A Comparison of the Cost-Effectiveness of Two Types of Occupational Therapy Services

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The demand for efficient and effective health care prompted this study comparing the treatment outcomes and personnel costs of two types of occupational therapy service provision for the patient with a total hip replacement. System 1 used traditional individual treatment as the primary service provision method, with group treatment used as an adjunct. System 2 used group treatment as the primary intervention method, with individual treatment as the adjunct. Program evaluation research found the study subjects to be demographically homogeneous with no difference in treatment outcomes relative to four specific functional performance goals. Direct labor costs, however, were reduced by more than one third for the System 2 patients. The results of this study suggest that for specific rehabilitation patient populations, group treatment could be a cost-effective method of occupational therapy service provision.

Cost containment, quality assurance, and accountability are issues that have demanded the attention of health care managers for more than a decade. An average hospital stay in 1965 cost $315; by 1986, this cost had risen to $3,840, an increase in health care costs five times greater than the general rate of inflation. The federal government's approach to cost containment on a national scale was the Tax Equity and Fiscal Responsibility Act (Public Law 97-248) (Intagliata & Hollander, 1987), passed in 1982. Its goal was to "change health care provider behaviors by changing the incentives under which care is provided and reimbursed" (Stanfill & Soper, 1988, p. 9). The act was implemented through the establishment of the prospective payment system and its diagnosis-related groups, which effectively limit the number of hospital days according to the diagnosis.

The success or failure of these efforts is still being debated as hospitals struggle to integrate quality care with a businesslike approach to fiscal soundness. The question that must be answered is, At what point do cost-cutting and bottom-line methods negatively affect the quality of care being provided? (Coddington, Palmquist, & Trollinger, 1985; Hull, 1985).

Regulatory agencies, such as the Joint Commission on Accreditation of Healthcare Organizations, have indicated their concern by focusing on outcome indicators of quality. Do we accomplish what we say we will, and at what cost? Enlightened patients and third-party payers are also demanding that we be accountable for the outcomes of the therapeutic interventions we employ (Gillette, 1982).

Unfortunately, there is a dearth of cost-effectiveness studies in our literature to assist occupational therapy managers in meeting the challenge of efficient and effective services (Ostrow & Johnson, 1987). Johnston (1987) suggested that our professional energy would be more appropriately focused if our research answered the question, "In what ways and with whom is this therapy more versus less cost-effective?" (p. X).

The purpose of the present study was to determine the difference in patient outcomes and personnel costs between two types of occupational therapy service provision systems for the patient with a total hip replacement. System 1 used traditional individual treatment as the primary method of occupational therapy service provision, with group treatment used as an adjunct. System 2 used group treatment as the primary method of occupational therapy service provision, with individual treatment used as an adjunct.

Literature Review

A review of the literature substantiated several assumptions on which this study is based: (a) there is a dearth of research regarding the efficacy of group treatment by occupational therapists with persons with physical dis-
abilities and (b) there is a dearth of research regarding the cost-effectiveness of one method of service provision versus another with a given population.

Although limited, there is some evidence to support the use of group therapy with persons with physical disabilities. Kurasik (1967) conducted a study at the Veterans Administration Hospital in Albany, New York, to establish "whether group therapy is advantageous in the rehabilitation of the hemiplegic patient and, if so, why?" (p. 852). He concluded that on the average, group patients achieved their maximum goal 8 days ahead of individually treated patients, with peer support and encouragement cited as major reasons for success.

Gauthier, Dalziel, and Gauthier (1987) concluded that outpatient occupational therapy group services for patients with idiopathic Parkinson disease is effective in maintaining functional status and facilitating behavioral change and is more cost-effective.

Feigenson et al. (1981) conducted a pilot study to establish the cost-effectiveness of inpatient versus outpatient rehabilitation treatment for patients with multiple sclerosis. Their findings indicated that inpatient treatment was more cost-effective for this patient population.

**Method**

Both group and individual treatment sessions took place in the occupational therapy clinic of Moss Rehabilitation Hospital in Philadelphia, Pennsylvania, a 142-bed urban facility. The subjects were 55 patients referred for occupational therapy with a primary diagnosis of total hip replacement, hip arthroplasty, or hip hemiarthroplasty. Patients with documented attentional deficits or an inability to follow two-step verbal or gestural directions were excluded from the study.

