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A randomised controlled trial of the efficacy of supported employment

Hoffmann H, Jäckel D, Glauser S, Kupper Z. A randomised controlled trial of the efficacy of supported employment.

Objective: Although numerous randomised controlled trials indicated the superiority of supported employment (SE), we still have too little evidence that SE is more effective than traditional vocational rehabilitation programmes (TVR) in Western European countries with highly developed social security and welfare systems, sophisticated rehabilitation programmes and high thresholds to the open labour market. The aim of this study is to prove the efficacy of SE in Switzerland.
Method: Following a 2-week intake assessment, 100 unemployed persons with stabilised severe mental illness (SMI) were randomly assigned to either the SE programme ($n = 46$) or to the most viable locally available TVR ($n = 54$). Follow-up lasted 24 months.
Results: After the first year, the rate of competitive employment reached a mean level of 48.2% in the SE group and of 18.5% in the TVR group. 58.7% of the SE group were ever competitively employed as opposed to 25.9% of the TVR group. In the second year, SE group participants were competitively employed for 24.5 weeks as compared with 10.2 in the TVR group. The groups showed no significant differences in the non-vocational outcome criteria.
Conclusion: The SE programme in Switzerland also proved more effective than TVR and seems to be applicable to the socio-economic context of Western European countries.

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Key words: supported employment; individual placement and support; vocational rehabilitation; severe mental illness; randomised controlled trial

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Significant outcomes

- Consistent with earlier research findings, supported employment (SE) proved more effective than traditional vocational rehabilitation (TVR) programmes.
- 58.7% of the SE group were ever competitively employed as opposed to 25.9% of the TVR group.
- In the second year, SE group participants were competitively employed for 24.5 weeks as compared with 10.2 in the TVR group.
- At the end of the study, 45.7% of the SE group were still competitively employed as compared with 16.7% of the TVR group.

Limitations

- Switzerland has highly developed social security and welfare systems, sophisticated rehabilitation programmes and high thresholds to the open labour market. These facts may influence the comparability with the results of the US studies.
- Although all TVR programmes operate according to the train-place principle, they are not homogeneous in design, a fact that may limit the generalisability of the control condition.
- Programme fidelity ratings are high and consistent with the individual placement and support (IPS) model with one exception: the law on Swiss Invalidity Insurance requires an assessment prior to all vocational reintegration programmes to be carried out in the form of intake selection.

Introduction

The results of more than a dozen randomised controlled trials (RCT) conducted in the United States have shown that supported employment (SE) is more effective than prevocational training in helping people with severe mental illness (SMI) to obtain competitive employment (1–6). Meanwhile, a few RCT studies have also been conducted outside the United States (7–12). Notwithstanding the disparities in service culture and socioeconomic contexts, all of these studies but one (12) demonstrated the superiority of SE. It was concluded that the reason for the first ever reported failure was the number of contacts by the employment specialists with the participants, which was far too low (13,14).

Western European countries have highly developed social security and welfare systems, sophisticated rehabilitation programmes and higher thresholds to the open labour market than the United States and most non-European countries. The authors of the European multicentre study EQOLISE (10) discussed that these might be the reasons for the minor evidence of SE's superiority in countries such as the UK, the Netherlands, Germany and Switzerland. In Switzerland, for example, there is no prevailing 'hire and fire' policy and only few entrance-level jobs are available, owing to the high technological standards. As a consequence, the threshold to the open labour market is very high for people with SMI. The social insurance and welfare system is highly developed, and considerable invalidity benefit sums are expended in highly developed and sophisticated vocational reintegration programmes, social firms and sheltered workshops specialised on people with SMI.

Notwithstanding the importance of the EQOLISE study, to date we still have too little evidence that SE is more effective than traditional vocational rehabilitation programmes (TVR) in Western European countries. There are also no studies so far in which the frequency of the employment specialist's contacts with participants and significant others are monitored. These issues will be addressed in this study, conducted at Job Coach Project (JCP) of the Bern University Hospital of Psychiatry.

Aims of the study

This supported employment project has the aim of achieving the sustainable integration of people with severe mental illness into competitive employment to increase the chances that in Switzerland, the traditional 'train-place' paradigm of vocational rehabilitation will be replaced by supported employment in the near future.

Material and methods

Study settings and planned interventions

Supported employment (Job Coach Project). As opposed to the traditional 'train-place' model of vocational rehabilitation in which a person is trained to 'get ready' for competitive employment, SE emphasises a 'place-train' approach that rapidly places individuals with SMI in real-world competitive employment settings, so that they can experience the benefits and challenges of the job environment first hand. SE then provides the necessary training and support to successfully sustain these placements (15).

