



AOTA Critically Appraised Topics and Papers Series

Traumatic Brain Injury

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER (CAP)

Focused Question

What is the evidence for the effect of interventions to address psychosocial, behavioral, and social functions on the occupational performance for persons with traumatic brain injury (TBI)?

McMorrow, M. J., Braunling-McMorrow, D., & Smith, S. (1998). Evaluation of functional outcomes following proactive behavioral-residential treatment. *Journal of Rehabilitation Outcomes Measurement*, 2(2), 22–30.

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

State the problem the authors are investigating in this study.

Persons in target subgroups (of TBI) experience long-term, specialized, expensive care. There have been few published reports of the postdischarge outcomes as a result of participating in these programs.

RESEARCH OBJECTIVE(S)

List study objectives.

To evaluate the effects of a proactive behavioral-residential treatment program on the functional outcomes of persons with acquired brain injury (ABI) with serious unwanted behaviors that put themselves or others at risk.

Describe how the research objectives address the focused question.

The objective directly addresses the focused question.

DESIGN TYPE:

One group, repeated measures design

Level of Evidence:

III

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *If no, explain.*

Yes

No

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

All persons admitted to the program during its first 4 years of operation (6/92–5/96) were included.

Inclusion Criteria

NR

Exclusion Criteria

NR

NR = Not reported.

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes

No

Attention

Yes

No

Others (list and explain):

None; all persons admitted to the program were included initially

SAMPLE CHARACTERISTICS

N=71

% Dropouts	At 3-month follow-up, 16 (23%) lost; at 12-month follow-up 38 (54%) remained		
#/ (%) Male	64/90%	#/ (%) Female	7/10%
Ethnicity	NR		
Disease/disability diagnosis	86% had severe brain injury (coma > 24 hours or Glasgow Coma Scale rating of 3–8 at time of injury). Age: 16–56 years (mean = 30). Time since onset ranged from 9 days to 20 years (38% were > 2 years). Prior rehabilitation experience ranged from 0 to 13 involvements (mean = 3); the participants generally failed to benefit from previous rehabilitation to treat the unwanted behaviors.		

Check appropriate group:

<20/study group	20–50/study group	51–100/study group ✓	101–149/study group	150–200/study group
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Sample Characteristics Bias: If no, explain.

If there is more than one study group, was there a similarity between the groups?

Yes

No

Were the reasons for the dropouts reported?

Yes

No

INTERVENTION(S)—Included are only those interventions relevant to answering the evidence-based question

Add groups if necessary

Group 1

Brief Description	The program included traditional rehabilitation therapies (occupational therapy, physical therapy, psychological therapy, and speech therapy) plus cognitive, behavioral, and medical approaches. The program consisted of the following:
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	<p>I. All staff used the same practice approach that included these commitments:</p> <ul style="list-style-type: none"> • Use a behavioral approach involving positive reinforcement • Avoid punishment or escape extinction learning operations • Use minimal effective dosage of medications and avoid PRN (as needed) usage • Minimize restrictions (residence as well as how treated) • Use no mechanical restraint and no exclusionary or seclusionary procedures • Keep the person as involved as possible in the life of the community • Treat all patients with a high degree of personal dignity and respect. <p>II. The interaction style included:</p> <ul style="list-style-type: none"> • Positive interaction • Early intervention • All inclusive (all participants/all the time/all situations) intervention • Reinforcement of desired behaviors • Finding and using teachable moments <p>III. Residential continuum (was not available for the early years):</p> <ul style="list-style-type: none"> • Reside in a place with most to least staff availability • Reside in a place with greater to lesser emphasis on basic vs. complex activities of daily living <p>IV. Personal Intervention Planning</p> <ul style="list-style-type: none"> • Emotional-behavioral self-management through individual and group therapies and ongoing reinforced practice of compensatory strategies to promote successful negotiation of difficult life situations. <p>V. Personal Goal Setting</p> <ul style="list-style-type: none"> • Group therapeutic contracting <p>VI. Functional/Integrated Cognitive Training Within Context</p> <p>VII. Performance Monitoring/Weekly Feedback</p> <p>VIII. Community Access Review 3 times daily (to determine whether the person could be in a less restricted situation)</p>
Setting	Single 8-bed community integrated residential setting at first. Later, a continuum of four residential options (from secure unit to staff-monitored apartment living) was included.
Who Delivered?	A rehabilitation/behavioral team including an occupational therapist, whose duties were not described. The training of the team was not described, nor was any measure of actual adherence to the protocol.
Frequency?	Daily, all day
Duration?	Mean length of stay was 7 months

Intervention Biases: Explain, if needed.

