

Use of Standardized Outcome Measures in Physical Therapist Practice: Perceptions and Applications

Diane U Jette, James Halbert, Courtney Iverson, Erin Miceli, Palak Shah

Background. Standardized instruments for measuring patients' activity limitations and participation restrictions have been advocated for use by rehabilitation professionals for many years. The available literature provides few recent reports of the use of these measures by physical therapists in the United States.

Objective. The primary purpose of this study was to determine: (1) the extent of the use of standardized outcome measures and (2) perceptions regarding their benefits and barriers to their use. A secondary purpose was to examine factors associated with their use among physical therapists in clinical practice.

Design. The study used an observational design.

Methods. A survey questionnaire comprising items regarding the use and perceived benefits and barriers of standardized outcome measures was sent to 1,000 randomly selected members of the American Physical Therapy Association (APTA).

Results. Forty-eight percent of participants used standardized outcome measures. The majority of participants (>90%) who used such measures believed that they enhanced communication with patients and helped direct the plan of care. The most frequently reported reasons for not using such measures included length of time for patients to complete them, length of time for clinicians to analyze the data, and difficulty for patients in completing them independently. Use of standardized outcome measures was related to specialty certification status, practice setting, and the age of the majority of patients treated.

Limitations. The limitations included an unvalidated survey for data collection and a sample limited to APTA members.

Conclusions. Despite more than a decade of development and testing of standardized outcome measures appropriate for various conditions and practice settings, physical therapists have some distance to go in implementing their use routinely in most clinical settings. Based on the perceived barriers, alterations in practice management strategies and the instruments themselves may be necessary to increase their use.

DU Jette, PT, DSc, is Professor and Chair, Department of Rehabilitation and Movement Science, University of Vermont, Rowell 305, 106 Carrigan Dr, Burlington, VT 05405 (USA). Address all correspondence to Dr Jette at: diane.jette@uvm.edu.

J Halbert, PT, BS; C Iverson, PT, BS; E Miceli, PT, BS; and P Shah, PT, MS, are students at the University of Vermont.

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Standardized instruments measuring various aspects of health status have been advocated for use by rehabilitation professionals for many years, and much has been written about the potential benefits of, and barriers to, the use of such measures in practice.¹⁻⁵ Additionally, many such instruments have been developed for use for patients with the various conditions managed by physical therapists. These instruments have been referred to in the literature using different terms such as “health status measures,” “disability measures,” “outcome measures,” and “quality-of-life measures.” In general, they assess the actual or perceived ability of an individual to carry out activities such as moving in an environment or completing personal care and to participate in life situations such as work or household management. The literature, however, also includes studies in which physical therapists have defined these measures to include assessment of body function.⁶⁻⁹ Although referred to by different terms and defined at different levels, these measures, in general, are standardized in that they use closed-ended questionnaire formats or specific protocols for implementation, provide scores that allow quantitative assessment of ability, and have been evaluated for their psychometric properties. When they are used to determine the change in ability from before to after an intervention, they may be referred to as outcome measures.

The drive for use of standardized outcome measures in practice has been motivated to some extent by the recognition that goals for patients’ improvement not only must consider the traditionally measured impairments in body function (eg, range of motion, strength [force-generating capacity]) but also should consider patients’ points of view and preferences for daily activities and life participation.¹⁰ Although we do not

know of any clinical trials that have demonstrated the direct effects of using standardized outcome measures, suggested benefits include identifying patients who are at risk for poor or adverse outcomes,⁴ facilitating improved continuity of care for patients transitioning from one health care setting to another,¹¹ determining the most cost-effective settings for patients to receive rehabilitation services,¹¹ assessing practitioner and organizational performance,⁴ and determining the most-effective interventions for particular conditions.⁴

The need for physical therapists to use standardized outcome measures has been recognized at the national level in the United States. The Centers for Medicare & Medicaid Services sponsored a report in 2006 to determine the possibility of a uniform rehabilitation outcomes assessment method for patients leaving acute care.¹¹ The authors proposed several purposes for this type of assessment, including provider decision making, patient safety, and ability to determine patients’ health and function longitudinally.¹¹ On a smaller scale, the Commission on Accreditation in Physical Therapy Education¹² supports the use of standardized outcome measures in practice by requiring all education programs to demonstrate that their graduates have some experience in using and interpreting them during their professional (entry-level) education.