The Job Coach Project (JCP) of the Bern University Hospital of Psychiatry was derived from the individual placement and support (IPS) (16) model. Some modifications were, however, made in order not only to meet the standards of the Swiss social insurance system and the needs of the Swiss labour market but also to enhance the sustainability.

The JCP is staffed by employment specialists (job coaches) that are experienced in the long-term treatment and the rehabilitation of individuals with SMI. The employment specialist assists each participant in the programme in seeking competitive employment on the basis of his or her educational background, work preference and previous work experience. Great attention is paid to aiding these persons to obtain and sustain competitive jobs. Once employed, on-the-job training and follow-along support is provided to help ensure that the individual retains the job for as long as possible. If employment is terminated for any reason, the employment specialist assists the individual in dealing with job loss and helps him or her to secure another place. To provide sufficient support for each participant, the maximum caseload of each employment specialist is limited to 12 participants. The employment specialists were requested to have contact (face to face, by phone or e-mail) at least once a fortnight with each participant and once a month with supervisors, social counsellors or other relevant persons.

In parallel, particular emphasis is also placed on employer support and on ongoing collaboration with other significant persons within the participant's work and home environment.

Several incentives were given to employers, i.e. the JCP acts as a temporary placement agency by paying all social insurance and pension fund contributions and by offering as many incentives as possible. Salaries are defined as a performance-linked wage, thereby facilitating a win-win situation for both parties.

As the JCP is part of the community mental health division of the Bern University Hospital of Psychiatry, the employment specialists are in close contact with the attending therapists from the outset. Moreover, supervision sessions with a psychiatrist are scheduled on a bi-weekly basis.

Programme fidelity. To ensure that the JCP was up to the fidelity standard of the IPS model, the research team rated the JCP once a year by applying the Individual Placement and Support Fidelity Scale (17). In addition, consensus ratings of implementation fidelity are collated from the input of the programme manager and from the direct observation of programme functioning. Repeated ratings scored between 66 and 68 of 75, i.e. all score sets range from equivalent to consistent with the IPS. The sole exception to this is the 'organisation' subscale, which is not fully consistent, as the law on Swiss Invalidity Insurance requires that an assessment prior to all vocational reintegration programmes be carried out in the form of intake selection. Swiss Invalidity Insurance applies the rationale 'rehabilitation must precede invalidity benefits'. Consequently, persons in Switzerland suffering from SMI are allowed access to vocational reintegration programmes only if this is authorised by the Federal Social Insurance Office. Exclusion criteria as stipulated by the Federal Social Insurance Office are detailed later.

Control intervention: Traditional vocational rehabilitation programmes (TVR). All control interventions must be verified as high-quality, train-place vocational rehabilitation programmes within the Canton of Bern and be deemed by the Federal Social Insurance Office to be the best locally available alternative for each prospective participant.

A precept of the TVR is that persons with SMI exhibit functional deficits that prevent them from fitting into a competitive work environment. As a result, participants in a TVR require a period of preparation before entering into regular employment. To facilitate a smooth transition into the real-world work environment, persons participating in a TVR are typically placed in sheltered workshops for 6 to 12 months, after which a 3 to 6-month training stint in a companion open market may be feasible. The accompanying support by employment specialists terminates at the end of the TVR. The wage paid by the Federal Social Insurance Office to participants during their programme attendance is equivalent to 80% of their last obtained wage in competitive employment.

Study participants

All participants in this study were persons with SMI who had received the authorisation for vocational rehabilitation from the Swiss Invalidity Insurance. After obtaining written informed consent from each participant, eligibility was checked in the assessment centre.

Assessment. The Swiss Invalidity Insurance is legally responsible for ensuring that anyone applying to participate in a vocational rehabilitation programme is subjected to an assessment, normally lasting one to three months. In agreement with the Swiss Invalidity Insurance State Office, the authors developed a 2-week assessment model, in which all applicants are tested with regard to psychopathology, cognitive and social functioning, work attitudes and performance, attribution style and quality of life.

Inclusion and exclusion criteria. To be included in the study, persons had to: i) be between 18 and 64 years of age; ii) have a stabilised mental disorder in accordance with ICD-10 criteria; iii) be mandated by the Swiss Invalidity Insurance State Office; iv) express an interest in competitive employment; and v) be out of competitive work at the time of signing the consent form.

