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### Health Literacy: Physical Therapists' Perspectives

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#### ABSTRACT

**Background and Purpose:** The literature is replete with research and guidelines indicating that educational materials provided by healthcare workers often surpass the average reading ability of adults in the United States (US). The purpose of this article was two-fold: (1) to assess PTs' knowledge and use of health literacy strategies, and (2) to assess written home exercise programs for 10 outpatient physical therapy practices. **Method:** Physical therapist conference attendees attending a state chapter meeting of the American Physical Therapy Association were invited to participate; a total of 43 participated. In addition, 10 outpatient physical therapy practices in western Pennsylvania provided a home exercise program (HEP) for review; a sample of convenience was employed for selecting these sites. Participants were solicited via inclusion of an introductory cover letter, written survey on health literacy, and a return envelope in each conference applicant's registration packet. Data were collected over the course of the conference. The home exercise programs were either mailed or requested in person by one of the investigators. The home exercise programs were reviewed for Flesch reading ease, the Flesch-Kincaid grade level, and the presence of diagrams. **Results:** Only 25% of PTs report that they clinically assess or screen for problems related to illiteracy. Seven percent (n=3) of the respondents recognized the incidence of illiteracy in United States, although 65% (n=28) were aware of the relationship of illiteracy to poorer health status. The average Flesch reading ease was  $75.08 \pm 18.99$  and the grade level was  $4.59 \pm 3.59$ . Each of the 10 home exercise programs included pictures or diagrams. **Discussion and Conclusion:** Clinical implications of this study include recognition of the need to employ appropriate reading levels for patient educational materials, from HEPs to educational brochures. Physical therapists must become more aware of health literacy by implementing the most appropriate interventions to allow for the best possible outcomes for the patient.

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#### BACKGROUND

The concept of literacy is an important aspect of communication in both everyday life, as well as in healthcare. According to the National Literacy Act of 1991, literacy can be defined as "...an individual's ability to read, write, and speak in English, and compute and solve problems at levels of proficiency necessary to function on the job and in society to achieve one's goals and develop one's knowledge and potential."<sup>1</sup> Health literacy builds on the general definition for literacy and is defined 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" as defined by Kutner et al.<sup>2</sup>

Populations at risk for inadequate health literacy include individuals with language barriers, the poor, minorities, the homeless, the elderly, and people who have medical problems.<sup>3</sup> According to a national survey, approximately 47% of US adults have difficulty comprehending healthcare information.<sup>2</sup> Additionally, 40% of US adults 65 years of age and older read at less than a 5<sup>th</sup> grade level.<sup>4,5</sup> Patients with decreased health literacy often have difficulty related to preventative, diagnostic, and management interventions which result in increased health care costs.<sup>6</sup> In an article by Wolf et al, the relationship between health literacy and the overall health of new Medicare patients in several US cities was evaluated. Wolf et al discovered that approximately 33% of participants had limited health literacy levels. Furthermore, individuals with low health literacy were found to have more frequent exacerbations of medical conditions such as hypertension and diabetes mellitus.<sup>6</sup>

Healthy People 2020 identifies the following goal related to health literacy: "Use health communication strategies and health information technology to improve population health outcomes and health care quality, and to achieve health equity."<sup>7</sup> The American College of Obstetrics and Gynecology has stressed it is the responsibility of health care providers to recognize and address the problem of health literacy.<sup>8,9</sup> According to Kutner et al, almost 9 out of every 10 adults have difficulty using the everyday health information that is regularly accessed in health care facilities, the media, and communities.<sup>2</sup> According to Berkman et al, limited health literacy is associated with poorer health outcomes and higher health care costs.<sup>10</sup>

The relationship between health literacy and health outcomes is further stressed in the Quick Guide to Health Literacy, Fact Sheet.<sup>11</sup> For example, individuals with limited health literacy are less likely to incorporate preventive care measures in their self-management. Thus, when they access health care, the patients with low health literacy are generally sicker than the general population. When individuals with poor health literacy have chronic diseases, these individuals have greater difficulty managing their disease. This has been demonstrated with hypertension, diabetes mellitus, asthma, and HIV / AIDS. Individuals with limited literacy have a higher rate of emergency room visits and hospitalization. This population is more likely to report a poorer health status than individuals with adequate health literacy. Individuals with poor literacy generally have higher healthcare costs since they access care to treat complications related to chronic illness rather than use services to prevent complications. There are also psychological ramifications of poor health literacy; these individuals report feeling ashamed, and thus may hide their reading and vocabulary difficulties.<sup>11</sup>

