlight between 11:00 a.m. and 2:00 p.m. When outside in the sun, cover up with clothing, wear a wide-brimmed hat, and use sunscreens that block out the sun's harmful rays.

Ask for feedback after clients have read your instructions. Either have readers explain the information in their own words or have them demonstrate the desired behavior. If learners can do so correctly, it is a good indication that the information is understood. Do not ask questions such as "Do you understand?" because you are likely to get a "yes" or "no" answer, not a substantive response.

26. Put the reading level (RL) on the back of a PEM for future reference—for example, if the PEM is readable at the sixth-grade level, the designation would be RL6.
27. Determine readability by applying at least two formulas (SMOG, Fog, and

[1] Fry Now, Pay Laten, American Cancer Society pamphlet, No. 2611, 1985.

Fry are suggested). Also, you can measure comprehension by applying the cloze or listening test and check reading skills by applying the WRAT, REALM, or TOFHLA.

It does not take a great deal of effort, just know-how and common sense, to improve the readability and comprehensibility of instructional materials (see **Table 7–7** for a summary of tips). The benefits are significant in terms of

Table 7–7 SUMMARY OF TIPS FOR DESIGNING EFFECTIVE LOW-LITERACY PRINTED MATERIALS

CONTENT

Clearly define the purpose of the material.
Decide when and how the information will be used.
Use behavioral objectives that cover the main points.
Verify the accuracy of content with experts.
Give "how to" information for the learner to achieve objectives.
Present only the most essential information (three to four main ideas: who, what, where, and when).
Relate new information to what the audience already knows.
Present content relevant to the audience and avoid cultural bias in writing and graphics.

ORGANIZATION

Keep titles short, yet use words that clearly convey the meaning of the content.
Provide a table of contents for lengthy material and a summary to review content presented.
Present the most important information first.
Use topic headings (advance organizers).
Make the first sentence of each paragraph the topic sentence.
Include only a few concepts per paragraph.
Use short, simple sentences that convey only one idea at a time; limit the length of the entire text.
Limit lists to no more than seven items.
Present each idea in logical sequence.

LAYOUT/GRAPHICS

Select large, easily read print (minimum 12-point type) and use nonglossy paper.
Write headings and subheadings in both lowercase and uppercase letters; avoid fancy lettering.
Use bold type or underlining to emphasize important information.
Use lots of white space between segments of information.
Use generous margins and keep right-hand margins unjustified.
Provide a question-and-answer format for patient–nurse interaction.
Select double spacing (between lines of type), type style (serif), and font (print size) for ease of reading.
Design a colorful, eye-catching cover that suggests the message contained in the text.

continues

Table 7–7 SUMMARY OF TIPS FOR DESIGNING EFFECTIVE LOW-LITERACY PRINTED MATERIALS (CONTINUED)

LINGUISTICS

Keep sentences short (ideally 8–10 words, but no more than 20 words).
Write in the active voice, using the present tense and the pronouns you and your to engage the reader.
Use one- to two-syllable words as much as possible; avoid multisyllabic (polysyllabic) words.
Use words familiar and understandable to the target audience.
Avoid complex grammatical structures (i.e., multiple clauses).
Limit the number of concepts.
Focus content on what the audience should do as well as know.
Use positive statements; avoid negative messages.
Use questions throughout the text to encourage active learning.
Provide examples the audience can use to relate to personal experiences/circumstances.

LINGUISTICS

Avoid using double negatives and value judgment words.
Clearly define terms likely to be unclear to audience.

VISUALS

Include simple, culturally sensitive illustrations and pictures.
Use simple drawings, but only if they improve the understanding of essential information.
Choose illustrations and photographs free of clutter and distractions.
Convey a single message or point of information in each visual.
Use visuals that are relevant to the text and meaningful to the audience.
Use drawings recognizable to the audience that reflect familiar images.
Use adult rather than childlike images (use cartoons sparingly).
Use captions to describe illustrations.
Use cues such as arrows, underlines, circles, and color to give direction to ideas and to highlight the most important information.
Use appealing and appropriate colors for the audience (for older adults, use black and white, and avoid pastel shades, especially blue, green, and violet hues).