Persons exhibiting the following were excluded: i) learning disability (IQ < 70); ii) primary substance abuse disorder; iii) physical or organic handicap that seriously impeded work; iv) unwillingness to attend regular outpatient therapy; v) performance $< 50\%$ of normal work performance as evidenced during the assessment phase; and/or vi) attendance in the programme of < 15 h/week. The latter two criteria were specified by the Swiss Invalidity Insurance State Office as minimum requirements for starting a vocational rehabilitation programme with the goal of obtaining competitive employment.

Randomisation procedure. The study was designed as a prospective randomised controlled trial with a 1- and 2-year follow-up. A total of 143 persons

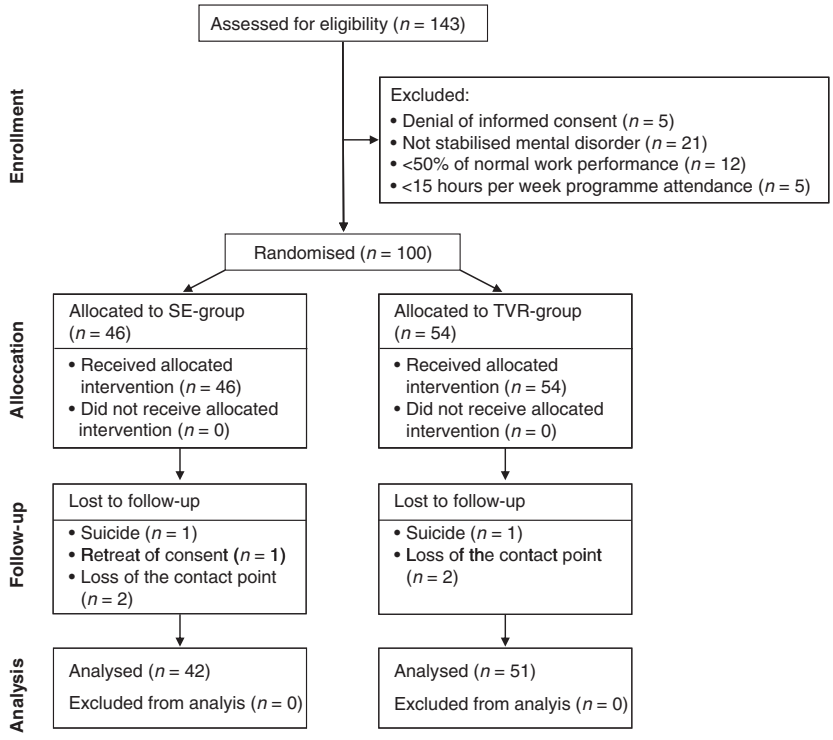

Fig. 1. Participant flowchart: Progress through stages of the trial. SE, supported employment; TVR, traditional vocational rehabilitation programmes.

with SMI were applied for the study by the Swiss Invalidity Insurance State Office (cf. Fig. 1.).

At the end of the assessment, five applicants denied informed consent. Thirty-eight applicants were excluded for not meeting the inclusion criteria.

Of the remaining 100 applicants, 46 were randomly assigned to the SE group and 54 to the TVR group by a randomisation procedure meeting Cochrane criteria (18). Randomization was performed based on a random list generated by a computer algorithm. This list was randomly chosen from a choice of ten lists and was then transformed in a stack of sequentially numbered and sealed envelopes containing the individual assignments. These steps were performed by an administrative office outside the research team. Consequently, just as in a casino situation of betting on 'red' or 'black', the probability of assignment to either of the two groups remained always at 50% regardless of the proportion of earlier assignments. This procedure i) guaranteed that the research team was always fully blinded regarding assignments, ii) group assignment was only revealed once all initial assessments had been completed and iii) also resulted in slightly unequal group sizes. Following randomisation, seven participants were lost to the study: sadly, one participant in each group committed suicide, while three participants in the study group and two in the control group withdrew their consent. Complete sets of all data were obtained for the remaining 42 participants in the SE group and the 51 participants in the TVR group, notwithstanding the fact whether the participants dropped out of the programme or not. Regarding the primary outcome, employment status, data from 95% (95 of 100) of all participants were available.

Ethical approval. The study protocol and the consent forms were approved by the Canton of Bern Ethics Committee.

