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# A randomised controlled trial of a supported employment programme on vocational outcomes for individuals with chronic mental illness

## Key Message

An individual placement and support model for supported employment is more effective than a conventional vocational rehabilitation approach for helping individuals with chronic mental illness find competitive employment.

## Introduction

The functional deficits seen in individuals with long-term mental illness often result in high rates of unemployment in this group. A variety of vocational rehabilitation programmes such as hospital-based workshop training, vocational guidance and counselling, psychosocial rehabilitation, and sheltered workshops have been developed and implemented for this group over the past half century. The results of these programmes are far from satisfactory. Supported employment (SE) has been developed to help people with disabilities participate as much as possible in the competitive labour market. Based on consistent positive findings from several randomised controlled trials, SE is now considered an evidence-based practice.<sup>1</sup> Supported employment was introduced to Hong Kong in 1994, and has been expanded to meet the vocational goals of patients with a variety of disabilities. Along with the Hospital Authority, a total of 44 government-funded units are providing SE services for disabled persons. Despite the extensive use of SE in Hong Kong, its effectiveness and applicability in the local context has not been explored. A local study on the provision of an individualised SE programme for individuals with mental illness has been conducted,<sup>2</sup> but it adopted a pre-post design and lacked a control group for comparison. The current evidence suggesting that SE is more effective than conventional vocational rehabilitation (CVR) programmes is only generalisable to the United States. It remains unclear whether SE is more effective than other vocational rehabilitation programmes in countries with different economic and welfare systems.

## Aims and objectives

To determine the effectiveness and applicability of an SE programme for individuals with chronic mental illness in a Hong Kong setting.

## Methods

This study was conducted from November 2002 to October 2005.

## Subjects and setting

The participants were patients with chronic mental illnesses who lived in Hong Kong. The inclusion criteria were: (1) psychiatric patients who had been ill for at least 2 years, and (2) were aged 18 to 55 years, (3) had expressed interest in competitive employment, (4) had no serious medical condition that might affect their ability to compete for work, and (5) were willing to consent to participate in the study. Based on a previous local study and employment data from a local household survey, the sample size required was calculated as about 96, using a 0.3 minimal detectable difference (assuming the probability of competitively employed people in the test group is 0.6 and in the control group is 0.3), a 0.8 statistical power, and a two-tailed significance level of 0.05. Subjects were recruited from the Occupational Therapy Department, Kwai Chung Hospital, Hong Kong. After giving written consent, participants were individually randomised to either an SE or CVR group using random computer-generated numbers.

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### **Test intervention**

Participants in the intervention group received an SE programme based on the Individual Placement and Support (IPS) model.<sup>3</sup> Unlike the conventional, stepwise, train-then-place model of vocational rehabilitation, the IPS model of SE emphasises a place-and-train approach that rapidly places individuals with mental illness in real-world work settings and provides support to maintain these placements. All SE participants were given an individual job coach (an occupational therapist). Initially, the job coach worked with the participant to build a relationship based on trust and collaboration. Based on the participant's work history, preference, and abilities, the job coach tried to help him/her search rapidly for a job (job development). When a participant was employed, the job coach assisted with preparation and job entry (job placement). On-the-job training and individualised follow-along supports were also provided as needed to enable the participant to keep the job. When a job was terminated, the job coach assisted the participant to find another job. All SE participants were encouraged to attend a short course on assertive job seeking to prepare for entry to competitive job market. To ensure the SE programme was consistent, in February 2003, the IPS programme developers, Professor Robert Drake and Ms Deborah Becker conducted 1 week of intensive training on implementing the IPS programme and rated the programme, using their IPS Fidelity Scale. It scored 69 out of 75, equivalent to good SE implementation.

### **Control intervention**

Participants in the CVR (the control group) received a stepwise CVR programme in Kwai Chung Hospital's Occupational Therapy Department. The CVR approach assumes that people with chronic mental illness have some deficits that prevent them from fitting into a competitive work setting and thus require a period of preparation before entering regular work. The CVR programme was implemented in the form of pre-vocational training in various work groups in a simulated environment. The primary objective of this programme was to equip participants with the skills and knowledge needed to choose, obtain, and keep competitive jobs using a train-then-place approach. While attending the CVR programme, participants were encouraged to seek open, competitive, employment by using normal channels such as newspaper advertisements, the Labour Department, internet searching, and personal contacts with potential employers.