The literature provides relatively few reports of the overall use of standardized outcome measures by physical therapists. Physical therapists in 5 academically affiliated institutions in Toronto were surveyed in 1992⁹ and again in 1998⁸ to determine their use of standardized outcome measures and the perceived obstacles to their use. A second part of the latter study used qualitative methods to explicate the findings.⁷ The studies in-

cluded questions about use of a variety of types of outcomes measures; however, the authors included manual muscle testing and goniometric measurements in their definition of outcomes measures. In the 1998 study, a high proportion of respondents used manual muscle testing (88%) and goniometry (90%), whereas relatively low proportions used measures such as the Functional Independence Measure (FIM) (18%) or the Impairment Inventory scale of the Chedoke-McMaster Stroke Assessment (35%).

In 1997, a study examining the use of outcome measures in rehabilitation centers in the United Kingdom showed that 77% of the centers used at least one tool; of those centers, 28% used some measures of general motor function, and 88% used at least one measure of disability.¹³ In 2001, 2 studies were published that examined the use of outcome measures in Europe.^{6,14} Haigh et al⁶ found that a few rehabilitation centers used a large number of tools on a small proportion of patients. For patients with orthopedic conditions, the outcomes measured were largely at the body function level. For patients with neurological conditions, disease-specific measures of disability were used more frequently. There was minimal use of generic measurement tools that can be used regardless of condition. Although specific data were not reported, Torenbeek et al¹⁴ noted low overall satisfaction with outcome measurement for patients with stroke and low back pain among rehabilitation professionals in 5 European countries. In addition, there was little consensus about which outcome measures to use. In a study of physical therapists in outpatient clinics in the United States, Russek et al¹⁵ found that only 50% of the respondents used the outcome tools they had been provided by their clinics’ corporate owner.

A few studies^{7,8,13,15,16} have examined perceptions of the benefits of and barriers to using standardized outcome measures among rehabilitation professionals, and many of the reported barriers were similar across studies. Perceptions about barriers include lack of time and inconvenience; lack of familiarity, know-how, and training; and lack of resources such as staffing and automation. Attitudes and perceptions related to use of outcome measures among other health care providers, including mental health practitioners, oncologists, general practitioners (GPs), and nurses, also have been reported. Garland et al³ found variability in attitudes across mental health practitioners, but noted that, in general, the responses reflected ambivalence. All of the practitioners interviewed had participated in mandated outcome assessments, yet they reported being more likely to use their own intuition than standardized measures to evaluate clients' progress. Similarly, Taylor et al¹⁷ reported that many oncologists they interviewed relied on their own impressions and informal assessments of patients' quality of life to inform their decisions. Most respondents argued that the use of standardized measures made decision making more difficult rather than facilitating it. As in the previously mentioned studies, approximately one half of GPs and nurses interviewed in a study by Meadows et al¹⁸ said that they preferred relying on their own clinical judgment in the management of their patients.

Because of the lack of recent information about the use of standardized outcome measures among physical therapists in the United States and the professional and governmental emphasis on the collection and application of data from such instruments, this study was conducted to determine the extent of their use,

their clinical applications, perceptions of their value, and barriers to their use. Secondarily, we examined the relationships between practice setting and therapist characteristics and the use of standardized outcome measures.

Method

Procedure

One thousand potential participants were randomly selected from the membership list of the American Physical Therapy Association (APTA). The sample size was determined based on an estimated 50% return rate and a desire for a 95% confidence interval of 5 or less if a response was chosen by 50% of the sample. The random selection process was computer generated and stratified by geographic area. In March 2008, these individuals received a survey questionnaire and a letter explaining the purpose of the study and requesting return of the completed survey questionnaire by postage-paid return mail. Participation was presumed to indicate informed consent.