A retrospective review of the patients' charts was conducted to gather data on demographic, attendance, number and type of treatment units (group or individual), and treatment outcome relative to specific goals. Twenty-nine charts were for patients who had received traditional occupational therapy treatment (System 1). Twenty-six charts were for patients participating in the New Hip Group treatment program (System 2).

The four goals of treatment consistently related to function for this patient population were as follows:

1. Consistent compliance with hip precautions during functional tasks.
3. Appropriate use of a specified ambulation device during functional mobility tasks.
4. Consistent use of energy conservation techniques and attention to safety issues during activities.

The method used by the hospital's occupational therapy department to evaluate functional status is observation of task performance relative to activities of daily living. Classification of this status is done according to a standard protocol developed in 1987 by the department's supervisory staff.

Traditional (System 1) individual occupational therapy treatment for this patient population involved (a) education regarding hip precautions, (b) training and practice with adaptive devices to facilitate compliance regarding hip precautions during functional tasks, and (c) functional ambulation practice with training in safety precautions and energy conservation techniques.

Patients with multiple diagnoses received the occupational therapy indicated, such as joint protection education and splinting. At the discretion of the primary occupational therapist, some patients also attended groups focusing on aerobic exercises, advanced life-skills training, or both. Given that the content and goals of these groups bore no similarity to those of the New Hip Group, attendance was not considered a variable for study. All patients were seen for a minimum of 1 hr per day, documented in 15-min units.

Patients receiving the System 2 method of occupational therapy service provision were evaluated by their primary therapists. They attended 1-hr group treatment sessions daily. The primary therapist was responsible for evaluating the patient's progress two times per week during morning self-care routines. Patients with multiple diagnoses were seen for individual treatment, as needed, by the primary therapist. The primary therapist was responsible for all documentation, family education, and equipment ordering.

Design of the New Hip Group was based on the philosophy and assumptions outlined by Howe and Schwartzberg (1986), who described the functional group by its use of time and energy in action designed to promote adaptation. Adaptation (i.e., adjustment to environmental demands) is facilitated through action, or occupation, which is characterized as (a) purposeful, related to individual and group needs and goals; (b) self-initiated, whereby persons commit to improving their skills and joining the group to do so; (c) spontaneous, with an emphasis on learning in the present; and (d) group-centered, to encourage the interdependence and interaction of members toward a common goal or task.

The New Hip Group was structured into seven instruction and activity modules geared to facilitate achievement of the four goals described earlier. One session is not solely dependent on the previous one. Specific information is briefly reviewed and reinforced in each session. Patients who complete the seven modules before discharge continue in the group and share in the leader role. A supervisory-level employee with several years of experience was chosen to carry out the role of primary group leader and coordinator of the program.

I used a convenience sample of all patients with total hip replacement referred for occupational therapy be-
between January 1, 1988, and April 6, 1989. An analysis of means between systems was conducted with a t test and chi-square analysis to determine demographic homogeneity between patients in each treatment provision system and any outcome differences. A comparison of service provision cost was conducted with the use of average personnel costs calculated from department records covering the entire time of the study.

Results

Fifty-five charts were reviewed: 29 were the records of patients with a total hip replacement who received traditional occupational therapy services (System 1), and 26 were of those patients who received group treatment as the primary method of occupational therapy service (System 2). The demographic data analyzed were age, sex, multiple diagnoses, and number of days in treatment. A significance level of .05 was set for all statistical measures used.

An independent-samples t test did not show a significant difference in age in number of treatment days. For System 1, which consisted of 20 women and 9 men, the mean age was 68.52 years (SD = 11.34 years) and the mean number of treatment days was 11.86 (SD = 4.98). For System 2, which consisted of 19 women and 7 men, the mean age was 73.58 years (SD = 12.34 years) and the mean number of treatment days was 10.58 (SD = 3.22). A chi-square analysis did not reveal a significant difference between the groups for this variable [corrected $\chi^2 (1, N = 55) = .001$]. The presence of multiple diagnoses was considered as a possible intervening variable. The results of a chi-square analysis revealed no significant difference between the groups for this variable [corrected $\chi^2 (1, N = 55) = 2.469$]. (Critical value of $\chi^2$ with 1 df is 3.84 at $p < .05$.)