Research indicates that educational materials provided by healthcare workers often surpass the average reading ability of US adults.<sup>5</sup> Literacy is commonly measured through readability tests such as the Flesch Reading Ease and Flesch-Kincaid Grade Level. These tools were developed in 1949 and the mid-1970s, respectively, for adult readers and adult materials. Detailed information on the reliability and validity of these tools is not available. The Flesch Reading Ease test measures the readability of a passage in which higher scores indicate better reading ease while lower scores indicate more difficulty. Therefore, a passage with a Flesch Reading Ease score of 87 would indicate easy readability; a passage with a score of 25 would indicate very difficult readability. The Flesch-Kincaid grade level measures the level of education necessary to comprehend a particular text. Thus, the lower the grade level of a particular text, the easier it is to read. Similarly, the higher the grade level, the more difficult it is to read.<sup>12</sup>

The purpose of this research was two-fold: 1) to assess PTs' knowledge of health literacy, and 2) to evaluate literacy levels of written home exercise programs (HEPs) in 10 outpatient physical therapy practices in western Pennsylvania.

## **METHODS**

### **Participants**

Physical therapists attending the Pennsylvania Physical Therapy Association Annual Conference 2005 were the intended subjects for inclusion in this study. A sample of convenience was employed where surveys were distributed to 100 of the first individuals to pick up their registration packets. A total of 43 physical therapists responded to the survey.

### **Instrument**

For the first part of this study, participants were given a survey in their registration packets. Survey items included the incidence of illiteracy, the relationship between low literacy and health, the recommended reading level for adult clients, their assessment or screening for problems related to illiteracy, and specific techniques employed to accommodate for illiteracy. Data were analyzed quantitatively using descriptive statistics and qualitatively for themes.

## **RESULTS**

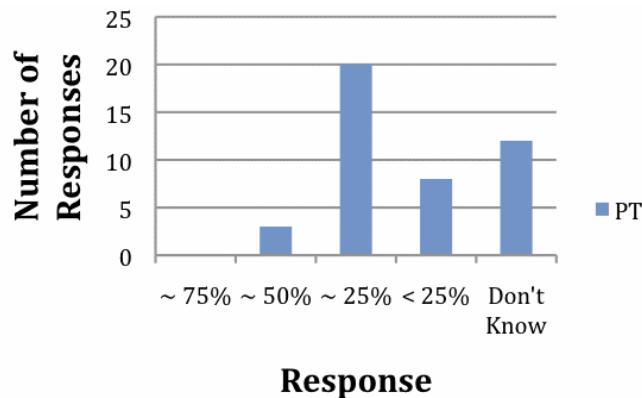
### **Part 1: Survey**

Of the 43 participants, 48.8% (n=21) reported that they worked in an outpatient orthopedic and/or sports practice, 7% (n=3) reported practicing in skilled care, 7% (n=3) reported practicing in home care, 14% (n=6) reported practicing in pediatrics, 9.3%

(n=4) reported they practice in academia, and 14% (n=6) reported they practice in 'other,' such as a combination of practice settings. There were no respondents who reported that they worked in acute care or in an administrative / managerial position.

The survey item asking PTs what the incidence of illiteracy in U.S. revealed that only 7% (n=3) recognized the level of illiteracy in the U.S. See Figure 1.

**Figure 1. Results Assessing the Incidence of Literacy in US**



The second item of the survey investigated PTs knowledge of the relationship between low literacy and poorer health status and utilization of health care. Sixty-five percent (n=28) of respondents recognized that illiteracy is linked to poorer health status. The relationship of lower literacy to overutilization of the health care system or avoidance altogether was recognized by 49% (n=21).

The third survey item assessed the reading level at which patient materials should be written for adults (see Table 1). Only 53.5% (n=23) of the respondents correctly identified the 5<sup>th</sup> grade level.

**Table 1: Results Assessing the Recommended Reading Level for Home Exercise Programs and Brochures for Adult Clients**

	n	Percentage of individuals selecting recommended reading level
5 <sup>th</sup> grade level	23	53.5%
7 <sup>th</sup> grade level	12	27.9%
9 <sup>th</sup> grade level	3	6.9%
11 <sup>th</sup> grade level	2	4.7%
I don't know	2	4.7%
Did not respond to item	1	2.3%

The fourth item on the survey questioned participants on their screening for illiteracy in patients. Only 34.9% (n=15) reported assessing or screening patients for problems related to illiteracy. One person left this item blank and 62.8% (n=27) reported that they did not assess or screen for problems related to illiteracy. Of those who do assess for illiteracy, qualitatively, those individuals identified the following strategies for screening: patient observations, having patients read the materials, having patients verbally demonstrate their comprehension, and direct questioning of the patient.