The letter sent to potential participants noted that the instruments we were asking about were "referred to by various names and often include information that is related to patients'/clients' social, physical, or psychological status as they relate to daily activities or role participation. Examples include Oswestry Low Back Pain Questionnaire, Functional Independence Measure (FIM), Arthritis Impact Questionnaire (AIM), and SF-36 [Medical Outcome Study 36-Item Short-Form Health Survey]. This study asks you to think broadly about the measures." The questionnaire indicated that in thinking broadly, respondents should consider instruments "described with terms such as 'health status,' 'quality of life,' 'disability,' 'functional status,' or 'outcomes measures.'" In the survey questionnaire, we referred to

the instruments as "health status questionnaires." In an attempt to be consistent with terms used in the most recent rehabilitation literature, we use the term "standardized outcome measures" throughout this article, recognizing the various terms used to identify these measures.

Approximately 3 weeks after the initial mailing, those therapists who did not respond and who had e-mail addresses listed in the APTA Web site directory were sent a reminder e-mail, with the survey questionnaire and letter as attachments. After an additional week, another survey questionnaire was mailed to those who had not responded to the initial mailing or e-mail.

Instrument

The survey instrument (eAppendix 1 available at <http://www.ptjournal.org>) was designed by the investigators. The initial draft was sent to 14 clinician colleagues for input. Eight clinicians in various types of practice, including acute care, outpatient hospital-based care, and private practice, responded. They had between 15 and 30 years of practice as physical therapists. They were asked to assess the face and content validity of the items in the survey instrument, to indicate whether there were important gaps, and to indicate whether any items were unclear or confusing. Changes to the survey instrument were made based on their feedback. We also used the previous literature (cited in the introduction of this report) related to health care practitioners' attitudes toward, and use of, standardized outcome measures to support the content validity of the instrument. Construct validity of the parts of the instrument that assessed beliefs about the usefulness of and barriers to using instruments in practice was assessed through factor analysis. A principal components factor analysis with varimax rotation resulted in 5 factors that explained

57% of the variance in item responses. Cronbach alpha was determined for each of the factors to provide evidence for internal consistency. We interpreted the 5 factors to support the framework for attitudes and beliefs provided by the literature. The factors represented benefits for the management of the patient (7 items, $\alpha=.85$), problems or limitations for the physical therapist (6 items, $\alpha=.77$), problems or limitations for the patient (6 items, $\alpha=.77$), benefits for external communication (3 items, $\alpha=.67$), and limitations due to culture or language (2 items, $\alpha=.59$). Taken all together, the internal consistency of the items related to beliefs about the benefits of using standardized outcome measures was good ($\alpha=.84$). The internal consistency of all items related to beliefs about problems of or barriers to the use of standardized outcome measures was similarly good ($\alpha=.83$).

Data Analysis

Data were analyzed using SPSS statistical software, version 15.0.* Response frequencies and means or medians for the survey items were determined and displayed in tabular and graphic formats. After examining the response frequencies, and before examining the associations among variables, some variable categories were collapsed in order to allow further analysis and derive stable models.

Logistic regression analyses were conducted to examine the association of participant and practice characteristics with the use of standardized outcome measures. We used a forward selection process to derive models, requiring $P<.05$ to enter and $P<.10$ to delete. Odds ratios and their 95% confidence intervals were recorded for each level of the inde-

pendent variables that were significant. We chose one level of each variable as a reference group to allow the most salient interpretation of results.

Results Participants

Completed questionnaires were received from 498 participants, for a response rate of 49.8%. Three questionnaires were returned as undeliverable, 1 questionnaire was returned with no responses, and 38 questionnaires were returned with respondents indicating that they did not manage patient care. We, therefore, had 456 usable questionnaires. Similar response rates have been reported by Haigh et al,⁶ Russek et al,¹⁵ and Hatfield and Ogles.¹⁹

Sixty-eight percent of the participants were female, and 32% were male. The majority (61%) worked in an outpatient setting. A slim majority (53.4%) of participants had postbaccalaureate professional degrees. Thirty-two percent were certified clinical specialists. Although not formally tested, the sample seemed to reflect the demographics of APTA members reported in 2006 and 2007 fairly well.²⁰ Our sample had a slightly greater proportion of those with postbaccalaureate degrees and less time in practice. Our sample also appears to have had slightly more therapists working in outpatient and acute care settings. It is difficult to determine whether these differences were due to the different time frames in which the data were collected or to bias in the sample. Participant and practice characteristics of the sample are shown in Tables 1 and 2, respectively.

