

The effectiveness of supported employment for people with severe mental illness: a randomised controlled trial

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Summary

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Background The value of the individual placement and support (IPS) programme in helping people with severe mental illness gain open employment is unknown in Europe. Our aim was to assess the effectiveness of IPS, and to examine whether its effect is modified by local labour markets and welfare systems.

Methods 312 patients with severe mental illness were randomly assigned in six European centres to receive IPS (n=156) or vocational services (n=156). Patients were followed up for 18 months. The primary outcome was the difference between the proportions of people entering competitive employment in the two groups. The heterogeneity of IPS effectiveness was explored with prospective meta-analyses to establish the effect of local welfare systems and labour markets. Analysis was by intention to treat. This study is registered with ClinicalTrials.gov, with the number NCT00461318.

Findings IPS was more effective than vocational services for every vocational outcome, with 85 (55%) patients assigned to IPS working for at least 1 day compared with 43 (28%) patients assigned to vocational services (difference 26·9%, 95% CI 16·4–37·4). Patients assigned to vocational services were significantly more likely to drop out of the service and to be readmitted to hospital than were those assigned to IPS (drop-out 70 [45%] vs 20 [13%]; difference –32·1% [95% CI –41·5 to –22·7]; readmission 42 [31%] vs 28 [20%]; difference –11·2% [–21·5 to –0·90]). Local unemployment rates accounted for a substantial amount of the heterogeneity in IPS effectiveness.

Interpretation Our demonstration of the effectiveness of IPS in widely differing labour market and welfare contexts confirms this service to be an effective approach for vocational rehabilitation in mental health that deserves investment and further investigation.

Introduction

Unemployment for people with mental-health disorders is very high, with rates of up to 95% for those with severe mental illness.¹ In the UK, the contribution of mental-health problems to absence from work due to sickness has substantially increased over the past decade,² and people with mental-health disorders represent the largest group (40%) who claim incapacity benefit.³ A European study⁴ reported that mental-health problems are a rising cause of sickness, absenteeism, and work disability pensions. Traditional rehabilitation, increasingly referred to as the train-and-place model, has addressed deficits related to illness and training in job skills to prepare patients for a return to employment. This approach remains the most widespread but has had very little success, and many patients obtain employment only in sheltered workshops.⁵ Developments in the USA emphasise direct job placements, often in simple entry-level occupations, plus support to patient and employer. This model is called place-and-train.

The most intensively studied place-and-train or supported employment intervention is individual placement and support (IPS), which emphasises rapid job search on the basis of patient preference and continuing support to patient and employer from an employment specialist working as an integral member of the mental-health service contributing to treatment

planning and delivery.⁶ Results from several randomised trials and two meta-analyses^{7,8} have shown the effectiveness of the programme in the USA, where this intervention is now the recommended evidence-based practice.⁹ There are almost 20 experimental and quasi-experimental studies of IPS. Several of these studies investigated combined interventions (eg, IPS and assertive community treatment¹⁰) or examined specific aspects of the intervention (such as degree of IPS integration for agencies, teams, and individual providers¹¹). Results from randomised trials^{10,12–16} have shown that rates for competitive employment on the open job market for patients using IPS were more than doubled, and a large scale implementation trial in eight sites with locally-determined supported employment and control services noted much the same degree of clinical effectiveness.¹⁷

Europe differs greatly from the USA in both its employment practices (varying amounts of employment protection compared with a hire and fire culture in the USA) and in having more generous welfare systems. Such systems might generate a benefit trap, in which there could be perceived or real financial disincentives to returning to work—eg, loss of housing benefits or high disability payments.¹⁸ Differences in both labour markets and welfare systems might reduce the effectiveness of IPS. Moreover, welfare systems and job markets vary

considerably across Europe,¹⁹ and there are substantial differences in unemployment rates.

Our aim was to assess the effectiveness of IPS compared with existing good quality rehabilitation and vocational services for people with severe mental illness in terms of open employment outcomes (in the competitive labour market), and to examine its effectiveness in different European welfare systems and labour markets.