The final survey item asked if specific techniques were employed to accommodate for illiteracy when developing patient education materials such as home programs. Thirty (69.8%) of the respondents reported they did employ strategies to accommodate for illiteracy for patient education materials. Identified strategies included: use of pictures / drawings (n=28), use of digital camera images (n=3), employing few words (n=1), using computerized HEPs (n=1), having patient demonstrate their understanding by repeating instructions (n=1); demonstration by patient (n=4), reviewing with family members or caregivers (n=1), use of audiotapes (n=1), simplifying exercises (n=1), using just three to five exercises (n=1), and use of Spanish (n=1). Some PTs reported using several techniques. Twenty-eight percent (n=12) of the PTs did not accommodate for illiteracy and one PT did not respond to this item.

## Part 2: Review of Home Exercise Programs

Home exercise programs were evaluated for 10 western Pennsylvania outpatient physical therapy practices. A sample of convenience was employed; 10 practices were asked to submit a written home program and each of the practices provided material for this study. Each HEP was assessed for 3 items including: 1) the Flesch Reading Ease, 2) Flesch-Kincaid Grade level, and 3) presence of diagrams. The specific results are presented in Table 2. Ease scores range from 0 to 30 (very difficult) to 90 to 100 (very easy); the higher the number the lower the literacy. The HEPs were reviewed and ranged in reading ease from 22.8 (very difficult) to 87.0 (easy), with a mean score of  $75.97 \pm 18.99$ .

The Flesch-Kincaid Grade level ranged from 2.7 to 14.7 with a mean of 4.59 grade level  $\pm 3.59$ . Diagrams were employed on each HEP analyzed. As illustrated in Table 2, 90% of the HEPs that were collected had a "fairly easy" readability according to the Flesch Reading Ease Table and the Flesch-Kincaid Grade Level. The only outlier evaluated had a Flesch Reading Ease of 22.8 and a Flesch-Kincaid Grade Level of 14.1. That HEP had a very difficult readability, which is normally meant for those individuals who read at the college level.

**Table 2. Readability of Home Exercise Programs**

Program	Flesch Reading Ease	Flesch-Kincaid Grade Level	Diagrams (Yes/No)
1	83.6	3.1	Yes
2	78.3	4.0	Yes
3	83.6	3.2	Yes
4	85.4	3.0	Yes
5	87.0	2.7	Yes
6	83.1	3.1	Yes
7	22.8	14.7	Yes
8	79.6	3.8	Yes
9	80.6	3.8	Yes
10	75.7	4.5	Yes
AVERAGE	$75.97 \pm 18.99$	$4.59 \pm 3.59$	100%

## DISCUSSION

The purpose of this study was to identify the awareness of health literacy among PTs. In order to determine practicing therapists' awareness of literacy, a survey addressing items pertaining to health literacy was distributed to approximately 50% of the attendees at the Pennsylvania Physical Therapy Association Annual Conference 2005. In addition, HEPs from 10 western Pennsylvania outpatient physical therapy practices were collected and evaluated for readability. Readability of patient literature was analyzed using the Flesch Reading Ease and Flesch-Kincaid Grade Level equations.

The first part of this study revealed that the majority of PTs surveyed were unaware of the high rate of illiteracy. With this lack of awareness, it is unlikely that the needs of those patients with low literacy can be fully met. Therapists appear to understand that low literacy is linked to poorer health status and utilization of health care. In the lower literacy populations, there may either be an over utilization of health care or an avoidance of it. According to Young, there are approximately 90 million people or 47% of all American adults who have problems related to health literacy.<sup>13</sup> Many patients have problems in accessing, reading, understanding, and utilizing health care information.

Although only 53.5% were aware that patient educational materials should be written at a 5<sup>th</sup> grade readability level, almost 50% of respondents were not aware of this. This is important when providing patients with written educational materials, having the patient complete forms, or instructing patients in the use of equipment. Similarly, only 34.9% of the PTs surveyed assessed or screened patients for problems related to illiteracy.