Outcome measures

The outcomes measured in this study comprised two categories termed vocational and non-vocational. Vocational outcomes included i) rates of competitive employment; ii) time to first job (i.e. time from study entry to first job start); iii) total weeks competitively employed. To avoid a bias and for reasons of fairness towards the TVR group, only the second-year data were used, because due to the train-place concept, the TVR participants spent an average of 6.1 months of the first year in

sheltered training workshops and only 0.8 months in competitive employment and therefore had no chance to compete with the SE group; iv) hours worked per week during the second year; v) percentage of participants employed in a job ≥20 h a week; vi) job tenure in the longest competitive job held during the follow-up period; vii) employment status at the 24-month follow-up; viii) total earnings in the second year; ix) employment status at 24-month follow-up; x) hours worked per week at 24-month follow-up, xi) hourly wage at 24-month follow-up; and xii) monthly income at 24-month follow-up.

Non-vocational outcomes included i) psychiatric symptoms; ii) global functioning; iii) relapses (number of hospitalisations and time spent in hospital); iv) coping with stress; v) the self-perceived and objective quality of life.

The primary outcome variable was whether the participant successfully obtained competitive employment, which had been operationally defined as a job on the open labour market that anyone could hold, not only individuals with disabilities. Hence, by definition, protected jobs, such as transitional employment and other set-aside jobs, were excluded. To be counted as competitively employed, the participant had to i) hold the job for at least 5 days and ii) earn at least a minimum wage. As in Switzerland no minimum hourly wage is defined by law, it was fixed for the purposes of this study at CHF 10.00 (= USD 11.70)) exchange rate on September 7, 2011: 1 CHF = 1.17 USD), which is the equivalent of the US minimum wage as converted by the Big Mac Index (19).

Major assessments were conducted at baseline and at the 12 and 24-month follow-ups by the second or third author in face-to-face interviews. Participants were paid CHF 50.00 for each follow-up interview.

Measures. As specified in their medical histories, all participants had been diagnosed with one or more psychiatric disorders. The second author reviewed all patient charts to validate the principal diagnosis according to ICD-10 criteria. Other background data (demographics, work experience since age 20) were obtained during the assessment. The vocational outcome measures were retrospectively assessed on a monthly basis at the 12- and 24-month follow-up interviews.

The symptomatology of all patients was assessed by using the *Positive and Negative Syndrome Scale* (PANSS) (20) and the *Brief Psychiatric Rating Scale* (BPRS) (21). To assess the overall level of functioning, the *Global Assessment of Functioning Scale* (GAF) (22) was utilised. This instrument rates psychological, social and occupational functioning on a hypothetical continuum of mental health to illness.

The following self-report questionnaires were used to assess motivational cognitions, coping with stress and the quality of life:

The *Stress-management Questionnaire* (23) consists of 19 subscales of different coping strategies, each including six items in a five-point Likert scale format. In a previous study, the authors performed a factor analysis to reduce the complexity of the data, (24) in which two factors explaining 60% of the total variance were revealed, namely an 'active-change oriented coping factor' and a 'depressive-resigned coping factor'. The consistency of both factors proved to be good with Cronbach's alpha = 0.92 each.

The *Wisconsin Quality of Life Index* (W-QLI) (25), which was derived from the *Quality of Life Index for Mental Health*, encompasses eight semi-independent domains, i.e. life satisfaction, occupational activities, psychological well-being, physical health, social relations, economics, activities of daily life and symptoms. Goal attainment is included as a ninth domain, with its own scoring strategy. Each domain is assessed by the participant and his or her employment specialist. This multi-dimensional instrument is valid and reliable. The W-QLI uses an individualised importance weighting, incorporating the individual's perspective instead of imposing a socially prescriptive definition.

Finally, the frequency of the employment specialists' contacts with the SE participants, supervisors and other relevant people (such as therapists, occupational counsellors, social workers and relatives) was calculated by the first author from the JCP charts. The employment specialists were instructed to note any contact whether face to face, by phone or e-mail.

Statistical analyses

Baseline comparisons and non-vocational outcomes. To assess equivalence of the groups at baseline, demographic data including age, sex, marital status, education level, vocational status, diagnosis, substance abuse, and psychiatric and vocational history were analysed. For non-vocational outcome, data proportions of categorical variables were compared according to initial group assignment using χ^2-tests. Values of continuous variables between the two groups were compared using either the *t*-test or, for non-normally distributed variables, the (non-parametric) Wilcoxon ranks sum test.

Vocational outcomes. Intention-to-treat analyses were performed first. All individuals were analysed with the last observation carried forward – a widely implemented imputation technique of replacing missing values with the most recent valid non-missing values. Regarding the primary outcome, employment status, data from 95% (95 of 100) of all participants were available. Data for primary outcome were missing in two participants from the JCP group and three participants from the TVR group. In all these cases, the last observation carried forward was unemployment. Groups were compared on measures regarding competitive or sheltered employment. Independent *t*-tests were used to compare the difference between group means.