Methods

Study design

We undertook a randomised trial in six European centres—London (UK), Ulm-Guenzburg (Germany), Rimini (Italy), Zürich (Switzerland), Groningen (Netherlands), and Sofia (Bulgaria). Patients were included if they were diagnosed with severe mental illness (psychotic illness, including bipolar disorder), were aged between 18 years and local retirement age (ie, between 60 and 65 years), had been ill and had major role dysfunction for at least 2 years, were living in the community at baseline, had not been in competitive employment in the preceding year, and wished to enter competitive employment. They were randomly allocated to either IPS or vocational service (control service). Since the effect of sex and work history on vocational outcomes needed to be considered,²⁰ service allocation was stratified by centre, sex, and work history (more or less than 1 month's competitive employment in the 5 years before baseline). Recruitment took place between April 1, 2003, and May 30, 2004, with follow-up ending on Nov 30, 2005. Randomisation was done centrally with MINIM (version 1.5). A researcher at every centre recruited patients and submitted their details to the statistician for randomisation, and researchers were notified of allocation by email. The allocation sequence was concealed until the services had been assigned, but patients, professionals, and researchers could not be blinded to service allocation thereafter.

The primary hypothesis was that patients assigned to IPS would be more likely to obtain open employment than would control service patients. Secondary hypotheses were that they would be in open employment for longer than would control patients, and they would not spend more time in hospital. The primary outcome was the difference in proportions of people entering competitive employment (working for at least 1 day) in each service type. Secondary vocational outcomes were the number of hours worked, the number of days employed, and the job tenure of employed patients. Other secondary outcomes included drop-out from service and admission to hospital. All analyses, apart from that of job tenure, were undertaken on an intention-to-treat basis with the entire sample, and then repeated for every centre alone.

Interventions

IPS was provided by one or two IPS workers at every centre, who were trained in the model. The IPS model

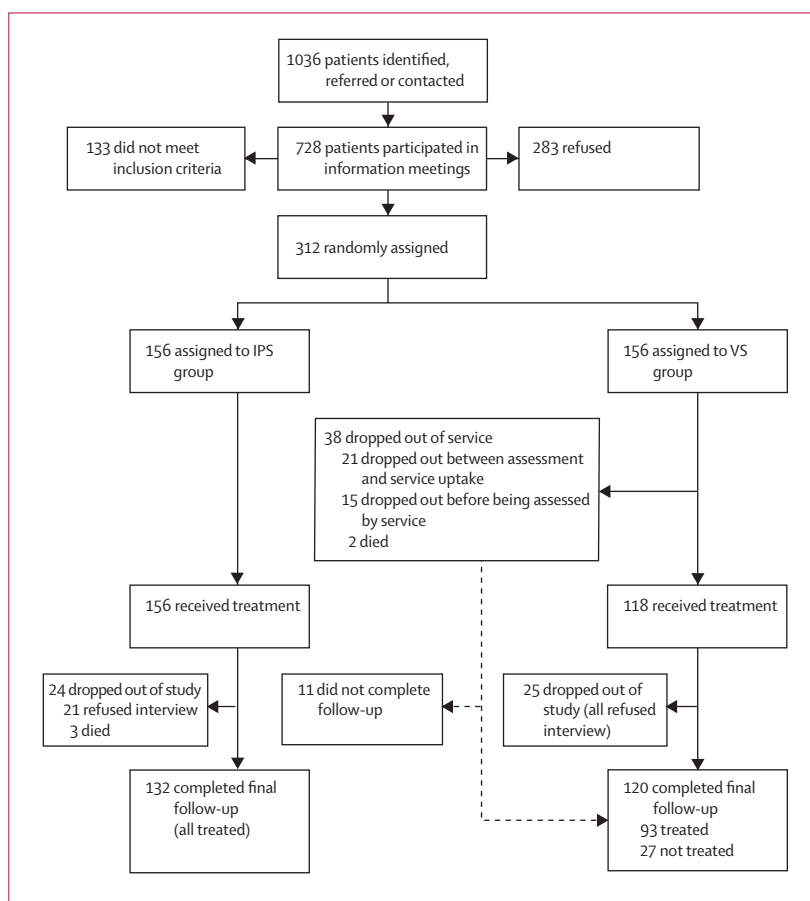


Figure 1: Trial profile

IPS=Individual placement and support. VS=vocational service.

consists of identification of patients who want to work in the competitive labour market, and helps them develop realistic goals and seek appropriate employment directly; there is no training phase. The IPS worker builds up a network of employers willing to accept patients, with whom the IPS worker continues contact, supporting both patient and employer. This support is open ended (in our study until the end of the 18-month follow-up), and the IPS worker had a maximum caseload of 25 patients. When the local services operated a community mental health team system, all IPS workers were located within such a team, providing a service to study patients recruited from that team and liaising with team staff.