READABILITY AND COMPREHENSION

Perform analysis with readability formulas and comprehension tests to determine reading level of material.
Write materials two to four grade levels below the determined literacy level of the audience.
Pilot test the material to determine readability, comprehensibility, and appeal before its widespread use.

Source: Adapted from Bernier, M.J. (1993). Developing and evaluating printed education materials: A prescriptive model for quality. *Orthopedic Nursing, 12*(6), 42, and from papers from the 16th Annual Conference on Patient Education, Nov. 17–20, 1994, Orlando, FL—sponsored by American Academy of Family Physicians and Society of Teachers of Family Medicine.

compliance and quality of care when marginally literate patients are given PEMs that effectively communicate messages they can read and understand.

Always remember to test any new materials before printing and distributing them. Not only will this effort save the cost of printing handouts that might not be useful, but patients will have the opportunity to participate in the evaluative process. Readily understandable materials also reduce time and frustration on the part of the nurse educator and avoid the possibility of litigation when better-quality and more appropriate healthcare instructions are used. The important role of printed media to communicate health information should compel all writers of PEMs to use the techniques recommended in this chapter. As Doak and Doak (1987) so aptly summarize, "With so much to be gained, the investments of a little time and thoughtful attention to the materials provided to patients can pay back dividends too important to ignore" (p. 8).

Teaching Strategies for Clients with Low Literacy

Working with clients who are illiterate and marginally literate requires more than designing simple-to-read instructional literature. It also calls for using alternative and innovative teaching strategies to break down the barriers of illiteracy. Using techniques to improve communication with clients has the potential to greatly enhance their understanding (Mayeaux et al., 1996; Weiss, 2003).

Teaching clients with poor reading skills does not have to be viewed as a problem, but rather can be seen as a challenge (Dunn, Buckwalder, Weinstein, & Palti, 1985). Existing teaching methods and tools can be adapted to meet the logic, language, and experience of the patient who has difficulty with reading and comprehension (Doak et al., 1998). Incidentally, many literate and highly motivated clients also can benefit from some of these same teaching strategies.

Many authors (Austin, Matlock, Dunn, Kesler, & Brown, 1995; Davis et al. 2002; Doak et al., 1998; Houts et al., 1998; Kessels, 2003; Lerner et al, 2000; Mayeaux et al., 1996; Pignone et al., 2005; Rothman et al., 2004; Schultz, 2002; Webber, Higgins, & Baker, 2001; Weiss, 2003; Winslow, 2001) suggest the following tips as useful strategies for the nurse educator to employ:

1. *Establish a trusting relationship before beginning the teaching–learning process*. Start by getting to know the clients to reduce their anxiety. Because many poor readers have a history of being defensive, the nurse educator must attempt to overcome their defense mechanisms by casting aside communication barriers such as any preconceived notions, including myths and stereotypes. Also, focus on clients' strengths. Demonstrate your belief in them as responsible individuals. Be open and honest about what specifically needs to be learned to build up their confidence in their ability to perform self-care activities. Encourage family and friends to help reinforce the clients' self-confidence. Remember, your role as educator is to facilitate learning by providing guidance and support.
2. *Use the smallest amount of information possible to accomplish the predetermined behavioral objectives*. Stick to the essentials, paring down the information you teach to what the client must learn. Prioritize

behavioral objectives, and select only one or two concepts to present and discuss in any one session. Present the context of the message first before giving any new information. Remember, clients with poor comprehension and reading skills are easily overwhelmed. Information about the history of treatment, general principles, statistics, detailed physiology, and extraneous facts about a topic are not necessary for them to know. Keep teaching sessions short, limiting them to no more than 20–30 minutes, but 15–20 minutes is the ideal time limit.

3. *Make points of information as vivid and explicit as possible*. Explain information in simple, concrete terms using everyday, living-room language. Provide personal examples relevant to the client's background. Visual aids, such as signs and pictographs, should be large with readable print and contain only one or two messages. For example, a sign reading "NOTHING BY MOUTH" or, worse yet, "NPO" should be changed to "Do not eat or drink anything" (remember to avoid using all-capital letters and abbreviations).

