The Predictive Power of Narrative Data in Occupational Therapy Evaluation

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Key Words: assessment process • functional assessment • outcome measure

Objective. This study examined whether adding the Canadian Occupational Performance Measure (COPM) to existing occupational therapy evaluation measures used in a subacute skilled nursing facility unit enhanced the accuracy of therapists’ predictions of the functional status of clients at discharge.

Method. This study utilized a prospective comparison design. Two independent predictive variables were developed using the standard Functional Independent Measure (FIM), and an enhanced FIM that included narrative information from the Canadian Occupational Performance Measure (FIM/COPM). These variables were subsequently compared with the actual FIM discharge (DFIM) scores for 31 clients. The primary author (D.S.) gathered data from chart review and conducted the statistical analysis. The data were analyzed using descriptive correlations (Pearson r) and comparison statistics (Wilcoxon signed rank test).

Results. Comparison statistics (Wilcoxon signed rank test) revealed a statistically significant difference between the standard FIM predictive score and the discharge FIM score. No statistically significant difference was found between the FIM/COPM predictive score and the discharge FIM score. These findings suggest that predictive scores based solely on information attained from the standard FIM resulted in less accuracy in outcome predictions. Correlational analyses further supported these conclusions.

Conclusion. The findings support the study hypothesis that use of the COPM in combination with the FIM enhances accuracy in prediction of outcomes for rehabilitative services for persons in adult physical disabilities settings.


The goal of client-centered care is to create an empowering environment in which clients, not therapists, direct the course of care (Matheis-Kraft, George, Obinger, & York, 1990). An inherent aspect of client-centered care is concern for the client as a person who works in partnership with health care providers (Law et al., 1994). Consequently, a client-centered approach requires that health care professionals relinquish the aura of professional power inherent in the medical model and delivery of health care today (Freidson, 1975; Smith, 1990; Townsend, 1998; Waitzkin, 1989).

The medical model has been viewed as a primary barrier to the evolution of client-centered care in occupational therapy (Colman, 1992; Neistadt, 1995; Rogers, 1982; Wilcock, 1998). The essence of client-centered care in...
occupational therapy is setting goals that are individually relevant (Law, 1998; Townsend, 1997). To do so, therapists must collaborate with clients and understand their priorities. Neistadt and Seymour’s (1995) national survey of occupational therapists in adult physical disabilities treatment settings found that those respondents who used the most extensive formal assessment of client priorities used more occupationally relevant intervention strategies than did the other respondents. Unfortunately, these occupationally oriented respondents represented only 2% of the facilities in the survey. Most survey respondents (57%) reported that they used an interview to assess client priorities. This group of occupational therapists ranked self-care, upper extremity exercise, and passive range of motion as the most frequent intervention strategies. Neistadt and Seymour’s study suggests that the process occupational therapists use to evaluate clients shapes the resulting intervention strategies and the extent to which these are collaborative and client centered.

Because few occupational therapy assessments include the environment or social role expectations of clients (Pollock, 1993), occupational therapists may not have the necessary assessment instruments to support a client-centered evaluation process. To establish a more client-centered approach, evaluations are needed that elicit narrative data to identify the valued occupations of individuals and estimate the impact of illness or disability on these occupations. The Canadian Occupational Performance Measure (COPM) (Law et al., 1994) is one example of an instrument that meets these requirements.

Typical evaluation practices in settings for clients with physical disabilities focus primarily on performance component issues within a mechanistic paradigm (Fisher, 1998; Law, 1993; Mathiowitz, 1993; Neistadt & Atkins, 1996; Wood, 1998). The occupational therapy assessment used at East Rehab Two, the site of this research, is an example of this type of practice. The assessment consists of a brief client biography followed by sections in which to record upper extremity range of motion, basic activities of daily living, cognition, and visual perceptual function. Therapists use data from this evaluation, along with observing the client’s current functional level, to record a score on the Functional Independence Measure (FIM™)1 and to predict the outcome of care. The score on the FIM is the basis for discharge planning.

The FIM is designed to identify the severity of disability on a 7-level rating scale ranging from complete dependence to complete independence (Granger & Gresham, 1984). The FIM tracks functional gains achieved by clients in self-care, bowel and bladder control, transfers, locomotion, communication, and social cognition. This instrument records an overall score summing all categories as well as individual category scores. The extent of assistance, need for supervision, and use of adaptive equipment are considered when assigning ratings.