For longitudinal data, repeated-measures analysis of variance (ANOVA) under the general linear model was used to examine the time, group and time-by-group interaction effects.

All statistical tests are two tailed with the level of significance set at 0.05. Data were analysed by using JMP® 7.0 software (SAS Institute, Cary, NC, USA).

Results

Demographic and clinical characteristics

Table 1 compares the demographic and clinical characteristics of the two study groups at baseline. The two groups did not show any significant differences on demographic and clinical measures at the outset, thus indicating high equivalence.

Follow-up rates and attrition

As shown in Fig. 1., there were no significant differences in follow-up rates between the SE group and the TVR group. The early attrition rates (dropping out of the programme within the first 2 months) were 4.3% in the SE group and 1.9% in the TVR group. A further 9.3% of the participants, however, never started a TVR. Within the first 6 months after beginning vocational rehabilitation, 26.1% of the SE group dropped out, together with 18.5% of the TVR group. Drop-outs scored significantly higher on the depressive-resigned coping factor and had a lower employment rate since age 20 (both on 0.05 level). No other significant differences between drop-outs and non-drop-outs in baseline characteristics could be found. Of all those participants who dropped out within the first 6 months or, alternatively, never started a rehabilitation programme, 6.5% vs. 5.6% nevertheless obtained competitive employment during the follow-up period.

Vocational outcomes

All competitively employed participants in both groups worked for at least 2 weeks. Tables 2 and 3 summarise the differences in the vocational outcomes of both groups. The results in Table 2 are all clearly in favour of SE. Table 3 shows that the hours worked and the wages in SE jobs assume a middle position between competitive jobs without vocational support and sheltered jobs.

The monthly rates of competitive employment for each programme (regardless whether participants are still in the programme or already dropped out) are graphed in Fig. 2. After the first month, the SE group consistently showed significantly higher competitive employment rates according to univariate tests of proportions. In the second year, the mean rate of competitive employment was 48.2% in the SE group as opposed to 18.5% in traditional vocational rehabilitation programmes.

Random effects logistic regression was also used to assess the overall differences between the SE and TVR groups in month-by-month competitive employment rates for the 24-month follow-up period. The Type III tests of fixed effects revealed a significant group effect, $F(1, 98) = 16.49$, $P < 0.0001$; a significant time effect, $F(23, 2254) = 6.40$, $P < 0.0001$; and no significant group x time interaction, $F(23, 2254) = 1.04$, $P = 0.41$. Therefore, this analysis substantiated the graphical pattern of a consistently higher monthly competitive employment rate over the follow-up period explicitly favouring SE over TVR.

Weekly contacts of the employment specialists

Table 4 reveals that the employment specialists had on average at least one contact a week with the participant (70%) or a relevant person (30%). Half of the contacts were by phone or e-mail. In the first 6 months, the frequency was about double that in the following 18 months.

The frequency of contacts with participants who dropped out of the SE programme within the first 6 months ($n = 12$) was with 2.5 (SD 0.2) compared with 1.6 (SD 0.1) of those who stayed ($n = 29$) significantly higher ($P < 0.001$). In the following 18 months, the proportion was even more distinct ($P < 0.0001$) with 1.5 (SD 0.1) of the drop-outs ($n = 10$) vs. 0.8 (SD 0.1) of those who were still in the programme after 24 months ($n = 17$).

Table 1. Baseline comparison of demographic and clinical characteristics of patients in Bern with SMI who desired competitive employment by study condition*

	Supported employment (SE) (n = 46)		Traditional vocational rehabilitation programmes (TVR) (n = 54)	
Variable	*N*	%	*N*	%
Age (SD)	33.5 (9.8)		34.1 (9.2)	
Sex				
Male	30	65	35	65
Marital status				
Never married	33	72	41	76
Education level				
Unskilled or uncompleted vocational training	11	24	14	26
Completed vocational training	30	65	32	59
University degree	5	11	8	15
Diagnosis				
Schizophrenia spectrum	18	39	20	37
Affective disorder	18	39	23	43
Other	10	22	11	20
Concomitant substance abuse	7	15	5	9
Symptoms (PANSS) (SD)				
Positive symptoms (7–49)	9.5 (3.4)		8.6 (2.3)	
Negative symptoms (7–49)	11.2 (4.7)		10.3 (3.3)	
General symptoms (16–112)	25.4 (7.4)		23.1 (5.1)	
Global functioning (GAF, 0–100) (SD)	49.8 (6.6)		49.9 (5.5)	
Coping with stress (SVF) (SD)				
Active-change oriented coping	121.6 (31.1)		125.8 (32.8)	
Depressive-resigned coping	108.1 (32.5)		108.7 (36.6)	
Quality of life (W-QLI) (SD)				
Subjective	5.7 (2.1)		5.9 (2.0)	
Objective	5.0 (1.2)		5.2 (1.3)	
Years of illness (SD)	5.8 (6.0)		5.6 (5.3)	
Number of previous psychiatric hospitalisations (SD)	1.8 (2.8)		1.6 (2.2)	
Months in hospital (SD)	5.5 (6.7)		4.0 (4.8)	
Work status before intake				
Not working	36	78	46	85
Sheltered work	10	22	8	15
Months of unemployment before intake (SD)	19.7 (20.8)		27.8 (29.1)	
Employment rate since age 20 (SD)	0.54 (0.79)		0.55 (0.28)	

