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主持人：謝清麟 台大醫學院職能治療學系

非密集式居家職能治療對出院後中風病人之療效

The effects of low-intensity home-based occupational therapy on stroke patients after discharge from hospital

一、中文摘要

本研究驗證非密集式居家職能治療對發病至少一年之中風病人之療效。12位中風病人接受為期15週、每週一次之居家職能治療。實驗前、後測量病人之上下肢動作功能恢復程度、日常生活能力。發現病人之上肢、下肢動作功能、平衡能力、及日常生活能力均有進步，但未達統計顯著。然而由於本研究之樣本較小、實施職能治療不長，亦未提供任何輔助器材，可能因此造成治療效果不顯著，或續研究可參考以上經驗，或可獲得較精確之結果。

關鍵詞：職能治療，中風，居家照護

English Abstract

Objective: To examine the effectiveness of low-intensity home-based occupational therapy in improving the performance of activities of daily living (ADL) and motor function of postacute stroke patients. *Design:* Quasi-experimental. *Setting:* Stroke survivors living at home. *Patients:* Twelve stroke patients with residual disability, who were at least 1 year (mean = 14 months, median=13 months) poststroke. *Interventions:* The patients received home-based occupational therapy once a week for 15 weeks, focused on neuromuscular facilitation, and balance, functional ambulation, and ADL training.

Main outcome measures: The Barthel ADL index and the Fugl-Meyer motor assessment scale were assessed before (pre-intervention) and immediately after (post-intervention)

Results: The patients achieved improvement in balance and motor function of the upper and lower extremities as well as ADL function after the treatment using the

repeated measures analysis of variance but not significantly ($p \geq 0.1$). *Conclusions:* These results indicate that postacute stroke patients may not improve motor and ADL function through low-intensity home-based occupational therapy. Further researches might be needed to examine the effectiveness of home-based occupational therapy, considering small sample size of the study and short interval of the intervention,

Keywords: Occupational Therapy, Stroke, Home Care

二、緣由與目的

Stroke is a major cause of disability.¹ More than 60% of stroke patients have some functionally limiting disability as a result of the cerebrovascular accident.² Residual physical disability in stroke survivors is a major and lasting problem for the patients themselves, for their families, and for health services.³ The difficulties involved in the long-term care of stroke patients are exacerbated by the fact that the level of dependency of some patients increases after hospital discharge.⁴

Comprehensive multidisciplinary assessment and treatment programs have been proven to improve survival and functional outcome compared with less organized systems of stroke care.⁵ However, because of the high costs and the large number of patients, the long-term management of stroke rehabilitation should be well organized and justified.

Few studies have examined the effectiveness of rehabilitation for stroke patients who survive for more than 1 year.

This might be because it has been documented that little recovery can be expected more than 6 months poststroke,^{6,7} although Kelly and Winograd⁸ suggested that functional recovery may occur for up to 2 years poststroke. Recent reports indicated that significant functional gains in weight shift, balance, mobility, and activities of daily living (ADL), could still be achieved in stroke patients who survive for more than 1 year.⁹⁻¹² However, the rehabilitation models used in previous studies differed in terms of rehabilitation disciplines and treatment programs (e.g., treatment times, duration, and content). Thus, future research should focus on different models for providing rehabilitation for postacute stroke survivors.¹⁰

Domiciliary rehabilitation seems to be a good and cost effective alternative for stroke patients. Many patients and families prefer home-based treatment to outpatient treatment for disabling conditions, because of familiarity and convenience.¹³ To ensure both optimum rehabilitation for stroke patients and the best use of resources, it is essential to investigate the effect of individual therapies on postacute stroke survivors.

Low-intensity home-based therapy might be practical and cost-effective in long-term management of stroke disability. We investigated the effectiveness of low-intensity home-based occupational therapy on postacute stroke recovery, in terms of ADL performance and motor function.

三、研究方法

Subjects: Subjects were recruited from August 1996 through October 1996 from patients discharged from the National Taiwan University Hospital. Of the 102 consecutive stroke patients admitted from August through October 1995, 16 met the following criteria: (1) diagnosis of cerebral hemorrhage or cerebral infarction, (2) stroke onset for more than a year, (3) residual disability, (4) not receiving any kind of rehabilitation treatment in the 3 months before contact (5) ability to

follow verbal commands and (6) living in the Taipei area during the period of research. The clinical diagnosis of stroke was confirmed by a physician by reviewing the medical records.