### **Outcome measures**

Vocational outcomes and cost-effectiveness ratios were compared over 18 months. The vocational outcomes were divided into employment and non-employment outcomes. Employment outcomes included employment rates, time to get first job, total days employed, and total earnings whereas non-employment outcomes included mental condition, number and length of hospitalisations, and quality-of-life measures. For the cost-effectiveness analysis, we constructed a cost per unit improvement in employment

outcomes in the two study groups. This was obtained by dividing the mean overall cost of each programme by its mean effectiveness. The overall costs of each programme were the sum of three direct costs: the cost of community-based job visits, the cost of workshop-based training, and the staff cost for the provision of each intervention. These were divided by the total number of participants in each programme to yield the mean cost. All costs were calculated in financial year 2003 Hong Kong dollars.

### **Instruments**

The job coaches kept a monthly record of employment outcomes. The non-employment outcomes were assessed using the Brief Psychiatric Rating Scale to assess participants' mental conditions and the Hong Kong Chinese Version World Health Organization Quality of Life Measure abbreviated version was used to measure their quality of life.

### **Data analysis**

Demographic data including age, sex, education levels, marital status, diagnosis, and psychiatric history were analysed to examine the comparability of the groups. Employment and non-employment outcomes were compared using the *t* test for continuous variables, an odds ratio (OR) for categorical variables, and a repeated measure analysis of variance (ANOVA) for longitudinal data. All statistical tests were 2-tailed with the level of significance set at 0.05, and a 95% confidence interval (CI) was also reported for the estimate of treatment effectiveness. All analyses were conducted on an intention-to-treat basis. The primary outcome assessed in the study was competitive employment, which was defined as a job for which anyone could apply, paid at the market rate.

## **Results**

### **Demographic and clinical characteristics**

A total of 104 individuals with chronic mental illness were referred for the study; four were excluded before randomisation for not meeting the inclusion criteria. Of the remaining 100 participants, 54 were randomised to the SE programme and 46 to the CVR programme. After randomisation, two participants were lost to follow-up (one in the SE and one in the CVR) because they could not be traced. At follow-up, two participants had died. Complete vocational data were obtained on 98 (98%) participants, 53 in the SE group and 45 in the CVR group. There were too few non-completers to compare them with completers statistically. No statistically significant differences were found in the demographic characteristics, and the two groups were largely equivalent at the outset.

### **Vocational outcomes**

The SE participants had significantly better competitive employment outcomes than the CVR participants. The SE participants were more likely than CVR participants to obtain any jobs during the 18-month study period (69.8%

**Table 1. Employment outcomes of supported employment (SE) and conventional vocational rehabilitation (CVR) groups during the 18-month study period**

Outcomes	SE (n=53)	CVR (n=45)	df	P value/95% CI
Any job (%)	69.8	48.9	OR=2.418	1.06-5.53*
Competitive job (%)	64.2	31.1	OR=3.962	1.70-9.22*
Sheltered workshop (%)	5.7	17.8	OR=3.604	0.90-14.52
Earnings (HK\$)	17 191	10 279	t(96)=1.664	0.099
Days employed	144	136	t(96)=0.219	0.827
Days to first job	84	114	t(57)= -1.028	0.309
Total no. of job obtained	51	34	$\chi^2(1)=5.64$	-
Competitive job	48	26	-	0.023*
Sheltered workshop	3	8	-	-
Mean job (competitive) tenure (days)	139	131	t(72)=0.267	0.790

\* Statistically significant results at 0.05 level

**Table 2. Mean 18-month costs for participants in supported employment (SE) and conventional vocational rehabilitation (CVR) groups, in 2003 dollars\***

Services	Unit cost (\$)	Mean cost (\$)	
		SE (n=53)	CVR (n=45)
Community job visit	1011	4731	2606
Workshop training	278	10 533	12 580
Staff costs	-	15 000	15 442
<b>Total cost</b>	-	<b>30 263</b>	<b>32 220</b>

\* No statistically significant differences between two groups were found at the 0.05 level

vs 48.9%; OR=2.418; 95% CI, 1.06-5.53). Further, SE participants were also more likely to be competitively employed (64.2% vs 31.1%; OR=3.962; 95% CI, 1.70-9.22). Consistent with the stepwise train-and-place approach, CVR participants were more likely than SE participants to work in sheltered workshop (SWS). Among those who obtained at least one job, there seemed to be a trend consistently favouring the SE participants although there were no significant group differences in mean total earnings, in mean total days employed, and in time to first job (Table 1). The 34 SE participants who achieved employment held 51 jobs whereas the 14 CVR participants who achieved employment held only 34 jobs during the follow-up period. The mean competitive job tenure was 139 days in SE participants and 131 days in CVR participants.