In today's health care environment, awareness of patient literacy is more important than ever. The Federal Patient Self-Determination Act of 1990 mandates that healthcare workers provide all patients with written information regarding their conditions and treatment options.<sup>14</sup> Furthermore, the American Medical Association developed a Patient Bill of Rights that states, "(1) the patient has the right to appropriate care, (2) the patient has the right to be informed about his or her current condition and the possible treatment options, (3) the patient has the right to obtain all the necessary information prior to making an informed decision, (4) the patient has the right to decline medical treatment, and (5) the patient has the right to privacy regarding their medical care."<sup>15</sup> However, if patients are unable to understand their conditions and the treatment options that are given to them, they will have difficulty making informed decisions regarding their care. In addition, the Joint Commission provides healthcare

workers with several recommendations regarding effective communication. These recommendations include providing training opportunities to healthcare workers regarding patient literacy, utilizing layman's terms when communicating with patients, practicing the "teach-back" method, and using drawings and models to explain various techniques.<sup>16</sup>

Strategies employed by PTs in this study to screen for problems related to illiteracy included patient observations, having patients read the materials, having patients verbally demonstrate their comprehension, and direct questioning of the patient. Other strategies could also have been used. Billek-Sawhney and Reicherter recommend identifying clues in the behavior of a patient. Some of these are poor eye contact with the patient when presented with written materials, reporting glasses are not available, signing forms without looking at them, becoming defensive, or providing incomplete written histories.<sup>5</sup> The Rapid Estimate of Adult Literacy in Medicine (REALM) and the Test of Functional Health Literacy in Adults are standardized tests that may also be used to assess literacy.

Many techniques are available to enhance patients' understanding of home programs. The ones identified by PTs in this study included writing patient education materials at a fifth grade level or lower, using words that contain 2 or less syllables, listing key points, and using drawings, images, and models.<sup>5</sup> Vanderhoff recommends employing three elements to establish effective patient communication.<sup>17</sup> These elements are 1) explain, ask, and listen, 2) write it down, and 3) demonstrate and repeat. These concepts have been substantiated further by the U.S. Department of Health and Human Services and the Federal Plain Language Guidelines.<sup>18,19</sup> Some specific recommendations put forth include limiting written material to four main messages, using plain language, supplementing instructions with pictures, using at least 12-point font, keeping line length to 40 to 50 characters, and using headings and bullets.<sup>18,19</sup>

Although therapists did not seem to have a good awareness or understanding of literacy, 9 out of 10 home programs were written at an appropriate level. The results obtained from this study differ from those previously found in other types of patient information provided in the medical setting, such as instructions for medications or for informed consent documents. Most of those patient education materials were written at the 12<sup>th</sup> to 16<sup>th</sup> grade level, while many patients have been found to read between the 8<sup>th</sup> and 9<sup>th</sup> grade levels.<sup>4,20,21</sup> Additionally, it has been found that patients who graduate from high school do not typically read at a 12<sup>th</sup> grade level, but read at a level several grades below that.<sup>20,22</sup>

According to the results obtained throughout this study, the majority of PTs recognized that patient education materials must be written at a 5<sup>th</sup> grade level. In addition, the majority of HEPs collected were considered easily readable and read at a 5<sup>th</sup> grade level or less. Additional research is necessary on health literacy and in particular PT assessment and accommodation for literacy in their HEPs.

This study had several limitations that may have impacted the results. These limitations included the study's small sample size, the sole inclusion of participants from the Pennsylvania Physical Therapy Association Annual Conference 2005, the survey-style research design, the majority of participants working in the outpatient setting, and the failure to prevent discussion of responses between participants. In addition, despite their widespread use, the validity and reliability of the Flesch Reading Scales have not been definitively established.

Clinical implications of this study include the recognition of the need to develop appropriate patient educational materials from home exercise programs to educational brochures with attention to patient health literacy guidelines. The need for initial and ongoing assessment of the patients' ability to interpret physical therapy written materials was identified.

## CONCLUSION

Physical therapists must be aware of literacy levels when discussing diagnosis, prognosis, and treatment with their patients. Legislation such as the Federal Patient Self-Determination Act of 1990 and the American Medical Association Patient Bill of Rights, as well as the Joint Commission, recommend that healthcare become more patient centered.<sup>14-16</sup> It is critical for PTs to recognize patient literacy levels and provide appropriate patient education materials to comply with these standards.

**\*\* The reading level for this article was Flesch-Kinkaid Grade Level of 13.8\*\***

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## KEY TERMS

Health Literacy, Home Exercise Programs, Physical Therapy, Patient Education