   Underlining, highlighting, color coding, arrows, and common international symbols can be used effectively to give directions and draw attention to important information. For example, different-colored signs, pictorial cues, and other visual stimuli, such as strips on the floor tiles that lead to specific areas of the hospital, are valuable for increasing independence and safety.
4. *Teach one step at a time*. Teaching in increments and organizing information into segments of information (chunks) help to reduce anxiety and confusion and give enough time for clients to understand each item before proceeding to the next unit of information. Also, these techniques give clients a sense of order and a chance to ask questions after each block of information has been presented. In addition, you have the opportunity to assess their progress and reward them with words of encouragement, praise, and reinforcement every step of the way. Most importantly, the pacing of instruction allows for more adequate time between sessions for learners to assimilate information.
5. *Use multiple teaching methods and tools requiring fewer literacy skills*. Oral instruction contains cues such as tone, gestures, and expressions that are not found in written materials. However, the spoken word lacks other signals, such as punctuation and capital letters. Therefore, a person with poor reading skills may likely have some trouble with understanding spoken language as well. The listening test, as previously described, can be used to measure comprehension of oral instruction. Another way to test the difficulty level of information presented verbally is to begin by taping a spoken message, then converting it into a written form, and finally applying a readability formula to it.

   Exposing clients to repetition and multiple forms of the same message is highly recommended. Audiotaped instruction, used in combination with other visual resources such as simple lists, pictorials, and videotapes, can help to improve comprehension and reduce

learning time. These media forms, as more permanent sources of information, can also be sent home with the client for added reinforcement of health messages. Also, interactive computer programs, which allow clients to proceed at their own pace, can be programmed developmentally to match a user's literacy skill level.

6. *Allow patients the chance to restate information in their own words and to demonstrate any procedures being taught*. Use the teach back or show me method to verify that information shared with the learner was, in fact, understood. Encouraging them to explain something in their own words may take longer and requires patience on the part of the educator, but feedback in this manner can reveal gaps in knowledge or misconceptions of information. Return demonstration, hands-on practice, role-playing real-life situations, and sharing personal stories in dialogue form are communication modes that provide you with feedback as to the client's level of functioning.

   Trying to elicit feedback by asking questions does not always work, because people with low literacy skills often do not have the right vocabulary or fluency to explain what they do and do not understand. Remember, do not ask questions that will elicit only a yes or no response. This is because learners will likely respond in the affirmative, even when they have no clue as to what you are talking about, just so they do not have to admit their ignorance.

   Furthermore, they are unlikely to ask questions of you for fear of embarrassment at not understanding instructions. Ask open-ended questions, such as "Tell me what you understand about . . . ," to obtain feedback from them to verify their comprehension. Encouraging clients to repeat instructions in their own words or physically demonstrate an activity is an effective approach to verifying what they really understand.

   Chew et al. (2004), based on their research, developed the following three questions as a practical and quick method for identifying literacy sills in patients: (1) "How often do you have someone help you read hospital materials?" (2) "How confident are you filling our medical forms by yourself?" and (3) "How often do you have problems learning about your medical condition because of difficulty understanding written information?" They found these three questions to be effective screening tests for inadequate health literacy in patients at the VA preop clinic, but not as effective for detecting patients with marginal health literacy.

7. *Keep motivation high*. It is important to recognize that people with limited literacy may feel like failures when they cannot work through a problem. Reassure them that it is normal to have trouble with new information and that they are doing well. Encouraging them to keep trying and recognizing any progress they make, even if in small increments, is motivating to the slow learner. Rewards—not punishments—are excellent motivators. Sticking to the basics and keeping the information relevant and succinct will maintain a learner's interest and willingness to learn.