The vocational service at every centre was chosen on the basis that it was the best alternative vocational rehabilitation service available locally, and it was the typical and dominant service in the area. All services provided high quality vocational rehabilitation according to the train-and-place model. This rehabilitation consisted of an assessment of the patient's rehabilitation needs, and the provision of a structured training programme aimed at combating deficits related to illness and training in appropriate work skills (eg, reintroduction of a daily routine for attending

the centre, time management, or information technology skills). The structured programme usually occupied most of the week and was generally at a day centre, although in Ulm it involved mostly residential care. Every vocational service had to make a commitment to take patients into the service within 2 months of randomisation.

All IPS workers were novices who undertook an equal amount of training at a project conference at the start of the study, by the originator of IPS, Deborah Becker, and

a London vocational rehabilitation specialist, who then continued to supervise workers by telephone conference every 2 weeks. The fidelity of the IPS workers to the model was assessed with the IPS fidelity scale²¹ at three time points. The scale distinguishes successfully between supported employment and other vocational interventions.²¹

The characteristics of the vocational services were assessed at two time points with a vocational services questionnaire developed for the study. This questionnaire was a data collection method developed from narrative accounts from all centres of the vocational services being used, and was designed to capture the nature of the service offered and its distinctiveness from IPS. Both the IPS fidelity scale and the vocational services questionnaire were administered to both IPS workers and vocational services at every centre, to measure systematically the differences between them.

Procedures

Patients were followed up for 18 months, with interviews at baseline and 6, 12, and 18 months. Data were obtained on vocational outcomes, hospital admission, and service use by interview, on job satisfaction and hours worked by questionnaire at the start and end of each job obtained, and on job status by vocational staff. Clinical and social functioning, quality of life, and needs for care were assessed at all interviews with validated, structured assessments and will be reported separately. Researchers were trained centrally in administration of all measures, and inter-rater reliability was assessed periodically with videotaped interviews. The clinical diagnosis of psychosis was confirmed from case-notes by OPCRIT²²—a validated structured assessment by independent research staff who were clinically trained.

Statistical analysis

The study was funded to provide one full time equivalent IPS worker for every centre, which meant a maximum sample size of around 300 patients in total (50 people at all six centres, divided equally between treatment groups). With Drake and colleagues finding that 9% of the control group entered competitive employment,¹³ and on the basis of a total sample size of 300, our study had 90% power to detect an increase of 13% for the IPS group at the 5% significance level. For analysis of data within every centre, our study had 90% power to detect an increase of 37% for the IPS group at the 5% significance level. This analysis was clearly less well powered than was the overall primary analysis, but there was sufficient power to detect differences approaching those found by Drake and colleagues.¹³

95% CIs were calculated for primary and other binary outcomes. Continuous vocational outcomes (number of hours worked, number of days employed, and job tenure) and time in hospital were analysed by presenting bootstrapped estimates for both the differences in

	IPS (n=156)	Vocational service (n=156)	Total (n=312)
Age (years)	37.3(9.80)	38.3(9.94)	37.8(9.86)
Men	93 (60%)	95 (61%)	188 (60%)
Age at first psychiatric contact (years)	26.8(8.36)	26.5(8.54)	26.6(8.44)
Number of admissions in lifetime			
0	13 (8%)	18 (12%)	31 (10%)
1-5	117 (75%)	105 (68%)	222 (71%)
6-10	16 (10%)	21 (14%)	37 (12%)
≥11	10 (6%)	11 (7%)	21 (7%)
Clinical diagnosis			
Schizophrenia / schizoaffective disorder	122 (79%)	126 (82%)	248 (80%)
Bipolar disorder	28 (18%)	23 (15%)	51 (17%)
Other	5 (3%)	5 (3%)	10 (3%)
Work history			
>1 month in past 5 years	88 (56%)	86 (55%)	174 (56%)
≤1 month in past 5 years	68 (44%)	70 (45%)	138 (44%)
Number of years in education	12.1 (3.83)	11.6(3.09)	11.9 (3.48)
Living situation			
Alone	51 (33%)	54 (35%)	105 (34%)
With friends / relatives	85 (55%)	77 (49%)	162 (52%)
Sheltered accommodation	20 (13%)	25 (16%)	45 (14%)
Born in country of residence	135 (87%)	147 (94%)	282 (90%)

Data are mean (SD) or number (%).