Overall Perceptions of Standardized Outcome Measures

Of the 456 participants, 218 (47.8%) indicated that they used standardized outcome measures in practice. Table 3 shows the perceived benefits

of and problems with using standardized outcome measures in practice among the participants who used them. More than 90% of the participants who used them agreed that standardized outcome measures enhance communication with patients and help to direct a plan of care. More than 75% of the participants who used them agreed that problems with standardized outcome measures are that they are confusing to patients, difficult for patients to complete, and too time consuming for patients.

Implementation of Standardized Outcomes Measures in Practice

Most frequent uses of information from standardized outcome measures were quality assurance, communicating with other health care providers, and determining progress or outcomes of individual patients (Tab. 4). Of the participants who used standardized outcome measures, 35.1% responded that they were required for all patients in their setting, and 23.8% responded that they were routinely used for all patients but not mandated. The most common means of collecting data and analyzing outcome was to have patients complete paper forms followed by therapists' review of the raw information (80.6%). That is, the therapists did not necessarily have access to scores from the measurement tool when seeing the patient and used only their qualitative assessment of the responses.

Participants were asked to list the measures that they used in their practices and to indicate whether the measures were "home grown." The most frequently listed measures were: Oswestry Low Back Disability Index (ODI) (41.3%); facility "home-grown" measures (22%); Lower Extremity Functional Scale (LEFS) (18.8%); Disabilities of the Arm, Shoulder, and Hand (DASH) (18.3%); and Berg Balance Scale (BBS)

* SPSS Inc, 233 S Wacker Dr, Chicago, IL 60606.

Table 1.
Participant Characteristics (N=456)^a

Variable	Percentage	95% CI		N	National Data ²⁰ (%)
		Lower Bound	Upper Bound		
Sex				(1 missing)	
Male	31.9	26.9	36.9	145	34.7
Female	68.1	63.1	73.1	310	65.3
Years of physical therapist practice				(4 missing)	
<3	13.7	10.4	17.0	62	11.1 (<4 y)
3–5	11.3	8.1	14.3	51	6.5 (4–5 y)
6–10	17.9	14.1	21.7	81	17.2
11–20	24.8	20.4	29.2	112	27.1
>20	32.3	27.3	37.3	146	38.5
Professional (entry-level) degree				(1 missing)	
Certificate	4.4	2.4	6.4	20	6.9
Baccalaureate	42.2	36.7	47.7	192	48.8
Master's	40.9	35.5	46.3	186	35.6
Doctorate	12.5	9.4	15.6	57	8.1
Highest degree				(3 missing)	
Professional	72.2	66.6	77.8	327	Unable to determine
Advanced master's	13.2	9.9	16.5	60	Cannot distinguish from professional degree
Transitional DPT	10.6	7.7	13.5	48	8.9
Doctorate	4.0	2.2	5.8	18	4
Specialty (could have more than 1)				(35 missing)	
None	68.0	61.9	74.1	296	
Cardiovascular-pulmonary	0.5	–0.1	1.1	2	
Geriatric	3.9	2.1	5.7	17	
Neurology	1.6	0.8	2.4	7	
Orthopaedic	11.5	8.2	14.8	50	
Pediatric	2.5	–0.7	5.7	11	
Sports	1.8	0.6	3.0	8	
Manual therapy	5.5	3.3	7.7	24	
Hand therapy	1.1	0.1	2.1	5	
Other	3.7	1.9	5.5	15	

^a CI=confidence interval, DPT=Doctor of Physical Therapy.

(17.9%). The eAppendix 2 (available at <http://www.ptjournal.org>) comprises a list of all measures listed by the participants. The most frequent reasons for choosing specific standardized outcome measures were: they could be completed quickly (68.7%), they were easy for patients to understand (68.2%), and they had

been shown to be valid and reliable (64%).

Fifty-two percent of participants indicated they did not use standardized outcome measures in practice, and 49% of them indicated that they did not plan to implement their use in future. The 3 most common reasons

for not using standardized outcome measures were: they are too time consuming for patients to complete (43%); they are too time consuming for clinicians to analyze, calculate, and score (30%); and they are too difficult for patients to complete independently (29.1%) (Tab. 5).