8. *Build in coordination of procedures*. A way to facilitate learning is to simplify information by using the principles of tailoring and cuing. *Tailoring* refers to coordinating recommended regimens into the daily schedules of clients rather than forcing them to adjust their lifestyles to these regimens. Otherwise, they may feel that changes are being imposed on them. Tailoring allows new tasks to be associated with old behaviors. It personalizes the message so that instruction is individualized to meet the client's learning needs. For example, coordinating a medication schedule to a patient's mealtimes does not drastically alter everyday lifestyle and tends to increase motivation and compliance. *Cuing* focuses on the appropriate combination of time and situation using prompts and reminders to get a person to perform a routine task. For example, placing medications where they best can be seen on a frequent basis or keeping a simple chart to check off each time a pill is taken serves as a reminder to comply with taking medications as prescribed.

   Both of these principles are related to the behavior modification theory and are especially useful techniques to encourage compliance with medications. Because poor readers often cannot decipher schedules, tailoring and cuing can assist them to adhere to time frames.
9. *Use repetition to reinforce information*. Repetition, at appropriate intervals, is a key strategy to use with clients who have low literacy. Each major point made along the way should be reviewed. Therefore, time must be set aside to remind learners of what has come before and to prepare them for what is to follow. But this is time well spent. Repetition, in the form of saying the same thing in different ways, is one of the most powerful tools to help clients understand their situations and learn important self-care measures.

All of these teaching strategies are especially well suited to the individual needs of people with low-literacy skills. As noted earlier, nurses must empower consumers by providing health information that is culturally and linguistically appropriate. Creating an open, trusting, and accepting environment that makes it acceptable for the client to say "I don't understand" is the cornerstone of effective communication (Cole, 2000).

It is always a challenge to teach clients who, because of illness or a threat to their well-being, may be anxious, frightened, depressed, in denial, or in pain. Teaching patients, in particular, is even more of a special challenge in today's healthcare environment, when varying degrees of literacy compound the ability of a significant portion of the adult population to understand information vital to their health and welfare.

State of the Evidence

In 1999, the Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs of the American Medical Association acknowledged that, although a great deal had been learned to that date about the magnitude and consequences of the problem of illiteracy and low literacy, further research efforts had to focus on four areas:

1. Literacy screening
2. Methods of health education
3. Medical outcomes and economic costs
4. Understanding the causal pathway of how health literacy influences health status

The committee also called for healthcare policies to address the issue of health literacy for the following reasons:

1. Low-literate patients cannot be empowered consumers in a market-driven healthcare system.
2. Patients who cannot understand healthcare instructions will not receive quality health care.
3. Healthcare professionals are subject to liability for adverse outcomes by patients who do not understand important health information.
4. Clinical management problems likely result in substantial but avoidable costs for the U.S. healthcare system.
5. Health literacy problems are more prevalent in certain populations (Medicare beneficiaries, Medicaid recipients, and uninsured individuals).

Indeed, as a result of the findings of the NALS and NAAL reports, a broad policy agenda on health literacy has been put forth in the 10-year goals and objectives of Healthy People 2010 (U.S. Department of Health and Human Services, 2003). Specifically, objective 11-2 (Improvement of Health Literacy) addresses three major health literacy initiatives: prevention measures, interaction activities between healthcare providers and clients, and navigation of the healthcare system. Although the literacy and verbal skills of individuals is a concern of critical importance, so too are the demands made by PEMs, the need to improve communication skills of health professionals, and the need to make the healthcare system less complex.

The specific reports by the Institute of Medicine (IOM), the Agency for Healthcare Research and Quality (AHRQ), and the American Medical Association (AMA), all released in 2004, recognized that health literacy is a key priority in transforming the U.S. healthcare system (Aldridge, 2004; Weiss et al., 2005). In particular, AHRQ examined the relationship between literacy and adverse outcomes as well as interventions to improve outcomes for people who are low literate (Pignone et al., 2005).

The interest in the literacy problem has escalated tremendously in the past 5–10 years and numerous research studies have been conducted to examine many aspects of the problem. Pignone et al. (2005) conducted a systematic review of intervention studies designed to improve health outcomes of clients with low health literacy. These authors called for further research to understand the types of interventions that would be most effective and efficient. Also, Williams et al. (2002) examined patient-physician communication as a critical factor affecting health outcomes. These researchers, noted experts in the field of health literacy, have called for additional research on the optimal methods for interacting with people who have limited literacy skills. Nursing research must specifically focus on nurse–client interaction techniques that improve understanding of health information, which would lead to a higher level of motivation and compliance.