*No statistically significant differences between the two groups were found at the 0.05 level.
PANSS, positive and negative syndrome scale; GAF, global assessment of functioning scale; SVF, stress-management questionnaire; W-QLI, Wisconsin quality of life index.

Table 2. Differences in vocational outcomes between supported employment (SE) and traditional vocational rehabilitation programmes (TVR) in the study sample (n = 100)

	Study sample (n = 100)		
	SE (n = 46)	TVR (n = 54)	Sign.
Time to first job in days (SD)	116.7 (155.5)*	214.3 (196.5)†	n.s.
Competitive employment rates	58.7%	25.9%	<0.001
Competitive employment rates ≥20 h a week	56.5%	24.1%	<0.001
Total weeks competitively employed during the second year (SD)	24.5 (23.7)	10.2 (18.1)	<0.001
Hours competitively worked in second year (SD)	628.0 (694.6)	316.9 (632.9)	<0.05
Job tenure in longest competitive job held during follow-up (in weeks) (SD)	41.8 (42.1)	13.0 (26.6)	<0.0001
Total earnings (in CHF) in the second year (SD)	12 436.7 (16 183.6)	10 489.9 (18 778.5)	<0.05

*n = 27.
†n = 14.
CHF, Swiss Franks (exchange rate on September 7, 2011: 1 CHF = 1.17 USD).

Non-vocational outcomes

Repeated-measures analysis of variance (ANOVA) under the general linear model was used to examine the time, group and time-by-group interaction effects between the SE and TVR groups. Compared with the figures at intake presented in Table 1, all symptoms measured by the PANSS

Table 3. Differences in vocational outcomes between supported employment (SE) and traditional vocational rehabilitation programmes (TVR) in the study sample (n = 100) at the 2-year follow-up

	n	SE	*n*	TVR	Sign.
Employment status at 24-month follow-up	46		54		<0.001
In a competitive job without support		7 (15%)		9 (17%)	
In a competitive job with support of an employment specialist		14 (30%)		0	
In vocational training		3 (7%)		6 (11%)	
Sheltered work		12 (26%)		19 (35%)	
Unemployed		10 (22%)		20 (37%)	
Hours worked per week at 24-month follow-up (SD)					
In a competitive job without support	7	31.4 (13.2)	9	26.1 (14.8)	
In a competitive job with support	14	23.9 (6.6)	0	–	
Sheltered work	12	21.6 (9.3)	19	27.3 (10.1)	
Hourly wage (in CHF) at 24-month follow-up (SD)					
In a competitive job without support	7	21.6 (11.4)	9	23.5 (12.2)	
In a competitive job with support	14	14.7 (1.3)	0	–	
Sheltered work	12	4.6 (3.4)	19	4.6 (3.1)	
Monthly income (in CHF) at 24-month follow-up (SD)					
In a competitive job without support	7	3104.3 (2549.0)	9	3444.4 (1936.1)	
In a competitive job with support	14	1540.0 (661.6)	0	–	
Sheltered work	12	391.7 (252.0)	19	596.7 (559.2)	

CHF, Swiss Franks (exchange rate on September 7, 2011: 1 CHF = 1.17 USD).