Standardized Outcome Measures in Physical Therapist Practice

Table 2.

Practice Characteristics (N=456)^a

Variable	Percentage	95% CI		N	National Data ²⁰ (%)
		Lower Bound	Upper Bound		
Region				(26 missing)	
Northeast	19.1	15.0	23.2	82	
Midwest	25.3	20.7	29.9	109	
South	31.6	26.5	36.7	136	
West	23.5	19.1	27.0	101	
Guam and Virgin Islands	0.5	-0.1	1.1	2	
Type of work facility				(21 missing)	
Acute care	15.4	11.8	19.0	67	13.1
Inpatient rehabilitation (including subacute care)	6.0	3.8	8.2	26	3.5
Extended care	3.0	1.4	4.6	13	5.6 (including SNF)
Outpatient	61.2	55.2	67.0	266	56
Home health	7.8	3.1	12.5	34	7.9
School system	3.4	1.6	5.2	15	4.1
Other	3.2	1.6	4.8	14	9.8
Age, y (majority of patients)				(6 missing)	
No majority	70.0	64.2	75.8	315	
<21	8.7	6.0	11.4	39	
21-40	1.8	0.6	3.0	8	
41-60	7.1	4.7	9.5	32	
61-75	5.1	3.1	7.1	23	
>75	7.3	4.9	9.7	33	
Conditions (majority of patients)				(3 missing)	
No majority	30.7	25.8	35.8	139	
Musculoskeletal	56.1	50.5	62.1	254	
Neuromuscular	6.4	4.2	8.6	29	
Cardiovascular-pulmonary	1.5	0.3	2.7	7	
Women's health	0.4	-0.2	1.0	2	
Integumentary	0.4	-0.2	1.0	2	
Other	4.4	2.4	6.4	20	
	\bar{x}	95% CI			
Treatment sessions per 8-h day	10.9	10.5	11.3		

^a CI=confidence interval, SNF=skilled nursing facility.

Odds of Using Standardized Outcome Measures

The type of facility in which the participant practiced, whether or not the participant had a clinical specialty certification, and the age of the majority of patients managed in the practice were related to the likelihood of using standardized outcome measures. Compared with physical

therapists working in acute care settings, those working in outpatient settings were nearly 7 times more likely to use standardized outcomes measures and those working in home care settings were approximately 12 times more likely to use standardized outcome measures. Participants with a clinical specialty were nearly 2 times more likely to

use standardized outcome measures than those who did not have a specialty (Tab. 6).

Discussion

More than 50% of the respondents in this study reported that they did not use standardized outcome measures, and only a small proportion of those indicated that they intended to use

them in the future. There are no comparable data reported from similar samples to assist in the interpretation of this number. The use of standardized measures was variable across settings, and the greater likelihood of use in the outpatient and home health care settings compared with the acute care setting was not surprising. Abrams et al¹⁶ reported that among physical therapists who participated in their survey, with most managing a majority of patients with orthopedic conditions, usage of standardized outcome measures was fairly high. In the home health care setting, the Outcome Assessment and Information Set (OASIS) is mandated. Huijbregts et al⁷ reported the perception that it would be difficult to find suitable measures for patients who might have fluctuating conditions, such as those in intensive care units. Hanekom et al,²¹ in a 2007 systematic review of outcomes measures used by physical therapists in intensive care units, reported that only one case study measured function using the modified Borg scale. No other functional measures or measures of health-related quality of life were found as outcome measures in any of the studies they reviewed.

In our study, the finding that 3 of the most frequently used measures are useful in orthopedic conditions is not surprising given the fact that a majority of the participants practiced in outpatient settings and approximately 11% had orthopedic clinical specialty certification. Among Australian physical therapists who managed mostly patients with orthopedic conditions, Abrams et al¹⁶ found a relatively high use of the ODI; approximately 50% of the therapists indicated that they used the ODI frequently or always. Measures specific to other body regions were used less frequently, but the authors did not indicate the specific names of most of those measures. Haigh et al⁶ reported that the ODI was used in

Table 3. Perceived Benefits and Problems Among Physical Therapists Who Used Standardized Outcome Measures (n=218)