Baker et al. (1998) studied health literacy and the risk of increased hospital admissions. They called for further research that would lead to a more accurate assessment of the impact of low literacy on healthcare costs. If the consequences of inadequate literacy result in poorer

health outcomes and higher costs for health care, then this would be an incentive for all types of payers to develop education programs to better reach patients with different levels of reading ability.

However, it is not yet well understood if health education materials for clients with low literacy do, in fact, improve health outcomes. In addition, more evidence is needed on the benefits of nonprint media, such as videos, audiotapes, and computers, in helping clients to overcome barriers of health illiteracy to improve their quality of life. In addition, much more attention must be paid to the ethical and legal implications of providing education materials to clients with limited literacy skills that are suitable to meet their health information needs. Nurses, in the role of educators, must empirically explore teaching and learning approaches to find those most effective in working with clients who suffer the burden of illiteracy and low literacy.

Summary

The ability to learn from health instruction varies for clients, depending on such factors as educational background, motivational levels, reading and comprehension skills, and readability level of the materials used for instruction. The prevalence of functional illiteracy and low literacy is a major problem in the adult population of this country. Nurses in the role of educators serve as communicators and interpreters of health information. They must always be alert to the potentially limited capacity of their clients to grasp the meaning of written and oral instruction. Nurse educators need to know how to identify clients with literacy problems, assess their needs, and choose appropriate interventions that create a supportive environment directed toward helping those with poor reading and comprehension skills to better and more safely care for themselves. An awareness of the incidence of illiteracy, the populations most at risk, and the effects that literacy levels have on motivation and compliance with self-management regimens are key to understanding the barriers to communication between nurses and clients.

The first half of this chapter focused on the magnitude of the illiteracy problem, the myths and stereotypes associated with poor literacy skills, the assessment of variables affecting reading and comprehension of information, and the readability levels of patient education materials. The remainder of the chapter examined in detail the measurement tools available to test for readability, comprehension, and reading skills, guidelines for writing and evaluating education materials, and specific teaching strategies to be used to match the logic, language, and experience of clients with literacy problems.

Data suggest that written materials are an important source of health information to reinforce and complement other methods and tools of instruction. PEMs are the most cost-effective and time-efficient means to communicate health messages, but research suggests that there is a large discrepancy between the average comprehension and reading skills of clients and the readability level of current written instructional aids. Unless this gap is narrowed, printed sources of information will serve no useful purpose for adults who suffer with illiteracy and low literacy.

Removing the barriers to communication between clients and healthcare providers offers an ideal opportunity for nurse educators to function as facilitators and work collaboratively with other health professionals to improve the quality of care delivered to consumers. It is our mandated responsibility to teach in understandable terms so that clients we serve can fully benefit from our nursing interventions.

REVIEW QUESTIONS

1. What are the definitions of the terms *literacy, illiteracy, low literacy*, *functional illiteracy,* and *health literacy*?
2. Approximately how many million Americans are considered to be illiterate or functionally illiterate? This represents what percentage of the U.S. population?
3. Why are the rates of low literacy and illiteracy potentially on the rise in the United States?
4. Why is the number of years of schooling a poor indicator of someone's literacy level?
5. What segments of the U.S. population are more likely to be at risk for having poor reading and comprehension skills?
6. Why are problems with low literacy and functional illiteracy greater in older adults than in younger age groups?
7. What are three common myths about people who are illiterate?
8. What are seven clues that clients who are illiterate may demonstrate?
9. What impact does illiteracy or low literacy have on a person's level of motivation and compliance?
10. How does reliance on printed education materials to supplement teaching pose an ethical or legal liability for nurse educators?
11. Which measurement tools (formulas and standardized tests) are used specifically to test readability, comprehension, and reading skills?
12. What are 10 general guidelines to simplify written educational materials for clients with low literacy skills?
13. What 5 teaching strategies can be used by the nurse educator to make health information more understandable for clients with poor reading and comprehension skills?

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