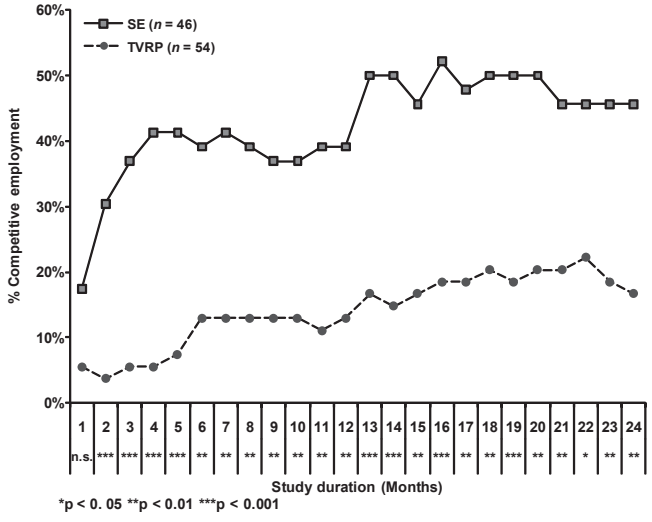

Fig. 2. Month-by-month rates of competitive employment for supported employment (SE) and traditional vocational rehabilitation programmes (TVR).

Table 4. Average number of weekly contacts of the employment specialists in the supported employment group with participants, supervisors and other relevant people

	Month 1–6	Month 7–24
Weekly contacts with participant (SD)	1.3 (0.5)	0.7 (0.3)
Weekly contacts with supervisors or other relevant people (SD)	0.6 (0.3)	0.3 (0.2)
Percentage of contacts by phone or e-mail (SD)	45.6 (14.1)	53.0 (14.2)

decreased equivalently during the follow-up period in both groups at the 24-month follow-up as presented in Table 5. The Type III tests of fixed effects revealed only a significant time effect for the negative symptoms.

The GAF increased significantly at the 24-month follow-up mainly on account of the better vocational situation. The same could be observed in terms of the objective quality of life. The subjective quality of life was higher than the objective one at intake but did not increase significantly.

In none of the non-vocational variables, a significant group or time-by-group interaction effect could be found.

During the course of the study, SE group participants were hospitalised 0.2 (SD 0.5) times for 15.7 (SD 47.0) days on average vs. 0.4 (SD 0.9)

Table 5. Differences in non-vocational outcomes at the 24-month follow-up between supported employment (SE) and traditional vocational rehabilitation programmes (TVR) in the study sample (n = 100)

	Study sample (n = 100)				Repeated-measures ANOVA
	At intake		At 24-month follow-up		
	SE (n = 46)	TVR (n = 54)	SE (n = 46)	TVR (n = 54)	Time effect
Symptoms (PANSS) (SD)					
Positive symptoms (7–49)	9.5 (3.4)	8.6 (2.3)	8.8 (2.9)	8.8 (3.4)	n.s.
Negative symptoms (7–49)	11.2 (4.7)	10.3 (3.3)	9.8 (3.4)	9.0 (2.7)	$F(2, 178) = 10.66$, $P < 0.0001$
General symptoms (16–112)	25.4 (7.4)	23.1 (5.1)	23.4 (5.2)	21.7 (4.5)	n.s.
Global functioning (GAF, 0-100) (SD)	49.8 (6.6)	49.9 (5.5)	55.2 (9.1)	55.3 (9.1)	$F(2, 178) = 24.8$, $P < 0.0001$
Quality of life (W-QLI) (SD)					
Objective	5.7 (2.1)	5.9 (2.0)	6.4 (1.5)	6.6 (1.4)	$F(2, 154) = 30.6$, $P < 0.0001$
Subjective	5.0 (1.2)	5.2 (1.3)	6.1 (1.9)	6.3 (1.9)	n.s.

PANSS, positive and negative syndrome scale; GAF, global assessment of functioning scale; W-QLI, Wisconsin quality of life index.

times for 30.6 (SD 71.5) days for participants in the TVR group. Neither of these differences reached significance level. In summary, in none of the non-vocational outcome variables, a significant group or group x time effect could be found.

Discussion

Main study findings

Consistent with earlier research findings not only in the United States but also elsewhere, the SE programme implemented in this study proved more effective than the traditional vocational rehabilitation programmes in helping individuals with SMI to obtain and sustain competitive employment. Moreover, as has been the case in previous studies, neither group showed significant differences in the non-vocational outcome criteria.

At intake, participants in both groups did not differ at all. The early attrition rate was significantly higher in the TVR group, a finding already reported by Mueser et al. (26). In the second year, the mean competitive employment rate was 48.2% in the SE group as opposed to 18.5% in the traditional vocational rehabilitation programmes. SE group participants were competitively employed for 24.5 weeks on average and earned CHF 12 437 (=USD 14 551) vs. 10.2 weeks and CHF 10 490 (=USD 12 273) for participants in the TVR group. At 58.7% and 25.9% in the SE and TVR groups respectively, the rates of individuals ever competitively employed during the study period figure within the same range as the average of all previous RCT studies on IPS as reported by Bond et al. (6) at 61% and 23%. The European EQOLISE study yielded comparable rates of 55% and 28% (10).