	N	Percentage
Perceived benefits		
Enhance communication with patient	206	94.5
Help direct the plan of care	204	93.6
Enhances communication with payers	190	87.2
Enhance thoroughness of physical therapist examination	190	87.2
Improve patient outcomes	184	84.4
Help focus the intervention	182	83.5
Helps to motivate patient	172	78.9
Enhance efficiency of physical therapist examination	170	78.0
Help to decrease insurance denials	150	68.8
Enhance marketing of practice	115	52.8
Other	11	5.0
Perceived problems		
Confusing to patients	174	79.8
Difficult for patients to complete	166	76.1
Take too much time for patients	164	75.2
Often are not completed at discharge, so cannot give information about response to treatment	144	66.1
Take too much of clinicians' time	113	51.8
Make patients/clients anxious	110	50.5
Are difficult to interpret	102	46.8
Are not culturally sensitive	100	45.9
Require too high a reading level	97	44.5
Provide information that is too subjective	87	39.9
Do not help to direct the plan of care	71	32.6
Items are not relevant for my patients	71	32.6
Require more effort than they are worth	67	30.7
English is a language in which many of my patients/clients are not fluent	58	26.6

only approximately 4% of assessments done for patients with low back pain across 418 rehabilitation centers in Europe in 1998. Torenbeek et al¹⁴ indicated that the ODI was used in rehabilitation facilities in 4 out of 5 European countries; they reported the highest use in Ireland (12.5% of facilities). The date of their survey was not reported. The ODI is available in the public domain, and the ISI Web of Science citation index²² identifies 1,035 citations of the article in which it was originally reported in 1980.²³ The ISI Web of

Science citation index also indicates that the articles in which the LEFS and DASH were originally reported have been cited 74 and 431 times since their original publications in 1999 and 1996, respectively.^{24,25} These data suggest that the measures are fairly well known, at least among those publishing articles in scientific journals. Many standardized outcome measures have been developed within the last decade or so, and this timing may explain why the participants who had been practicing for more than 20 years were

Standardized Outcome Measures in Physical Therapist Practice

Table 4.

Uses of Information Among Physical Therapists Who Used Standardized Outcome Measures (n=218)

Use	N	Percentage
Quality assurance	173	79.4
Communicating with other health care providers	167	76.6
Determining progress/outcomes of individual patients	163	74.8
Determining average patient improvement to examine practice effectiveness	154	70.6
Determining average patient improvement to examine clinician effectiveness	125	57.3
Traditional research	113	51.8
Comparing patient outcomes across conditions	108	49.5
Determining case mix	89	40.8
Comparing clinicians' performances	82	37.6
Comparing clinics' performances	72	33.0

much more likely than their younger colleagues to learn about them from continuing education workshops and other therapists than from formal, professional education.

One surprise is the relatively high use (22%) of “home-grown” measures. Similarly, Kay et al⁸ reported that 18% of the physical therapists surveyed in their study used departmentally developed instruments. This practice seems unnecessary given the large number of existing measures that cover all body regions and many specific conditions. The finding also is somewhat contradictory, given that 68% of those who used standardized outcome measures indicated that one reason for choosing an instrument was its documented validity and reliability. We also found that participants defined outcome measures broadly to include not only measures of activity and participation but also some measures of body function such as the BBS. This finding is reflected in the literature in that previous reports of use of outcome measures by physical therapists have included references to measures of body function.⁶⁻⁸

The problems perceived by physical therapists who used standardized outcomes measures and the reasons

given for not using them among those who did not use them were fairly similar and included issues that have been discussed in the literature for more than a decade.^{13,15,16} Even in the most recent study,¹⁶ the majority of participants indicated lack of familiarity with, lack of training in, and lack of access to measures were barriers. Practitioners in other health care specialties have reported the same types of barriers as those reported by physical therapists. Meadows et al¹⁸ reported that 39% of GPs and 28% of nurses indicated having insufficient time to discuss health outcome data with their patients. Logistical problems such as time, additional paperwork, and costs of personnel were cited as the most important reason for not using the measures among psychologists.¹⁹ Based on our results, it appears that many physical therapist practices may not yet have determined how best to address these barriers.