Most of the patients were excluded because they had no residual disability, were receiving therapy at the time of contact or in the last 3 months, or were lost to follow-up due to phone number or address change. The subjects were recruited into the study if, after a full explanation of the study procedures, the patient and his or her main caregiver consented. Only one subjects refused to participate in this study, but three subjects did not complete the intervention because of unstable medical condition. Twelve patients (7 men, 5 women, mean age 64.1 ± 7.2 years) received the intervention completely, and their data were analyzed. Five of these patients had cerebral hemorrhage, and 7 had cerebral infarction. The left cerebral hemisphere was affected in 8 of these patients, and the right in four. The mean (\pm SD) interval from onset of stroke to intervention was 14 ± 2.1 months.

Treatment program: The home-based occupational therapy program was administered by an occupational therapists who were experienced in the treatment of stroke patients in home and hospital settings. The patients received home-based occupational therapy once a week 15 for 15 consecutive weeks, with each treatment session lasting about 30 to 40 minutes. Patients were treated based on their clinical needs. The services mainly consisted of motor recovery facilitation, postural control training, functional ambulation training, and ADL training. Daily exercise programs were tailored to the patients' individual needs. Family counseling was also included to foster treatment compliance.

Outcome measures: The Fugl-Meyer motor assessment (FMA)¹⁴ was used to measure motor function recovery. It is a reliable and valid measure of specific motor function and is also sensitive to changes throughout the recovery process.¹⁴⁻¹⁶

The Barthel ADL index (BI)¹⁷ was used

to measure disability by interview. Its validity has been well established.^{18,19} It is reliable on test-retest, between raters, and whether administered by interview or by observation.²⁰

The FMA and BI (interview) were administered by a third occupational therapist for each patient at entry into the study and after the intervention.

Data analysis: Repeated-measures analysis of variance (ANOVA) was used to determine significant gains with time on the BI and the FMA subscales.

四、結果

The mean scores on the FMA subscales and the BI are listed in the Table. The motor function of upper extremities, the motor function of lower extremities, and the balance scores of the FMA between baseline and post intervention improved slightly but not significantly (upper extremities: $F[1,11]=4.63$, $p=0.054$; lower extremities: $F[1,11]=0.37$, $p=0.56$; balance: $F[1,11]=1.35$, $p=0.27$). Also, no significant differences in sensation ($F[1,11]=0.7$, $p=0.42$), joint pain ($F[1,11]=0.27$, $p=0.62$), and passive range of motion ($F[1,11]=1.43$, $p=0.26$) were noted with time. The patients' performances on ADL improved slightly but not significantly ($F[1,11]=2.1$, $p=0.18$).

Table: The Patients' Change in Performance with Time on the Fugl-Meyer Motor Assessment Scale and the Barthel Index

	Before intervention mean \pm SD	Post intervention mean \pm SD
Fugl-Meyer		
UE	21.3 \pm 11.1	21.9 \pm 11.4
LE	14 \pm 8.7	13.8 \pm 8.5
Balance	7.7 \pm 3.9	8.1 \pm 3.6
Sensation	13.3 \pm 3.8	13.7 \pm 4.2
ROM	37.8 \pm 4.2	38.3 \pm 3.8
Joint pain	38.4 \pm 3.1	38.6 \pm 2.7
Barthel Index	12.1 \pm 3.4	12.5 \pm 3.2

五、討論

This study investigated the effectiveness of low-intensity home-based occupational therapy on improving the performance of ADL and motor function for postacute stroke patients who survived for more than 1 year. After 15 weeks of home-based occupational therapy, the patients demonstrated gains in motor functions and ADL performance, however no statistical significance was reached. These results indicate that motor function ADL performance improvement after home-based occupational therapy is possible for postacute stroke survivors more than 1 year poststroke, however more researches are needed to confirm these findings.

In contrast to the results of previous studies,^{10,12} the patients' daily function measured by BI after the program improved slightly, but the difference was not statistically significant. It might be because the BI is not sensitive to change. Besides, no assistive devices were applied for the patients, although some of the patients needed.