FIM scores track client progress from initial evaluation to discharge. Additionally, these data are used to predict discharge status based on the initial observation and score of the client. This prediction determines the estimated length of stay, directs the goals of rehabilitation, and assists in discharge planning. Because so much is based on this prediction, its accuracy is critical. First, the person responsible for discharge planning may use this prediction to plan the date of discharge and, in collaboration with the client and his or her family, make the needed arrangements for home adaptations, plan follow-up home health services, or locate an appropriate long-term-care or assisted living facility. Second, management may use FIM predictive scores to predict facility census and bed availability. Accurate discharge predictions enable admissions personnel to plan future admissions to the facility with greater certainty. Finally, the predicted score provides a guidepost for therapists when establishing intervention goals.

In a preliminary study at a different facility, Simmons (1997) found that therapists achieved 61% accuracy in predicting the FIM discharge score based on initial assessments. One of the reasons for this moderate accuracy may be linked to the use of the typical occupational therapy evaluation that assesses performance components and activities of daily living skills. Evaluations such as these are not structured to elicit meaningful narrative data. Consequently, therapists have no way to systematically gain an understanding of the client as an occupational being with unique goals for the future. Research in clinical reasoning suggests that narrative data may be important for understanding the life story of clients (Clark, 1993; Mattingly, 1991; Schwartz, 1991), and may be helpful in determining mutually agreed upon goals for clients.

Research Hypothesis

This study examined whether the addition of the COPM to the existing occupational therapy evaluation measures on a subacute skilled nursing facility unit would increase the accuracy of the predictive FIM scores recorded by occupational therapists.

Method

Design

In this study, a prospective comparison design was used to carry out descriptive, correlational, and comparative analyses to explore the relations of two independent variables (FIM scores and FIM/COPM scores) to a dependent variable DFIM (FIM outcome prediction scores). For full definitions of these variables see Table 1.

Participants

Occupational therapists on the rehabilitation unit of a skilled nursing facility located in a city in the northeastern
United States participated in this study. Five occupational therapists agreed to participate by adding the COPM to their existing evaluation process, recording FIM scores and recording FIM/COPM scores on a separate form for analysis. Two were master’s level practitioners and three were prepared at the baccalaureate level. Together they averaged 8 years of experience. Two therapists were FIM certified while three were eligible to apply for certification. All therapists attended in-service training for use of the COPM.

A total of 31 records (16 women) were reviewed from clients admitted to the subacute unit of the skilled nursing facility from December 1997 through February 1998. This unit specializes in rehabilitation using a case management process. Clients ranged in age from 42 through 94 years (x age = 69 years, women) (x age = 74 years, men). The primary diagnoses included total hip and knee arthroplasty, cerebrovascular accident, and complex medical situations such as post-surgical recovery, chronic obstructive pulmonary disease, coronary artery bypass graft, and cardiac recovery. Inclusion criteria consisted of physician orders for rehabilitation, use of occupational therapy disciplines such as range of motion, strength, and leisure. The COPM manual reports test-retest reliability of .63 for performance and 0.84 for satisfaction, using interclass correlation coefficients (Law et al., 1994).

The COPM is a five-step semi-structured interview that assesses individual, client-identified problem areas in daily function. Two scores, performance and satisfaction with performance, are obtained in self-care, productivity, and leisure. The COPM manual reports test-retest reliability of .63 for performance and 0.84 for satisfaction, using interclass correlation coefficients (Law et al., 1994).

The occupational therapy evaluation at the facility was typical of many evaluations used in physical disability settings. This evaluation had not been tested for reliability or validity; however, all sections were based on commonly used evaluative techniques in the occupational and physical therapy disciplines such as range of motion, strength, vision, and basic activities of daily living. As noted earlier, to decrease duplication, therapists often used the results of their evaluation findings to determine FIM scores, or used information obtained during the FIM observation period to complete aspects of the occupational therapy evaluation.

### Procedure

In this facility, occupational therapists were responsible for recording FIM scores in eating, grooming, dressing upper body, dressing lower body, toileting, transfer toilet, transfer shower, social/interaction, and cognition. In this study, the use of the term “total FIM score” refers to the sum of these 9 categories only, rather than the sum of all 17 FIM categories. The COPM was added to the existing evaluation process at this facility specifically for this study.

The therapists completed the facility occupational therapy evaluation and recorded initial functional observation findings (in conjunction with team input) on the FIM on the first day of client contact. The FIM scores recorded for that date included initial functional scores of the 9 categories. Predictive validity of the FIM was assessed with home visits by clinicians who documented minutes of help per day using daily journal and stopwatch procedures. In the same study for clients with multiple sclerosis, the percent of variance explained in predicting minutes of help per day by the FIM score was 77%; for patients with stroke, the percent of variance was 65% (Granger & Brownscheidle, 1995).