Twenty-seven percent of the participants in our study who did not use standardized outcome measures cited the lack of a support system in terms of technology and staffing as a reason, and only 11% of those who used the measures indicated that office staff helped patients to complete them. Similarly, more than 10 years

ago, Russek et al¹⁵ reported that the physical therapists in their study identified lack of personnel to assist in data management as a barrier to implementation of these measures. Kay et al⁸ reported that approximately 42% of the physical therapists they surveyed in 1998 thought that lack of resources was an obstacle. The study of nurses and GPs indicated that they, too, would be more willing to use standardized measures if the data were collected and analyzed by someone else.¹⁸

In our study, approximately 7% of the participants indicated that computers, and not paper, were used for completion and analysis of measures, and slightly fewer than 10% of participants indicated that they chose measures based on their ability to analyze data electronically. Recent literature has suggested that implementation of computerized systems is critical to clinical practice in terms of evaluating both individual patients and overall practice performance. For example, in 1994, Shields et al²⁶ described the development of a computer-based clinical database in the acute care setting and urged its implementation to better measure outcomes of physical therapy interventions. More recently, Jette et al,²⁷ reporting on a new standardized outcome measure that uses a computerized adaptive testing format, suggested that challenges for implementation included assisting clinicians in carrying out the testing as well as understanding and interpreting the data derived from such measures. They stressed the need for training, technical support, and access to software.

In our study, 18% of the participants who did not use standardized outcome measures cited the lack of relevance to the plan of care as a reason. Kay et al⁸ found that 39% of physical therapists surveyed in 1998 thought that outcome measures did

not meet the needs of their patients. Researchers reporting the perceptions of nurses, GPs, psychologists, and oncologists also cite lack of clinical relevance as a barrier to use of standardized outcome measures. For example, Hatfield and Ogles¹⁹ reported that a substantial number of psychologists felt that standardized outcome measures could “distort” the effects of treatment. General practitioners and nurses stated that they were more likely to use standardized outcomes measures if they helped in the care of the individual patient,¹⁸ and oncologists indicated that informal collection of data seemed a better way to understand individual patient needs than using standardized outcome measures.¹⁷ Among the physical therapists in our study who used standardized outcome measures, however, the majority believed that these measures could aid in directing the plan of care and enhancing the thoroughness of their examinations. Similarly, previous studies^{7,14} have shown that physical therapists perceived planning of care and monitoring the effects of treatment as benefits of standardized outcome measures. Although it is likely that many physical therapists are similar to other health care practitioners in valuing and applying the qualitative information gathered from patients, differences in perceptions regarding the usefulness of standardized outcome measures may be due to the fact that physical therapists have better tools for measuring the constructs that provide a basis for evaluating the effectiveness of their care.

Limitations

One limitation of our study is that our data reflect what has been reported by physical therapists rather than what has been observed, and although we provided our participants with a definition of standardized outcome measures, they may have thought about the measures

Table 5.

Reasons Among Participants Who Did Not Use Standardized Outcome Measures (n=238, May Indicate More Than 1 Reason)

Reason	N	Percentage
Take too much time for patients/clients to complete	102	43.0
Take too much of clinicians' time to analyze/calculate/score	71	30.0
Are difficult for patients/clients to complete independently	69	29.1
Require a support system that I do not have (eg, technology, staffing)	64	27.0
Often are not completed at discharge, so are not useful in determining patients'/clients' response to treatment	58	24.5
Do not contain the types of items or questions that are relevant for the types of patients/clients who I see	57	24.1
Other reason	54	21.2
Are confusing for patients/clients	48	20.3
Require more effort than they are worth	47	19.8
Do not contain information that helps direct the plan of care	43	18.1
Are difficult to interpret (eg, do not know what norms are, how score relates to severity, or what a clinically important change might be)	40	16.9
Require too high a reading level for my patients/clients	27	11.4
Make patients/clients anxious	22	9.3
Provide information that is too subjective to be useful	22	9.3
Require training that I do not have	18	7.6
Are in English, a language in which many of my patients/clients are not fluent	16	6.8
Are not sensitive to the cultural/ethnic concerns of many patients/clients	10	4.2
Cost too much	7	3.0
Are really only useful for research purposes	7	3.0
Are not relevant because my practice involves consultation, case management, or discharge planning only	6	2.5
Plan to implement?		
No	110	49.3
Maybe	93	41.4
Yes	20	9.0

