Appendix

A

Literacy Data and Measures

Defining Literacy/Illiteracy

During the 1800s, people were deemed literate if they could write their own names. Today, people need much higher literacy skills to understand their health-care instructions and to function in society.

Until a few years ago, literacy skills were universally measured in terms of **grade level**—the average reading skill level achieved at each year of schooling in the American school system. Readability difficulty of text was also rated by school grade level. This system is in wide use today.

More recently, literacy skills (as well as the literacy demand of materials) are sometimes defined in terms of **competency level** via measures of task difficulty. Descriptions of both the grade level and competency measures follow.

Grade-level measures of literacy

There is no universally accepted definition of literacy or illiteracy. Cook (1977) cites the U.S. Army's definition of literacy in terms of reading skills at a minimum grade level—the 5th grade.[1] This level was commensurate with the reading demands of the simplest of the Army's training manuals. Those who had reading/writing skills at or above 5th grade could read the manuals and were literate; those reading below this level were termed functionally illiterate. This definition is widely shared today, although the word *illiterate* is falling into disuse.

The use of grade levels for reading skills by the Army not only reflects the nation's school systems, but also the scale used by the most widely used reading assessment instrument in the health community: the Wide Range Achievement Test (WRAT).[2] Grade-level measurements have advantages and disadvantages.

A significant advantage is that grade level is widely understood in the United States as a measuring scale for literacy skills. A further advantage is that, for materials, readability formulas also report reading difficulty in terms of grade level. By measuring reading skills of people and the readability of materials on the same scale, we can easily see if the materials are at a suitable level.

A disadvantage is that most reading skill instruments measure a person's skills at reading text only, but do not measure skills in visual reading, including charts, graphs, and problem solving. Another disadvantage is that adults often develop more advanced skills to read a subject of special interest to them, but such skills would not be detected by the testing instruments.

Competency measures of literacy

Since the mid-1970s, a competency-based scale for both people's reading skills and the difficulty of written materials has been developed and used in the National Adult Literacy Surveys (NALS). A scale of zero (lowest/easiest) to 500 (highest/most difficult) is used for rating both people and the text and numeracy materials. These scores are grouped into five levels:

Level 1	0 to 225	(lowest/simplest)
Level 2	226 to 275	
Level 3	276 to 325	
Level 4	326 to 375	
Level 5	376 to 500	(highest/most complex)

An advantage of the zero to 500 rating scale is that it has broader applications than the grade-level scale. It applies to tasks included in prose, document, and numeracy materials. The reading formulas mentioned earlier apply to text only and without regard to the difficulty of tasks, such as numeracy or graphic tasks, which may be necessary to use the materials.

A major disadvantage of the zero to 500 scale is that its meaning and interpretation are largely unknown to health-care professionals. Health-care materials may contain a number of topics and tasks and it would be difficult to arrive at a single collective rating using the zero to 500 scale. The authors recognize both scales, but in the interest of making this book of immediate use to health-care professionals, the grade-level scale is used predominantly.

Competency scales pose a dilemma for health-care practitioners who want to measure the literacy levels of materials they develop or use on the zero to 500 scale. If they use the extensive NALS survey data about literacy competency, how can they use the same scale to measure the competency demand of their health instructions? There is no convenient formula to use.

The NALS uses three criteria to establish a rating on the scale:

1. The structure of the material (i.e., narrative, chart, graph)
2. The content and/or context
3. The nature of the task that must be done

Since the NALS is a research-based project in literacy, it has not provided a "formula" to apply the three criteria to health-care materials. Furthermore, the NALS competency questions are usually quite brief—at most half a page—and are of the same structure throughout. In contrast, health-care instructions may be several pages long and often consist of several kinds of structure (narrative, tables, graphs, illustrations, etc.)