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### Study Variables and Definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Independence Measure (FIM)</td>
<td>This variable represents the sum of the 9 categories (eating, grooming, dressing upper body, dressing lower body, toileting, transfer toilet, transfer shower, social/interaction and cognition) recorded by occupational therapists after admission observation period. These are the predictive/goal FIM scores based on observation and facility evaluation information only.</td>
</tr>
<tr>
<td>Functional Independence Measure/Canadian Occupational Performance Measure (FIM/COPM)</td>
<td>These are predictive/goal FIM scores based on observation/facility evaluation and Canadian Occupational Performance Measure information.</td>
</tr>
<tr>
<td>Discharge Functional Independence Measure (DFIM)</td>
<td>This variable represents the sum of the 9 categories recorded by occupational therapists. It is the final scores recorded by the therapists on the FIM representing the functional level of the client at discharge.</td>
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</table>

Granger and Brownscheidle estimated FIM validity was reported as high (Granger & Brownscheidle, 1995). Predictive validity of the FIM was assessed with home visits by clinicians who documented minutes of help per day using daily journal and stopwatch procedures. In the same study for clients with multiple sclerosis, the percent of variance explained in predicting minutes of help per day by the FIM score was 77%; for patients with stroke, the percent of variance was 65% (Granger & Brownscheidle, 1995).

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categories scored by occupational therapists (FIM), and predictive scores for clients functional level at discharge for the same 9 categories (FIM/COPM). On the second day of client contact, the same therapist administered and scored the COPM on the same client. Subsequently the therapist recorded the adjusted FIM discharge prediction scores (FIM/COPM) for each of the 9 categories. These adjustments to the FIM prediction score were based on the results of the COPM in combination with evaluative data from the first day. A therapist increased or decreased his or her prediction of a client’s functional level based on the client’s goals identified on the COPM. For example, if a client indicated that it was important to be independent in tub transfers, the FIM prediction score might be adjusted upward to reflect a score of independence in bathing. If a client indicated that achieving independence in tub transfers was not a goal, the FIM score would be adjusted to reflect the goal of bathing with assistance at discharge. At the time of client discharge, the same therapist readministered the FIM and recorded the FIM discharge scores (DFIM) representing the functional skill level actually achieved by the client in the 9 FIM categories.

After discharge the client’s medical record was processed in accordance with facility practice. The medical record clerk retrieved and forwarded both the FIM score sheet and the FIM/COPM work sheet to the primary author. The information was recorded for the 31 clients who participated in this study by client number and the data were categorized into three variables: (a) FIM predictive scores from first day observation, (b) FIM/COPM predictive scores from second day interview and, (c) the final FIM discharge scores (DFIM). Summing the scores from all of the 9 FIM categories created the three variable sets for this study. Once data were obtained, the FIM score sheets were returned to medical records and the researcher retained the FIM/COPM work sheet. This process maintained compliance with FIM data handling policies.

Data Analysis

Analysis of the three variables was completed using descriptive statistics, Pearson $r$ correlation statistics and the Wilcoxon signed rank test. All data were analyzed with the Statistical Package for the Social Sciences (Norusis, 1993).

After the computation of descriptive statistics, Pearson $r$ was used to explore relations between the three variables. The nonparametric Wilcoxon signed rank test was used to assess possible differences between the three study variables.

Results

Descriptive statistics (see Table 2) of the data revealed that the FIM/COPM scores more closely approximated the actual discharge scores (DFIM) than did the FIM scores alone. Pearson $r$ correlation coefficients are shown in Table 3. Relations between both initial FIM predictive scores and initial FIM/COPM predictive scores with the actual discharge scores (DFIM) were found to be statistically significant. However, the client-centered scores (FIM/COPM) demonstrated relations of greater magnitude. Especially strong correlations ($p < .05$) were present between scores on the FIM/COPM and the DFIM categories in, eating ($r = .99$), toileting ($r = .99$), grooming ($r = .96$), and dressing upper body ($r = .96$). These findings support the hypothesis that the addition of the COPM to the evaluation process results in better predictions by therapists of the discharge FIM scores.