Table 1: Patient characteristics at baseline

	IPS	n	Vocational service	n	Difference (95% CI)
Worked for at least 1 day	85 (55%)	156	43 (28%)	156	26.9% (16.4 to 37.4)
Number of hours worked*	428.8 (706.77)	143	119.1 (311.94)	138	308.7 (189.22 to 434.17)
Number of days employed*	130.3 (174.12)	154	30.5 (80.07)	152	99.8 (70.71 to 129.27)
Job tenure (days)*	213.6 (159.42)	83	108.4 (111.95)	39	104.9 (56.03 to 155.04)
Drop-out from service	20 (13%)	156	70 (45%)	156	-32.1% (-41.5 to -22.7)
Admission	28 (20%)	148	42 (31%)	141	-11.2% (-21.5 to -0.90)
Percentage of time spent in hospital*	4.6 (13.56)	148	8.9 (20.08)	141	-4.3 (-8.40 to -0.59)

Data are number (%) or mean (SD). *Data for hours worked were not available for all patients, since not all patients completed follow-up interviews or were able to supply this information. Data for days employed were collected outside interview. Job tenure data were only calculated for the subgroup of patients who worked. Data for hospital use were missing for 23 patients. †Bootstrapped estimates of difference between means and bias corrected and accelerated 95% CIs presented.

Table 2: Vocational, admission, and drop-out outcomes†

means and their 95% CIs since they were positively skewed. The analysis of job tenure was based only on patients who had been in competitive employment for at least 1 day. Missing secondary vocational data were handled with a conservative approach. Secondary vocational data (hours worked and days employed) for patients who had worked for at least 1 day were scored as missing, whereas patients who had not worked were scored as zero.

Prospective meta-analyses²³ were used to explore the possible effect of labour market and welfare system factors on the heterogeneity of the effectiveness of IPS and returning to competitive employment. These analyses were done to account for variability in the primary employment outcome across the six centres that might have been due to factors other than the interventions or characteristics of the study sample. The factors considered were identified through a detailed consultation exercise, through review of published work, analysis of international data sets, and use of a semistructured questionnaire to IPS workers associated with the study. The factors identified were local unemployment rate, percentage change in gross domestic product (GPD), long-term national unemployment rate as a proxy for social exclusion, benefit trap, and indirect income redistribution. Cochran's Q test²⁴ was used to examine whether there was significant heterogeneity in outcomes between the centres. The Cochran's Q test was then used to examine whether the factors of interest explained a significant amount of the variation between centres. To confirm the appropriateness of the assumptions made by the prospective meta-analyses, we used an alternative method, logistic regression analysis, for the categorical variable benefit trap only. The logistic regressions against both IPS effect sizes and getting a job irrespective of service, including centre as a random effect, were fitted with R (version 2.4).

Likelihood of benefit trap was assessed by asking IPS workers whether they considered their client group to be at risk of having their income reduced if they took a job, and centres were categorised as high, low, and no risk. The factors were tested first against IPS effect sizes and then against finding a job irrespective of service.

Analyses were done with SPSS for Windows (version 12.0), except for the meta-analyses (Comprehensive Meta-Analysis [version 2.0]) and the bootstrapping analyses (Stata for Unix [version 8.1]).

This study is registered with ClinicalTrials.gov, with the number NCT00461318.

Role of the funding source

The sponsor of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

Figure 1 shows the trial profile. Table 1 shows baseline sociodemographic characteristics of the two groups. Data for the primary outcome measure (in competitive employment for at least 1 day) were available for the whole sample. Of these patients, 252 (81%) completed the final follow-up interview. There were no systematic differences in any baseline characteristics between those who dropped out (did not complete the final interview) and those who remained, nor between the number dropping out of the study between IPS and vocational service groups (difference 7.7 percentage points, 95% CI -1.01 to 16.4, $p=0.085$). Interview data were supplemented by data from questionnaires and vocational workers. Five people (three IPS and two vocational service patients) died from natural causes during the study.