### Non-employment outcomes

A repeated measure ANOVA indicated a significant time effect in some quality-of-life measures (including overall quality of life, overall health, social relationship, and environment), but the between-group and the group-by-time interactions did not reveal any statistically significant differences. There were no statistically significant group differences in mental health levels and the use of psychiatric beds.

### Cost-effectiveness analysis

The overall mean costs for SE participants were 6.5% lower than those for CVR participants (\$30 263 vs \$32 220) but there were no statistically significant differences in each cost component as well as in the total cost between groups (Table 2). The results of the cost-effectiveness analysis

consistently indicated that the cost per unit improvement in employment outcomes was considerably lower for SE participants than for CVR participants (Table 3). It appeared to be 40% cheaper to find a competitive job in the SE group compared with the CVR group.

### Discussion

Individuals participating in this SE programme were more likely to achieve employment and to work competitively during the 18-month study period. This outcome supports previous studies on IPS and similar approaches to SE. Participants in the SE programme appeared to have more favourable employment outcomes such as more total earnings, more days employed, and obtained jobs faster than the CVR participants despite there being no statistically significant differences between the two groups in these variables. It is likely that these results have been diluted by the high number of participants (39-39.7%) who did not achieve employment during the study period. Also, a relatively higher proportion of CVR participants were placed in SWS, which is considered a more stable, long-term placement.

The non-employment outcomes in this study are consistent with other studies suggesting that employment may help improve non-employment outcomes such as quality of life. The lack of statistically significant differences in non-employment outcomes in the main effect for group and in the group by time interaction suggest that the group effects for SE programmes may be restricted to competitive employment outcomes. The cost-effectiveness analysis indicates that the SE programme was a more cost-effective means than the CVR programme of helping individuals with chronic mental illness find competitive employment. Although the SE programme is more labour intensive than conventional stepwise interventions, individuals participating in the SE programme may utilise fewer extra mental health services such as day rehabilitation services, suggesting a cost offset.

As in other randomised controlled trials, nearly 40% of SE participants were unable to achieve any competitive jobs at any time during the study. Social stigma and the

**Table 3. Cost per unit improvement in the employment outcomes in supported employment (SE) and conventional vocational rehabilitation (CVR) groups**

Outcome	Mean cost per unit improvement in employment outcomes (HK\$)	
	SE (n=53)	CVR (n=45)
Mean no. of competitive jobs obtained (SE: 0.906 [48 jobs] vs CVR: 0.578 [26 jobs])	33 403	55 744
Mean days employed (SE: 144 vs CVR: 136)	210	237
Mean earnings in \$ (SE: 17 191 vs CVR: 10 279)	1.94	3.13

reluctance of employers to hire individuals with mental illness may partly account for this finding. Other factors such as cognitive functioning, psychiatric symptoms, and work-related social skills may be associated with some individuals' ability to achieve competitive employment. Further research is required to investigate the relationships between these variables and employment outcomes.

This study has several limitations that should be acknowledged. First, participants' compliance with treatment may significantly affect vocational outcomes. In this study, five SE participants received workshop-based training for more than 3 months while eight CVR participants did not attend any workshop training. Second, interviewers were not blinded to assignment to groups, though this factor could not account for the major differences in competitive employment outcomes. Third, the study participants represent a self-selected group. These people are motivated to work despite the many obstacles to employment (eg social stigma, psychiatric symptoms, lack of confidence) they face. Further work is needed to understand how best to help other patients to overcome these barriers to employment. Finally, the cost-effectiveness analysis was not comprehensive, largely because of the limited study perspective and available information. Costs for in-patient and out-patient care, along with indirect costs, were excluded from the analysis. As a result, the calculated overall costs for each group are probably lower than the

actual cost incurred, thus biasing the final results.

In conclusion, this study adds information about the effectiveness of SE programmes as a means of improving employment outcomes for individuals with chronic mental illness. It provides evidence supporting the effectiveness and applicability of implementing the IPS model of SE for individuals with chronic mental illness in Hong Kong.

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