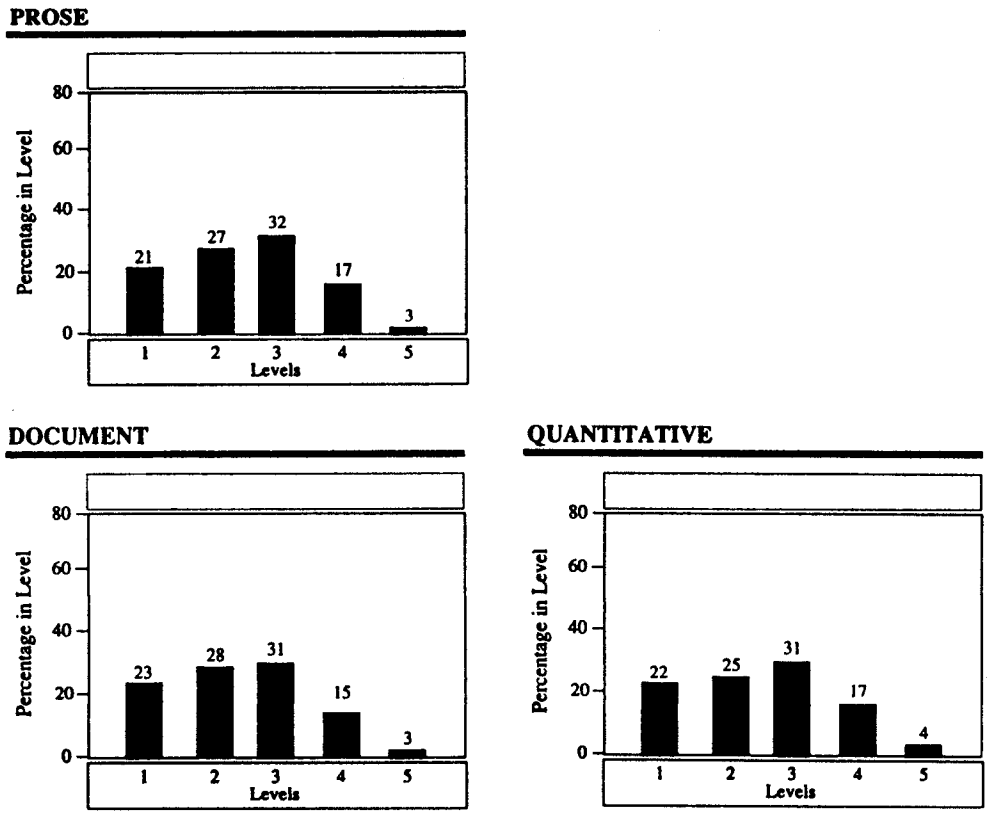
One way to apply the NALS criteria to health-care materials may be to partition the health instruction and analyze parts of like structure. That is, obtain a NALS score for each part. This seems rather tedious, and we have requested a more suitable approach from the NALS authors.

Magnitude of the Literacy Problem

National literacy surveys conducted since the 1970s have consistently shown that between 16 and 20 percent of adult Americans are functionally illiterate.[3] Profiles of national literacy in terms of both grade levels and competency levels are shown in Figure 1-1 in Chapter 1. The national data in competency terms for prose, document, and quantitative literacy are shown in Figure A-1.

FIGURE A-1

Literacy levels of the total U.S. population. (*Source: National Adult Literacy Survey, U.S. Department of Education, 1993)*



The results show 21 to 23 percent in level one. These people, on average, will understand little from most current health instructions.

When we combine the 21 percent at level 1 with the additional 27 percent of marginal readers at level 2, we see that literacy problems are experienced by nearly half of the U.S. population. This population group will either not understand or will have difficulty with most written health care instructions.

Literacy surveys have also been conducted by a number of states including Oregon, Mississippi, Florida, and Hawaii. Some state surveys use the same questions and rating scales as the NALS.[4]

Age and ethnic considerations

Literacy skills vary by age and by ethnic group. Older people, those 65 and over, have much lower literacy skills. Forlizi (1989) points out that functional illiteracy among this group is about 35 percent—about double that of the population as a whole. NALS data show that document literacy skills of the 65 and older group drop to level 1 compared to level 3 for the 25 to 39 age group.

Literacy skills of ethnic groups are lower than that of the U.S. population as a whole. Their lower performance stems from the influence of a number of variables, including years of schooling. Functional illiteracy is more prevalent among ethnic groups, and for one Southeast Asian group, it reaches a level above 50 percent.[5] The NALS report shows that literacy skills of American ethnic groups average one level lower than the general population.

What does this mean to you as a health-care provider? Clearly, you may have to use instructions at lower literacy levels for older people, for ethnic groups, and indeed, for a great part of the U.S. population. Since these groups have such sizable numbers of people with low reading skills, consider including alternative media such as simple visuals, demonstrations, verbal or audiotaped instructions instead of text.

Literacy skills of patients has an impact on costs for their health care. Weiss (1992) points out that those with the lowest levels of literacy skills are likely to incur health-care costs that are many times higher than people with even marginal literacy skills.[6]

References

1. Cook DW (1977): Adult Literacy Education in the United States. International Reading Association, p. 68. Newark, DE.
2. The Wide Range Achievement Test (WRAT 3) (1993): Newark, DE: Jastak Inc.
3. Forlizi LA (1989): Adult literacy in the United States today. Report from the Institute for the Study of Adult Literacy. University Park, PA: Penn State University.
4. Oregon Progress Board (May 1991): The Oregon Literacy Survey. Salem, OR: Economic Development Department.
5. Dehn RW, Schneider DM (November 1989): Patient Literacy in a Family Practice Clinic. Presentation at American Academy of Family Physicians, Orlando, FL.
6. Weiss BD, et al. (May–June 1992): Health status of illiterate adults: relation between literacy and health status among persons with low literacy skills. Journal of American Board of Family Practice 5(3):257–264.