All IPS workers maintained good or fair levels of IPS fidelity throughout the study (median 65, min-max 61-70 of 75). By contrast, no vocational services achieved 56 (the lower cutoff for fair) at any time-point (median 31,

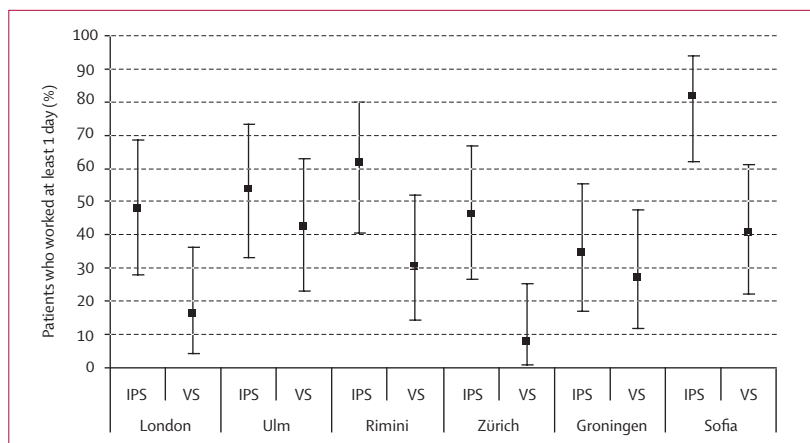


Figure 2: Proportions assigned to IPS or VS who worked at least 1 day within centres. Error bars=95% CIs. IPS=individual placement and support. VS=vocational service.

	IPS effect size		Getting a job	
	Q	p value	Q	p value
Local unemployment rates*	5.82	0.016	0.984	0.321
GDP per head growth (annual %) 2003†	1.66	0.198	9.56	0.002
% GDP spent on health 2002‡	0.229	0.632	2.55	0.110
Long-term unemployment rate (1999)§	0.532	0.466	16.16	<0.001
Benefit trap? (2004-05)¶	1.62	0.445	10.90	0.004

These socioeconomic variables should not be compared with each other, since the data are from different years and different sources. *Ranges from 3.6 in Zürich and Sofia to 8.1 in Groningen. Information provided by authors adjusted using ratio of national rates (EIU 2004 database accessed online via the Economist Intelligence Unit Market Indicators and Forecasts website) and ratio applied to local rates. †Ranges from -1.4 in Groningen to 4.9 in Sofia. Information from World Development Indicators Online database, accessed via the Economic and Social Data Services (ESDS) website. ‡Ranges from 7.3 in Sofia to 11.2 in Zürich. Information from World Development Indicators Online database, accessed via ESDS website. §Persons unemployed for a period of 1 year or more as a percentage of the labour force. Ranges from 1.2 in Zürich to 8.3 in Sofia. Information from ESDS website. ¶High risk centres: London, Groningen; low risk: Ulm, Zürich; no risk: Rimini, Sofia. GDP=gross domestic product.