At the end of the study, 45.7% of the SE group were still competitively employed as compared with 16.7% of the TVR group, in other words, 77.9% vs. 64.4% of those who had ever been competitively employed. Therefore, not only was the rate of competitive employment significantly higher in the SE group but so was sustainability, which was manifested in a significantly longer job tenure amounting to 24.5 vs. 10.2 weeks. This figure is about equal to the annualised job tenure average of 24.2 weeks as noted in previous SE studies (6). The longest job tenure in a competitive job was 41.8 weeks, which was not only significant longer than in the TVR group (who was, however, additionally handicapped by the time spent in the initial training in sheltered workshops), but also longer than the 36.8 weeks reported by Bond et al. (27), a tenure that had hitherto been unsurpassed.

Participants of both groups, when employed in a competitive job, worked with a very high percentage of 96.3% vs. 93.1% for 20 h or more a week compared with 43.6% vs. 14.2% in Bond et al. (6). On the one hand, this discrepancy may be caused by the more restrictive inclusion criteria, and on the other, it may be influenced by the fact that there is no welfare trap in Switzerland. The mean time for securing the first competitive job of 116.7 vs. 214.3 days was equivalent to the average of 137.6 vs. 205.9 days recorded in previous studies (6).

The employment specialist's effort to keep the participant in competitive employment was significantly higher in those who later dropped out of the SE, i.e. some drop-outs cannot be averted despite increasing the contact frequency of the employment specialist.

The equivalent or, in part, better results in comparison with previous studies may be attributable to various factors, such as the considerably lower percentage of participants with a schizophrenia spectrum disorder (28), the more favourable

economic situation in Switzerland and the particular selection criteria used during the assessment phase. A more detailed assessment – as we have it in Switzerland – may reveal important information about the participant's capacities and thus facilitate the search for a suitable job for the individual concerned that will ultimately increase the likelihood of achieving sustainable employment (29).

Study limitations

Several study limitations should be touched upon. First, the follow-up interviewer (S.G.) was not blind to programme assignment, thereby giving rise to possible rater bias. Key employment measures, however, were objective and duly corroborated by multiple sources (e.g. participants, vocational programmes, Swiss Invalidity Insurance). Second, although traditional vocational rehabilitation programmes all operate according to the train-place principle, these programmes also differ in design, a fact that may call the generalisability of the control condition into question. In an explorative analysis, the authors checked whether any traditional vocational rehabilitation programmes produced a better outcome; no differences were found. Third, although the 2-year follow-up period used in this study was comparable in duration to follow-ups noted in the literature, this time frame may nevertheless be too brief to adequately settle the critical question of sustainability. Although the trend clearly favours SE, the authors have started a 5-year follow-up study to further clarify this question. Fourth, all fidelity ratings were performed by the research team, leading to a further possibility of rater bias owing to the team's enthusiasm for a new project. Finally, the SE programme was started at the same time as the study. Most of the starting-up problems encountered were dealt with during the first year. Inasmuch as only the follow-up data from the second year were used, these problems were largely inconsequential to the study. As already mentioned in the method section, the rationale for using second-year data was to be fair to the TVR because the train-place principle took an average of 6.1 months of the first year to train people in a sheltered environment for competitive employment.

Future directions

This study clearly demonstrates that a SE programme, which conforms to the fidelity criteria of IPS, with the exception of entrance selection, can be successfully introduced in Switzerland, a country that is highly developed in terms of its economy and the social insurance network, and which, furthermore, provides high-quality traditional vocational rehabilitation programmes.

A nationwide introduction of SE would lead to a reduction in sheltered work places, but not to their complete abolition. Without the existence of the Job Coach Project offering SE, the majority of participants in vocational rehabilitation programmes would be more likely to end up in sheltered employment. The results furthermore support the claim that traditional vocational rehabilitation programmes should be replaced by SE programmes in near future.

In conclusion, the Swiss example demonstrates that even in a Western European country with a very high threshold to the open labour market for people with SMI, the IPS model of SE proved to be a viable alternative to employment in sheltered workshops and to competitive employment without support. Hence, the authors can recommend shifting the focus from stepwise traditional vocational rehabilitation programmes in Switzerland and Europe (consistent with the results of the EQOLISE study, 10) to an individual placement and support model of SE, with minimal prevocational training and the set goal of competitive employment.

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Declaration of interest

None.

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