The quasi-experimental study design was used because the variability of disabilities in stroke patients made a control-group design very difficult.¹⁰ However, no statistical findings were reached. Future studies should use randomized controlled study design.

In summary, motor function and ADL performance improvement after low-intensity home-based occupational therapy appears possible for postacute stroke survivors more than 1 year poststroke. More studies are needed to confirm these findings.

六、計畫成果自評

The results of this study did not reach statistical significance. Small sample size and the quasi-experimental study design might be the main reasons. Future research is needed to increase the sample size and a "real" experimental design should be encouraged.

Furthermore, a more sensitive ADL tool should be used.

七、參考文獻

1. Landau P. Rehabilitation. Does it make a difference?. *Aus Fam Phys* 1997;26: 1157-61.
2. Kojima S, Omura T, Wakamatsu W, Kishi M, Yamazaki T, Iida M, et al. Prognosis and disability of stroke patients after five years in Akita, Japan. *Stroke* 1990;21:72-7.
3. Partridge CJ, Morris LW, Edwards MS. Recovery from physical disability after stroke: profiles for different levels of starting severity. *Clin Rehabil* 1993;7:210-7.
4. Corr S, Bayer A. Poor functional status of stroke patients after hospital discharge: scope for intervention? *Bri J Occu Ther* 1992;55:383-5.
5. Consensus Statement. Treatment of stroke. *Br Med J* 1988;297:126-8.
6. Wade DT, Hewer RL, Skilbeck CE, David RM. *Stroke: a critical approach to diagnosis, treatment, and management*. Chicago: Year Book Medical Publishers Inc, 1985.
7. Jeffery DR, Good DC. Rehabilitation of the stroke patient. *Curr Opin Neurol* 1995;8:62-8.
8. Kelly JF, Winograd CH. A functional approach to stroke management in elderly patients. *J Am Geriatr Soc* 1985;33:48-60.
9. Rodriguez AA. Gait training efficacy using a home-based practice model in chronic hemiplegia. *Arch Phys Med Rehabil* 1996;77:801-5.
10. Tangeman PT, Banatitis DA, Williams AK. Rehabilitation of chronic stroke patients: changes in functional performance. *Arch Phys Med Rehabil* 1990;71:876-80.
11. Wade DT, Collen FM, Robb GF, Warlow CP. Physiotherapy intervention late after stroke and mobility. *Br Med J* 1992;304:609-13.
12. Werner RA, Kessler S. Effectiveness of an intensive outpatient rehabilitation program for postacute stroke patients. *Am J Phys Med Rehabil* 1996;75:114-20.
13. Sandin KJ, Mason KD. *Manual of stroke rehabilitation*. Boston: Butterworth-Heinemann 1996.
14. Fugl-Meyer AR, Jaasko L, Leyman I, Olsson S, Steglind S. The post-stroke hemiplegic patient: a method for evaluation of physical performance. *Scand J Rehabil Med* 1975;7:13-31.
15. Sanford J, Moreland J, Swanson LR, Stratford PW, Gowland C. Reliability of the Fugl-Meyer assessment for testing motor performance in patients following stroke. *Phys Ther* 1993;73:447-54.
16. Duncan PW, Propst M, Nelson SG. Reliability of the Fugl-Meyer assessment of sensorimotor recovery following cerebrovascular accident. *Phys Ther* 1983;63:1607-10.
17. Mdhoney FI, Barthel DW. Functional evaluation: Barthel index. *Md Stste Med J* 1965;14:61-5.
18. Collin C, Wade DT, Davies S, Hoene V. The Barthel ADL index: a reliability study. *Int Disabil Stud* 1988;10:61-3.
19. de Haan R, Limburg M., Schuling J, Broeshart J, Jonkers L, van Zuylen P. Clinimetric evaluation of the Barthel Index, a measure of limitations in daily activities. *Nederlands Tijdschrift voor Geneeskunde*. 1993;137:917-21 [Abstract] [Dutch].
20. Wade DT. *Measurement in neurological rehabilitation*. Oxford: Oxford University Press, 1992.
21. Davis PM. *Steps to follow: a guide to the treatment of adult hemiplegia*. New York: Springer-Verlag, 1991.
22. Johnstone M. *Restoration of motor function in the stroke patient: a physiotherapy's approach*. London: Churchill Livingstone, 1987.