they used in different ways. Additionally, the validity and test-retest reliability of our survey data were not tested. We attempted, however, to demonstrate content validity through use of previous literature on the topic and construct validity through factor analysis. There was good internal consistency within the items assessing the perceived benefits and barriers to using outcome measures. Another limitation was that we sent survey questionnaires only to members of APTA. Therefore, the results of this study may be biased and not representative of the

entire profession of physical therapy. Given that APTA members may be more likely than nonmembers to attend national meetings, they may be more likely to have been exposed to issues related to measuring outcomes. Therefore, we might speculate that those who are members would be more likely than nonmembers to use standardized outcome measures. We considered our response rate to be adequate in that it was comparable to that reported in similar studies; however, there is the possibility that the sample was biased.

Standardized Outcome Measures in Physical Therapist Practice

Table 6.

Odds of Using Standardized Outcome Measures by Participant and Practice Characteristics^a

Factor	Odds Ratio	95% CI		Percentage Using
		Lower	Upper	
Facility				
Acute care	Reference			16.4
Inpatient rehabilitation	2.63	0.80	8.67	30.8
Extended care	2.21	0.47	10.30	23.1
Outpatient	6.80	2.99	15.48	60.5
Home care	12.56	4.36	36.18	64.7
School system	1.04	0.10	11.07	6.7
Other type of facility	5.46	1.27	23.43	50.0
Specialty				
No	Reference			43.2
Yes	1.72	1.03	2.88	59.2
Age of majority (>50%) of patients, y				
<21	Reference			17.9
21–60	3.58	1.16	11.05	57.9
>60	2.42	0.74	7.92	35.0
No majority	6.57	2.03	21.31	59.1

^a CI=confidence interval.

Implications

Despite more than a decade of development and testing of measures appropriate for various conditions and practice settings, the physical therapy profession appears to have some distance to go in implementing standardized outcome measurement routinely in most clinical settings. The development of such measures for acute care settings may need to be a particular focus. Regardless of setting, practices will need to help clinicians to manage time so that collection of data can become routine despite productivity expectations. Given the perceived time-consuming nature of standardized outcome measurement, investment in computerized systems for quick data entry and analysis may be warranted.

Although the content, properties, and applicability of many standardized outcome measures have been reported in the literature for more than a decade, clinicians continue to

report that the measures are not used because they are not applicable to their patients or that they cannot interpret the scores. It appears, therefore, that disseminating information through the professional literature may not be an efficient or effective mechanism. Further instruction and enculturation through continuing education as well as professional and graduate professional education may increase the use of standardized outcome measures. Education should include the use of hardware and software to facilitate their usage. In addition, software should be made readily available to provide analyses that assist in the interpretation of scores. Interpretation could include comparing patients' scores with norms; using scores to qualify severity of condition or predict outcome or duration of an episode of care; or categorizing changes in scores as worse, stable, or improved. Such data could assist physical therapists in making decisions

about change in management strategies, referral, or discharge from services. As noted by Jette et al,²⁷ the essential strategies to improve use of standardized outcome measures may well require new funding mechanisms.

Given that many of our participants believed that standardized outcome measures are confusing and difficult for patients to complete, efforts should be made to ensure readability and interpretability by patients. Reading level, font size, and general appearance of measurement tools need to be considered. Language and cultural concerns were cited by relatively few of our participants; however, given the changing nature of the US population, these concerns may become magnified and necessitate adaptations to the commonly used instruments.

Conclusion

Most participants in our study did not use standardized outcome measures. There was a relationship between specialty certification, age of patients seen, and practice setting and likelihood of using standardized outcome measures. Most participants who used standardized outcome measures perceived that their use enhanced communication with patients and helped to direct the plan of care. More than 70% of the participants, however, felt that these tools could be confusing, difficult, and time consuming for patients. It appears that outcome measures are used largely without computerized systems for either administration or analysis. Participants with fewer years in practice reported learning to use standardized outcome measures in their professional education programs. Focus on education in the use of outcome measures in professional education programs and continuing education, as well as alterations in practice management strategies, may lead to increasing use of standardized outcome measures in the future.

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