Contamination

Yes

No

Co-intervention

Yes

No

Timing

Yes

No

Site

Yes Possibly, in that the continuum of residential placements was not available in the beginning; only later, when these were available, was placement found to be an important part of the therapy.

No

Use of different therapists to provide intervention

Yes

No This was not reported; it is assumed that all personnel provided whatever services they were responsible for to all participants.

MEASURES AND OUTCOMES—Included are measures relevant to answering the focused question

There were 7 functional outcomes measured:

1. Residential status
2. Level of independence or freedom from assistance
3. Behavioral/emotional status (intervened on own behalf rather than depend on external help)
4. Level of community participation (with or without assistance)
5. Level of self-awareness of personal skills and difficulties
6. Vocational/higher education/productive activity status
7. Level of involvement in productive activity per day and per week

Each of these contained five hierarchical and exclusive levels of performance (maximum, moderate, intermediate, limited, and minimal). There was no reliability or validity information provided. The outcome areas were measured at referral evaluation, 1 day prior to admission, at discharge, and 3 months, 6 months, and 12 months postdischarge.

Measurement Biases

Were the evaluators blinded to treatment status? *If no, explain.*

Yes

No

Recall or memory bias *If yes, explain.*

Yes

No

Others (list and explain):

The evaluation was completed by record review, interview with the participant or significant other, or team process. Trained (unexplained) raters were asked to specify one level of functioning in each outcome area during each assessment. Presumably, each rater reported on his or her area of expertise, but this was not reported, nor was which information was scored from record review, interview, or observation by team members.

Limitations (appropriateness of outcomes and measures) *If no, explain.*

Did the measures adequately measure the outcome(s)?

Yes

No

Other The outcome measure was devised for this study. No validity or reliability information was reported. It probably measured the outcomes adequately in that each outcome was graded according to an observable, operationalized, defined behavior.

RESULTS

List results of outcomes relevant to answering the focused question

Include statistical significance where appropriate ($p < 0.05$)

Include effect size if reported

When the percentage of participants scoring at the various levels of achievement was compared to the preadmission and discharge evaluations, the group's level of functioning improved in all seven functional outcome areas; all except vocational involvement improved to the intermediate level. Vocational involvement improved to the limited level (1/4 time participation). The group performance attained at discharge was maintained across all seven functional outcome areas at the 3-month follow-up. The results were not tested statistically. Results for 6-month and 12-month follow-up are not reported here because of extensive attrition and lack of knowledge concerning what occurred during that time that could have affected the scores.

Was this study adequately powered (large enough to show a difference)? *If no, explain.*

Yes

No Attrition was high at follow-up

Were appropriate analytic methods used? *If no, explain.*

Yes

No None used

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No None used

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

“The results of this study suggest that a proactive behavioral-residential treatment program had an important impact on the functional outcomes of a group of persons who had experienced ABI...The posttreatment results are strengthened when one considers that they were contrasted to repeated, pretreatment measures that failed to show gains despite the passing of time and inclusion in other forms of treatment during this period.” (p. 29).

Were the conclusions appropriate for the study design (level of evidence)? *If no, explain.*

Yes The conclusions were appropriate for the level of evidence, but the results need to be interpreted cautiously because they were not tested statistically. The key or required components of the program cannot be identified from this study. There was no evidence given about the consistency and commitment of the various staff members to the approach or the delivery of the treatment as outlined above.

No

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No No statistical analysis

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

This study cannot provide occupational therapists with specific guidance for clinical practice because the occupational therapist's role in this program is not identified. However, the practice approach to which all professional staff was said to be committed is consistent with the philosophy of occupational therapy and provides some weak support for the validity of that philosophy.

This work is based on the evidence-based literature review completed by Catherine Trombly, ScD, OTR/L, FAOTA.

CAP Worksheet adapted from: Critical Review Form – Quantitative Studies ©Law, M., Stewart, D., Pollack, N., Letts, L., Bosch, J., & Westmorland, M., 1998, McMaster University. Used with permission.

For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6611, x 2052.



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