Given that all demographic factors analyzed (i.e., age, sex, number of days in treatment, presence of multiple diagnoses) were nonsignificant, the patients in Systems 1 and 2 were deemed comparable. These findings provide the basis for a comparison of the cost and effectiveness of the two systems of service provision.

Outcomes (effectiveness) of occupational therapy services were measured in terms of full, partial, or no achievement of Goals 1 through 4 considered significant for satisfactory functional performance, mentioned above. All 55 subjects were documented as reaching either partial or full achievement on each of the four goals. A chi-square analysis indicated no significant difference in goal achievement between the subjects in Systems 1 and 2 (see Table 1).

Service provision costs were calculated with the use of a mean hourly rate of $23 for an occupational therapist in this facility. For direct labor costs per patient, System 2 costs were approximately one third less than System 1 costs. The mean cost for System 1 patients was $298.00 (SD = $7.11); for System 2 patients, $197.64 (SD = $12.37).

Summary and Conclusion

This study was undertaken to systematically review the effects of a specific method of occupational therapy service provision with a specific patient population. As is often the case with clinical research, concurrent randomized assignment of subjects was not possible given the limited number of appropriate patients available at a given point in time. I am confident, however, that the type of data collected and their analysis dealt effectively with temporal change, population of convenience contamination, or both.

The results of this study clearly indicate that for the patient with total hip replacement, group treatment was as effective as one-on-one treatment in this setting. Further, the one-third decrease in labor cost evidenced by this study illustrates the labor savings inherent in the use of group treatment as the primary mode of occupational therapy service provision.

Whether this type of service provision is effective for other patient groups can be answered only by further study. However, I can share the rationale used to hypothesize the appropriateness of its use with this patient population.

The choice of hip replacement patients for this type of service provision was based on the limited scope and

Table 1

<table>
<thead>
<tr>
<th>Service System</th>
<th>Goal 1(a) Partial Achievement</th>
<th>Goal 1(a) Full Achievement</th>
<th>Goal 2(b) Partial Achievement</th>
<th>Goal 2(b) Full Achievement</th>
<th>Goal 3(c) Partial Achievement</th>
<th>Goal 3(c) Full Achievement</th>
<th>Goal 4(d) Partial Achievement</th>
<th>Goal 4(d) Full Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>System 1</td>
<td>7</td>
<td>22</td>
<td>8</td>
<td>21</td>
<td>10</td>
<td>18</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>System 2</td>
<td>4</td>
<td>22</td>
<td>5</td>
<td>21</td>
<td>9</td>
<td>17</td>
<td>9</td>
<td>17</td>
</tr>
</tbody>
</table>

$\chi^2$ for System 1 = 1.08

$\chi^2$ for System 2 = 2.469

Note: Critical value of $\chi^2$ with 1 df is 3.84 at $p = .05$. System 1 used traditional individual treatment as the primary method of intervention, with group treatment as an adjunct; System 2 used group treatment as the primary method of intervention, with individual treatment as an adjunct.

\(a\)Consistent compliance with hip precautions during functional tasks. \(b\)Independent use of adaptive devices for lower extremity self-care tasks. \(c\)Appropriate use of a specified ambulation device during functional mobility tasks. \(d\)Consistent use of energy conservation techniques and attention to safety issues during activities.

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discrete nature of their occupational therapy needs, as follows: (a) the occupational performance dysfunction experienced by most hip replacement patients is predictable and short term, (b) there are few or no residual deficits after surgery, (c) the goals and intervention methods used to achieve the goals are consistent, and (d) both the goals and the intervention methods lend themselves well to the group setting.

It is also important to note that the group treatment program undertaken by the occupational therapy department in this study was based on theory, and the clearly defined goals relevant to this patient population created the structure on which the treatment modules were developed. Of equal importance is the level of professional expertise committed to the development and implementation of this program. The program in this study was conducted by a supervisory-level therapist with several years of experience using an occupational therapy task-oriented group approach.

Group treatment is deeply rooted in our professional history. Its potential for therapeutic efficacy with persons with physical disabilities may be realized in direct proportion to the level of clinical reasoning we therapists bring to its use. The issues of cost containment, personnel shortages, and evidence of efficacy will continue to demand our attention and test our problem-solving skills. We must not allow the pressures of cost containment and personnel shortages to compromise our efforts to provide quality care and promote quality of life for our patients. This study presented a model used to evaluate the programmatic efforts made by an occupational therapy department to address these issues.

References