Table 3: Socioeconomic sources of heterogeneity

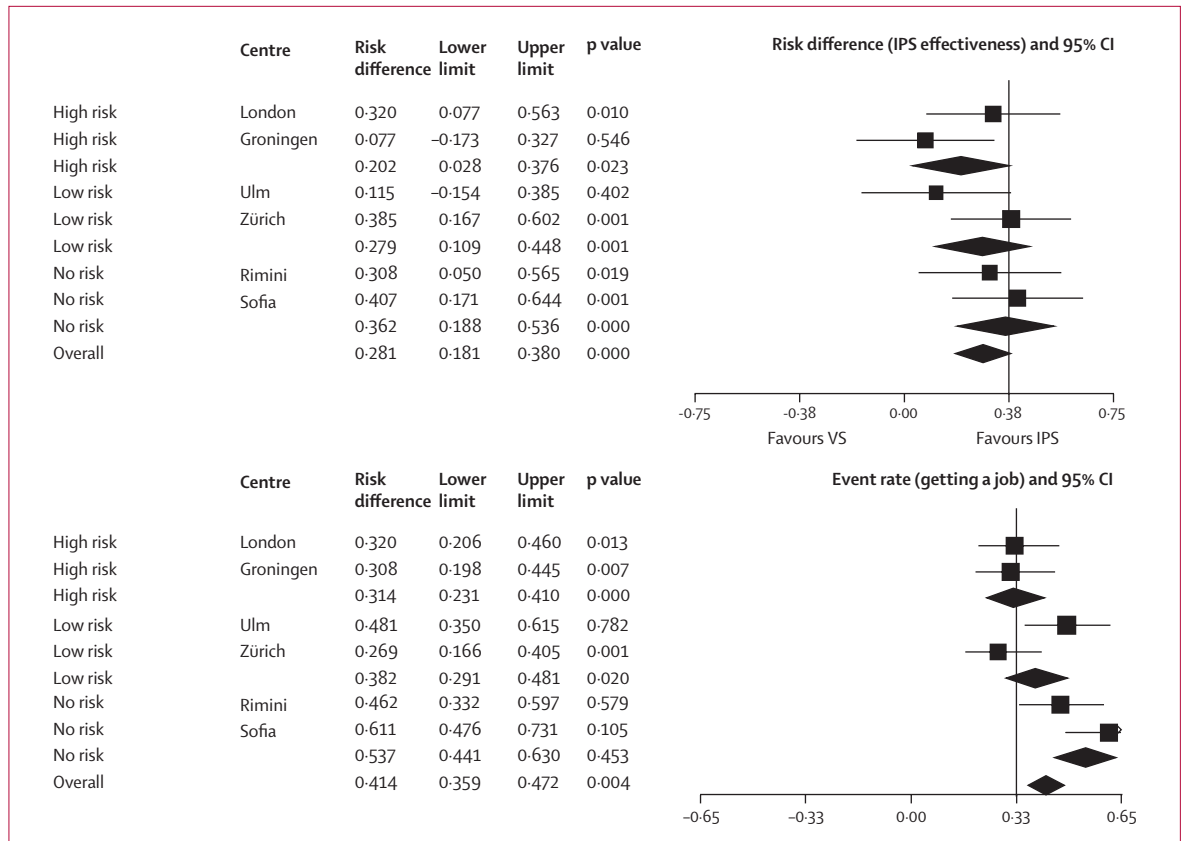


Figure 3: Effect of benefit trap on IPS effect size (upper) and on getting a job overall (lower)
 The third, sixth, and ninth rows show the summed estimate for the previous two rows, whereas the tenth row shows the total estimate for all the data. For every centre, the 95% CI is represented by a horizontal line and the IPS effect size (upper) or getting a job (lower) represented by a square, proportionate to study size. The diamond indicates that the outcome is pooled across centres, the width of which represents the 95% CI. IPS=individual placement and support. VS=vocational service.

min-max 24-40), confirming that the services they were delivering were not classifiable as IPS. Vocational service questionnaire data also confirmed that the IPS and vocational services at all centres differed substantively in their aims and scope, with vocational services working to the train-and-place model.

In all six centres, IPS was more effective than were vocational services for every vocational outcome, with 85 (55%) patients assigned to IPS working for at least 1 day compared with 43 (28%) patients assigned to vocational services (difference 26.9%, 16.4-37.4). Patients assigned to IPS worked for more hours than did vocational service patients during the 18 months of follow-up, and they were employed for more days (table 2). Of those who worked for at least 1 day, patients allocated to IPS maintained their jobs for longer periods than did those assigned to vocational services (214 days vs 108 days).

Vocational service patients were significantly more likely to drop out of the service than were IPS patients (table 2). Vocational service patients were also more likely to be admitted during the study period than were those assigned to IPS, and they spent on average twice as much time in hospital (table 2).