We found further support for this hypothesis when we examined relations between both predictive variables (FIM and FIM/COPM and the outcome variable (DFIM) using the Wilcoxon signed rank test. The statistical analysis revealed that there were no statistically significant differences between the FIM/COPM and DFIM scores ($z = -2.27, p = .03$). However, statistically significant differences were found between the FIM and DFIM ($z = -2.1, p = .03$). The number of accurate predictions of discharge FIM scores when the COPM was incorporated (65%) versus when it was not (29%) further illustrates the statistical significance demonstrated by the Wilcoxon test.

Discussion

Clients expect and demand effective occupational therapy services (Rogers & Holm, 1994). Use of a single evaluative instrument in therapy may limit the amount of relevant client data available to evaluate meaningful change. Moreover, limited or inaccurate data collection may inhibit the establishment of client-centered, long-term goals. Velozo (1994) suggested that the use of multiple instruments captures the specific qualities that occupational therapy is able to address. The findings of this study suggest that tools designed to capture client-relevant occupational roles enhance the accuracy of occupational therapists in predicting the functional level of clients at discharge.

Although the descriptive statistics recorded in Table 2 were close in relation between all three variables, when further detail of the range of differences between the FIM and DFIM and the approximation of the FIM/COPM and DFIM were reviewed, the effectiveness of the COPM was evident. These findings suggest that therapists were more accurate in predicting the discharge status of clients, as reflected by the FIM score, when they used both evaluation methods (typical evaluation with FIM and COPM). Enhanced prediction accuracy of therapists may improve the case management process for clients and the facility.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$N$</th>
<th>$M$</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIM</td>
<td>31</td>
<td>59.32</td>
<td>3.49</td>
<td>47.00</td>
<td>63.00</td>
</tr>
<tr>
<td>FIM/COPM</td>
<td>31</td>
<td>60.74</td>
<td>2.50</td>
<td>53.00</td>
<td>63.00</td>
</tr>
<tr>
<td>DFIM</td>
<td>31</td>
<td>60.65</td>
<td>2.72</td>
<td>53.00</td>
<td>63.00</td>
</tr>
</tbody>
</table>

Effective administration in subacute settings depends on maintaining a high occupancy rate. Administrators plan future admissions based on the discharge predictions made by the clinical team. Therapists often think that management pressures them to discharge clients; pressure that often arises when actual discharge dates are well beyond predicted discharge dates. If, through the use of multiple tools, the accuracy of discharge predictions could be improved, occupational therapy could be of value to the management team in areas other than direct patient care.

Moreover, accurate predictions are critical because greater numbers of rehabilitation facilities have adopted capitated contracts with third-party payers. With these contracts, therapists are expected to predict how much service a client will require based on an initial evaluation. From this information, the predicted cost of care and reimbursement rate is established. Inaccurate predictions may result in team conflict over treatment times as well as budgetary shortfalls for the facility.

Limitations
This study used a prospective comparison design that limited the extent of the analysis in several areas. First, it cannot be inferred that the independent variables (FIM, FIM/COPM) were the direct cause for changes in the dependent variable (DFIM). Second, the selection of a sample of convenience, and the fact that all participants were from one facility limit the generalizability of the results to a larger population.

The reliability of the instruments being utilized is important for any study (Pagano, 1994). Only two of the five participating therapists were FIM certified, possibly limiting the accuracy of the assessment process. In addition, the following characteristics of participating therapists were not considered in data analysis: (a) years of experience, (b) years of experience in specific practice settings, and (c) level of education. These parameters may affect the evaluative process of therapists.

Questions for Future Research
Further research is needed to confirm that the COPM enhanced the accuracy of FIM predictions directly, as suggested in this study. It could be argued that other variables such as years of experience or levels of education of participating therapists were the agents of change and not the COPM. Because therapeutic evaluations were reimbursed in skilled nursing facilities at the time of this study, the time required to use the COPM was not a concern. However, with the implementation of the prospective payment system in skilled nursing facilities settings evaluation time is no longer reimbursed separately. Future research also is needed to examine the relation of the COPM to therapy outcomes with relation to the time and cost expended administering this tool.

Conclusion
We stated that the FIM/COPM score approximation with the DFIM score supports the hypothesis that use of the COPM enhances accuracy in prediction of discharge scores after rehabilitative services for persons in adult physical disabilities settings. Assessments such as the COPM may enable therapists to better understand their clients as occupational beings and with this understanding may more accurately predict the outcome of occupational therapy intervention. Demonstrating the effectiveness of occupational therapy tools such as the COPM in accurately predicting outcomes should be advantageous to occupational therapy clients as well as to our profession. ▲

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