

A multidisciplinary community-based rehabilitation program improved social functioning in severe traumatic brain injury

Powell J, Heslin J, Greenwood R. Community based rehabilitation after severe traumatic brain injury: a randomised controlled trial. *J Neurol Neurosurg Psychiatry*. 2002 Feb;72:193-202.

QUESTION

In patients with severe traumatic brain injury (TBI), is a multidisciplinary community-based outreach rehabilitation program more effective than information only?

DESIGN

Randomized (allocation concealed*), blinded (outcome assessors)*, controlled trial with a mean follow-up of 24.8 months.

SETTING

An urban setting in London, England, UK.

PATIENTS

110 patients who sustained severe TBI 3 months to 20 years previously and had no other neurologic conditions. 94 patients (85%, mean age 34 y, 76% men) participated in the end-of-study assessment.

INTERVENTION

54 patients were allocated to a multidisciplinary community-based outreach rehabilitation program, and 56 were allocated to an information-only group. Rehabilitation was individualized, and patients were seen for 2 to 6 hours per week for an average of 27 weeks.

MAIN OUTCOME MEASURES

Scores on the Barthel Index (BI), the Brain Injury Community Rehabilitation Outcome-39 (BICRO-39), the Functional Independence/Assessment Measure (FIM+FAM), and the Hospital Anxiety and Depression Scale

(HADS). An individually determined change score, the maximum gain index (MGI), was also calculated by identifying the subscale on which each patient showed the greatest improvement from intake to follow-up.

MAIN RESULTS

Analysis was by intention to treat. On the BI, more patients in the outreach group (35%) showed improvement than did patients in the information-only group (20%) (Mann-Whitney U test on ranked changed scores, mean rank 53.2 vs 41.6, $P < 0.05$). Median change scores on the BICRO-39 were greater for those in the outreach group than for those in the information group for the total score, the MGI, and the self-organization and psychological well-being subscores (Table). The

FIM+FAM and HADS scores showed similar improvements in both groups. However, the MGI for the FIM+FAM was greater for those in the outreach group than for those in the information-only group (mean rank 53.2 vs 40.4, $P < 0.03$).

CONCLUSION

In patients with severe traumatic brain injury, a multidisciplinary community-based outreach rehabilitation program improved social functioning.

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*See Glossary.

Community outreach program vs information only in traumatic brain injury at a mean of 24.8 months†

BICRO-39 scores (range)	Median change scores (range)		P value‡
	Outreach	Information	
Total score (0 = functioning well, 30 = not functioning well)	2.5 (-1.7 to 6.2)	0.9 (-4.1 to 6.8)	< 0.05
Maximum gain index (-5, 5)	1.6 (0.2 to 2.6)	1.0 (0.0 to 3.3)	< 0.03
Self-organization (0 = no help, 5 = cannot do)	0.4 (-2.8 to 2.2)	0.1 (-1.5 to 3.1)	< 0.03
Psychological well-being (0 = symptoms never experienced, 5 = almost always)	0.6 (-2.0 to 2.6)	0.2 (-1.8 to 1.3)	< 0.05

†BICRO-39 = Brain Injury Community Rehabilitation Outcome-39.

‡Probability levels for group comparisons (Mann-Whitney U tests).

COMMENTARY

In 1998, Chesnut and colleagues (1) published an evidence-based analysis of TBI rehabilitation. They were able to draw few positive conclusions about the efficacy of rehabilitation because of the dearth of available evidence. The important study by Powell and colleagues provides a welcome counterpoint because it supports the usefulness of ongoing community-based rehabilitation for patients with TBI. Particularly noteworthy are the design—it is one of the few randomized controlled trials related to community-based rehabilitation (2)—the inexpensive intervention, the similarity of the intervention to other publicly funded community-based rehabilitation programs, and that change occurred many years after TBI.

Several limitations exist in the study. First, the 2 primary outcome measures that were used had substantial ceiling and floor effects (BI and 2 subscales of the BICRO-39). Use of other available measures of community integration might have avoided this problem (3). Second, the outreach group did not make substantive gains in terms of returning to paid employment, school, or child care or improving nonfamily social contact—2 key indicators of successful community integration. It is possible, as the authors suggest, that obstacles beyond the control of the therapist or patient are the reason for this. However, altering some of

the elements of the therapy may have a positive effect. This study contributes to the growing body of evidence suggesting that multifaceted rehabilitation approaches provide the best outcomes (4), but also shows what more needs to be done.

The take-home message is that functionally based rehabilitation shows promise for improving day-to-day life for patients with severe TBI even many years after injury. Although further evidence is needed to substantiate these findings and to address questions about the content, intensity, duration, and timing of rehabilitation, time since injury should not preclude referral to community-based services.

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