IPS was significantly more effective than was the vocational service in terms of vocational outcomes in London (difference 32.0%, 7.7-56.3), Rimini (30.8%, 5.0-56.5), Zürich (38.5%, 16.7-60.2%), and Sofia (40.7%, 17.1-64.4), but there was no difference in Ulm (11.5%, -15.4 to 38.5) or Groningen (7.7%, -17.3 to 32.7). In Ulm, the number of patients assigned to IPS working for at least 1 day (n=14) was close to that of the other centres, but more vocational service patients (n=11) at this centre also worked for at least 1 day than did those at the other five centres (figure 2). There was no statistically significant heterogeneity in variation in effectiveness of IPS (Q=6.12, p=0.295).

Only local unemployment rates explained a significant amount of the heterogeneity in effectiveness of IPS (Q= 5.82, p=0.016), whereas increased GDP growth per head, long-term unemployment rate, and risk of a benefit trap (as assessed by IPS workers) accounted for a significant amount of heterogeneity in getting a job, irrespective of service (table 3). Figure 3 shows the effect sizes of the centres grouped by the variable risk of benefit trap. Where benefits were deemed likely to be higher than salary (a greater risk of benefit trap), this was associated with a lower risk difference (a measure

of the effectiveness of IPS). A higher risk of benefit trap was associated with a lower event rate (of getting a job). Logistic regression analyses confirmed these findings (data not shown).

Discussion

This study clearly shows the effectiveness of IPS, since the rate of obtaining competitive employment for people with severe mental illness who were motivated to work was doubled compared with usual, high quality, vocational rehabilitation. Not only did patients assigned to IPS obtain competitive employment more often than did those assigned to vocational services, but they also kept their jobs for longer and worked for more hours. We noted that a high rate of employment did not have a detrimental effect on clinical wellbeing and relapse, which would have been indicated by an increased number of psychiatric admissions. This result is important confirmation for many of the clinicians we approached, who were concerned about the potential stress that working in the competitive labour market might cause their patients. Indeed, the finding of a reduced rate of admission with IPS is not reported in US studies,^{10,12–16} and could relate to the generally greater degree of integration of health and social care in Europe.

We have shown that IPS is effective in Europe, despite very different economies and labour markets from the USA, where previous IPS studies have largely been done. Although the heterogeneity of effect size between the six centres was not statistically significant, the test for heterogeneity is known to have very low power, especially when the number of sites is small as in this case. It was still valid to explore the sources of clinical heterogeneity.²⁵

Unlike the US trials, our study showed that socioeconomic context did affect IPS effectiveness, especially local unemployment rates, which accords with a non-randomised US study.²⁶ Sofia and Rimini, which had the most successful IPS services, were the two sites where local unemployment rates were reported as being substantially lower than national rates. IPS workers seemed more able to find jobs for individuals with severe mental illness in unskilled, support positions (such as warehouse or catering work), in the context of a buoyant local economy.

Overall, more patients obtained jobs when the country's economy was growing and job creation was increased than they did when the economy was slow. High amounts of social exclusion were also associated with more patients obtaining jobs; this counter-intuitive finding might have been because these countries offered less welfare support, thus providing greater incentives to work in the competitive employment market. Furthermore, the benefit trap (in which there could be a perceived or real financial disincentive to returning to competitive employment) was shown to be a demonstrable impediment to successful vocational rehabilitation overall in this group, although its association with IPS

effect size was not significant. Recruitment to the study was especially difficult in two countries with a substantial benefit trap (the UK and Netherlands). The prospective meta-analysis was exploratory, however, and the findings should be treated with some caution.

To ensure comparability across very different mental-health-care systems, we restricted our study to patients with severe mental illness who had been unemployed for at least 1 year. Our inclusion criteria were close to many of the US studies and, like patients in those studies, our patients had very limited work history and work skills, as well as several longstanding role impairments. Most of the US studies, however, included non-psychotic patients; yet we showed equal IPS effectiveness. We therefore believe that the IPS approach would be at least as effective in Europe as it has been in the USA. The accumulated evidence for IPS in North America, plus our findings of its effectiveness in widely differing labour market and welfare contexts, should confirm this service as an effective approach for vocational rehabilitation in mental health that deserves investment and further investigation.

Contributors

TB designed the study with WR and AF. All authors were involved in the conduct of the study, interpreting the results, and in revising and correcting the paper, which was drafted by TB and JC. The analyses were led by SW. All authors read and approved the final version of the manuscript.

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Conflict of interest statement

We declare that we have no conflict of interest.

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